

**Project Manual for**  
**Northwestern Water & Sewer District**  
**McComb Water Line Replacement – Phase 2**  
**WL-2815**



**2020**

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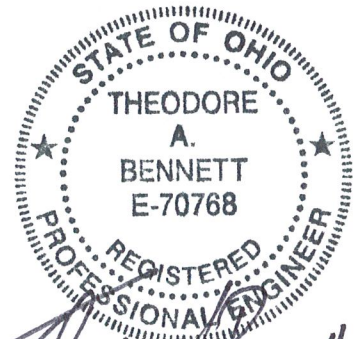
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Dan Wickard – Superintendent  
Garret T. Chamberlain, P.E. – Assistant Engineer



**Jones & Henry**  
ENGINEERS, LTD.



*Theodore A. Bennett*  
**8/11/2020**

3103 Executive Parkway, Suite 300  
Toledo, Ohio 43606  
419.473.9611



**NORTHWESTERN WATER & SEWER DISTRICT  
MCCOMB WATER LINE REPLACEMENT – PHASE 2 WL- 2815**

**ADVERTISEMENT FOR BIDS**

Sealed Bids for McComb Water Line Replacement - Phase 2 WL-2815, will be received by the Northwestern Water & Sewer District, at the District's Office, 12560 Middleton Pike, Bowling Green, Ohio 43402, until 11:00 AM, local time, on September 8, 2020 at which time they will be publicly opened and read.

In general, the work consists of the replacement of approximately 2695-feet of existing 4-inch, 6-inch and 8-inch water mains along W. Cooper Street between Rader Road and N. Church Street, E Main Street and S. Main Street. Additionally, work includes replacement of two small sections of water main crossing under the railroad tracks on Todd Street and E. Main Street. The work shall also include new fire hydrants, water services including water meters and meter pits, valves and restoration of disturbed areas.

The issuing office is Jones & Henry Engineers, Ltd., 3103 Executive Parkway, Suite 300, Toledo, Ohio 43606. Copies of the Bidding Documents may be examined at the Owner's office listed above or the issuing office, without charge.

Technical questions regarding the project should be e-mailed to the Project Manager Theodore Bennett, P.E. at [tbennett@jheng.com](mailto:tbennett@jheng.com) at Jones & Henry Engineers, Ltd.

Copies of Bidding Documents and Contract Documents may be obtained electronically from Newfax Corporation, Phone 419-241-5157, [www.newfaxcorp.com](http://www.newfaxcorp.com). A non-refundable fee will be required for each set of Bidding and Contract Documents by Newfax Corporation payable to Newfax Corporation.

Neither Owner nor Engineer has any responsibility for the accuracy, completeness or sufficiency of any bid documents obtained from any source other than the source indicated in these documents. Obtaining these documents from any other source(s) may result in obtaining incomplete and inaccurate information. Obtaining these documents from any source other than directly from the source listed herein may also result in failure to receive any addenda, corrections, or other revisions to these documents that may be issued.

Bids must be submitted on the forms bound herein, must contain the names of every person or company interested therein, and shall be accompanied by either a Bid Guaranty and Contract Bond in the amount of 100% of the amount bid with satisfactory corporate surety, or by a certified check on a solvent bank in the amount of not less than 10% of the amount of the Bid, subject to conditions provided in the Instructions to Bidders. The successful bidder will be required to furnish satisfactory Performance Bond and Maintenance and Guarantee Bond in the amount of 100% of the Bid.

The Contractor shall be required to pay not less than the prevailing wage rates established by the federal Davis-Bacon Wage Determinations issued by the U.S. Department of Labor.

Any Bid may be withdrawn prior to the scheduled closing time for receipt of Bids, but no bidder shall withdraw his Bid within 90 days after the actual opening thereof.

This procurement is subject to the EPA policy of encouraging the participation of small business in rural areas (SBRAs). The Owner reserves the right to reject any or all Bids, waive irregularities in any Bid, and to accept any Bid which is deemed most favorable to the Owner.

796-7688.001  
2020

Northwestern Water & Sewer District  
McComb Water Line Replacement – Phase 2

Jerry R. Greiner

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President

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To Newspaper:

Advertise: August 24, 2020

August 31, 2020

Furnish Affidavit:



## **INSTRUCTIONS TO BIDDERS**

### **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. Bidder - One who submits a Bid directly to Owner as distinct from a sub-bidder, who submits a bid to a Bidder.
  - B. Issuing Office - The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.
  - C. Successful Bidder - The Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

### **ARTICLE 2 – COPIES OF BIDDING DOCUMENTS**

- 2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

### **ARTICLE 3 – QUALIFICATIONS OF BIDDERS**

- 3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within 5 days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:
- A. Evidence of Bidder's authority to do business in the state where the Project is located.
  - B. Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."
  - C. List of equipment suppliers to be used.
- 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.
- 3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

**ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE**

4.01 *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.
- B. Easements and their conditions are listed in these documents.

4.02 *Existing Site Conditions*

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
  - 1. The Supplementary Conditions identify:
    - a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
    - b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
    - 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: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or adjacent to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated

in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

- A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder 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.
- D. Bidder shall 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.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

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

4.05 *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 5 – BIDDER'S REPRESENTATIONS**

5.01 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;
- E. consider 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 Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

#### **ARTICLE 6 – N/A**

#### **ARTICLE 7 – INTERPRETATIONS AND ADDENDA**

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions after the date established in the Instructions to Bidders may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

#### **ARTICLE 8 – BID SECURITY**

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 100 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.
- 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 Documents, 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 Documents 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. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.
- 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 seven 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.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

#### **ARTICLE 9 – CONTRACT TIMES**

- 9.01 The number of days within which, or the dates by which, the Work is to be substantially completed, and completed and ready for final payment, are set forth in the Agreement.

#### **ARTICLE 10 – LIQUIDATED DAMAGES**

- 10.01 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 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS**

- 11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.
- 11.02 All prices that Bidder sets forth in its Bid shall 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 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.
- 12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the Work:
- If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall 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.
- 12.04 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, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity 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 7.06 of the General Conditions.

## ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form shall be completed in ink or printed format. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
- 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."
- 13.02 A Bid by a corporation shall 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 shall be shown. The corporate seal shall be affixed and attested by the corporate secretary or an assistant corporate secretary.

- 13.03 A Bid by a partnership shall 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 partnership's address for receiving notices shall be shown.
- 13.04 A Bid by a limited liability company shall 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 firm's address for receiving notices shall be shown.
- 13.05 A Bid by an individual shall show the Bidder's name and address for receiving notices.
- 13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture's address for receiving notices shall be shown.
- 13.07 All names shall be printed in ink below the signatures.
- 13.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.09 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.10 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

#### ARTICLE 14 – BASIS OF BID

14.01 N/A

14.02 *Unit Price*

- A. Bidders shall 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.

14.03 *Allowances*

- A. For cash allowances the Bid price shall 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 15 – SUBMITTAL OF BID**

- 15.01 The Bidding Documents have been provided electronically, a Bidder is responsible for furnishing separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of 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 7 of the Bid Form.
- 15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to 12560 Middleton Pike, Bowling Green, Ohio 43402.
- 15.03 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.

#### **ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID**

- 16.01 A 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.
- 16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

#### **ARTICLE 17 – OPENING OF BIDS**

- 17.01 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 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE**

- 18.01 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 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT**

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. 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, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.
- 19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.
- 19.03 Evaluation of Bids
- A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
  - 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.
  - B.
- 19.04 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.
- 19.05 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.

#### **ARTICLE 20 – BONDS AND INSURANCE**

- 20.01 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 and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

#### **ARTICLE 21 – SIGNING OF AGREEMENT**

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall 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 ten days thereafter, Owner shall 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 22 – SALES AND USE TAXES**

- 22.01 Owner is exempt from Ohio state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Bid. Refer to Paragraph SC-7.09 of the Supplementary Conditions for additional information.

## **ARTICLE 23 – N/A**

## **ARTICLE 24 – RETAINAGE**

- 24.01 Provisions concerning retainage are set forth in the Agreement.

## **ARTICLE 25 – WAGE RATES**

- 25.01 The Bidder to whom the Contract is awarded will be required to pay as a minimum, the prevailing wage rates, current throughout the work, promulgated by the Davis-Bacon Act. Wage rates received for this project are included in the Exhibits of the Supplementary Conditions.

## **ARTICLE 26 – PROTEST**

- 26.01 A protest based upon all alleged violation of the procurement requirements of 40 CFR Part 33 may be filed against the Owner's procurement action by a party with an adversely affected direct financial interest. The protest shall be filed with the Owner.
- 26.02 A protest shall be filed as early as possible during the procurement process, but must be received by the OWNER no later than one week after the basis of the protest is known or should have been known, whichever is earlier. If the protest is mailed, the protester bears the risk of non-delivery within the required time period.
- 26.03 A protest must clearly present the procurement requirement being protested, the procurement regulation in alleged noncompliance, and the facts which support the protest, and any other information necessary to support the protest.

## **ARTICLE 27 – REQUIREMENTS FOR EQUAL EMPLOYMENT OPPORTUNITY (EEO)**

- 27.01 This procurement is subject to the provisions of orders issued by the Secretary of Labor Section 204 of Executive Order 11246 pertaining to equal employment opportunity (EEO). The form Contractor Equal Employment Opportunity Certification in the Additional Supplemental Conditions shall be completed and submitted with the bid.

## **ARTICLE 28 – CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS**

- 28.01 This procurement is subject to the provisions of Executive Order 12549 pertaining to the Certification Regarding Debarment, Suspension, and Other Responsibility Matters. The form Certification Regarding Debarment, Suspension, and Other Responsibility Matters in the Additional Supplemental Conditions shall be completed and submitted with the bid.

**ARTICLE 29 – DISADVANTAGE BUSINESS ENTERPRISES (DBE) UTILIZATION**

29.01 This procurement is subject to the USEPA program to encourage the participation of disadvantaged business enterprises. DBE Utilization is defined and explained in the Additional Supplemental Conditions. DBE program Forms 6100-3, 6100-4, and 6100-2 in the Additional Supplemental Conditions shall be completed and submitted with the bid.

**ARTICLE 30 – AMERICAN IRON & STEEL REQUIREMENTS**

30.01 This procurement is subject to the American Iron & Steel Requirements of PL 113-76, Consolidated Appropriations Act, 2014. The form titled American Iron & Steel Acknowledgement, found in the Additional Supplemental Conditions of all applicable materials shall be submitted by all Bidders.

**ARTICLE 31 – REQUIREMENTS FOR UTILIZATION OF SMALL BUSINESS IN RURAL AREAS (SBRAS)**

31.01 This procurement is subject to the EPA Policy of encouraging the participation of small businesses in rural areas. It is EPA Policy that recipients of EPA financial assistance awards utilize the services of small businesses in rural areas (SBRAs), to the maximum extent practical. The objective is to assure that such business entities are afforded the maximum practical opportunity to participate as subcontractors, suppliers, and otherwise in EPA-awarded financial assistance programs. This policy applies to all contracts and subcontracts for supplies, construction, and services under EPA grants or cooperative agreements. Small purchases are also subject to this policy.

**ARTICLE 32 – QUESTIONS REGARDING BID DOCUMENTS**

32.01 All questions shall be submitted by e-mail to Theodore Bennett, P.E. at Jones & Henry Engineers, Ltd. at 3103 Executive Parkway, Suite 300, Toledo, OH 43606, [tbennett@jheng.com](mailto:tbennett@jheng.com), no later than September 2, 2020

**ARTICLE 33 – ENGINEER'S ESTIMATE**

33.01 The Engineer's Opinion of Probable Construction costs is \$765,000.00



**BID FORM**

NORTHWESTERN WATER & SEWER DISTRICT  
MCCOMB WATER LINE IMPROVEMENTS – PHASE 2

**ARTICLE 1 – BID RECIPIENT**

- 1.01 This Bid is submitted to:  
Northwestern Water & Sewer District  
12560 Middleton Pike  
Bowling Green, Ohio 43402
- 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 – BIDDER’S ACKNOWLEDGEMENTS**

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

**ARTICLE 3 – BIDDER’S REPRESENTATIONS**

- 3.01 In submitting this Bid, Bidder represents that:
- A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum, Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. 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 any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. 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.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

#### **ARTICLE 4 – BIDDER'S CERTIFICATION**

4.01 Bidder certifies that:

- A. 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;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

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;
2. “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;
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.

#### **ARTICLE 5 – BASIS OF BID**

- 5.01 Bidder will complete the Work in accordance with the Contract Documents for unit prices indicated on the following page(s):

**UNIT PRICE BID**

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Item No.	Description	Estimated Amount	Unit	Unit Cost in Numbers		Unit Price in Words	Total Estimated Cost of Item	
1	Mobilization and Demobilization	1	LS					
2a	6-inch Water Main, Type B	140	LF					
2b	8-inch Water Main, Type B	1520	LF					
2c	8-inch Water Main, Type C	238	LF					
2d	10-inch Water Main, Type B	902	LF					
2e	10-inch Water Main, Type C	44	LF					
2f	8-inch PVC Water Main, in 16-inch Bored Casing	104	LF					
2g	10-inch PVC Water Main, in 20-inch Bored Casing	105	LF					
2h	Connections to Existing Water Mains 12-inch and Smaller (Without tapping)	8	EA					



Item No.	Description	Estimated Amount	Unit	Unit Cost in Numbers		Unit Price in Words	Total Estimated Cost of Item	
2i	Existing Water Main Plugged	15	EA					
2j	Water Main Plug with Blowoff	1	EA					
2k	Water Main Termination and Abandonment	12	EA					
2l	Water Main Abandoned - Grout Filled	333	LF					
3a	6-inch Gate Valve and Box	3	EA					
3b	8-inch Gate Valve and Box	6	EA					
3c	10-inch Gate Valve and Box	5	EA					
3d	8-inch by 8-inch Tapping Sleeve, Valve and Box	1	EA					
3e	10-inch by 8-inch Tapping Sleeve, Valve and Box	1	EA					
3f	12-inch by 10-inch Tapping Sleeve, Valve and Box	1	EA					
3g	Valve Box Abandoned	18	EA					
4a	Fire Hydrant Assembly, Type A	7	EA					

Item No.	Description	Estimated Amount	Unit	Unit Cost in Numbers		Unit Price in Words	Total Estimated Cost of Item	
4b	Fire Hydrant Assembly, Type A Excluding Watch Valve	1	EA					
4c	Fire Hydrant Assembly, Type B	2	EA					
4d	Fire Hydrant Assembly Removed	8	EA					
5a	Water Service, (Less than 2-inch diameter)	349	LF					
5b	Water Service, (2-inch diameter)	59	LF					
5c	Water Service Trenchless, (Less than 2-inch diameter)	434	LF					
5d	Water Service Trenchless, (2-inch diameter)	25	LF					
5e	Water Service Connection Reinstated, (Less than 2-inch diameter)	33	EA					
5f	Water Service Connection Reinstated, (2-inch diameter)	1	EA					
5g	Water Meter Pits (Without Meter)	34	EA					
6a	ODOT Item 202 Pavement and Base Removed	1201	SY					

Item No.	Description	Estimated Amount	Unit	Unit Cost in Numbers		Unit Price in Words	Total Estimated Cost of Item	
6b	ODOT Item 202 Driveway and Sidewalk Pavement Removed	723	SY					
7a	Flexible Pavement Trench Repair – Heavy Roadway	496	SY					
7b	Flexible Pavement Trench Repair – Residential Roadway	625	SY					
7c	Flexible Pavement Trench Repair - Driveway	69	SY					
7d	Temporary Pavement Repair	1101	SY					
7e	ODOT Item 411 Stabilized Crushed Aggregate (Berm and Drive)	106	SY					
7f	3-inch ODOT Item 301 Asphalt Concrete Base Course	200	SY					
8a	6-inch ODOT Item 452 Non-Reinforced Concrete Pavement, Class MS (Approach)	19	SY					
8b	4-inch Concrete Sidewalk	3609	SF					
8c	6-inch Concrete Sidewalk and Curb Ramp with Detectable Warning Surface	367	SF					

Item No.	Description	Estimated Amount	Unit	Unit Cost in Numbers		Unit Price in Words	Total Estimated Cost of Item
9a	Curb Removed	25	LF				
9b	Concrete Curb	25	LF				
10a	Sewer Repair (Less than or equal to 10-inch diameter)	20	LF				
10b	Sewer Repair (12-inch diameter and larger)	20	LF				
11	Catch Basin Removed and Replaced	3	EA				
12	Audio-Video Recording of the Zone of Influence	1	LS				
13	Maintenance of Traffic	1	LS				
14	Storm Water Pollution Prevention	1	LS				
15	Clearing and Grubbing	1	LS				
16	Pavement Marking	1	LS				
<b>Total Estimated Construction Cost:</b>							

**ARTICLE 6 – TIME OF COMPLETION**

- 6.01 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.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

**ARTICLE 7 – ATTACHMENTS TO THIS BID**

- 7.01 The following documents are submitted with and made a condition of this Bid:
- A. Required Bid security;
  - B. Evidence of authority to do business in the state of the Project;
  - C. Required Bidder Qualification Statement with supporting data.

**ARTICLE 8 – DEFINED TERMS**

- 8.01 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 9 – BID SUBMITTAL**

BIDDER: *[Indicate correct name of bidding entity]*

By:

*[Signature]*

*[Printed name]*

*(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)*

Attest:

*[Signature]*

*[Printed name]*

Title:

Submittal Date:

Address for giving notices:

**796-7688.001  
2020**

**Northwestern Water & Sewer District  
McComb Water Line Replacement – Phase 2**

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Telephone Number:

Email Address:

Contact Name:

Bidder's License No.:

*(where applicable)*

STATE OF OHIO )  
 )ss.  
COUNTY OF \_\_\_\_\_)

1.       (    )     We are not charged with any delinquent personal property taxes on the general tax list of personal property in \_\_\_\_\_ County, Ohio.
2.       (    )     We are charged with delinquent personal property taxes on the general tax list of \_\_\_\_\_ County, Ohio including unpaid penalties and interest in the amount of \$\_\_\_\_\_.

Title:

Notary Public in and for \_\_\_\_\_

20





**BID GUARANTY AND CONTRACT BOND  
(SECTION 153.571 OHIO REVISED CODE)**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned \_\_\_\_\_  
\_\_\_\_\_ as  
principal and \_\_\_\_\_  
\_\_\_\_\_ as sureties, are hereby held and firmly  
bound unto Northwestern Water & Sewer District as OWNER in the penal sum of the dollar amount of the  
bid submitted by the principal to the OWNER on \_\_\_\_\_  
\_\_\_\_\_ to undertake the project known as McComb Water Line Replacement – Phase 2 WL-2815

The penal sum referred to herein shall be the dollar amount of the principal's bid to the OWNER incorporating any additive or deductive alternate proposals made by the principal on the date referred to above to the OWNER, which are accepted by the OWNER. In no case shall the penal sum exceed the amount of \_\_\_\_\_  
\_\_\_\_\_ dollars.

(If the foregoing blank is not filled in, the penal sum will be the full amount of the principal's bid, including alternates. Alternatively, if the blank is filled in, the amount stated must not be less than the full amount of the bid including alternates, in dollars and cents. A percentage is not acceptable.) For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above-named principal has submitted a bid on the above referred to project;

Now, therefore, if the OWNER accepts the bid of the principal and the principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the principal pays to the OWNER the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid and such larger amount for which the OWNER may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the OWNER does not award the contract to the next lowest bidder and resubmits the project for bidding, the principal pays to the OWNER the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing, new contract documents, required advertising, and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect; if the OWNER accepts the bid of the principal and the principal within fifteen days after the awarding of the contract enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said Contract is made a part of this bond the same as though set forth herein.

Now also, if the said principal shall well and faithfully do and perform the things agreed to be done and performed according to the terms of said contract; and shall pay all lawful claims of subcontractors, materialmen, and laborers, for labor performed and material furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialman or laborer having a just claim, as well as for the OWNER herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of the said contract or in or to the plans or specifications therefore shall in any way affect the obligations of said surety on its bond and does hereby waive notice of any such modifications, omissions, or additions to the terms of the contract or in or to the plans and specifications.

SIGNED AND SEALED this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

**Principal:**

\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Surety: \_\_\_\_\_

Surety Company Address:

\_\_\_\_\_

Street

By \_\_\_\_\_

Attorney-in-Fact

\_\_\_\_\_

City

State

Zip

Surety Agent's Address:

\_\_\_\_\_

Agency Name

\_\_\_\_\_

Street

\_\_\_\_\_

City

State

Zip

\_\_\_\_\_

---

**NOTICE OF AWARD**

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Date of Issuance:

Owner: Northwestern Water & Sewer District      Owner's Contract No.: WL- 2815  
Engineer: Jones & Henry Engineers, Ltd.      Engineer's Project No.: 796-7688.001  
Project: McComb Water Line Replacement - Phase 2      Contract Name:  
Bidder:  
Bidder's Address:

**TO BIDDER:**

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

Replacement of approximately 2695-feet of existing 4-inch, 6-inch and 8-inch water mains along W. Cooper Street between Rader Road and N. Church Street, E Main Street and S. Main Street. Additionally, work includes replacement of two small sections of water main crossing under the railroad tracks on Todd Street and E. Main Street. The work shall also include new fire hydrants, water services including water meters and meter pits, valves and restoration of disturbed areas.

The Contract Price of the awarded Contract is: \$ [ ] *[note if subject to unit prices, or cost-plus]*

[ ] 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. *[revise if multiple copies accompany the Notice of Award]*

☐ a set of the 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 this Notice of Award:

1. Deliver to Owner [ ] counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security *[e.g., performance and payment bonds]* and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

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

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

---

Owner:

Authorized Signature

By:

Title:

Copy: Engineer



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

THIS AGREEMENT is by and between Northwestern Water & Sewer District (“Owner”) and  
\_\_\_\_\_ (“Contractor”).

Owner and Contractor hereby agree as follows:

**ARTICLE 1 – WORK**

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:
- A. In general, the work consists of the replacement of approximately 2695-feet of existing 4-inch, 6-inch and 8-inch water mains along W. Cooper Street between Rader Road and N. Church Street, E Main Street and S. Main Street. Additionally, work includes replacement of two small sections of water main crossing under the railroad tracks on Todd Street and E. Main Street. The work shall also include new fire hydrants, water services including water meters and meter pits, valves and restoration of disturbed areas.
- 1.02 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Northwestern Water & Sewer District, McComb Water Line Replacement - Phase 2 WL-2815.

**ARTICLE 2 – ENGINEER**

- 2.01 The part of the Project that pertains to the Work has been designed by Jones & Henry Engineers, Ltd..
- 2.02 The Owner has retained Jones & Henry Engineers, Ltd. (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

**ARTICLE 3 – CONTRACT TIMES**

- 3.01 *Time of the Essence*
- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 3.02 *Contract Times: Days*
- A. The Work will be substantially completed within 210 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 240 days after the date when the Contract Times commence to run.

### 3.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. 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 \$500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A 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 \$500.00 for each day that expires after such time until the Work is completed and ready for final payment.
  3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

### 3.04 *Special Damages*

- A. In addition to the amount provided for liquidated damages, 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.

## ARTICLE 4 – CONTRACT PRICE

- A. Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents.

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

## ARTICLE 5 – PAYMENT PROCEDURES

### 5.01 *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.

### 5.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment once each month 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. 92 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
    - b. 92 percent of cost of materials and equipment not incorporated in the Work.
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 98 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less amounts 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.

### 5.03 *Final Payment*

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

## ARTICLE 6 – INTEREST

- 6.01 All amounts not paid when due shall not bear interest.

## ARTICLE 7 – CONTRACTOR’S REPRESENTATIONS

- 7.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
  - B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
  - C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
  - D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
  - E. 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 Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor’s safety precautions and programs.
  - F. 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.
  - G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
  - H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
  - I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
  - J. 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.



## ARTICLE 8 – CONTRACT DOCUMENTS

### 8.01 *Contents*

- A. The Contract Documents consist of the following:
  - 1. This Agreement (pages 1 to 9, inclusive).
  - 2. Bid Guarantee & Contract bond (pages C-430-1 to C-430-2, inclusive).
  - 3. Performance bond (pages C-610-1 to C-610-2, inclusive).
  - 4. Labor and Maintenance bond (pages [ ] to [ ], inclusive).
  - 5. Maintenance and Guarantee bond (pages C-614-1 to C-614-3, inclusive).
  - 6. General Conditions (pages C-700-1 to C-700-67, inclusive).
  - 7. Supplementary Conditions (pages C-800-1 to C-800-16, inclusive).
  - 8. Specifications as listed in the table of contents of the Project Manual.
  - 9. Drawings (not attached but incorporated by reference) consisting of [ ] sheets with each sheet bearing the following general title: [ ] **[or]** the Drawings listed on the attached sheet index.
  - 10. Addenda (numbers [ ] to [ ], inclusive).
  - 11. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bid (pages [ ] to [ ], inclusive).
  - 12. 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.
    - c. Change Orders.
    - d. Field Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

## ARTICLE 9 – MISCELLANEOUS

### 9.01 *Terms*

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

9.02 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, 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 Documents.

9.03 *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.

9.04 *Severability*

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

9.05 *Contractor's Certifications*

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

9.06 *Other Provisions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, 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:

CONTRACTOR:

\_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

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

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Address for giving notices:

Address for giving notices:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

License No.: \_\_\_\_\_  
*(where applicable)*

CERTIFICATION OF FISCAL OFFICER

The undersigned, as \_\_\_\_\_ of  
\_\_\_\_\_ hereby certifies that funds sufficient to  
meet the requirement of this Contract have been lawfully appropriated for such purpose and are in the  
treasury, or in the process of collection.

By: \_\_\_\_\_

Title: \_\_\_\_\_

APPROVAL BY OWNER'S LEGAL OFFICER

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**NOTICE TO PROCEED**

---

Owner:	Northwestern Water & Sewer District	Owner's Contract No.:	WL- 2815
Contractor:		Contractor's Project No.:	
Engineer:	Jones & Henry Engineers, Ltd.	Engineer's Project No.:	796-7688.001
Project:	McComb Water Line Replacement - Phase 2	Contract Name:	
		Effective Date of Contract:	

---

**TO CONTRACTOR:**

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [\_\_\_\_\_, 20\_\_]. *[see Paragraph 4.01 of the General Conditions]*

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, [the date of Substantial Completion is \_\_\_\_\_, and the date of readiness for final payment is \_\_\_\_\_] **or** [the number of days to achieve Substantial Completion is \_\_\_\_\_, and the number of days to achieve readiness for final payment is \_\_\_\_\_].

Before starting any Work at the Site, Contractor must comply with the following:  
*[Note any access limitations, security procedures, or other restrictions]*

---

Owner:

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer





**PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS, that \_\_\_\_\_  
\_\_\_\_\_, Contractor, as Principal and \_\_\_\_\_  
\_\_\_\_\_, as Surety, are held and firmly bound  
unto Northwestern Water & Sewer District, hereinafter called the Owner, in the penal sum of  
\_\_\_\_\_ dollars (\$ \_\_\_\_\_), good and lawful money of the United States of  
America to be paid to said Owner, its legal representatives and assigns, for which payment well and truly  
to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, and each and  
every one of them jointly and severally, firmly by these presents.

WHEREAS, the above-named Principal has entered into a certain written Agreement with the  
Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_ A.D. 2019, for  
construction of work entitled McComb Water Line Replacement - Phase 2 WL-2815 (hereinafter called the  
Contract) which Contract and Specifications for said work shall be deemed a part hereof as fully as if set  
out herein.

NOW THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, that if the said Principal shall  
well and faithfully do and perform the things agreed by him to be done and performed according to the  
terms of said Contract and shall pay all lawful claims of subcontractors, material suppliers, and laborers,  
for labor performed and materials furnished in carrying forward, performing or completing of the said  
Contract, we agreeing and assenting that this undertaking shall be for the benefit of any material supplier  
or laborer having a just claim as well as for the obligee herein, then this obligation shall be void, otherwise  
the same shall remain in full force and effect; it being expressly understood and agreed that the liability  
of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation  
as herein stated.

The said surety, for value received, hereby stipulates and agrees that no charge, extension of time,  
alteration or addition to the terms of the Contract or to the work to be performed thereunder or the  
Specifications accompanying the same shall in any wise affect its obligations on this bond, and it does  
hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the  
Contract or to the work of the Specifications.

WITNESS our hands and seals this \_\_\_\_\_ day of \_\_\_\_\_ A.D. 20\_\_\_\_\_.

Witnesses:

Principal:

\_\_\_\_\_  
Printed

\_\_\_\_\_  
Printed

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Principal Signature (Seal)

\_\_\_\_\_  
Printed

\_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Surety Signature (Seal)

I hereby approve the form and correctness of the foregoing Bond.

\_\_\_\_\_  
Owner’s Legal Officer

Date: \_\_\_\_\_

**MAINTENANCE AND GUARANTEE BOND**

KNOW ALL MEN BY THESE PRESENTS, that \_\_\_\_\_  
\_\_\_\_\_, Contractor, as Principal and \_\_\_\_\_  
\_\_\_\_\_, as Surety, are held and firmly bound  
unto Northwestern Water & Sewer District, hereinafter called the Owner, in the penal sum of  
\_\_\_\_\_ dollars (\$ \_\_\_\_\_), good and lawful money of the United States of  
America to be paid to said Owner, its legal representatives and assigns, for which payment well and truly  
to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, and each and  
every one of them jointly and severally, firmly by these presents.

WHEREAS, the above-named Principal has entered into a certain written Agreement with the  
Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_ A.D. 20\_\_\_\_, for  
construction of work entitled McComb Water Line Replacement - Phase 2 WL-2815 (hereinafter called the  
Contract) which Contract and Specifications for said work shall be deemed a part hereof as fully as if set  
out herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH, that by and under said  
Contract, the above-named Principal has agreed with the Owner that for a period specified in paragraph  
15.08. of the General Conditions, to keep in good order and repair any defect in all the work done under  
said Contract either by the Principal or his Subcontractors, or his material suppliers, that may develop  
during said period due to improper materials, defective equipment, workmanship or arrangements, and  
any other work affected in making good such imperfections, shall also be made good all without expense  
to the Owner, excepting only such part or parts of said work as may have been disturbed without the  
consent or approval of the Principal after the final acceptance of the work, and that whenever directed  
\_\_\_\_\_

so to do by the Owner by notice served in writing, either personally or by mail on the Principal at

---

---

OR

---

legal representatives, or successors, or on the Surety at 

---

---

WILL PROCEED at once to make such repairs as directed by said Owner; and in case of failure so to do within one week from the date of service of such notice, or within reasonable time not less than one week, as shall be fixed in said notice, then the Owner shall have the right to purchase such materials and employ such labor and equipment as may be necessary for the purpose, and to undertake, do and make such repairs, and charge the expense thereof, to and receive same from said Principal or Surety. If any repair is necessary to be made at once to protect life and property, then and in that case, the Owner may take immediate steps to repair or barricade such defects without notice to the Contractor. In such accounting, The Owner shall not be held to obtain the lowest figures for the doing of the work, or any part thereof, but all sums actually paid therefore shall be charged to the Principal or Surety. In this connection, the judgment of the Owner is final and conclusive. If the said Principal for a period specified in paragraph 15.08. of the General Conditions and, shall keep said work so constructed under said Contract in good order and repair, excepting only such part or parts of said work which may have been disturbed without the consent or approval of said Principal after the final acceptance of the same, and shall whenever notice is given as hereinbefore specified, at once proceed to make repair as in said notice directed, or shall reimburse said Owner for any expense incurred by making such repairs, should the Principal or Surety fail to do as hereinbefore specified, and shall fully indemnify, defend, and save harmless the Owner from all suits and actions for damages of every name and description brought or claimed against it for or on account of any injury or damage to person or property received or sustained by any party or parties, by or from any of the acts or omissions or through the negligence of said Principal, servants, agents, or employees, in the prosecution of the work included in said Contract, then the above obligation shall be void, otherwise to remain in full force and effect.

---

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed by their respective authorized officers this \_\_\_\_\_ day of \_\_\_\_\_ A.D. 20\_\_.

Signed, Sealed, and Delivered

In the Presence of:

Witnesses:

\_\_\_\_\_  
Printed

\_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Principal (Seal)

\_\_\_\_\_  
Printed

\_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Surety (Seal)

I hereby approve the form and correctness of the foregoing Bond.

\_\_\_\_\_  
Owner's Legal Officer

Date: \_\_\_\_\_



OHIO WATER DEVELOPMENT AUTHORITY  
**CONTRACTOR'S ESTIMATE**

TO OWNER:

APPLICATION NO: \_\_\_\_\_

PERIOD TO: \_\_\_\_\_

OWDA LOAN NO: \_\_\_\_\_

FROM CONTRACTOR:

FOR OWDA OFFICE USE ONLY

Fund: \_\_\_\_\_

Voucher: \_\_\_\_\_

OWDA Pay: \_\_\_\_\_

Date: \_\_\_\_\_

PROJECT:

1 ORIGINAL CONTRACT PRICE	
2 Net change by CHANGE ORDER	\$0.00
3 CURRENT CONTRACT PRICE (Line 1 + 2)	\$0.00
4 TOTAL COMPLETED & STORED TO DATE	
5 RETAINAGE	
a.                      % of completed work	
b.                      % of stored work	
Total Retainage (Line 5a + 5b)	\$0.00
6 TOTAL EARNED LESS RETAINAGE (Line 4 less Line 5 total)	\$0.00
7 LESS PREVIOUS PAYMENTS (Line 6 from prior certificate)	
8 CURRENT PAYMENT DUE	\$0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Approved Change Orders through Change Order No: _____		
NET CHANGES by Change Order		\$0.00

**CONTRACTOR'S CERTIFICATE**

I hereby certify that the above materials and services have been furnished and performed in accordance with the conditions of the contract for the above work, and that payment has not been received and therefore is due and to be paid on said contract

CONTRACTOR:

BY: \_\_\_\_\_

DATE: \_\_\_\_\_

ENGINEER: \_\_\_\_\_ By: \_\_\_\_\_ Date: \_\_\_\_\_

OWNER: \_\_\_\_\_ By: \_\_\_\_\_ Date: \_\_\_\_\_

OWDA: \_\_\_\_\_

Chief Engineer

Executive Director





STATE OF \_\_\_\_\_ )  
 ) ss  
County of \_\_\_\_\_ )

The undersigned, \_\_\_\_\_, hereby represents that on \_\_\_\_\_ it was awarded a contract by Northwestern Water & Sewer District, hereinafter called Owner, to McComb Water Line Replacement - Phase 2 WL-2815, in accordance with terms and conditions of Contract No. \_\_\_\_\_; and the undersigned further represents that all progress payments heretofore received by the Contractor from the Owner on account of the Work have been applied by the Contractor to discharge in full all of the Contractor's obligations incurred in connection with the Work covered by all prior progress payments in accordance with the applicable subcontracts, except as follows: \_\_\_\_\_

This affidavit is freely and voluntarily given with full knowledge of the facts, on this \_\_\_\_\_ day of \_\_\_\_\_, A.D. 20\_\_\_\_.

Contractor

By \_\_\_\_\_  
Title \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, A.D. 20\_\_\_\_\_

Notary Public

(Seal)

My Commission Expires \_\_\_\_\_



STATE OF \_\_\_\_\_ )  
County of \_\_\_\_\_ ) ss

The undersigned hereby warrants and certifies that all of its indebtedness arising by reason of the said Contract has been fully paid or satisfactorily secured; and that all claims from Subcontractors and others for labor and material used in accomplishing the said project, as well as all other claims arising from the performance of the said Contract, have been fully paid or satisfactorily settled. The undersigned further agrees that, if any such claim should hereafter arise, he (it) shall assume responsibility for the same immediately upon request to do so by the OWNER.

This affidavit is freely and voluntarily given with full knowledge of the facts, on this day of \_\_\_\_\_, A.D. 20\_\_.

Title \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, A.D. 20\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires \_\_\_\_\_



## CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: Northwestern Water & Sewer District	Owner's Contract No.: WL- 2815
Contractor:	Contractor's Project No.:
Engineer: Jones & Henry Engineers, Ltd.	Engineer's Project No.: 796-7688.001
Project: McComb Water Line Replacement – Phase 2	Contract Name:

**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.

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 shall be as provided in the Contract, except as amended as follows: *[Note: 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.]*

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: *[punch list; others]*

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.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____



## STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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## 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 form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  4. *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, or both; 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, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (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. 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), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree 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 the 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. *Engineer*—The individual or entity named as such in the Agreement.
21. *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.
22. *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. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *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.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
27. *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.
28. *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.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
30. *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.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
33. *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.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
35. *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.

36. *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.
37. *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 furnished by Owner which are designated for the use of Contractor.
38. *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.
39. *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.
40. *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 thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, 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.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.



47. *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.
48. *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 the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
  1. 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:*
  1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
  1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
    - a. does not conform to the Contract Documents; or
    - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
    - c. 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 15.04).
- E. *Furnish, Install, Perform, Provide:*
  1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean 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, shall mean 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, shall mean 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. 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 Bonds and Evidence of Insurance*

- A. *Bonds:* When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance:* When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance:* After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), 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 executed 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 specifically 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 *Initial 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 for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall 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.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items 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 items, or from those established in applicable transmittal protocols.

**ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE**

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one 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 or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall 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.

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, shall mean 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, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, 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, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 Documents 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 Documents 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 shall 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 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 thereunder.

- 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 give written notice to Owner and Contractor 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 editions, 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 shall preclude 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 thirtieth 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 sixtieth day after the day of Bid opening or the thirtieth 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 shall 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 shall 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 shall 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 the Contract Times and Contract Price. 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.
- 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. 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. Such an adjustment shall 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 utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
  4. acts of war or terrorism.
- D. 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.
- E. Paragraph 8.03 governs 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.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times 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.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

## **ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS**

### **5.01 *Availability of Lands***

- A. Owner shall furnish the Site. Owner shall notify Contractor 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; 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 7.12, 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 at law; 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 shall 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 known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
  2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); 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 upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. 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. 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 either:

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; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
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 the necessity of Owner's obtaining 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 above; 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. *Possible Price and Times Adjustments:*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, 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 conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
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; or
  - 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 as 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, or both, then any such adjustment shall 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, or both, 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.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
  2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
    - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
    - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
    - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
    - d. 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 in the Contract Documents, or was not shown or indicated 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), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; 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 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. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, 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. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
  - 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;
  - c. 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; and
  - d. 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, or both, then any such adjustment shall 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, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

~~5.06 Hazardous Environmental Conditions at Site~~

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

- ~~1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and~~
- ~~2. 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 Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. 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. 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, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, 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.
- 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 or 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 shall obligate 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 shall obligate 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 all of Contractor's obligations under the Contract. These bonds shall 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 Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, 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 shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving

rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

- E. 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.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

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. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements 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 and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements 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 and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. 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, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of 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.



- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect 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 shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
  - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
  - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
  - 4. Foreign voluntary worker compensation (if applicable).
- B. *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:
  - 1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
  - 2. claims for damages insured by reasonably available personal injury liability coverage.
  - 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
  - 1. Products and completed operations coverage:
    - a. Such insurance shall 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, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
  3. Broad form property damage coverage.
  4. Severability of interest.
  5. Underground, explosion, and collapse coverage.
  6. Personal injury coverage.
  7. 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); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
  8. 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.
- D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *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. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.
- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after

Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

~~I. General provisions: The policies of insurance required by this Paragraph 6.03 shall:~~

- ~~1. include at least the specific coverages provided in this Article.~~
  - ~~2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.~~
  - ~~3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.~~
  - ~~4. remain in effect at least until final payment (and longer if expressly required in this Article) 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 Documents.~~
  - ~~5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed 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.~~
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

#### 6.04 *Owner's Liability Insurance*

- ~~A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.~~
- B. 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.

#### 6.05 *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 full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the

remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as “insureds.”

2. be written on a builder’s risk “all risk” policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder’s risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
6. extend to cover damage or loss to insured property while in transit.
7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder’s risk insurance.
8. allow for the waiver of the insurer’s subrogation rights, as set forth below.
9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
10. not include a co-insurance clause.
11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
12. include performance/hot testing and start-up.

13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed 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.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- 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 notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance:* 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 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers 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. 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 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 Subcontractors, all individuals or entities identified in the Supplementary Conditions as 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. None of the above waivers shall extend 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. 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:
  - 1. loss 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 perils whether or not insured by Owner; and
  - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner 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.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work 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 any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

**6.07 Receipt and Application of Property Insurance Proceeds**

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 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 6.05 shall 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, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

## ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES

### 7.01 *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. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

### 7.02 *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 at all times maintain good discipline and order at the Site.
- B. 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 shall 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.

### 7.03 *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 shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall 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 shall 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.

7.04 “Or Equals”

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, 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 material or equipment, or items from other proposed suppliers under the circumstances described below.
1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an “or equal” item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
    - a. in the exercise of reasonable judgment Engineer determines that:
      - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
      - 2) it 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) it has a proven record of performance and availability of responsive service; and
      - 4) it is not objectionable to Owner.
    - b. Contractor certifies that, if approved and incorporated into the Work:
      - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
      - 2) it 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 shall result in any change in Contract Price. The Engineer’s denial of an “or-equal” request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.



- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an “or-equal” item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment 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 material or equipment under the circumstances described below. To the extent possible such requests shall 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 material or equipment from anyone other than Contractor.
  2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.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 material or equipment that Contractor seeks to furnish or use. The application:
    - a. shall 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 that specified, and
      - 3) be suited to the same use as that 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 that specified, and
      - 2) available engineering, sales, maintenance, repair, and replacement services.

- d. shall 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 shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities 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, Supplier, or other individual or entity 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 five days.

- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. 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, Suppliers, or other individuals or entities 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, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, 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, Supplier, or other individual or entity, whether initially or as a replacement, shall 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 fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
2. shall create 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.

7.07 *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 a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- 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.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. 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

7.09 *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.

7.10 *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. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- 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 shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give 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 notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *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.

7.12 *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. 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.
- B. 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. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when 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.
  - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
  - D. 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.
  - E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.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).
  - F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
  - G. Contractor's duties and responsibilities for safety and protection shall 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.

#### 7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of 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 threatened 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 thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
  - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
  - c. determined and verified 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
  - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall 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 submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*
  - a. Contractor shall submit the number of copies required in the Specifications.
  - b. Data shown on the Shop Drawings will 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.D.
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.D.
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. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
  1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. 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, conform to the 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.
  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 shall 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.
  5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 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, shall 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, Sample, or other submittal shall 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.D.4.

E. *Resubmittal Procedures:*

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 submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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 and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  1. abuse, modification, or improper 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.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  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. any inspection, test, or approval by others; or
  8. any correction of defective Work by Owner.
- D. 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 shall 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 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 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 shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

**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 utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other

work. 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.

- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, 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.

#### 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 at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible 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, or both. 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 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. When applicable, any such equitable adjustment in Contract Price shall 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 is conditioned on such

adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

- 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. 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 to 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.
- C. 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 to Contractor.
- D. 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 shall 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 Documents (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 10.08. 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 *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 Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer’s consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

### 10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

### 10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer’s authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *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.

10.07 *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.

10.08 *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, shall 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 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 10.08 shall also apply to the Resident Project Representative, if any.



10.09 *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 (if any) of which Engineer has been informed.

**ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK**

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
  - 1. *Change Orders:*
    - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
    - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not 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, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
  - 2. *Work Change Directives:* 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 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.
  - 3. *Field Orders:* 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. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *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. Such

changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes 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 shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate 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.

11.03 *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.

11.04 *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 shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall 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); or
  - 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 11.04.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 11.04.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit shall 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 shall be 15 percent;
    - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five 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 11.04.C.2.a and 11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.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 five 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 shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
- d. no fee shall 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 will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

#### 11.05 *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 shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

#### 11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
  - 1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. 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. The supporting data shall 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.

Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall 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.
3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *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 that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

#### 11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
  1. changes in the 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 11.02, (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 in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

#### 11.08 *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 shall be submitted 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; and
  - 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.
- 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 shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, 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 shall 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 shall 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 shall 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 shall 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 shall 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 shall 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 shall be incorporated in a Change Order 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. 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 shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall 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. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall 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 shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns

from sale of surplus materials and equipment shall 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, who 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 shall 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 for services specifically related to the Work.
5. Supplemental costs including 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, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - ~~c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.~~
  - 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 property insurance established in accordance with Paragraph 6.05), 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 shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
  - 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 shall not include any of the following items:
    - 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety 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. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
    - 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
    - 4. 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.
    - 5. 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:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.
  - E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

#### 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 on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a 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 on account of Work covered by allowances, and the Contract Price shall 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, subject to the provisions of the following paragraph.
- ~~E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:~~
  - ~~1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;~~
  - ~~2. there is no corresponding adjustment with respect to any other item of Work; and~~
  - ~~3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.~~

**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 will 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 therewith 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 shall 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 shall 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 shall 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 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 shall 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, or both, 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 shall 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 rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven 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 on account of 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. 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 shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and 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.
  2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
  3. 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, or
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, 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. Thirty 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 on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of 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 that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
  - j. liquidated 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;

- I. there are other items entitling 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 shall 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 shall be treated as an amount due as determined by Paragraph 15.01.C.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 seven 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 shall 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 seven 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 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 6.05 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 7.11), and other documents, Contractor may make application for final payment.
2. The final Application for Payment shall 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 disputes that Contractor believes are unsettled; 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 Application and Acceptance:*

1. 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 ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall 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. At the same time Engineer will also give written notice

to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. 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. *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.
- D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

#### 15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- 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 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 terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then 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 other adjacent areas;
  - 2. correct such defective Work;
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, 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 therefrom.
- B. If 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 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 correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

- C. 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.
- D. 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.
- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not 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, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall 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) ten 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) 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 seven 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 shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

**16.03 Owner May Terminate For Convenience**

- A. Upon seven 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 on account of loss of anticipated overhead, profits, or revenue, 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 seven 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, seven 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; and
  - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising 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; or
  - 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 Documents requires the giving of written notice, it will be deemed to have been validly given if:
  - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
  - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

### 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 shall not constitute a waiver of that provision, nor shall 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 or completion of the Contract or termination 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 *Headings*

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





## SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

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 thereto.

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### ARTICLE 2 – PRELIMINARY MATTERS

#### SC-2.02 Copies of Documents

##### **SC-2.02 Add the following new paragraphs following Paragraph 2.02.B**

C. The Engineer can provide electronic drawing files to assist the Contractor with layout and construction staking of the improvements. The Engineer will require the Contractor sign an electronic release prior to providing the files to the Contractor. The wording of the release shall be as follows:

*"These electronic files are provided to you for your convenience. Because electronic files can deteriorate or be damaged or be modified inadvertently or information from the electronic documents may be presented to you on your system differently than the original because of your software or system setup, these files may not be accurate. Any conclusion or information obtained or derived from such electronic files will be at your sole risk.*

*Information contained in the electronic documents is for information and reference in connection with this project only. The information is not intended or represented to be suitable for reuse on extensions of the original project or on any other project.*

*You should perform an acceptance test of the electronic documents immediately and inform us of any problems with the electronic documents. Jones & Henry will not be responsible for providing additional copies of these electronic files to you after 60 days from the date the documents are provided to you."*

D. Files will be provided in the Engineer's CAD software format. The Contractor's surveyor will be responsible for making any required conversions necessary to permit the surveyor to use the files for layout or staking.

E. The Contractor's surveyor should check horizontal and vertical control points to confirm there has been no shift in the electronic drawing file during the staking operation.

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*SC2.06 Electronic Submittals*

**SC-2.06 Add the following new paragraphs immediately after Paragraph 2.06 C.**

- D. Electronic files are provided to you for your convenience. Because electronic files can deteriorate or be damaged or be modified inadvertently or information from the electronic documents may be presented to you on your system differently than the original because of your software or system setup, these files may not be accurate. Any conclusion or information obtained or derived from such electronic files will be at your sole risk.
- E. Information contained in the electronic documents is for information and reference in connection with this project only. The information is not intended or represented to be suitable for reuse on extensions of the original project or on any other project.
- F. You should perform an acceptance test of the electronic documents immediately and inform us of any problems with the electronic documents. Jones & Henry will not be responsible for providing additional copies of these electronic files to you after 60 days from the date the documents are provided to you.

**ARTICLE 3 – DOCUMENTS; INTENT, REQUIREMENTS, REUSE**

*SC3.01 Intent*

**SC-3.01.C Delete Paragraph 3.01.C in its entirety and insert the following new paragraph in its place:**

- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version, as printed by Engineer, shall govern.

**ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK**

*SC4.01 Commencement of Contract Times; Notice to Proceed*

**SC 4.01 Delete Paragraph 4.01.A and substitute the following in its place:**

- A. The Contract Times will commence to run on the date listed on the Notice to Proceed.

**ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS**

*SC-5.03 Subsurface and Physical Conditions*

**SC 5.03 Add Paragraph 5.03.A.4 immediately after Paragraph 5.03.A.3.**

- 4. No reports of explorations or tests of subsurface conditions at or adjacent to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to Owner.

*SC-5.03 Subsurface and Physical Conditions*

**SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.B:**

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- C. The following reports of explorations and tests of subsurface conditions at or adjacent to the Site are known to Owner:
  - 1. There are no additional records available to Bidders.
- D. The following drawings of physical conditions relating to existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities) are known to Owner:
  - 1. WaterLine #2811, Northwestern Water & Sewer District. 2017, by Poggemeyer Design Group, Inc., Bowling Green, Ohio.
  - 2. Sanitary Sewer Improvements, Village of McComb, Hancock County, Ohio. 2010, by Poggemeyer Design Group, Inc., Bowling Green, Ohio.
  - 3. Village of McComb, Ohio, Detail Plans for Waterworks and Distribution System. 1935, by H.P. Jones & Company, Toledo, Ohio
- E. Contractor may request copies of reports and drawings identified in SC 5.03.C and SC 5.03.D that were not included with the Bidding Documents from Engineer.

*SC-5.06 Hazardous Environmental Conditions*

**SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following new paragraphs in their place:**

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not Used.

**ARTICLE 6 – BONDS AND INSURANCE**

*SC-6.01 Performance, Payment, and Other Bonds*

**SC 6.01 Add the following new paragraph immediately after Paragraph 6.01.F:**

- G. The Contractor shall furnish a Performance Bond and a Maintenance and Guarantee Bond, each in the amount of at least 100% of the Contract Price as security for the faithful performance and payment of all Contractor's obligations.

*SC-6.02 Insurance – General Provisions*

**SC 6.02 Add the following new paragraph immediately after Paragraph 6.02J:**

- K. The additional insured shall be:
    - 1. The Owner; and
    - 2. The Engineer – Jones & Henry Engineers, Ltd; and
    - 3. The Engineer's Consultants; and
    - 4. Others if specifically required by special provision in the Contract Documents.
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*SC-6.03 Contractor's Insurance*

**SC 6.03 Delete Paragraph 6.03.I of the General Conditions and substitute the following in its place:**

- I. General provisions: The policies of insurance required by these Paragraphs 6.03, 6.04 and 6.05 shall:

**SC 6.03 Delete Paragraph 6.03.I.3 of the General Conditions and substitute the following in its place:**

3. Contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 30 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.

**SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J**

- K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

<b>State:</b>	<b>Statutory</b>
Federal, if applicable (e.g., Longshoreman's):	Statutory
Jones Act coverage, if applicable:	
Bodily injury by accident, each accident	\$ 1,000,000
Bodily injury by disease, aggregate	\$ 1,000,000
Employer's Liability:	
Bodily injury, each accident	\$ 1,000,000
Bodily injury by disease, each employee	\$ 1,000,000
Bodily injury/disease aggregate	\$ 1,000,000
For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	Statutory
Foreign voluntary worker compensation	Statutory

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate	\$ <u>5,000,000</u>
Products - Completed Operations Aggregate	\$ <u>5,000,000</u>
Personal and Advertising Injury	\$ <u>4,000,000</u>
Each Occurrence (Bodily Injury and Property Damage)	\$ <u>4,000,000</u>

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:

Each person	\$ <u>2,000,000</u>
Each accident	\$ <u>2,000,000</u>

Property Damage:

Each accident	\$ <u>2,000,000</u>
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[or]

Combined Single Limit of	\$ <u>4,000,000</u>
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4. Excess or Umbrella Liability:

Per Occurrence	\$ <u>5,000,000</u>
General Aggregate	\$ <u>5,000,000</u>

5. Contractor's Pollution Liability:

Each Occurrence	\$ <u>1,500,000</u>
General Aggregate	\$ <u>1,500,000</u>



If box is checked, Contractor is not required to provide Contractor's Pollution Liability insurance under this Contract

6. Additional Insureds: In addition to Owner and Engineer, include as additional insureds the following: NONE
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*SC-6.04 Owner's Liability Insurance*

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

- A. The Contractor shall purchase and maintain during the entire term of this Contract one separate policy providing Owner's and Contractor's Protective Liability coverages. The named insured on this policy shall be:
  - 1. The Owner; and
  - 2. The Engineer - Jones & Henry Engineers, Ltd.; and
  - 3. Others if specifically required by special provision in the Contract Documents.
- B. The policy shall be provided on a form commonly referred to in the insurance industry as an "occurrence" type of policy form. (Claims made policy forms are not acceptable.)
- C. This insurance policy shall be a separate policy in addition to the coverage required in 6.03. No other insurance policy may substitute for or contribute to the coverage or limits afforded by this insurance policy, except a separate excess Owner's and Contractor's Protective Policy.
- D. This policy shall cover the total project and include explosion, collapse, and underground coverages for the entire Work provided by the Contractor and Subcontractors.
- E. The policy shall stipulate that the "designated Contractor" includes the Contractor and all Sub-contractors engaged in the Work.
- F. The original policy shall be submitted to and filed with the Owner or its designated representative.

*SC-6.05 Property Insurance*

**SC-6.05. Add the following new paragraphs immediately before 6.05.A. and continue on the numbering sequentially.**

- A. Contractor shall provide either property insurance in the form of Builder's Risk or installation floater as appropriate for the work as required herein.
- B. Contractor shall provide and maintain installation floater insurance for property under the care, custody, or control of Contractor. The installation floater insurance shall be a broad form or "all risk" policy providing coverage for all materials, supplies, machinery, fixtures, and equipment that will be incorporated into the Work. Coverage under the Contractor's installation floater will include:
  - 1. any loss to property while in transit,
  - 2. any loss at the Site, and
  - 3. any loss while in storage, both on-site and off-site.

Coverage cannot be contingent on an external cause or risk, or limited to property for which the Contractor is legally liable. The Contractor will be solely responsible for any deductible carried under this coverage and claims on materials, supplies, machinery,

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fixture, and equipment that will be incorporated into the Work while in transit or in storage. This policy will include a waiver of subrogation applicable to Owner, Contractor, Engineer, all Subcontractors, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them.

**SC-6.05.A.1 Add the following new subparagraph after subparagraph 6.05.A.1:**

- a. In addition to Owner, Contractor, and all Subcontractors, include as insureds the following:
  - 1) Engineer

**ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES**

*SC-7.09 Taxes*

**SC 7.09 Add a new paragraph immediately after Paragraph 7.09.A:**

- B. Owner is exempt from payment of sales and compensating use taxes of the State of Ohio 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.

*SC-7.12 Safety and Protection*

**SC-7.12 Insert the following after the second sentence of Paragraph 7.12.C:**

The Owner’s Safety Program is applicable to the Work.

A copy of the Safety Program requirements may be obtained from the Owner.

**ARTICLE 9 – OWNER’S RESPONSIBILITIES**

*SC-9.11 Evidence of Financial Arrangements*

**SC-9.11 Add the following new paragraph immediately after Paragraph 9.11.A:**

- B. The Owner has funded this project with the assistance of Funding Agencies. The requirements of the funding agency are listed in the Exhibits to the Supplementary Conditions and are made a part of the Contract Documents. Contractor shall comply with the requirements of the funding agencies, when there is a conflict between the funding agency requirements and any part of the Contract Documents the funding agency requirements shall take precedence, without voiding any requirement of the Contract Documents.

*SC-9.13 Owner’s Site Representative*

**SC-9.13 Add the following new paragraph immediately after Paragraph 9.12 of the General Conditions:**

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SC-9.13 The Owner may furnish an Owner's Site Representative to represent the Owner at the site to observe progress and quality of the work. The Owner's Site Representative is not the Engineer's Consultant, agent or employee, but will possess the same authority over the work as defined for the RPR in Section SC10.03.B.

#### ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

##### SC-10.03 *Project Representative*

###### **SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:**

- B. The Resident Project Representative (RPR), if provided, will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.
1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.
  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. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
  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 proper execution of the Work.
  5. 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 Engineer.
  6. 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.
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- 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.
  - 7. 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 Engineer.
  - 8. 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.
  - 9. 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.
  - 10. 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.
  - 11. Reports:
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- 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.
  - 12. 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.
  - 13. 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.
  - 14. 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.
  - C. The RPR shall 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.
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4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.
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. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or in part.

**ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

*SC-13.01 Cost of the Work*

**SC 13.01.B.5.c Delete Paragraph 13.01.B.5.c in its entirety and insert the following in its place:**

- c. Construction Equipment and Machinery:
  - 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
  - 2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the Rate Book appropriate for the Project. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include 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, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than \$1,000 will be considered small tools.

*SC-13.03 Unit Price Work*

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

- E. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:
-

1. if the extended price of a particular item of Unit Price Work amounts to 5 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
2. if there is no corresponding adjustment with respect to any other item of Work; and
3. if Contractor believes that Contractor has incurred additional expense as a result thereof, Contractor may submit a Change Proposal, or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, Owner may make a Claim, seeking an adjustment in the Contract Price.

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

*SC-14.02 Tests, Inspections and Approvals*

**SC 14.02.B Delete Paragraph 14.02.B in its entirety and insert the following in its place:**

- B. Contactor 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 Contractor, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

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

*SC-15.01 Progress Payments*

**SC 15.01.A Add the following new subparagraph to Paragraph 15.01.A:**

1. Mobilization for Contractor and any tier of subcontractor(s) shall be considered collectively and shall not exceed 5 percent of the Contract Price. Mobilization shall be those costs associated with the initiation of the project and site work, including but not limited to, transporting of personnel, equipment, materials, supplies, incidental items; establishment of the field offices, temporary facilities necessary for the project, bonds and insurances, submittal requirements, permits, field supervision, final cleanup and demobilization. Mobilization does not include such items as, contract negotiations and bid preparation.
  - a. Where the work is covered by unit price and no item has been included for mobilization as defined in Section 01010., then this work is considered incidental to the work and will not be paid separately.
  - b. Where the work is covered by unit prices, and item(s) for mobilization, as described in Section 01010 have been included, the maximum allowable amount shall be ten percent of the aggregate of all items excluding mobilization. Where mobilization is included as multiple

items, then the aggregate amount of all mobilization items shall not exceed the allowable 5 percent.

2. Costs for submittal requirements, field office and supervision, where identified separately in the schedule of values shall be considered for payment monthly. When the cost is a lump sum as submitted in accordance with 2.6, the monthly cost shall be established by dividing the lump sum by the number of monthly estimates based on the original contract time. No adjustments shall be made for any contract time extensions.
3. Mobilization shall be included in the progress payments, in accordance with the schedule of values and unit prices. When the work, excluding mobilization and inventory, has progressed to an amount equal to five percent or more of the contract price, then an amount of not more than 50 percent of the mobilization cost will be considered for inclusion in the progress payment. Prior to the established five percent, Owner may consider payment on invoices for bonds and insurances and permits; this amount shall be subtracted for the total amount from mobilization.

Up to an additional 40 percent of the mobilization cost will be considered for inclusion in the progress payments once the work, excluding mobilization and inventory, has progressed to an amount equal to 50 percent of the Contract Price. The remaining mobilization payment will be paid as part of the final payment.

#### *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, shall 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 Article 15.

END OF SECTION



**SUPPLEMENTARY CONDITIONS**

**EXHIBIT 1**

**DAVIS – BEACON WAGE RATES**

(To be Provided by Addendum)





**SUPPLEMENTARY CONDITIONS**

**EXHIBIT 2**

**FORMS**



# MEMORANDUM



To: Contractor

Subject: Northwestern Water and Sewer District  
McComb Water Line Replacement – Phase 2  
Electronic Document Release  
AutoCAD File for Base Drawing  
796-7688.001

From: Jones & Henry Engineers, Ltd.

Date: \_\_\_\_\_

---

In reference to your request for electronic CAD files for the project, we will provide the requested base drawing electronic file upon your signature below indicating agreement with our electronic document release policy.

*These electronic files are provided to you for your convenience. Because electronic files can deteriorate or be damaged or be modified inadvertently or information from the electronic documents may be presented to you on your system differently than the original because of your software or system setup, these files may not be accurate. Any conclusion or information obtained or derived from such electronic files will be at your sole risk.*

*Information contained in the electronic documents is for information and reference in connection with this project only. The information is not intended or represented to be suitable for reuse on extensions of the original project or on any other project.*

*You should perform an acceptance test of the electronic documents immediately and inform us of any problems with the electronic documents. Jones & Henry will not be responsible for providing additional copies of these electronic files to you after 60 days from the date the documents are provided to you.*

*Additional conditions relative to Use of Documents may be in the Agreement between Jones & Henry and our client and should be reviewed before you attempt to use the documents.*

\_\_\_\_\_ accepts the conditions of the above statement.  
(FIRM NAME)

Authorized Signature

\_\_\_\_\_

DATE

c: Project Distribution



**SUPPLEMENTARY CONDITIONS**

**EXHIBIT 3**

**FUNDING REQUIREMENTS**

## **WSLRA Documents**

## EPA PROCUREMENT RULES AND REGULATIONS

Ohio Environmental Protection Agency Regulations require that a copy of Sub agreement Provisions and other provisions be included in the bidding documents.

The Contractor's attention is called to the following sections which contain binding requirements:

- Contractor Equal Opportunity Certification

- Certification Regarding Debarment, Suspension and other Matters

- Disadvantaged Business Enterprises Utilization

- American Iron and Steel Acknowledgement

- Violating Facilities Clause

- Utilization of Small Business in Rural Areas

**Equal Employment Opportunity (EEO) Requirements**  
(Required Contract Provision)

The Contractor's EEO Certification Form provided on the following page must be:

- (1) included in the contract documents and
- (2) referenced in the Instructions to Bidders, informing bidders that the form must be completed and submitted with their bid.

NOTE: If the loan applicant has its own EEO requirements, local procedures and forms may be substituted for the EPA form.



## Contractor Equal Employment Opportunity Certification

During the performance of this contract, the undersigned agrees as follows:

1. The undersigned will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The undersigned will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The undersigned agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this equal opportunity (federally assisted construction) clause.
2. The undersigned will, in all solicitations or advertisements for employees placed by or on behalf of the undersigned, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.
3. The undersigned will send to each labor union or representative of workers, with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the undersigned's commitment under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The undersigned will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
5. The undersigned will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and relevant orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the administering agency of the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the undersigned's non-compliance with the equal opportunity (federally assisted construction) clause of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part, and the undersigned may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rules, regulations, or order of the Secretary of Labor, or as provided by law.
7. The undersigned will include this equal opportunity (federally assisted construction) clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No. 11246 of September 24, 1965, so that such provision will be binding upon each subcontract or vendor. The undersigned will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for non compliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor, as a result of such direction by the administering agency the undersigned may request the United States to enter into such litigation to protect the interest of the United States.

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(Signature)

---

(Date)

---

(Name and Title of Signer, Please type)

---

(Firm Name)

## **Debarment Requirements**

(Required Contract Provision)

The Certification Regarding Debarment, Suspension, and Other Responsibility Matters form included on the following page must be:

- (1) included in the contract documents and
- (2) referenced in the Instructions to Bidders, informing bidders that the form must be completed and submitted with their bid.

**Certification Regarding Debarment, Suspension, and Other Responsibility Matters**  
**INSTRUCTIONS**

Under Executive Order 12549 an individual or organization debarred or excluded from participation in Federal assistance or benefit programs may not receive any assistance award under a Federal program or a subagreement thereunder for \$25,000 or more.

Accordingly, each prospective recipient of an EPA grant, loan, or cooperative agreement and any contract or subagreement participant thereunder must complete the attached certification provide an explanation why they cannot. For further details, see the regulation 40 CFR 32.510, Participants' responsibilities.

Go to [www.epls.gov](http://www.epls.gov) to access the Excluded Parties List System (EPLS). The EPLS includes information regarding entities debarred, suspended, proposed for debarment, excluded or disqualified under the nonprocurement common rule, or otherwise declared ineligible from receiving Federal contracts, certain subcontracts, and certain Federal assistance and benefits. This information may include names, addresses, DUNS numbers, Social Security Numbers, Employer Identification Numbers or other Taxpayer Identification Numbers, if available and deemed appropriate and permissible to publish by the agency taking the action.

**Where To Submit**

The prospective EPA grant, loan, or cooperative agreement recipient must return the signed certification or explanation with its application to Ohio EPA.

A prospective prime contractor must submit a complete certification or explanation to the individual or organization awarding the contract.

Each prospective subcontractor must submit a complete certification or explanation to the prime contractor for the project.

Applicants may reproduce these materials as needed and provide them to their prospective prime contractor, who, in turn, may reproduce and provide them to prospective subcontractors.

Additional copies / assistance may be requested from:

Ohio EPA  
Division of Environmental and Financial Assistance  
P.O. Box 1049  
Columbus, Ohio 43216-1049  
(614) 644-2798  
[www.epa.state.oh.us/defa/](http://www.epa.state.oh.us/defa/)

### **Certification Regarding Debarment, Suspension, and Other Responsibility Matters**

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (b) of this certification;
- (d) Have not within a three year period preceding this application / proposal had one or more public transactions (Federal, State, or local) terminated for cause or default; and
- (e) Will not utilize a subcontractor or supplier who is unable to certify (a) through (d) above.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

---

Type Name & Title of Authorized Representative

---

Signature of Authorized Representative

---

Date

☐ I am unable to certify to the above statements. My explanation is attached.

## **Disadvantaged Business Enterprises (DBE) Utilization**

### **(Required Contract Provision)**

USEPA has a program to encourage the participation of disadvantaged businesses in the construction activities funded by the Clean Water and Drinking Water SRF's. "DBE" is an all inclusive term that includes Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Small Business Enterprises (SBE), Small Business in Rural Areas (SBRA), HUBZone Small Business, Labor Surplus Area Firms (LSAF), and other entities defined as socially and/or economically disadvantaged. While the WPCLF and WSRLA strongly encourage participation by all disadvantaged groups, specific participation goals are negotiated with USEPA only for Minority Business Enterprises and Women's Business Enterprises.

### **Goals**

As a condition of receiving capitalization grants from U.S. EPA for the Water Pollution Control Loan Fund (WPCLF) and the Water Supply Revolving Loan Account (WSRLA), the Ohio EPA negotiates "fair share" Disadvantaged Business Enterprises (DBE) objectives with U.S. EPA. The current negotiated goals for construction related activities are 1.3% of all contracts to MBEs and 1.0% of all contracts to WBEs.

### **DBE Certification**

Under the DBE program, qualified DBE's are those that have been certified as an MBE or WBE. Certifications can be obtained from a federal agency such as the Small Business Administration or the Department of Transportation or by an approved State agency. The Unified Certification Program (UCP) administered by the Ohio Department of Transportation (ODOT) can provide the necessary DBE certifications. Information on the UCP can be found at [www.ohioucp.org](http://www.ohioucp.org) as well as the ODOT website [www.dot.state.oh.us/divisions/equalopportunity/pages/dbe.aspx](http://www.dot.state.oh.us/divisions/equalopportunity/pages/dbe.aspx). Applications for certification by EPA can be found on EPA's Small Business Programs website at [www.epa.gov/osbp](http://www.epa.gov/osbp) under the Disadvantaged Business Enterprise Program link. Any questions regarding EPA's certification process should be directed to Teree Henderson of EPA at 202-566-2222.

### **DBE Qualifications**

To qualify for MBE certification, businesses must be 51 percent owned and controlled by a U.S. citizen and Ohio resident belonging to an African American, Native American, Hispanic, or Asian American ethnic group. In addition, the business must be in operation for at least one year prior to submitting an application. For DBE status, a business must be at least 51 percent owned by a socially and economically disadvantaged person who participates in the daily operations of the business. This person must be a woman or of African-American, Hispanic, Native American, Asian American ethnicity.

### **Program Requirements**

**To comply with DBE program requirements the WPCLF/WSRLA loan recipient must do the following:**

1. Create and maintain a bidder's list (see description below)

2. Include contract conditions applicable to the DBE program in all procurement contracts entered into by the Borrower for all WPCLF and WSRLA projects. These conditions are listed below.
3. Follow, document, and maintain documentation of good faith efforts on the part of prime contractors to ensure that Disadvantaged Business Enterprises (DBEs) have the opportunity to participate in the project.
4. Review the Form 6100-3 and 6100-4 submittals provided by bidders on the project for completeness and obtain any additional information necessary to verify the certification status of all proposed subcontractors.
5. Obtain documentation of the good faith efforts of the prime contractor if the prime contractor does not meet the MBE or WBE goal.
6. Obtain a written confirmation from any prime contractor states that they will not meet the MBE and WBE goals because they will not be entering into any agreements for goods or services with any company, firm, joint venture, or individual.
7. Submit the following to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined:
  - Form 6100-3 from each subcontractor
  - Form 6100-4 from each prime contractor
  - a copy of the Good Faith Efforts documentation from any prime contractors that will not meet the MBE and WBE goals,
  - if any of the prime contractors will not meet the MBE and WBE goals because they will not be entering into any agreements for goods or services with any company, firm, joint venture, or individual, a copy of the written confirmation from that prime contractor
8. Report MBE/WBE accomplishments on Form 5700-52A annually (within 15 days after October 1<sup>st</sup>).

**NOTE:** It is up to the WPCLF/WSRLA loan recipient whether or not to require completion and submission of Forms 6100-3 and 6100-4 from all bidders with the bid proposal or to accept completion and submission from the successful bidder(s) only at some time after bids are received. Regardless of whether the forms are completed and submitted with the bids or at some later time once the successful bidders are identified, completed forms are to be submitted to Ohio EPA with the bid package.

**To comply with DBE program requirements all prime contractors must do the following:**

1. Follow, document, and maintain documentation of their good faith efforts.
2. Complete and submit **Form 6100-4 DBE Subcontractor Utilization Summary** as part of the bid proposal package to the loan recipient.
3. Have its Disadvantaged Business Enterprise subcontractors complete **Form 6100-3 DBE Subcontractor Proposed Performance Form** and submit those as part of the bid proposal package to the loan recipient.
4. Provide **Form 6100-2 DBE Subcontractor Actual Participation Form** to all of its Disadvantaged Business Enterprise subcontractors for completion at the end of the work.
5. During construction, provide the data necessary so that the loan recipient can report MBE/WBE accomplishments on Form 5700-52A annually (within 15 days after October 1<sup>st</sup>).

## **Bidders List**

The Borrower must create, maintain, and use a bidders list for purposes of soliciting both MBE/WBEs and non-MBE/WBEs during procurement of construction, equipment, supplies, and services. This list shall include:

1. Entity's name with point of contact;
2. Entity's mailing address, telephone number, and e-mail address;
3. The procurement on which the entity bid or quoted, and when; and
4. Entity's status as an MBE/WBE or non-MBE/WBE.

Borrowers that receive less than \$250,000 or less in any one fiscal year can be exempt from maintaining a Bidders List.

The Bidders List shall be maintained until the project period has expired and the Borrower is no longer receiving EPA funding. The Bidders List must include all firms that bid on the prime contracts, or bid or gave a quote on subcontracts, including both MBE/WBEs and non-MBE/WBEs.

## **Required Contract Conditions**

The DBE Specification language and instructions to the bidders and Forms 6100-2, 6100-3 and 6100-4 must be included in the contract documents and referenced in the Instructions to Bidders, informing bidders that the forms must be completed and submitted with their bid for all WPCLF and WSRLA projects:

1. The prime contractor must pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the owner.
2. The prime contractor must notify the owner in writing prior to the termination of any Disadvantage Business Enterprise subcontractor for convenience by the prime contractor.
3. If a Disadvantage Business Enterprise contractor fails to complete work under the subcontract for any reason, the prime contractor must employ the six Good Faith Efforts (listed below) if soliciting a replacement contractor.
4. The prime contractor must employ the six Good Faith Efforts even if the prime contractor has achieved its fair share objectives.
5. An owner must ensure that each procurement contract it awards contains the following terms and conditions:

The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies.

## **Good Faith Efforts**

Borrowers and their prime contractors must follow, document, and maintain documentation of their good faith efforts as listed below to ensure that Disadvantaged Business Enterprises (DBEs) have the opportunity to participate in the project by increasing DBE awareness of procurement efforts and outreach.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities; including DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
3. Consider in the contracting process whether firms competing for large contracts could be subcontracted with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit participation by DBEs in the competitive process.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the steps in numbers 1 through 5 above.

## **DBE Forms**

Form 6100-3 – Each prime contractor must have its DBE subcontractors complete **Form 6100-3 DBE Subcontractor Proposed Performance Form**. This form gives the DBE subcontractor the opportunity to report the scope and cost of the subcontract and it should be forwarded to the Prime Contractor along with the DBE's quote. Each subcontractor completes one Form 6100-3. The Borrower must submit all Form 6100-3 forms to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined.

Form 6100-4 – Each prime contractor must complete and submit **Form 6100-4 DBE Subcontractor Utilization Summary** as part of the prime contractor's bid proposal package to the Borrower. This form summarizes the Prime Contractor's intended use of identified DBE(s) and the estimated dollar amount of each subcontract. Only one Form 6100-4 form is required from each Prime Contractor. The Borrower must submit this form to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined.

Form 6100-2 - The prime contractor must provide **Form 6100-2 DBE Subcontractor Actual Participation Form** to all of its Disadvantaged Business Enterprise subcontractors.

This form gives the DBE subcontractor the opportunity to describe the work the DBE received from the Prime Contractor, how much the DBE was paid and any other concerns the DBE might have. Disadvantaged Business Enterprise subcontractors must send completed Form 6100-2 directly to the Region 5 DBE Coordinator:

Adrienne M. Callahan, Region 5 MBE/WBE Coordinator  
USEPA, Acquisition and Assistance Branch  
77 West Jackson Boulevard (MC-10J)  
Chicago, IL 60604



This form is completed after the work by the subcontractor is done, and is NOT submitted with the bid package to Ohio EPA.

### **Reporting During Construction – Form 5700-52A**

The purpose of MBE/WBE reporting is to monitor the grant recipient's accomplishments in utilizing MBEs and WBEs; and adherence to the good faith efforts (i.e., outreach to MBEs, WBEs, and other DBEs); and progress in achieving MBE and WBE Goals. During the progress of the construction project, the loan recipient must complete & submit Form 5700-52A annually (**within 15 days after October 1<sup>st</sup>**). If there were no MBEs or WBEs utilized, or no procurement expenditures of any kind were made during the reporting period, a "negative report" is still required.

Reports are to be sent to:

Becky McKinney Ohio EPA – DEFA  
P.O. Box 1049  
Columbus, OH 43216-1049  
E-mail address: [Rebecca.McKinney@epa.ohio.gov](mailto:Rebecca.McKinney@epa.ohio.gov)  
Phone: (614) 644-3636  
Fax: (614) 644-3687

**Disadvantaged Business Enterprise (DBE) Program  
DBE Subcontractor Performance Form**

This form is intended to capture the DBE<sup>1</sup> subcontractor's<sup>2</sup> description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

Subcontractor Name		Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Prime Contractor Name		Issuing/Funding Entity:	

Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services , Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: <input type="radio"/> DOT <input type="radio"/> SBA <input type="radio"/> Other: _____		Meets/ exceeds EPA certification standards? <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> Unknown

<sup>1</sup> A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>2</sup> Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

**Disadvantaged Business Enterprise (DBE) Program  
DBE Subcontractor Performance Form**

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

<b>Prime Contractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

<b>Subcontractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

**Disadvantaged Business Enterprise (DBE) Program  
DBE Subcontractor Utilization Form**

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE<sup>1</sup> subcontractors<sup>2</sup> and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Issuing/Funding Entity:			

I have identified potential DBE certified subcontractors	<input type="checkbox"/> YES <span style="margin-left: 200px;"><input type="checkbox"/> NO</span>		
If yes, please complete the table below. If no, please explain:			
Subcontractor Name/ Company Name	Company Address/ Phone/ Email	Est. Dollar Amt.	Currently DBE Certified?

Continue on back if needed

<sup>1</sup> A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>2</sup> Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

**Disadvantaged Business Enterprise (DBE) Program**  
**DBE Subcontractor Utilization Form**

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

<b>Prime Contractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

**Disadvantaged Business Enterprise (DBE) Program  
DBE Subcontractor Participation Form**

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE<sup>1</sup> subcontractor<sup>2</sup> the opportunity to describe work received and/or report any concerns regarding the EPA-funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the EPA DBE Coordinator at any time during the project period of performance.

Subcontractor Name		Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Prime Contractor Name		Issuing/Funding Entity:	

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Amount Received by Prime Contractor

<sup>1</sup> A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>2</sup> Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

## Disadvantaged Business Enterprise (DBE) Program DBE Subcontractor Participation Form

Please use the space below to report any concerns regarding the above EPA-funded project:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

<b>Subcontractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>





## U.S. ENVIRONMENTAL PROTECTION AGENCY MBE/WBE UTILIZATION UNDER FEDERAL GRANTS AND COOPERATIVE AGREEMENTS

### PART I. (Reports are required even if no procurements are made during the reporting period.)

1A. FEDERAL FISCAL YEAR (Oct. 1-Sep 30)  20_____	1B. REPORTING PERIOD (Check ALL appropriate boxes) <input type="checkbox"/> 1 <sup>st</sup> (Oct-Dec) <input type="checkbox"/> 2 <sup>nd</sup> (Jan-Mar) <input type="checkbox"/> 3 <sup>rd</sup> (Apr-Jun) <input type="checkbox"/> 4 <sup>th</sup> (Jul-Sep) <input type="checkbox"/> Semi-Annual (Oct-Mar) <input type="checkbox"/> Semi-Annual (Apr-Sep) <input type="checkbox"/> Annual <input type="checkbox"/> Check if this is the last report for the project (Project completed).																				
1C. REVISION OF A PRIOR REPORT? Y or N Year: _____ Quarter: _____	BRIEFLY DESCRIBE THE REVISIONS YOU ARE MAKING:																				
2A. EPA FINANCIAL ASSISTANCE OFFICE ADDRESS (ATTN: DBE Coordinator)		3A. RECIPIENT NAME AND ADDRESS																			
2B. EPA DBE COORDINATOR  Name:  E-mail:	2C. PHONE:  Fax:	3B. RECIPIENT REPORTING CONTACT:  Name:  E-mail:	3C. PHONE:  Fax:																		
4A. FINANCIAL ASSISTANCE AGREEMENT ID NUMBER (SRF State Recipients, refer to Instructions for Completion of blocks 4A, 5A and 5C.)		4B. FEDERAL FINANCIAL ASSISTANCE PROGRAM TITLE or CFDA NUMBER:																			
5A. TOTAL ASSISTANCE AGREEMENT AMOUNT (SRF State Recipients, refer to Instructions for Completion of blocks 4A, 5A and 5C.)  EPA Share: \$ _____  Recipient Share: \$ _____		5B. If NO procurement and NO accomplishments were made this reporting period (by the recipients, sub-recipients, loan recipients, and prime contractors), <b>CHECK</b> and <b>SKIP</b> to Block No. 7. (Procurements are all expenditures through contract, order, purchase, lease or barter of supplies, equipment, construction, or services needed to complete Federal assistance programs. <u>Accomplishments</u> , in this context, are procurements made with MBEs and/or WBEs. <div style="text-align: center;"><input type="checkbox"/></div>																			
5C. <div style="text-align: center;">Total Procurements This Reporting Period</div> (Only include amount not reported in any prior reporting period)  Total Procurement Amount \$ _____ (Include total dollar values awarded by recipient, sub-recipients and SRF loan recipients, <b>including MBE/WBE expenditures.</b> )																					
5D. Were sub-awards issued under this assistance agreement? Yes <input type="checkbox"/> No <input type="checkbox"/> Were contracts issued under this assistance agreement? Yes <input type="checkbox"/> No <input type="checkbox"/>																					
5E. <div style="text-align: center;">MBE/WBE Accomplishments This Reporting Period</div>  Actual MBE/WBE Procurement Accomplished: (Include total dollar values awarded by recipient, sub-recipients, SRF loan recipients and Prime Contractors.)  <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>Construction</u></th> <th style="text-align: center;"><u>Equipment</u></th> <th style="text-align: center;"><u>Services</u></th> <th style="text-align: center;"><u>Supplies</u></th> <th style="text-align: center;"><u>Total</u></th> </tr> </thead> <tbody> <tr> <td><b>\$MBE:</b></td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td><b>\$WBE:</b></td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>					<u>Construction</u>	<u>Equipment</u>	<u>Services</u>	<u>Supplies</u>	<u>Total</u>	<b>\$MBE:</b>	_____	_____	_____	_____	_____	<b>\$WBE:</b>	_____	_____	_____	_____	_____
	<u>Construction</u>	<u>Equipment</u>	<u>Services</u>	<u>Supplies</u>	<u>Total</u>																
<b>\$MBE:</b>	_____	_____	_____	_____	_____																
<b>\$WBE:</b>	_____	_____	_____	_____	_____																
6. COMMENTS: (If no MBE/WBE procurements were accomplished during the reporting period, please explain what steps you are taking to achieve the MBE/WBE Program requirements specified in the terms and conditions of the Assistance Agreement.)																					
7. NAME OF RECIPIENT'S AUTHORIZED REPRESENTATIVE		TITLE																			
8. SIGNATURE OF RECIPIENT'S AUTHORIZED REPRESENTATIVE		DATE																			

PART II.

MBE/WBE PROCUREMENTS MADE DURING REPORTING PERIOD

EPA Financial Assistance Agreement Number: \_\_\_\_\_

1. Procurement Made By			2. Business Enterprise		3. \$ Value of Procurement	4. Date of Procurement MM/DD/YY	5. Type of Product or Services <sup>A</sup> (Enter Code)	6. Name/Address/Phone Number of MBE/WBE Contractor or Vendor
Recipient	Sub-Recipient and/or SRF Loan	Prime	Minority	Women				
	Recipient							

# Instructions:

## A. General Instructions:

MBE/WBE utilization is based on 40 CFR Part 33. EPA Form 5700-52A must be completed by recipients of Federal grants, cooperative agreements, or other Federal financial assistance which involve procurement of supplies, equipment, construction or services to accomplish Federal assistance programs.

Recipients are required to report 30 days after the end of each federal fiscal quarter, semiannually, or annually, per the terms and conditions of the financial assistance agreement.

	Quarterly Reporting Due Date	Semiannual Reporting Due Date	Annual Reporting Due Date
Agreements awarded prior to May 27, 2008	January 30, April 30, July 30, October 30	N/A	October 30
Agreements awarded on or after May 27, 2008	N/A	April 30, October 30	October 30

MBE/WBE program requirements, including reporting, are material terms and conditions of the financial assistance agreement.

## B. Definitions:

**Procurement** is the acquisition through contract, order, purchase, lease or barter of supplies, equipment, construction or services needed to accomplish Federal assistance programs.

A **contract** is a written agreement between an EPA recipient and another party (also considered "prime contracts") and any lower tier agreement (also considered "subcontracts") for equipment, services, supplies, or construction necessary to complete the project. This definition excludes written agreements with another public agency. This definition includes personal and professional services, agreements with consultants, and purchase orders.

A **minority business enterprise (MBE)** is a business concern that is (1) at least 51 percent owned by one or more minority individuals, or, in the case of a publicly owned business, at least 51 percent of the stock is owned by one or more minority individuals; and (2) whose daily business operations are managed and directed by one or more of the minority owners. In order to qualify and participate as an MBE prime or subcontractor for EPA

recipients under EPA's DBE Program, an entity must be properly certified as required by 40 CFR Part 33, Subpart B.

U.S. citizenship is required. Recipients shall presume that minority individuals include Black Americans, Hispanic Americans, Native Americans, Asian Pacific Americans, or other groups whose members are found to be disadvantaged by the Small Business Act or by the Secretary of Commerce under section 5 of Executive order 11625. The reporting contact at EPA can provide additional information.

A **woman business enterprise (WBE)** is a business concern that is, (1) at least 51 percent owned by one or more women, or, in the case of a publicly owned business, at least 51 percent of the stock is owned by one or more women and (2) whose daily business operations are managed and directed by one or more of the women owners. In order to qualify and participate as a WBE prime or subcontractor for EPA recipients under EPA's DBE Program, an entity must be properly certified as required by 40 CFR Part 33, Subpart B.

Business firms which are 51 percent owned by minorities or women, but are in fact managed and operated by non-minority individuals do not qualify for meeting MBE/WBE procurement goals. U.S. Citizenship is required.

## **Good Faith Efforts**

A recipient is required to make the following good faith efforts whenever procuring construction, equipment, services, and supplies under an EPA financial assistance agreement. These good faith efforts for utilizing MBEs and WBEs must be documented. Such documentation is subject to EPA review upon request:

1. Include of MBEs/WBEs on solicitation lists.
2. Assure that MBEs/WBEs are solicited once they are identified.
3. Divide total requirements into smaller tasks to permit maximum MBE/WBE participation, where feasible.
4. Establish delivery schedules which will encourage MBE/WBE participation, where feasible.
5. Encourage use of the services of the U.S. Department of Commerce's Minority Business Development Agency (MBDA) and the U.S. Small Business Administration to identify MBEs/WBEs.

6. Require that each party to a subgrant, subagreement, or contract award take the good faith efforts outlined here.

**C. Instructions for Part I:**

- 1a. Specify Federal fiscal year this report covers. The Federal fiscal year runs from October 1<sup>st</sup> through September 30<sup>th</sup> (**e.g. November 29, 2010 falls within Federal fiscal year 2011**)
- 1b. Check applicable reporting box, quarterly, semiannually, or annually. Also indicate if this is the last report for the project.
- 1c. Indicate if this is a revision to a previous year, half-year, or quarter, and provide a brief description of the revision you are making.
- 2a-c. Please refer to your financial assistance agreement for the mailing address of the EPA financial assistance office for your agreement.
- The "EPA DBE Reporting Contact" is the DBE Coordinator for the EPA Region from which your financial assistance agreement was originated. For a list of DBE Coordinators please refer to the EPA OSBP website at [www.epa.gov/osbp](http://www.epa.gov/osbp). Click on "Regional Contacts" for the name of your coordinator.
- 3a-c. Identify the agency, state authority, university or other organization which is the recipient of the Federal financial assistance and the person to contact concerning this report.
- 4a. Provide the Assistance Agreement number assigned by EPA. A separate report must be submitted for each Assistance Agreement.
- \*For SRF recipients:** In box 4a list numbers for ALL OPEN Assistance Agreements being reported on this form. Please note that although the New DBE Rule (which took effect May 27, 2008) revised the reporting frequency requirements from quarterly to semiannually, that change only applies to agreements awarded AFTER the New DBE Rule took effect. Therefore, SRF recipients may either continue to report activity for all Agreements on one form on a quarterly basis until the last award that was made prior to the New DBE Rule has been closed out; OR, the recipient may split the submission of SRF reports into quarterly reports for Agreements awarded prior the New DBE Rule, and semiannually for the awards made after the New DBE Rule.

- 4b. Refer back to Assistance Agreement document for this information.
- 5a. Provide the total amount of the Assistance Agreement which includes Federal funds plus recipient matching funds and funds from other sources.
- \*For SRF recipients only:** SRF recipients will not enter an amount in 5a. Please leave 5a blank.
- 5b. Self-explanatory.
- 5c. Provide the total dollar amount of **ALL** procurements awarded this reporting period by the recipient, sub-recipients, and SRF loan recipients, **including** MBE/WBE expenditures. For example: Actual dollars for procurement from the procuring office; actual contracts let from the contracts office; actual goods, services, supplies, etc., from other sources including the central purchasing/ procurement centers).
- \*NOTE:** To prevent double counting on line 5C, if any amount on 5E is for a subcontract and the prime contract has already been included on Line 5C in a prior reporting period, then report the amount going to MBE or WBE subcontractor on line 5E, but exclude the amount from Line 5C. To include the amount on 5C again would result in double counting because the prime contract, which includes the subcontract, would have already been reported.
- 5d. State whether or not sub-awards and/or subcontracts have been issued under the assistance agreement by indicating "yes" or "no".
- 5e. Where requested, also provide the total dollar amount of all MBE/WBE procurement awarded during this reporting period by the recipient, sub-recipients, SRF loan recipients, and prime contractors in the categories of construction, equipment, services and supplies. These amounts include Federal funds plus recipient matching funds and funds from other sources.
- \*For SRF recipients only:** In 5c please enter the total procurement amount for the quarter, or semiannual period, under all of your SRF Assistance Agreements. The figure reported in this section is **not** directly tied to an individual Assistance Agreement identification number. **(SRF state recipients report state procurements in this section)**
6. If there were no MBE/WBE accomplishments this reporting period, please briefly explain what

specific steps you are taking to achieve the MBE/WBE requirements specified in the terms and conditions of the Assistance Agreement.

7. Name and title of official administrator or designated reporting official.
8. Signature, month, day, and year report submitted.

#### D. Instructions for Part II:

For each MBE/WBE procurement made under this assistance agreement during the reporting period, provide the following information:

1. Check whether this procurement was made by the recipient, sub-recipient/SRF loan recipient, or the prime contractor.
2. Check either the MBE or WBE column. If a firm is both an MBE and WBE, the recipient may choose to count the entire procurement towards EITHER its MBE or WBE accomplishments. The recipient may also divide the total amount of the procurement (using any ratio it so chooses) and count those divided amounts toward its MBE and WBE accomplishments. If the recipient chooses to divide the procurement amount and count portions toward its MBE and WBE accomplishments, please state the appropriate amounts under the MBE and WBE columns on the form. **The combined MBE and WBE amounts for that MBE/WBE contractor must not exceed the "Value of the Procurement" reported in column #3**
3. Dollar value of procurement.
4. Date of procurement, shown as month, day, year. Date of procurement is defined as the date the contract or procurement was awarded, **not** the date the contractor received payment under the awarded contract or procurement, unless payment occurred on the date of award. **(Where direct purchasing is the procurement method, the date of procurement is the date the purchase was made)**
5. Using codes at the bottom of the form, identify type of product or service acquired through this procurement (e.g., enter 1 if construction, 2 if supplies, etc).
6. Name, address, and telephone number of MBE/WBE firm.

\*\*This data is requested to comply with provisions mandated by: statute or regulations

and 33); OMB Circulars; or added by EPA to ensure sound and effective assistance management. Accurate, complete data are required to obtain funding, while no pledge of confidentiality is provided.

The public reporting and recording burden for this collection of information is estimated to average 1 hour per response annually. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclosure or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and

maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, OPPE Regulatory Information Division, U.S. Environmental Protection Agency (2136), 1200 Pennsylvania Avenue, NW, Washington, D.C. 20460. Include the OMB Control number in any correspondence. Do not send the completed form to this address.



## **AMERICAN IRON AND STEEL ACKNOWLEDGEMENT**

The Contractor acknowledges to and for the benefit of Northwestern Water & Sewer District ("Purchaser") and the State of Ohio (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name and Title of Authorized Signatory, Please Print or Type

\_\_\_\_\_  
Bidder's Firm

☐

Check here if the WPCLF or WSRLA applicant will be requesting an individual waiver for non-American made iron and steel products. Please note that the waiver box does not need to be marked for nationwide waivers.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

**MAR 20 2014**

OFFICE OF WATER

**MEMORANDUM**

**SUBJECT:** Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014

**FROM:** f ( Andrew D. Sawyers, Director C.  
l) Office of Wastewater Management (4201M)

Peter C. Grevatt, Director  
Office of Ground Water and Drinking Water (4601M)

**TO:** Water Management Division Directors  
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.



**Violating Facilities Clause**  
(Required Contract Provision)

Language prohibiting this use of equipment or services from anyone on the EPA List of Violating Facilities must be included in the contract documents.

**Violating Facilities:**

The Contractor agrees to comply with all applicable standards, orders or requirements under Section 306 of the Clean Air Act, 42 USC 1857 (h), Section 508 of the Clean Water Act, 33 USC 1368, Executive Order 11738, and EPA regulations, 40 CFR Part 32, which prohibits the use under non-exempt Federal contracts, grants, or loans of facilities included on the EPA List of Violating Facilities.

**NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.**

## **Requirement For Utilization Of Small Businesses In Rural Areas (SBRA)**

(Required Contract Provision)

The following policy should be added to the “Instructions to Bidders” section and referenced in the Table of Contents for the contract documents:

This procurement is subject to the EPA policy of encouraging the participation of small businesses in rural areas. It is EPA policy that recipients of EPA financial assistance awards utilize the services of small businesses in rural areas (SBRAs), to the maximum extent practicable. The objective is to assure that such small business entities are afforded the maximum practicable opportunity to participate as subcontractors, suppliers and otherwise in EPA-awarded financial assistance programs. This policy applies to all contracts and subcontracts for supplies, construction, and services under EPA grants or cooperative agreements. Small purchases are also subject to this policy.

If possible, also add the following language to the “Advertisement for Bids”:

This procurement is subject to the EPA policy of encouraging the participation of small business in rural areas (SBRAs).

**NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.**

## CONTRACT CHANGE ORDER

Original Contract Amt		<p align="center"><b>OWDA APPROVAL</b></p> <p align="center">The above proposal is hereby accepted and I recommend that it be approved and made a part of the contract noted above. The approval does not constitute an increase in the total loan amount, but represents approval for the work.</p>
Previous Changes (+ / --)		
This Change (+ / --)		
Adjusted Contract Amt		
Ohio EPA Acceptance		Chief Engineer
Date		Date



## **CHANGE ORDER INSTRUCTIONS:**

All Change Orders for this work, regardless of costs and whether Water Pollution Control Loan Fund (WPCLF) or Water Supply Revolving Loan Account (WSRLA) funding will be used to finance the changes, must be submitted to Ohio EPA for review.

### *Changes Requiring Prior Approval*

Any change which substantially modifies the Project Facilities as specified in the Ohio EPA approved Facilities Plan and Final Permit to Install or Final Plan Approval (when applicable) or alters the direct or indirect impact of the Project Facilities upon the environment must be incorporated into a Change Order. One copy of the Change Order prior to execution is to be submitted to Ohio EPA for review and prior approval of the acceptability of the change. "Prior to execution" means before the Change Order is signed by the Owner.

Ohio EPA will review the Change Order and inform the Owner of the technical, environmental and operational acceptability of the change, and give the Owner permission to proceed with the proposed work.

### *All Other Changes*

Change Orders not requiring prior approval as described above must be submitted to Ohio EPA within one (1) month of the time at which they are approved by the Owner. Change Orders for WPCLF projects should be submitted to the Division of Environmental and Financial Assistance (DEFA) while Change Orders for WSRLA projects should be submitted to the Division of Drinking and Ground Water (DDAGW) in central office.

### *Change Order Approval Process*

After the Change Order is executed, one (1) copy of the Change Order, including the supporting documentation, is to be sent to Ohio EPA for final review. The WPCLF/WSRLA Change Order forms must have original signatures.

Communities have the option to submit hard copies of the project Change Orders via mail to Ohio EPA or to send PDF Change Order forms and supporting documentation electronically. With either hard copy or electronic submittals, the WPCLF Change Orders should be submitted to DEFA and WSRLA Change Orders should be submitted to DDAGW - Central Office.

The dedicated e-mail address for the electronic submittal of WPCLF Change Orders is [EPAWPCLFCO@epa.ohio.gov](mailto:EPAWPCLFCO@epa.ohio.gov).

The dedicated e-mail address for the electronic submittal of WSRLA Change Orders is [EPAWSRLACO@epa.ohio.gov](mailto:EPAWSRLACO@epa.ohio.gov).

After the Change Order is accepted and eligible costs determined, Ohio EPA will issue a letter informing the Owner and authorizing OWDA to disburse funds from Project Contingency for the work. The OEPA letter will be sent electronically. OWDA will return a PDF of the WPCLF/WSRLA Change Order form which will be signed by all parties including Ohio EPA and OWDA.

Please notify Ohio EPA if the community prefers a hard copy of change order approval documentation and then Ohio EPA and OWDA will send hard copies of approval documentation through the mail.

#### *Payments for Change Order Work*

The Owner is precluded from submitting to the OWDA payment requests for Eligible Project Costs associated with the Change Orders until such time as the Ohio EPA's approval of the Change Orders has been obtained.

**SECTION 01010  
DEFINITION OF CONTRACT ITEMS**

**ITEM 0 GENERAL**

**0.01 FOREWORD**

This Section describes the various Contract Items listed in the Bid.

**0.02 WORK INCLUDED**

Under each Item the Contractor shall furnish all labor, materials, tools, plant equipment, supplies, maintenance of equipment, heating, lighting and power, insurance and bonds, coordination, and all Work and in accordance with the Specifications Parts A, B, and Divisions 1 through 16 of Part C and necessary to complete the Work in accordance with the obvious or expressed intent of the Contract Documents.

The removal and proper disposal of debris generated by work under each Item shall be included in that corresponding Item.

**0.03 WORKMANSHIP AND MATERIALS**

The quality of workmanship and materials entering into any and all of the Items and the Work included shall conform to pertinent sections, paragraphs, sentences, and clauses, both directly and indirectly applicable thereto, contained in the Contract Documents, whether or not direct reference to such occurs under each Item in this Section.

**0.04 PAYMENT**

The lump sum and unit prices stated in the Bid shall be payment in full for the completion of all Work specified and described or required to be included in the Contract, complete, and ready for use.

**0.05 CONTRACT ITEMS**

- A. The contract items are defined on the following pages.
- B. The alternate bid items are identified by the suffix -alt on the bid form. Alternate Bid Items shall be measured and paid in accordance with their corresponding Base Bid Item number. The Owner may award the Alternate Bid Items at the Owner's discretion and contingent upon available funding for the work.

**ITEM 1**  
**MOBILIZATION AND DEMOBILIZATION**

**1.01 DESCRIPTION**

- A. This Item is intended to pay non-recurring cost to the Contractor not recovered under other pay Items of the Contract.
- B. This Item shall include, but not be limited to, the cost for moving equipment in and out, performance and payment bonds, insurance, permits, utility connection cost, and other expenses associated with preparation for construction in accordance with the requirements of the Contract Documents.
- C. This item is intended to be in accordance with the Supplemental Conditions SC 15.01A.

**1.02 WORK NOT INCLUDED**

- A. Any Work specifically included under other Bid Items.

**1.03 DEFINITION OF ITEM**

- A. Item 1 - Mobilization and Demobilization.

**1.04 MEASUREMENT & PAYMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 1.
- B. The Contractor is reminded of the requirements of Supplemental Conditions Section 15.01.A regarding Mobilization and Demobilization costs as a percentage of the total project cost.
- C. Payment shall be in accordance with Supplemental Conditions 15.01 A. The Engineer may reduce the amount to be paid under Item 1 if the percentage requested is not represented by the actual amount performed.

**ITEM 2**  
**WATER MAINS**

**2.01 DESCRIPTION**

- A. Under these Items, the Contractor shall furnish and perform all Work necessary for the installation of the water lines as scheduled, shown on the Drawings and specified, in conformance with relevant sections of the Specifications.
- B. These Items shall include all Work to install the waterlines, including but not limited to the following: excavation; hauling excess spoil material from Site; backfill; compaction; bedding; pipe materials; fittings; maintenance of trenches; connections to existing water mains; and related Work and materials such as blowoffs to perform disinfection,



flushing, performing pressure and bacteriological tests as shown on the Drawings and specified in conformance with relevant Sections of the Specifications.

- C. This Item shall include all work to install the carrier pipe in bored steel casing pipe in locations and limits as shown on the Drawings, including, but not limited to, the following additional items, bore and receiving pit excavation and backfill, bore-hole reaming, casing pipe installation, water main pipe, casing accessories, and pipe connection materials.
- D. Connections of new water lines to new and existing water lines shall be included under these Items. Temporary supporting of existing utilities, locating of existing utilities, exploratory excavation and backfill required by the utility owner for existing utilities encountered during construction is included under these Items.
- E. The abandonment of existing water mains, including existing pipe, fittings, grout (where specified), and other associated appurtenances shall be included under these Items.
- F. Water mains to be abandoned using grout fill shall be included under this Item. Contractor shall determine and modify, as necessary, the mix of flowable fill material to satisfactorily fill the entire abandoned water main pipe. The grout fill shall have sufficient flowable characteristics to ensure complete filling of the pipe. The Contractor may need to fill holes and vent pipes to assure thorough filling. Quantities of flowable fill material used to fill pipes shall be monitored continuously during the placement. Sites disturbed by the grout filled abandonment work shall be restored as a part of this work.
- G. The removal of existing water mains, including existing pipe, fittings, valves, backfill, bedding, structures, concrete encasements and other associated appurtenances incidental to water main construction shall be included under these Items.
- H. These Items shall include all water main fittings, accessories and appurtenances not included in other pay items. Fittings, including those not shown on the plans required to avoid existing utilities shall be included under these Items incidental to water main construction.
- I. The furnishing and placing of special backfill in areas excavated for this work included under these Items. No distinction is made for bore or receiving pits placed in pavements and the Contractor is expected to include the placement of the specified fill in the bore and receiving pits in unit pricing for trenchless work.
- J. All work to dewater trenches is included in these Items.
- K. All repairs of existing utilities damaged, as a result of construction, are included under these Items.
- L. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed lawn areas shall be included under these Items, unless specifically included under other items.

## **2.02 WORK NOT INCLUDED**

- A. Pavement replacement within the Contract limits is included under other Items.

## **2.03 DEFINITION OF ITEMS**

- A. Item 2a - 6-inch Water Main, Type B.
- B. Item 2b - 8-inch Water Main, Type B.
- C. Item 2c - 8-inch Water Main, Type C.
- D. Item 2d - 10-inch Water Main, Type B.
- E. Item 2e - 10-inch Water Main, Type C.
- F. Item 2f - 8-inch PVC Water Main, in 16-inch Bored Casing.
- G. Item 2g - 10-inch PVC Water Main, in 20-inch Bored Casing.
- H. Item 2h - Connections to Existing Water Mains 12-inch and Smaller (Without tapping).
- I. Item 2i - Existing Water Main Plugged.
- J. Item 2j - Water Main Plug with Blowoff.
- K. Item 2k - Water Main Termination and Abandonment.
- L. Item 2l - Water Main Abandoned - Grout Filled.

## **2.04 MEASUREMENT & PAYMENT**

- A. The quantities to be paid for under Items 2a through 2g and 2l shall be the horizontal length of pipe measured parallel to the axis of the line along the surface of the ground, with no deduction for laying length of fittings and valves. Vertical portions of the water main shall not be measured for payment.
- B. The quantities to be paid under Items 2h through 2k shall be the full compensation for each water line connection to existing water line, water main plug or termination and abandonment of existing water mains furnished and installed in accordance with the Specifications and Drawings.

## **ITEM 3 VALVES**

### **3.01 DESCRIPTION**

- A. Under these Items, the Contractor shall furnish and perform all Work necessary for the installation of the valves and accessories as shown on the Drawings and specified in conformance with relevant Sections of the Specifications.
- B. Valve boxes and manhole structures as required or shown in the Drawings shall be included under these Items.
- C. These Items shall include all Work to install, abandon valves, including but not limited to the following: excavation; removal of concrete encasements; hauling excess spoil material from Site; backfill; compaction; bedding; pipe materials; fittings and pipe connections; and related Work such as performing material testing.

- D. The abandonment of valves 4-inches and larger shall include removal of the valve box, cover and casting, or manhole frame, casting and structure walls to the specified depths.
- E. The furnishing and placing of special backfill in areas excavated for this work included under these Items.

### **3.02 WORK NOT INCLUDED**

- A. Pavement replacement within Contract limits is included for payment under other Items.
- B. 6-inch gate valves associated with fire hydrant assemblies are included under other Items.

### **3.03 DEFINITION OF ITEMS**

- A. Item 3a - 6-inch Gate Valve and Box.
- B. Item 3b - 8-inch Gate Valve and Box.
- C. Item 3c - 10-inch Gate Valve and Box.
- D. Item 3d - 8-inch by 8-inch Tapping Sleeve, Valve and Box.
- E. Item 3e - 10-inch by 8-inch Tapping Sleeve, Valve and Box.
- F. Item 3f - 12-inch by 10-inch Tapping Sleeve, Valve and Box.
- G. Item 3g - Valve Box Abandoned.

### **3.04 MEASUREMENT & PAYMENT**

- A. The quantities to be paid under Items 3a through 3f shall be full compensation for each valve and box or manhole provided in accordance with the Specifications and Drawings.
- B. The quantities to be paid under Item 3g shall be full compensation for each valve abandoned in accordance with the Specifications and Drawings.

## **ITEMS 4 FIRE HYDRANT ASSEMBLIES**

### **4.01 DESCRIPTION**

- A. Under these Items, the Contractor shall furnish and perform all Work necessary for the installation of the fire hydrant assemblies, shown on the Drawings and specified, in conformance with relevant sections of the Specifications.
- B. These Items shall include all Work to install the fire hydrant assemblies, including but not limited to the following: excavation; removal of concrete encasement; hauling excess spoil material from Site; backfill; compaction; bedding; pipe materials; fittings;

connections to water lines; construction, maintenance and removal of temporary access to the Work area; and related Work such as performing material testing.

- C. Fire hydrant assemblies shall include hydrant, watch valve, valve box, all 6-inch ductile iron pipe from the water main to the hydrant riser, anchoring pipe, and all associated fittings and accessories.
- D. The removal and salvaging of existing fire hydrants for the owner shall be included under these Items. Hydrant valves to be removed shall be included under these Items.

#### **4.02 WORK NOT INCLUDED**

- A. Pavement replacement within Contract limits is included for payment under other Items.

#### **4.03 DEFINITION OF ITEMS**

- A. Item 4a - Fire Hydrant Assembly, Type A.
- B. Item 4b - Fire Hydrant Assembly, Type A Excluding Watch Valve.
- C. Item 4c - Fire Hydrant Assembly, Type B.
- D. Item 4d - Fire Hydrant Assembly Removed.

#### **4.04 MEASUREMENT & PAYMENT**

- A. The quantity to be paid under Items 4a through 4c shall be the measured quantity of each fire hydrant assembly completed as specified, shown on the drawings and so measured.
- B. The quantity to be paid under Item 4d shall be the measured quantity of each fire hydrant assembly removed as specified, shown on the drawings and so measured.

### **ITEMS 5 WATER SERVICES**

#### **5.01 DESCRIPTION**

- A. Under these Items, the Contractor shall furnish and perform all Work necessary for the installation of the water services by both open-cut and trenchless methods, shown on the Drawings and specified, in conformance with relevant sections of the Specifications.
- B. These Items shall include all Work to install the water services, including but not limited to the following: excavation; hauling excess spoil material from Site; backfill; compaction; bedding; pipe materials; fittings; connections to existing services; construction, maintenance and removal of temporary access to the Work area; and related Work such as performing material testing.

- C. The removal of existing water services, including existing fittings, valves, structures and other associated appurtenances shall be included under these items.
- D. All repair of existing utilities damaged during water service construction is included under these Items.
- E. Connections of new water services to existing water services as shown on the Drawings are included under these Items.
- F. The installation and relocation of meter pits shall be included under this Item. Meter pits shall be provided by the Contractor. Water Meter provided by the Owner shall be installed by the Contractor.
- G. Reinstatement of existing water services to the new water line shall be included under these Items.
- H. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed lawn areas shall be included under these Items.
- I. These Items shall include all water service fittings, accessories and appurtenances not included in other pay items. Fittings, including those not shown on the plans required to avoid existing utilities shall be included under these Items.
- J. The excavation and backfill of bore and receiving pits for trenchless water service construction is included under these items.
- K. The furnishing and placing of special backfill in areas excavated for this work included under these Items.

**5.02 WORK NOT INCLUDED**

- A. Pavement replacement within Contract limits is included for payment under other Items.
- B. Repairing of water services which were damaged and not planned to be replaced, by Contractor as a result of the construction, will be at the Contractor's expense.
- C. Water meter will be provided by the Owner and is not included under this Item.

**5.03 DEFINITION OF ITEMS**

- A. Item 5a - Water Service, (Less than 2-inch diameter).
- B. Item 5b - Water Service, (2-inch diameter).
- C. Item 5c - Water Service Trenchless, (Less than 2-inch diameter).
- D. Item 5d - Water Service Trenchless, (2-inch diameter).
- E. Item 5e - Water Service Connection Reinstated, (Less than 2-inch diameter).
- F. Item 5f - Water Service Connection Reinstated, (2-inch diameter).
- G. Item 5g - Water Meter Pits (Without Meter).

**5.04 MEASUREMENT & PAYMENT**

- A. The quantities to be paid for under Items 5a through 5d shall be the horizontal length of pipe measured parallel to the axis of the line along the surface of the ground, with no deduction for laying length of fittings, meter vaults and valves. Vertical portions of the water service shall not be measured for payment.
- B. The quantities to be paid under Items 5e and 5f shall be full compensation for each water service connection reinstated, so measured, as specified and required.
- C. The quantity to be paid under this Item 5g shall be full compensation for each meter pit installed, as specified and measured.

**ITEM 6  
PAVEMENT REMOVAL**

**6.01 DESCRIPTION**

- A. Under these Items, the Contractor shall remove existing pavement material including flexible or rigid pavement, roadway base material, intermediate or surfaces courses, sidewalk or pavement base for pipeline construction as scheduled, shown on the Drawings and specified herein.
- B. The saw-cutting and preparation of the trench excavation both prior to the removal pavement for trench construction and for new pavement placement is included in these Items.
- C. The disposal of debris generated by work performed under these Items is included in these Items.

**6.02 WORK NOT INCLUDED**

- A. Pavement replacement required beyond specified pay limits for construction of manholes and chambers is included for payment under other Items.
- B. Pavement restoration is included in other sections.

**6.03 DEFINITION OF ITEMS**

- A. Item 6a - ODOT Item 202 Pavement and Base Removed.
- B. Item 6b - ODOT Item 202 Driveway and Sidewalk Pavement Removed.

**6.04 MEASUREMENT**

- A. Quantities to be paid for under these Items shall be the actual quantity constructed, measured in place within the limits as defined below, and scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits. When uniform courses are specified, the volume to be paid for shall not exceed the quantity calculated from plan lines and dimensions. Bituminous

materials will be measured in gallons at 60 degrees F applied at the specified rates and within the pay limits.

B. Pay Limits:

1. Depth - As specified, scheduled, or directed by the Engineer.
2. Length - The actual length measured.
3. Width:
  - a. Except as otherwise scheduled on the Drawings, the width of replacement over pipe trenches shall not exceed the nominal diameter of the pipe plus 2-1/2 feet on each side for trench depths of 16 feet and less; and 4 feet on each side for trench depths greater than 16 feet. No additional width will be allowed for precast manholes or manhole chamber construction.

C. The removal of areas marked for replacement with Items 7c, 8a, 8b and 8c shall be measured under item 6b.

**6.05 PAYMENT**

- A. The unit prices stated in the Bid for Items 6a and 6b shall be full compensation for each square yard of pavement removed within the prescribed limits as specified, so measured.

**ITEM 7  
FLEXIBLE PAVEMENT REPAIR**

**7.01 DESCRIPTION**

- A. Under these Items, the Contractor shall construct aggregate base, flexible pavement base and surface courses to replace pavement removed for pipeline construction as scheduled, shown on the Drawings and specified herein.
- B. The preparation of subgrade material prior to the placement of roadway base is included in these Item.
- C. The provision of the specified compaction testing is included in these Items.
- D. Bonding coats of prime or tack coats as specified are included in these Items.
- E. The provision of temporary pavement to maintain traffic is included in these Items.

**7.02 WORK NOT INCLUDED**

- A. Pavement replacement required beyond specified pay limits for construction of manholes and chambers is included for payment under other Items.
- B. The removal of pavement is included under other items.

### 7.03 DEFINITION OF ITEMS

- A. Item 7a - Flexible Pavement Trench Repair - Heavy Roadway.
- B. Item 7b - Flexible Pavement Trench Repair - Residential Roadway.
- B. Item 7c - Flexible Pavement Trench Repair - Driveway.
- C. Item 7d - Temporary Pavement Repair.
- D. Item 7e - ODOT Item 411 Stabilized Crushed Aggregate (Berm and Drive).
- E. Item 7f - 3-inch ODOT Item 301 Asphalt Concrete Base Course.

### 7.04 MEASUREMENT

- A. Quantities to be paid for under these Items shall be the actual quantity constructed, measured in place within the limits as defined below, and scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits. When uniform courses are specified, the volume to be paid for shall not exceed the quantity calculated from plan lines and dimensions. Bituminous materials will be measured in gallons at 60-degrees F applied at the specified rates and within the pay limits.
- B. Pay Limits:
  - 1. Depth - As specified, scheduled, or directed by the Engineer. To differentiate from special backfill material provided to backfill pipes and appurtenance excavations, aggregate base shall only be measured for the thickness shown on the Drawings or directed by the Engineer.
  - 2. Length - The actual length measured.
  - 3. Width:
    - a. Except as otherwise scheduled on the Drawings, the width of replacement over pipe trenches shall not exceed the nominal diameter of the pipe plus 2-1/2 feet on each side for trench depths of 16 feet and less; and 4 feet on each side for trench depths greater than 16 feet. No additional width will be allowed for precast manholes or manhole chamber construction.
  - 4. Trench depth as used herein shall mean the distance from the original surface of the pavement to the invert grade of the main line pipe.

### 7.05 PAYMENT

- A. The unit prices stated in the Bid for Items 7a through 7c and 7e shall be full compensation for each square yard of roadway or driveway repaired with flexible pavement including all specified pavement materials down to the bottom of the aggregate base course and with lift thicknesses specified, so measured.



- B. The unit prices stated in the Bid for Item 7d shall be full compensation for each square yard of temporary pavement placed with the prescribed limits as specified, so measured.
- C. The unit prices stated in the Bid Item 7f shall be measured for each square yard of asphalt base material placed (3-inch lift thickness) as directed by the Engineer to replace flexible pavement in areas where the existing pavement is discovered to be thicker than the provided typical sections.

**ITEM 8**  
**RIGID PAVEMENT REPAIR**

**8.01 DESCRIPTION**

- A. Under these Items, the Contractor shall construct aggregate base, rigid pavement base and surface courses to replace pavement removed for pipeline construction as scheduled, shown on the Drawings and specified herein.
- B. The preparation of subgrade material prior to the placement of roadway base is included in these Item.
- C. The provision of the specified compaction testing is included in these Items.
- D. Any concrete pavement or base discovered will be measured and paid as approach.

**8.02 WORK NOT INCLUDED**

- A. Pavement replacement required beyond specified pay limits.
- B. The replacement of non-rigid pavement base, intermediate and surface courses is included under other Items.
- C. The replacement of curbs is included under other Items.

**8.03 DEFINITION OF ITEMS**

- A. Item 8a - 6-inch ODOT Item 452 Non-Reinforced Concrete Pavement, Class MS (Approach).
- B. Item 8b - 4-inch Concrete Sidewalk.
- C. Item 8c - 6-inch Concrete Sidewalk and Curb Ramp with Detectable Warning Surface.

**8.04 MEASUREMENT**

- A. The quantities to be paid for under these Items shall be the actual quantity constructed, measured in place within the limits as defined below, and/or scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits. When uniform courses are specified, the volume to be paid for shall not exceed the quantity calculated from plan lines and dimensions.

B. Pay Limits:

1. Depth - As specified, scheduled, or ordered. Trench depth as used herein shall mean the distance from the original surface of the pavement to the invert grade of the main line pipe.
2. Length - The actual length ordered.
3. Width - Except as otherwise scheduled on the Drawings, the width of replacement over pipe trenches shall not exceed the nominal diameter of the pipe plus 2-1/2 feet on each side for trench depths 16 feet and less and 4 feet on each side for trench depths greater than 16 feet. No additional width will be allowed for precast manholes or manhole chamber construction.

**8.05 PAYMENT**

- A. The unit price stated in the Bid for Item 8a shall be full compensation for each square yard of rigid pavement placed within the prescribed limits down to the bottom of the aggregate base course as specified, so measured.
- B. The unit price stated in the Bid for Items 8b and 8c shall be full compensation for each square foot of rigid pavement placed within the prescribed limits as specified, so measured.

**ITEM 9  
REPLACEMENT OF CONCRETE CURBS**

**9.01 DESCRIPTION**

- A. Under these Items, the Contractor shall remove and replace concrete curbs and gutters as scheduled, shown on the Drawings and specified.

**9.02 WORK NOT INCLUDED**

- A. Curbs and gutters damaged or destroyed beyond the specified limits shall be replaced at the Contractor's expense.
- B. All pavement, driveways and sidewalks made of rigid pavement or aggregate shall be included under other Items.

**9.03 DEFINITION OF ITEMS**

- A. Item 9a - Curb Removed.
- B. Item 9b - Concrete Curb.

**9.04 MEASUREMENT & PAYMENT**

- A. The quantities to be paid for under these Items 9a and 9b shall be the length measured along the front of the curb or curb and gutter replaced, as specified and required.

**ITEM 10**  
**SEWER PIPE REPAIR**

**10.01 DESCRIPTION**

- A. Under these Items, the Contractor shall furnish and perform all work necessary for the installation of the sewer pipe as scheduled, shown on the Drawings and specified, in conformance with relevant sections of the Specifications.
- B. These Items shall include all work to install the sewers, including but not limited to the following: excavation; hauling excess spoil material from project site; backfill; compaction; bedding; pipe materials; fittings; maintenance of trenches; temporary pavement; connections to existing sewers; and related work such as performing material testing; deflection and infiltration tests.
- C. Connections of new sewers to existing sewers shall be included under these Items, unless specifically included under other Items.
- D. Maintaining existing sewers in operation and temporary flow stoppage, diversions and sewer flow by-pass connections shall be included under these Items.
- E. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed lawn areas shall be included under these Items, unless specifically included under other Items.
- F. The furnishing and placing of special backfill in areas excavated for this work included under these Items
- G. All repairs of existing utilities damaged, as a result of construction, are included under these Items. The repair of drainage pipes crossing the proposed pipes shall be considered incidental to these Items and is not specifically intended to be paid by these Items.
- H. Vertical pipe sections and riser pipes for 6-inch lateral sewers and cleanouts shall be included under these Items.

**10.02 WORK NOT INCLUDED**

- A. Pavement replacement within the Contract limits is included under other Items.
- B. Sewers installed to convey sewage around or through the work during construction will not be measured for payment.
- C. Damage to existing utilities shall be the responsibility of the Contractor.

**10.03 DEFINITION OF ITEMS**

- A. Item 10a - Sewer Repair (Less than or equal to 10-inch diameter).
- B. Item 10b - Sewer Repair (12-inch diameter and larger).

**10.04 MEASUREMENT & PAYMENT**

- A. The quantities to be paid for under these Items 10a and 10b shall be the horizontal length of pipe measured parallel to the axis of the line along the surface of the ground, with no deduction for laying length of fittings for the specified sizes and trench detail. The depth of the pipe shall be the average depth below the original ground surface of the pipe along a section between manholes.

**ITEM 11  
CATCH BASINS**

**11.01 DESCRIPTION**

- A. Under this Item, the Contractor shall perform all Work necessary for the construction, replacement or abandonment of catch basins as scheduled, shown on the Drawings, and specified herein.
- B. These Items shall include all Work to install the catch basins, including but not limited to the following: excavation; hauling excess spoil material from Site; backfill; compaction; bedding; pipe materials; fittings; connections to new and existing sewers; construction, maintenance and removal of temporary access to the Work area; and related Work such as performing material testing.
- C. All Work required to dewater trenches is included under these Items.
- D. Temporary supporting existing utilities, locating of existing utilities, exploratory excavation and backfill required by the utility owner for existing utilities encountered during construction is included under these Items.
- E. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed lawn areas shall be included under these Items, unless specifically included under other items.
- F. This item includes performing all Work necessary including but not limited to the materials and labor to reconnect leads to catch basins designated to be removed and replaced.

**11.02 WORK NOT INCLUDED**

- A. Pavement replacement within the Contract Limits is included under other Items.
- B. Sewer pipe, not including the catch basin lead, shall be included under the respective sewer pipe item.

**11.03 DEFINITION OF ITEM**

- A. Item 11 - Catch Basin Removed and Replaced.

**11.04 MEASUREMENT & PAYMENT**

- A. The quantities to be paid under Item 11 shall be the full compensation for each catch basin removed and replaced, furnished and installed in accordance with the Specifications and Drawings. A catch basin removed and replaced includes 3-feet of pipe for each connection.

**ITEM 12  
AUDIO-VIDEO RECORDING**

**12.01 DESCRIPTION**

- A. Under this Item, the Contractor shall produce and deliver to the Owner, color audio-video recordings of existing topography within the zone of influence along all sewer routes and audio-video recordings of designated buildings and dwellings as specified and directed.

**12.02 WORK NOT INCLUDED**

Not used.

**12.03 DEFINITION OF ITEM**

- A. Item 12 - Audio-Video Recording of the Zone of Influence.

**12.04 MEASUREMENT & PAYMENT**

- A. The quantities to be paid for under Item 12 shall be a lump sum for audio-video recording of the defined zone of influence along specified routes.

**ITEM 13  
MAINTENANCE OF TRAFFIC**

**13.01 DESCRIPTION**

- A. This Item shall include the furnishing and maintaining of measures required to maintain traffic through or around the proposed Work.
- B. This Item shall include detour routes as specified in the Contract Documents.

**13.02 WORK NOT INCLUDED**

Not used.

**13.03 DEFINITION OF ITEM**

- A. Item 13 - Maintenance of Traffic.

**13.04 MEASUREMENT & PAYMENT**

- A. The quantities to be paid for under Item 13 shall be lump sum for all maintenance of traffic measures.

**ITEM 14  
STORM WATER POLLUTION PREVENTION**

**14.01 DESCRIPTION**

- A. This Item shall include all Work specified in the SWPPP including preparation of a Storm Water Pollution Prevention Plan, installation, maintenance, and removal of all Storm Water Pollution Prevention measures.
- B. The weekly inspection and reporting of all Storm Water Pollution Prevention measures shall be included under this item.
- C. Obtaining permits and co-permittee coverage specified shall be included under this item.

**14.02 WORK NOT INCLUDED**

Not used.

**14.03 DEFINITION OF ITEM**

- A. Item 14 - Storm Water Pollution Prevention.

**14.04 MEASUREMENT & PAYMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 14.
- B. Payment shall be made in the amount of 20% of the lump sum Bid price for Item 14 for the first monthly estimate and 5% for each monthly estimate thereafter until the lump sum Bid amount for Item 14 has been paid.
- C. The Engineer may reduce the amount to be paid under Item 14 if the percentage requested is not represented by the actual amount performed.

**ITEM 15  
CLEARING AND GRUBBING**

**15.01 DESCRIPTION**

- A. This Item shall include all clearing and grubbing of lands required to complete the work as specified, shown in the Contract Documents and as directed by the Engineer.

- B. This work shall include, but not limited to, the complete removal of all vegetation including plants, shrubs, sod, agricultural crop residue, trimming and cutting of trees, removal of tree cuttings and stumps, scalping and the removal and disposal of all debris generated by the clearing and grubbing operation as specified and shown on the Drawings.
- C. This work shall include any incidental trimming or pruning of trees, foliage or other vegetation needed to complete the work. The removal of generated cuttings shall also be included in this Item.

**15.02 WORK NOT INCLUDED**

Not used.

**15.03 DEFINITION OF ITEM**

- A. Item 15 - Includes Clearing and Grubbing.

**15.04 MEASUREMENT & PAYMENT**

- A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 15.
- D. Payment shall be made in the amount of a percent of the lump sum Bid price for Item 15 consistent with the percentage of work completed.

**ITEM 16  
PAVEMENT MARKINGS**

**16.01 DESCRIPTION**

- A. Under this Item, Contractor shall replace the existing pavement markings scheduled for replacement, damaged or removed as part of the work. The location and type of pavement marking shall match the existing pavement markings in place prior to the commencement of the work.

**16.02 WORK NOT INCLUDED**

Not used.

**16.03 DEFINITION OF ITEM**

- A. Item 16 - Pavement Marking.

**16.04 MEASUREMENT & PAYMENT**

- A. The quantities to be paid for under Item 16 shall be lump sum for pavement markings in accordance with the Specifications and Drawings.

END OF SECTION



**SECTION 01043**  
**COORDINATION AND CONTROL OF THE WORK**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This section includes coordination and control of the Work.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Information for the Record:
    - a. Bypass Pumping plan and procedures.
    - b. Haul routes to and from Site.
    - c. Plan and procedures for any shut downs and bypass pumping.
    - d. Coordination drawings shall include, but not be limited to, all process piping including, but not limited to, bill of material, laying length, embedded conduit runs, and embedded plumbing lines.

**1.03 LINES AND GRADES**

- A. All Work under this Contract shall be built in accordance with the lines and grades shown on the Drawings or as altered or modified by authority of the Owner and Engineer.

**1.04 EXISTING STRUCTURES SHOWN ON DRAWINGS**

- A. Where underground and surface structures are shown on the Drawings, the location, depth, and dimensions of such structures are believed to be reasonably correct but are not guaranteed.
- B. Such structures are shown for the information of the Contractor, but information so given is not to be construed as a representation that such structures will in all cases be found or encountered just where shown, or that they represent all the structures which may be encountered.

**1.05 COOPERATION OF CONTRACTOR**

- A. The Contractor shall conduct his operations so as to interfere as little as possible with those of the Owner, other contractors, utilities, or any public authority on or near the Work.
- B. The Owner reserves the right to perform other Work by contract or otherwise, and to permit other public bodies, public utility companies, and others to do Work on or near the project during progress of the Work. If a conflict arises, the Owner will determine when and how the Work shall proceed.
- C. Claims for delay or inconvenience due to operations of such other parties on Work specified, shown on the Drawings, as directed or which can be reasonably expected to be encountered by the nature and location of the Work will not be considered.

- D. Operations entailing the use of construction equipment and lights outside the hours of 8:00 am and 5:00 pm or outside the hours allowed for construction by local ordinances or regulations.
- E. Closing off clear access to any public alley, street, road, avenue or boulevard without the prior consent of municipal officials and the Engineer is prohibited.
- F. Contractor and subcontractors are required under Ohio Revised Code Section 149.53 to Notify the Ohio Historical society and the Ohio Historic Site Preservation Board of archeological discoveries located in the project area and to cooperate with these entities in archeological and historical surveys.

**1.06 MAINTENANCE OF SANITARY SYSTEM DURING CONSTRUCTION**

- A. All construction which requires interruption of existing sanitary system flow shall be executed during periods designated by the Owner.
- B. Bypassing of untreated sanitary wastewater to any stream or body of water is prohibited.

**1.07 PERMANENT PAVEMENT AND FINAL RESTORATION**

- A. When construction is being done between April 15 and November 15, the final pavement restoration work shall be completed by November 15. When work is being performed between November 15 and April 15, temporary pavement as specified shall be provided. Final restoration of paved areas shall be completed within 30 days of the opening of asphalt plants for the season. The dates listed are intended to loosely define the period of operation of asphalt plants. Concrete pavement construction may continue beyond the dates listed with proper thermal protection as approved by the Owner.
- B. Pavement restoration shall include, but not limited to, replacement of pavement, driveways, and sidewalks.
- C. The fine grading, topsoil, and seeding operation shall be completed within 30 days of pavement restoration, unless weather conditions prevent such work from being completed.
- D. If at any time the pavement restoration and the fine grading, topsoil, and seeding operation does not meet the above conditions, no further mainline pipe construction will be permitted until the Contractor has completed restoration work to the satisfaction of the Engineer and Owner.
- E. In order to comply with the above conditions, the Contractor shall complete the pipeline and all appurtenances including, but not limited to, testing, in order to begin final pavement restoration and the fine grading, topsoil, and seeding operation.

**1.08 TEMPORARY PAVEMENT RESTORATION**

- A. The Contractor shall provide and maintain temporary pavement for all roads in which construction occurs. Temporary pavement shall be in accordance with Section 01565 and as shown on the drawings.

**1.09 TEMPORARY PARKING FACILITIES**

- A. No parking or staging area has been identified for this Work. The Contractor is expected to locate and obtain permission from private property owners for construction staging and parking.
- B. Parking spaces for the Contractor's personnel shall be provided and maintained in usable condition by the Contractor at all times. Provisions shall be made so that sediment is not tracked onto paved roadways from the vehicles operated by the Contractor's personnel.

**1.10 TEMPORARY WATER SERVICE**

- A. The source for temporary water can be from the District. The District shall furnish a meter and all backflow prevention devices with a deposit paid by the Contractor.
- B. There will be no charge for water used for the work and for the initial filling of the water main for testing and disinfection.

**1.11 DISPOSAL OF DEBRIS**

- A. All debris resulting from construction operations, i.e., packaging, waste materials, damaged equipment, etc., shall be trucked from the Site by the Contractor and disposed of at spoil sites.
- B. The Contractor shall police the hauling of debris to ensure that all spillage from haul trucks is promptly and completely removed from public or private rights-of-way.
- C. All debris shall be disposed of in accordance with federal, state, and local laws and regulations.

**1.12 CONTROL OF NOISE**

- A. The Contractor shall eliminate noise to as great an extent as possible at all times. Air compressors shall be equipped with silencers and the exhaust of all gasoline motors and other power equipment shall be provided with mufflers. In the vicinity of hospitals, libraries, and schools, precautions shall be taken to avoid noise and other nuisance, and the Contractor shall require strict observances of all pertinent ordinances and regulations. Any blasting permitted in such locations shall be done with reduced charges.

**1.13 DUST DEBRIS AND SMOKE PREVENTION**

- A. Strict compliance with all ordinances regulating the production and emission of smoke will be required.
- B. Contractor shall control debris and dust in accordance with Section 01568.
- C. The Owner may require additional dust control measures during dry weather.
- D. The Contractor shall accept full responsibility for all damage that may occur to property as a result of negligence in providing required control.

**1.14 SANITARY REGULATIONS**

- A. The Contractor shall provide all necessary housing accommodations for the workers for changing clothes and for protection during inclement weather. Toilet accommodations shall also be

maintained for the use of the employees on the Work. The accommodations shall be in approved locations, properly screened from public observance and shall be maintained in a strictly sanitary manner.

- B. The Contractor shall obey and enforce all other sanitary regulations and orders; shall take precautions against infectious diseases and the spread of same; and shall maintain at all times satisfactory sanitary conditions around all shanties, tool and supply houses, and on all other parts of the Work.

**1.15 RESERVED**

**1.16 EMERGENCY MAINTENANCE SUPERVISOR**

- A. The Contractor shall submit to the Engineer the names, addresses, and telephone numbers of two employees responsible for performing emergency maintenance and repairs when the Contractor is not working, See GC 2.04 and 7.01. These employees shall be designated in writing by the Contractor to act as his representative and shall have full authority to act on his behalf.
- B. Contractor shall post at job Site, in a conspicuous location, the emergency numbers for the project.
- C. Contractor shall be responsible for contacting the local fire, police, and emergency response personnel and organizations in advance of the Work. The Contractor shall be responsible for the coordination and compliance with emergency response plans, whether developed by the governing agency, laws, or the Contractor for the project.
- D. At least one of the designated employees shall be available for a telephone call any time an emergency arises.

**1.17 PUBLIC SERVICE STRUCTURES**

- A. Public service structures shall be understood to include all poles, tracks, pipes, wires, conduits, house-service connections, vaults, manholes, and other appurtenances, whether owned or controlled by the Owner or other public bodies or by privately-owned corporations, used to supply the public with transportation, heating, electric, telephone, gas, water, sewer, or other services.
- B. At least a week in advance of breaking ground, the Contractor shall notify the registered underground protection service, all public bodies, and other owners of such facilities of the proposed location of his operations, advising them that their property may be affected and that such measures as they may deem necessary should be promptly taken to protect, adjust, remove, or build them.
- C. In developed residential and commercial areas, the Contractor shall assume each building and dwelling has water and sewer services and that they shall be protected and repaired as needed as part of the pipeline installation. No additional payment will be made for Work associated with supporting or repairs of such services.
- D. Three conditions which may be encountered will be dealt with as follows:

1. Structures which are adjacent to but not included within the limits of an excavation required for performance of the Work shall be protected, supported, and maintained in service by the Contractor at his expense.
2. Structures within the limits of the Work which can be satisfactorily supported and maintained in service and which do not require removal and rebuilding in the judgment of the Engineer shall be thus supported by the Contractor at his expense, including cost of repair of damage incident to his operations.
  - a. Supports for water and gas mains, sewers, conduits, and similar structures shall be constructed of timber or other acceptable materials; shall be supported from undisturbed foundations, and shall be sufficiently substantial to ensure against settlement when pipe trenches or other excavations are backfilled. In all cases where permits or inspection fees are required by utilities in connection with changes to or temporary support of their conduits, the Contractor shall secure such permits and pay all permit and inspection fees.
  - b. The Contractor shall assume full responsibility for maintaining all public service structures in service and shall support and protect, or remove and rebuild them at his own expense. Such services shall not be interrupted without permission of the owner of the public service structure.
3. In case relocation of pipelines or other utility structures is required because of direct interference, as determined jointly by the Owner, Engineer, and Contractor, with the installation of the Work, the Contractor shall notify the Owners of the utility structure involved.
  - a. The Contractor will not be reimbursed for the cost of the relocation if the interference is shown on the Drawings, described in the Specifications, apparent on visual inspection, or specifically included in the Work to be performed by the Contractor.
  - b. The Contractor will not be paid for time lost because of such direct interference. Where it is the policy of any utility owner to perform such Work with his own forces, the Contractor shall cooperate to the fullest extent with such utility owner.

#### **1.18 UNAUTHORIZED OR PROHIBITED WORK**

- A. Work done beyond the lines shown on the Drawings or ordered, Work done without required inspection, except as herein provided, or any extra work done without authority will be considered as unauthorized and will not be paid for under the provisions of the Contract. Work so done may be ordered removed at the Contractor's expense. Work done without lines and grades being given shall be considered as unauthorized and subject to rejection.
- B. Disposing of excess or unsuitable materials, including but not limited to excavated material, demolition debris, clearing and grubbing debris, in wetlands or flood plains.
- C. Locating stock piles in environmentally sensitive areas.

- D. Pumping of sediment-laden water from trenches or excavations directly into any surface waters, stream, wetlands, or sewers. Pumped water shall be properly filtered and desilted prior to discharge.
- E. Open burning without a permit.
- F. Discharging injurious silica dust concentrations into the atmosphere within 200 feet of any residential or commercial, or public or private places of human occupancy.

#### **1.19 DRAINING OF TANKS AND PIPELINES**

- A. Unless otherwise indicated, tanks, pipelines, and other similar structures that are to be removed from service, to complete the Work will be initially drained by the Owner.
- B. Draining will be by gravity or by a permanently installed pump, if available.
- C. After the tank has been drained by the Owner to the lowest level possible with existing means for drainage, the Contractor shall remove and dispose of remaining liquid and accumulated solids, as required to complete the Work.

#### **PART 2 PRODUCTS**

Not used.

#### **PART 3 EXECUTION**

Not used.

#### **PART 4 SPECIAL PROVISIONS**

##### **4.01 REQUIRED SAFETY DOCUMENTATION TO BE SUBMITTED**

- A. The Contractor shall be expected to perform the work in accordance with the requirements of the Northwestern Water and Sewer District's Safety Program. The safety program documentation is included in the specification under 01043 section.

##### **4.02 UTILITY STRUCTURES AND POLES**

- A. The Contractor shall be responsible for the cost and coordination required for the temporary support required for all utility poles or utility structures above or below grade inside the work limits.

##### **4.03 SUBGRADE INVESTIGATION**

- A. The Contractor shall be aware that a detail subgrade investigation has not been performed prior to the work. The Contractor is expected to make the necessary investigations sufficient for the Contractor to submit a bid for the work.

##### **4.04 COORDINATION WITH OUTSIDE ENTITIES**

- A. The Contractor shall contact emergency services, schools, and trash collection to coordinate access to the work area.

- B. The Contractor shall provide a door hanger notice to residents and businesses of the status of the work ahead of the work.

#### **4.05 NORFOLK SOUTHERN RAILROAD CROSSING**

- A. Contractor shall be responsible for performing the watermain crossing under railroads in accordance with the Norfolk Southern requirements.
- B. Included in the project specifications following this section are the Norfolk Southern Corporation Property Pipeline Occupancy Specification.
- C. The Owner shall handle the charges required by Norfolk Southern representative for flagging and construction monitoring services.
- D. Contractor shall install a weatherproof, durable sign over the centerline of the pipe near Norfolk Southern R/W lines on both sides of the railroad track. Signs shall show the following:
  - 1. Name and address of the District
  - 2. Contents of pipe
  - 3. Pressure in pipe
  - 4. Emergency telephone number

#### **4.06 CONNECTION TO EXISTING WATER MAINS**

- A. The Owner wishes to connect the new water mains to existing water mains by closing valves upstream of the area.
- B. The Contractor is asked to provide a minimum of 2 weeks notice to the owner in advance of all shutdowns of District Watermains, to permit the District to check valves and notify customers of outages.
- C. The Owner cannot guarantee that the shutdown will be complete and some water should be expected to leak at existing valves. The Contractor should be prepared to manage water leaking past existing valves to perform the work.

#### **4.07 PRIVATE PROPERTY**

- A. The Contractor shall coordinate with the Owner for work on private property prior to commencement of work.
- B. The Owner has notified property owners in the area of the Work of this project.

END OF SECTION





**SPECIFICATIONS**

**FOR**

**PIPELINE OCCUPANCY**

**OF**

**NORFOLK SOUTHERN CORPORATION**

**PROPERTY**



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## **Specifications for Pipeline Occupancy of Norfolk Southern Property**

### **1.0 GENERAL**

#### **1.1 Scope**

- A.** This specification shall apply to the design and construction of pipelines carrying flammable or non-flammable substances. This specification shall also apply to tracks owned by others (sidings, industry tracks, etc.) over which NS operates its equipment.
- B.** It is to be clearly understood that NS owns its right-of-way for the primary purpose of operating a railroad. All occupancies shall therefore be designed and constructed so that rail operations and facilities are not interfered with, interrupted or endangered. In addition, the proposed facility shall be located to minimize encumbrance to the right-of-way so that the railroad will have unrestricted use of its property for current and future operations.

#### **1.2 Definitions**

- A. NS** - Norfolk Southern Corporation
- B. Applicant** - Individual, corporation or municipality desiring occupancy of NS property
- C. Professional Engineer** - Engineer licensed in the state where the facilities are to be constructed
- D. Carrier Pipe** - Pipe used to transport the product
- E. Casing Pipe** - Pipe through which the carrier pipe is installed
- F. Sidings or industry tracks** - Tracks located off NS's right-of-way, serving an industry

#### **1.3 Application for Occupancy**

- A.** Individuals, corporations, or municipalities desiring occupancy of NS property by pipeline occupations must agree, upon approval of the engineering and construction details by NS, to execute an appropriate NS occupational license and pay any required fees and/or rentals specified therein.
- B.** The application process and guidelines for a pipeline crossing occupancy can be found at [www.nscorp.com](http://www.nscorp.com), then follow links for "Customers", "Real Estate", "Wireline/Pipeline and Fiber Optics"
- C.** All applications shall be submitted through the web based application portal at <https://ns.railprospersmitting.com> with a PDF copy of all design and construction plans, and a PDF copy of all specifications and engineering computations for the proposed occupancy. On extensive projects, only those plans involving work on, or affecting NS property and operations, shall be submitted. Included shall be a plan showing the extent of the total project upon which that portion of the work affecting NS is clearly defined.
- D.** All of the above plans, specifications and computations must be prepared by and bear the seal of a Professional Engineer licensed in the state the project is located.

## 1.4 Right of Entry

- A. No entry upon NS property for the purpose of conducting surveys, field inspections, obtaining soils information or any other purposes associated with the design and construction for the proposed occupancy, will be permitted without a proper entry permit prepared by NS. The applicant must pay the associated fees and execute the entry permit.
- B. It is to be clearly understood that the issuance of an entry permit does not constitute authority to proceed with any construction. Construction cannot begin until a formal agreement is executed by NS and the applicant receives permission to proceed with the work, from the designated construction monitoring agency of NS.
- C. The application for a Right of Entry permit shall be obtained at [www.nscorp.com](http://www.nscorp.com), then follow links for Real Estate > NS Services > Access NS Property.

## 1.5 Site Inspection

- A. For longitudinal occupancy of NS property a site inspection along the proposed pipeline route may be required before final design plans are prepared. When a site inspection is required, the applicant and/or his engineer must meet with representatives of NS to view the entire length of the proposed occupancy.
- B. Prior to the site inspection the applicant must submit the following information through the application portal:
  - (1) A plan view of the proposed route showing all tracks, both NS right-of-way lines and all other facilities located on the right-of-way. The distance from the proposed pipeline to the adjacent track and to the right-of-way lines must be shown.
  - (2) A complete "Pipe Data Sheet" (See Plate I)
  - (3) Typical cross sections along the proposed route. (See Plate V)
- C. Site inspections for pipe crossings are not required unless, in the opinion of NS, the size and location of the facility warrant an inspection.

## 1.6 Information Required for Submission

### 1.6.1 Plans and Computations

- A. Plans for proposed pipeline occupancies shall be submitted to and approved by NS prior to NS issuance of an agreement and start of construction.
- B. **Plans are to be prepared in 11" x 17" size and submitted in a PDF format. Failure of the applicant to comply with these requirements may be sufficient cause for rejection of the application.**
- C. Plans shall be drawn to scale, dimensioned with US Customary Units, and shall include the following (See Plates I to IX):
  - (1) Plan view of proposed pipeline in relation to all NS facilities and facilities immediately adjacent to



NS including, but not limited to, tracks, buildings, signals, pole lines, other utilities and all other facilities that may affect or influence the pipeline design and construction. (See Plate II)

- (2) The location, in feet, of the pipe crossing from the nearest centerline of an NS bridge, giving the NS bridge number. If the above is not available, provide distance to the nearest highway grade crossing of the railroad and the DOT number posted at the highway grade crossing, if available.
- (3) In all cases, the name of the State and County in which the proposed facilities are located must be shown. In States where Townships, Ranges and Sections are used, show the distance in feet to the nearest Section line and identify the Section number, Township and Range.
- (4) The profile of the ground above the centerline of the pipe, from field survey, showing relationship of the pipeline and/or casing pipe to the ground levels, the tracks and other facilities, (See Plate III). For longitudinal occupations, the top of rail profile of the adjacent track shall be shown on the pipeline profile, (see Plate IV).
- (5) All NS property lines indicated by dimensions, in feet, to the centerline of adjacent track, as well as the overall width of the NS right-of-way. If the pipeline is in a public highway, the limits of the dedicated highway right-of-way, as well as the limits of any paving, sidewalks etc., shall be defined, by dimensions in feet, from the centerline of the dedicated right-of-way,
- (6) The angle of the crossing in relation to the centerline of the tracks(s). (See Plate II)
- (7) On pipelines having valves, the distance in feet along the pipeline from the crossing to the nearest valves and/or control stations.
- (8) A separate "Pipe Data Sheet" (See Plate I) shall be submitted on an 8 ½" x 11" sheet, for each crossing.

**D.** The plan shall be specific, on NS property and under tracks that are not on NS property, as to the:

- (1) Method of installation. (See Section 5.1)
- (2) Size and material of the casing pipe. (See Section 4.3)
- (3) Size and material of the carrier pipe. (See Section 4.4)

These items **cannot** have an alternative and any application that is received that indicates options in any of the above items **will not be processed.**

- E.** Once the application has been approved by NS, no variance from the plans, specifications, method of installation, construction, etc., as approved in the occupancy document, will be considered or permitted without the payment to NS of additional fees for the re-processing of the application.
- F.** All plans and computations associated with the work under the agreement shall be prepared by, and bear the seal of, a licensed Professional Engineer in the state where the work will take place. If not so imprinted, the application will be given no further consideration. This requirement also applies to all data submitted by the applicant's contractor. Contractor's plans and computations that are not stamped will be returned and construction will not be permitted to proceed.

## **1.6.2 Specifications**

- A. Project specifications, for all work on and affecting the NS right-of-way, shall be included with the submission. All pertinent requirements of this document shall be included.

## **1.7 Notification to Proceed with Construction**

- A. After approval of the engineering plans and specifications and execution of the occupational agreement, the applicant will be notified of the appropriate NS representative that must be contacted prior to start of construction. The NS representative will coordinate all other construction aspects of the project that relate to NS, including but not limited to, construction monitoring, flagging, track work, and protection of signal cables.

## **2.0 GENERAL REQUIREMENTS**

### **2.1 Use of a Casing Pipe**

- A. A casing pipe will be required for all pipeline crossings carrying liquid flammable or non-flammable substances under pressure.
- B. For flammable and nonflammable gas pipelines the casing pipe may be omitted provided the carrier pipe meets the requirements provided in the AREMA Manual Chapter 1, Part 5, Section 5.2.3. NS may require use of a casing pipe at locations where increased risks from specific site conditions (track speed, traffic density, etc.) are present.
- C. Pressure pipelines that do not cross under the track but are located within 30 feet of the centerline of any track or closer than 45 feet to nearest point of any bridge, building or other important structure, shall be encased.
- D. The casing pipe shall be laid across the entire width of the right-of-way, except where a greater length is required to comply with Section 4.3.1.F. of this specification, even though such extension is beyond the right-of-way. For non-pressure sewer or drainage crossing, where a casing is used for carrier pipe installation purposes only, the casing need only to extend from the boring pit to the receiving pit.

### **2.2 Location of Pipeline on the Right-of-Way**

- A. Pipelines laid longitudinally on NS right-of-way shall be located as far as practicable from any tracks or other important structures and as close to the railroad property line as possible. Longitudinal pipelines must not be located in earth embankments or within ditches located on the right-of-way.
- B. Pipelines shall be located, where practicable, to cross tracks at approximate right angles to the track, but preferably at not less than 45 degrees.
- C. Pipelines shall not be placed within a culvert, under railroad bridges, nor closer than 50 feet to any portion of any railroad bridge, building, or other important structure, except in special cases, and then by special design, as approved by NS Engineering.
- D. Pipelines shall not be located within 50 feet of a turnout (switch) when crossing the track. The limits of the turnout extend from the point of the switch to the last long timber.
- E. Pipeline shall not be located within 50 feet of a control point area. The limits of the control point area are governed by the signal system regulating the control point.

- F. Pipeline installations shall not be designed as an open cut installation where the pipeline is to be located within the limits of a grade crossing. If it is shown that no other method of installation is possible, the applicant will be responsible for reimbursing NS for all costs associated with the removal and reconstruction of the grade crossing.
- G. Pipelines carrying liquefied petroleum gas shall, where practicable, cross the railroad where tracks are carried on embankment.
- H. Longitudinal uncased gas pipelines must not be located within 30 feet of any track.

## **2.3 Depth of Installation**

### **2.4.1 Pipelines Conveying Non-Flammable Substances**

- A. Casing/carrier pipes placed under NS track(s) shall be not less than 5 ½ feet from base of rail to top of pipe at its closest point, except that under sidings or industry tracks this distance may be 4 ½ feet as approved by NS. On other portions of the right-of-way, where the pipe is not directly beneath any track, the depth from ground surface will be 4 feet or from bottom of ditch to top of pipe shall not be less than 3 feet.
- B. Pipelines laid longitudinally on NS right-of-way, 50 feet or less from centerline track, shall be buried not less than 4 feet from ground surface to top of pipe. Where the pipeline is laid more than 50 feet from centerline of track, the minimum cover shall be at least 3 feet.

### **2.4.2 Pipelines Conveying Flammable Substances**

- A. Casing pipes under NS track(s) shall be not less than 5 ½ feet from base of rail to top of pipe at its closest point, except that under sidings or industry tracks this distance may be 4 ½ feet as approved by NS. On other portions of the right-of-way, where the pipe is not directly beneath any track, the depth from ground surface will be 4 feet or from bottom of ditch to top of pipe shall not be less than 3 feet.
- B. Uncased gas pipelines, under NS track(s), shall not be less than 10 feet from the base of rail to the top of the pipe at its closest point. At all other locations where crossing the right-of-way, the minimum ground cover must be 6 feet. Where it is not possible to obtain the above depths, use of a casing pipe will be required.
- C. Pipelines laid longitudinally on NS's right-of-way, 50 feet or less from centerline track, shall be buried not less than 6 feet from ground surface to top of pipe. Where the pipeline is laid more than 50 feet from centerline of track, the minimum cover shall be at least 5 feet.

## **2.4 Pipelines Within Limits of a Dedicated Highway**

- A. Pipelines within the limits of a dedicated highway are subject to all the requirements of this specification and must be designed and installed in accordance with them.
- B. The limits of the dedicated highway (right-of-way) must be clearly shown on the plans.
- C. Construction cannot begin until an agreement has been executed between NS and the applicant and proper notification has been given to NS's authorized representative. (See Section 1.7)
- D. Pipelines shall maintain a minimum horizontal clearance of 4-feet, or if within 4-feet, a minimum vertical clearance of 10-feet from the base of any railroad signal apparatus.

## **2.5 Modification of Existing Facilities**

- A. Any replacement or modification of an existing carrier pipe and/or casing shall be considered as a new installation, subject to the requirements of this specification.

## **2.6 Abandoned Facilities**

- A. The owner of all abandoned pipe crossings and other occupancies shall notify NS in writing of the intention to abandon. The owner of pipe crossings and other occupancies shall submit to NS a request to abandon through the application portal and shall include its abandonment plans.
- B. Abandoned pipelines shall be removed or completely filled with cement grout, compacted sand or other methods as approved by NS.
- C. Abandoned manholes and other structures shall be removed to a minimum distance of 3 feet below finished grade and completely filled with cement grout or compacted sand.

## **2.7 Conflict of Specifications**

- A. Where laws or orders of public authority prescribe a higher degree of protection than specified herein, then the higher degree so prescribed shall be deemed a part of this specification.

## **2.8 Insulation**

- A. Pipelines and casings shall be suitably insulated from underground conduits carrying electric wires on NS property.

## **2.9 Corrosion Protection and Petroleum Leak Prevention**

- A. Pipelines on NS property that carry petroleum products or hazardous liquids shall be designed in accordance with current federal, state and/or local regulations that mandate leak detection automatic shutoff, leak monitoring, and sacrificial anodes and/or exterior coatings to minimize corrosion and prevent petroleum releases.

## **3.0 SOIL INVESTIGATION**

### **3.1 General**

- A. Test borings or other soil investigations approved by NS shall be made to determine the nature of the underlying material for all pipe crossings 60 inches in diameter and larger under track(s). (See section 1.4 relative to procedures)
- B. Test borings or other soil investigations, approved by NS, may be required when, in the judgement of NS, they are necessary to determine the adequacy of the design and construction of pipe crossings less than 60 inches in diameter and for other facilities located on the right-of-way.

### **3.2 Location**

- A. Borings shall be made on each side of the track(s), on the centerline of the pipe crossing, and as close to the track(s) as practicable. (See Section 1.4 relative to procedures)

- B. Test boring logs shall be accompanied with a plan, drawn to scale, showing the location of the borings in relation to the track(s) and the proposed pipe.

### 3.3 Sampling

- A. Test borings shall be conducted by a qualified firm using current methods approved by ASTM for soil sampling. Boring logs and soil data shall be accompanied by an analysis of the pertinent soil characteristics and their impact on the project as it relates to the railway by a certified Geologist or licensed Professional Engineer

### 3.4 Boring Logs

- A. Test boring logs shall clearly indicate all of the following:
  - (1) Boring number as shown on the required boring location plan.
  - (2) Ground elevation at each boring using same datum as the pipeline construction plans.
  - (3) Engineering description of soils or rock encountered.
  - (4) Depth and percent recovery of all soil samples.
  - (5) Depth from surface for each change in strata.
  - (6) Blows for each 6 inches (152mm) of penetration for the standard penetration test described in ASTM D 1586. Blows for lesser penetrations should be recorded.
  - (7) Percent recovery and Rock Quality Designation (RQD) for all rock cores.
  - (8) Depth to ground water while sampling and when it has stabilized in the bore hole.
- B. The location of the carrier pipe and/or casing pipe shall be superimposed on the boring logs before submission to NS.
- C. All borings shall be sealed, for their full depth, with a 4-3-1 bentonite-cement-sand grout after accurate ground water readings have been taken and recorded.
- D. Soil samples taken from auger vanes or return washwater are not acceptable.

### 3.5 Additional Information

- A. When directed by NS, additional borings may be required for the purpose of taking undisturbed thin-wall piston samples or Dennison type samples for laboratory testing to determine the index and engineering properties of certain soil strata.
- B. The geotechnical report shall assess the risk of frac-out. Information required to evaluate such a risk includes but not limited to the following:
  - (1) Maximum allowable fluid pressure
  - (2) Minimum depth of bore
  - (3) Expected drilling fluid pressure
  - (4) Pressure exerted by overburden
  - (5) Potential for type of soil to have fissures

## 4.0 DESIGN REQUIREMENTS

### 4.1 Design Loads

#### 4.1.1 General Requirements

- A. All pipes, manholes and other facilities shall be designed for the external and internal loads to which they will be subjected.
- B. To allow for placement of additional track(s) or shifting of the existing track(s), all proposed pipelines or structures shall be designed as if a railroad loading is directly above the facility.

#### 4.1.2 Earth Load

- A. The dead load of the earth shall be considered as 120 pounds per cubic foot unless soil conditions warrant the use of a higher value.

#### 4.1.3 Railroad Load (Live Load Impact)

- A. The railroad live load used shall be a Cooper E-80 loading. This loading consists of 80 kip axle loads spaced 5 feet on centers.
- B. An impact factor of 1.75 (multiply live load by the impact factor) shall be used for depth of cover up to 5 feet. Between 5 and 30 feet, the impact factor is reduced by 0.03 per foot of depth. Below a depth of 30 feet, the impact factor is one.
- C. The values shown in Table shall be used for the vertical pressure on a buried structure for the various heights of cover.

**Table 1**

Live loads, including impact, for various heights of cover for a Cooper E-80 loading.

Height of Cover	Load
Feet	lb/sq ft
2	3800
3	3150
4	2850
5	2550
6	2250
7	1950
8	1700
9	1500
10	1300
12	1000
14	800
16	625
18	500
20	400
25	250
30	150

- D.** To determine the horizontal pressure caused by the railroad loading on a sheet pile wall or other structure adjacent to the track, the Boussinesq analysis shall be used. The load on the track shall be taken as a strip load with a width equal to the length of the ties, 8 ½ feet . The vertical surcharge,  $q$  (psf), caused by each axle, shall be uniform and equal to the axle load divided by the tie length and the axle spacing, 5 feet . For the E-80 loading results in;

$$Q = 80,000 / (8.5 \times 5) = 1882 \text{ psf.} \quad (q = 356 / (2.591 \times 1.524) = 90.1 \text{ kPa})$$

The horizontal pressure due the live load surcharge at any point on the wall or other structure is  $p_h$  and can be calculated by the following:

$$p_h = (2q/\pi) (\beta - \sin \beta (\cos 2\alpha)) \quad (\text{See PLATE IX})$$

- E.** The vertical and horizontal pressures given above shall be used unless an alternate design method is approved by NS. Proposals to use an alternate design method must include acceptable references and a statement explaining the justification for choosing the alternate method.

## 4.2 Design Assumptions

- A.** To design a casing pipe or an uncased carrier pipe for the external loads on NS's right-of-way, the following design assumptions shall be used, unless site conditions indicate more conservative values are required:

**B.** Flexible Pipe (Steel, DIP, CMP, Tunnel Liner Plate)

(1) Steel Pipe (Bored and jacked in place)

- Spangler's Iowa formula shall be used for design with:
  - (a) Deflection lag factor -  $D_9 = 1.5$
  - (b) Modulus of soil reaction -  $E' = 1080 \text{ psi}$
  - (c) Bedding constant -  $K_b = 0.096$
  - (d) Soil loading constant -  $K_{u'} = 0.13$
  - (e) Allowable deflection of pipe - 3% of pipe diameter

(2) Ductile Iron Pipe (Open Cut)

- ANSI Specification A 21.50 shall be used for design with:
  - (a) Pipe laying condition = type 3 (see Sec. 5.1.2 for backfill requirements on RR R/W)
  - (b) Earth load – ANSI A 51.50 prism method

(3) Corrugated Steel Pipe & Corrugated Structural Steel Plate Pipe (Open Cut)

- AREMA Chapter 1, Part 4, Sections 4.9 & 4.10 shall be used for design with:
  - (a) Soil stiffness factor -  $K = 0.33$
  - (b) Railroad impact as per Section 4.1.3b. of this specification

(4) Tunnel Liner Plate (Tunneled)

- AREMA
  - (a) Soil stiffness factor -  $K = 0.33$
  - (c) Railroad impact as per Section 4.1.3.b. of this specification.

## 4.3 Casing Pipe

### 4.3.1 General Requirements

- A. Casing pipe shall be so constructed as to prevent leakage of any substance from the casing throughout its length, except at ends of casing where ends are left open, or through vent pipes when ends of casing are sealed. Casing shall be installed so as to prevent the formation of a waterway under the railroad, and with an even bearing throughout its length, and shall slope to one end (except for longitudinal occupancy).
- B. The casing pipe and joints shall be of steel and of leakproof construction when the pipeline is carrying liquid flammable products or highly volatile substances under pressure.
- C. The inside diameter of the casing pipe shall be such as to allow the carrier pipe to be removed subsequently without disturbing the casing or the roadbed. For steel pipe casings, the inside diameter of the casing pipe shall be at least 2 inches greater than the largest outside diameter of the carrier pipe joints or couplings, for carrier pipe less than 6 inches in diameter; at least 4 inches greater for carrier pipe 6 inches and over in diameter.
- D. A maximum vertical deflection of the casing pipe of 3 percent of its diameter, plus ½ inch clearance shall be provided so that no loads from the roadbed, track, traffic or casing pipe itself are transmitted to the carrier pipe. When insulators are used on the carrier pipe, the inside diameter of the flexible casing pipe shall be at least 2 inches greater than the outside diameter of the carrier pipe for pipe less than 8 inches in diameter; at least 3 ¼ inches greater for pipe 8 inches to 16 inches, inclusive, in diameter and at least 4 ½ inches greater for pipe 18 inches and over in diameter.
- E. The casing pipe diameter shall not be larger than is necessary to permit the insertion of the carrier pipe.
- F. Casing pipe under railroad tracks and across NS's right-of-way shall extend the **greater** of the following distances, measured at right angle to centerline of track:
  - (1) Across the entire width of the NS right-of-way
  - (2) 3 feet beyond ditch line
  - (3) 2 feet beyond toe of slope
  - (4) A minimum distance of 30 feet from each side of centerline of outside track when casing is sealed at both ends.
  - (5) A minimum distance of 45 feet from centerline of outside track when casing is open at both ends.
  - (6) Beyond theoretical railroad embankment line. This line begins at a point, on existing grade, 14 feet horizontally from centerline track and extends downward on a 2 (H) to 1 (V) slope. (See Plate III)  
The 14 feet is measured from 19 inches below the base of the rail.
- G. If additional tracks are constructed in the future, the casing shall be extended correspondingly at the applicant's expense.

### 4.3.2 Steel Pipe

- A. Steel pipe may be installed by open cut, boring or jacking.
- B. Steel pipe shall have a specified minimum yield strength, SMYS, of at least 35,000 psi . The ASTM or API specification and grade for the pipe are to be shown on the Pipe Data Sheet (Plate I).
- C. Joints between the sections of pipe shall be fully welded around the complete circumference of the pipe.



- D.** In situations where the applicant can demonstrate a situational need, interlocked joints (commonly known as “Permalok” joints) may be considered in place of fully welded joints. Submissions shall include an engineering analysis of the suitability of the proposed interlocked joint for railroad loading and jacking stresses in the given soil.
- E.** Steel casing pipe, with a minimum cover of 5 ½ ft., shall have a **minimum** wall thickness as shown in Table 2, unless computations indicate that a thicker wall is required.

**Table 2**

Pipe Diameter	Cathodically Protected	Uncoated and Unprotected
Nominal Pipe Size	Nominal Wall Thickness	Nominal Wall Thickness
Inches	Inches	Inches
10 and under	0.188	0.188
12 & 14	0.188	0.250
16	0.219	0.281
18	0.250	0.312
20 & 22	0.281	0.344
24	0.312	0.375
26	0.344	0.406
28	0.375	0.438
30	0.406	0.469
32	0.438	0.500
34 & 36	0.469	0.532
38	0.500	0.562
40	0.531	0.594
42	0.562	0.625
44 & 46	0.594	0.657
48	0.625	0.688
50	0.656	0.719
52	0.688	0.750
54	0.719	0.781
56 & 58	0.750	0.812
60	0.781	0.844
62	0.812	0.875
64	0.844	0.906
66 & 68	0.875	0.938
70	0.906	0.969
72	0.938	1.000

- F. Coated steel pipe that is bored or jacked into place shall conform to the wall thickness requirements for uncoated steel pipe since the coating may be damaged during installation.
- G. Smooth wall steel pipes with a nominal diameter over 72 inches will not be permitted.

#### 4.3.3 Corrugated Steel Pipe and Corrugated Structural Steel Plate Pipe

- A. Corrugated steel pipe and corrugated structural steel plate pipe may be used for a casing only when placed by the open cut method. Jacking or boring through the railroad embankment is not permitted.
- B. Corrugated steel pipe and corrugated structural steel plate pipe may be used for a casing provided the pressure in the carrier pipe is less than 100 psi.
- C. Pipe shall be bituminous coated and shall conform to the current American Railway Engineering and Maintenance-of-Way Association Specifications Chapter 1, Part 4.
- D. Corrugated steel pipe shall have a minimum sheet thickness as shown in Table 4. Corrugated structural steel plate pipe shall have a minimum plate thickness of 8 gage, 0.168 in. If computations indicate that a greater thickness is required, the thicker sheet or plate shall be used.

**Table 4**

Pipe Diameter		Sheet Thickness
Inches	Gage	Inches
12 to 30	14	0.079
36	12	0.109
42 to 54	10	0.138
60 to 120	8	0.168

#### 4.3.4 Steel Tunnel Liner Plates

- A. Liner plates shall be installed by the tunneling method as detailed in Section 5.15 of this specification.
- B. Tunnel liner plates shall be galvanized and bituminous coated and shall conform to current AREMA Specification Chapter 1, Part 4, Section 4.16. If the tunnel liner plates are used only to maintain a tunneled opening until the carrier pipe is installed, and the annular space between the carrier pipe and the tunnel liner is completely filled with cement grout within a reasonably short time after completion of the tunnel, then the tunnel liner plates need not be galvanized and coated.
- C. Tunnel liner plates are to be a minimum of 12 gage and shall be fabricated from structural quality, hot-rolled, carbon-steel sheets or plates conforming to ASTM Specification A 569.
- D. The following liner plate information must be shown on the Pipe Data Sheet (plate I):
  - (1) Number of flanges (2 or 4)
  - (2) Width of plate
  - (3) Type of plate (smooth or corrugated)

#### **4.3.5 Concrete Encasement**

- A. At locations where the installation is by open cut and a casing pipe is required but cannot be installed due to elbows or other obstructions, concrete encasement may be used when approved by NS.
- B. The concrete encasement must provide a minimum cover of 6 inches of concrete around the pipe. A 6 x 6 – W 2.9 x W 2.9 (152 x 152 MW 18.7 x MW 18.7) welded wire fabric shall be placed in the concrete on all sides.

### **4.4 Carrier Pipe**

#### **4.4.1 General Requirements**

- A. The pipe shall be laid with sufficient slack so that it is not in tension.
- B. Steel pipe shall not be used to convey sewage, storm water or other liquids which could cause corrosion.
- C. Carrier pipes which are not encased and are located on NS's right-of-way or under tracks which NS operates, shall be manufactured in accordance with the following specifications:
  - (1) Steel Pipe – The ASTM or API specification and grade for the pipe is to be shown on the Pipe Data Sheet. The specified minimum yield strength is to be at least 35,000 psi (241 MPa). For flammable substances see Sections 4.42 and 4.43 for additional requirements.
  - (2) Ductile Iron Pipe – ANSI A21.51/AWWA C151
  - (3) Corrugated Metal Pipe – AREMA Chapter 1, Part 4
- D. Carrier pipes installed within a casing pipe shall be designed for the internal pressure to which it will be subjected.
- E. Gravity flow carrier pipes, installed without a casing pipe, shall meet the requirements, of the particular pipe material, as given in Section 4.3 of this specification.

#### **4.4.2 Pipelines Carrying Flammable Substances**

- A. Pipelines carrying oil, liquefied petroleum gas and other flammable liquid products shall be of steel and conform to the requirements of the current ANSI B 31.4 Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols, and other applicable ANSI codes, except that the maximum allowable stresses for design of steel pipe shall not exceed the following percentages of the specified minimum yield strength (multiplied by the longitudinal joint factor) of the pipe as defined in the above codes:
  - (1) The following percentages apply to hoop stress in steel pipe within a casing under railroad tracks, across NS right-of-way and longitudinally on NS right-of-way:
    - (a) Seventy-two percent on oil pipelines.
    - (b) Fifty percent for pipelines carrying condensate, natural gasoline, natural gas liquids, liquefied petroleum gas, and other liquid petroleum products.
    - (c) Sixty percent for installations on gas pipelines.

(2) The following percentages apply to hoop stress in steel pipe laid longitudinally on NS right-of-way without a casing:

- (a) Sixty percent for oil pipelines.
- (b) Forty percent for pipelines carrying condensate, natural gasoline, natural gas liquids, liquefied petroleum gas, and other liquid petroleum products.
- (c) For gas pipelines see Section 4.4.3.b.

**B.** Computations, based on the above requirements and stamped by a P.E., shall be submitted with the application occupancy.

#### **4.4.3 Uncased Pipelines Carrying Gas**

- A.** Pipelines carrying flammable and nonflammable gas products shall be steel and shall conform to the requirements of the current ANSI B 31.8 Gas Transmission and Distribution Piping Systems, and other applicable ANSI codes.
- B.** The minimum wall thickness for uncased carrier pipe shall be in accordance with the values provided in AREMA , Chapter 1, Part 5, Section 5.2, Tables 5.2.3 (a through j).
- C.** A durable coating, which will resist abrasion (fusion bonded epoxy or other suitable material), shall be used to protect the uncased pipeline when the boring method of installation is used.
- D.** If NS determines there is the potential for damage to the uncased pipeline (foreign material in the subgrade, third party damage, etc.) special protection of the pipeline will be required. Special may include the use of a protection slab over the pipeline, increased depth of bury or other means.

#### **4.5 Casing Pipe End Seals**

- A.** Casings for carrier pipes of flammable and hazardous substances shall be suitably sealed to the outside of the carrier pipe. Details of the end seals shall be shown on the plans.
- B.** Casings for carrier pipes of non-flammable substances shall have both ends of the casing blocked up in such a way as to prevent the entrance of foreign material but allowing leakage to pass in the event of a carrier break.
- C.** The ends of a casing pipe may be left open when the ends are at or above ground surface and above high water level, provided drainage is affordable in such a manner that leakage will be conducted away from railroad tracks and structures.

#### **4.6 Vents**

- A.** Sealed casings for flammable substances shall be properly vented. Vent pipes shall be of sufficient diameter, but in no case less than two inches in diameter, and shall be attached near each end of the casing and project through the ground surface at right-of-way lines or not less than 45 feet, measured at right angles from centerline of nearest track.
- B.** Vent pipes shall extend not less than 4 feet above the ground surface. Top of vent pipe shall have a down-turned elbow, properly screened, or a relief valve. Vents in locations subject to high water shall

be extended above the maximum elevation of high water and shall be supported and protected in a manner approved by NS.

- C. Vent pipes shall be at least 4 feet, vertically, from aerial electric wires or greater if required by national Electrical Safety Code (ANSI C2).
- D. When the pipeline is in a public highway, street-type vents shall be installed.

#### **4.7 Signs**

- A. All pipelines (except those in streets or access roads where it would not be practical to do so) shall be prominently marked at right-of-way lines (on both sides of track for crossings) by durable, weatherproof signs located over the centerline of the pipe. Signs shall show the following:
  - (1) Name and address of applicant
  - (2) Contents of pipe
  - (3) Pressure in pipe
  - (4) Emergency telephone number
- B. For pipelines running longitudinally on NS property, signs shall be placed over the pipe (or offset and appropriately marked) at all changes in direction of the pipeline. Such signs should also be located so that when standing at one sign the next adjacent marker in either direction is visible. In no event shall they be placed more than 500 feet apart unless otherwise specified by NS.
- C. The applicant must maintain all signs on NS right-of-way as long as the occupational agreement is in effect.

#### **4.8 Warning Tape**

- A. All pressure pipelines installed on NS right-of-way by open cut shall have detectable underground warning tape placed a minimum distance of 18 inches directly above the pipeline with the tape placed not less than 12" below grade.

#### **4.9 Shut-off Valves**

- A. Accessible emergency shut off valves shall be installed within effective distances each side of the railroad at locations selected by NS where hazard to life and property must be guarded against. No additional valves will be required where pipelines are provided with automatic control stations and within distances approved by NS.

#### **4.10 Cathodic Protection**

- A. Cathodic protection shall be applied to all pipelines carrying flammable substances on NS's right-of-way.
- B. For crossings and at other locations where the pipeline must be placed within a casing, the casing is to have cathodic protection, or the wall thickness is to be increased to the requirements of Section 4.3.2 Table 2.

- C. Uncased gas carrier pipes must be coated and cathodically protected to industry standards and test sites, for monitoring the pipeline, provided within 50 feet of the crossing.
- D. Where casing and/or carrier pipes are cathodically protected by other than anodes, NS shall be notified and a suitable test made to ensure that other railroad structures and facilities are adequately protected from the cathodic current in accordance with the recommendation of current Reports of Correlating committee on Cathodic Protection, published by the National Association of Corrosion Engineers.
- E. Where sacrificial anodes are used the locations shall be marked with durable signs.

#### **4.11 Manholes**

- A. Manholes shall not be located on NS property where possible. At locations where this is not practical, including longitudinal occupancies, manholes shall be precast concrete sections conforming to ASTM Designation C 478, "Specification for Precast Concrete Manhole Sections".
- B. The top of manholes located on NS property shall be flush with the top of ground and shall not be located with service or access roads.
- C. The distance from centerline of adjacent track to centerline of proposed manhole shall be shown on the plans.

#### **4.12 Box Culverts**

- A. Reinforced concrete box culverts shall conform to the requirements of the most recent edition of Norfolk Southern's Public Projects Manual, available here:  
<http://www.nscorp.com/content/nscorp/en/transportation-terms/other-requirements/public-project-guidelines.html>.

#### **4.13 Drainage**

- A. Occupancies shall be designed, and their construction shall be accomplished, so that adequate and uninterrupted drainage NS right-of-way is maintained.
- B. All pipes, ditches, spillways, overflows, and other structures carrying surface drainage on or to NS property and/or under NS track(s) shall be designed to carry the run-off from a one hundred (100) year storm. Computations indicating this design, prepared by a Professional Engineer, and suitable topographic plans, outlining the total drainage area, shall be submitted.
- C. If the drainage is to discharge into an existing drainage channel on NS's right-of-way and/or through a drainage structure under NS track(s), the computations must include the hydraulic analysis of any existing ditch and/or structure.
- D. When calculating the capacity of existing or proposed drainage structures, under NS track(s), the headwater at the structure shall not be greater than 1.5.
- E. Pipe(s) used to carry surface drainage on NS right-of-way shall have a minimum diameter of 36 inches.
- F. Detention ponds must not be placed on any part of NS's right-of-way. Also, the railroad embankment must not be used as any part of a detention pond structure.
- G. Formal approval of the proposed design, by the appropriate governmental agency having jurisdiction, shall be submitted with the drainage computations.

#### **4.14 Pipelines on Bridges**

- A.** Pipelines of any types shall not be installed on any bridge carrying NS tracks.
- B.** New overhead pipe bridges shall not be constructed over NS's right-of-way where underground installation of the pipeline is possible. Where the applicant can show that no practicable alternative is available, this type of structure will be permitted provided the following conditions are met:
  - (1) The vertical clearance, distance from top of rail to bottom of structure, is shown and is a minimum of 23 feet, measured at a point 6 feet horizontally from centerline track.
  - (2) The support bents for the overhead structure are located off of NS's right-of-way or a minimum clear distance of 18 feet from centerline track, whichever distance is greater.
  - (3) Support bents within 25 feet of centerline track have pier protection in accordance with AREMA requirements.
  - (4) Complete structural plans and design computations for the structure and foundations, stamped by a Professional Engineer, are submitted with the application.
  - (5) A fence (with barbed wire) or other measures are provided which will prevent access to the bridge by unauthorized personnel or vandals.
- C.** Pipelines carrying flammable substances or non-flammable substances, which by their nature might cause damage if escaping on or near railroad facilities or personnel, shall not be installed on bridges over NS tracks. In special cases when it can be demonstrated to NS's satisfaction that such an installation is necessary and that no practicable alternative is available, NS may permit the installation and only by special design approved by NS.
- D.** When permitted, pipelines on bridges over NS tracks shall be so located as to minimize the possibility of damage from vehicles, railroad equipment, vandalism and other external causes. Leak protection extending across the NS right-of-way shall be provided as directed by NS (See Plate VII).

### **5.0 CONSTRUCTION REQUIREMENTS**

#### **5.1 Method of Installation**

##### **5.1.1 General Requirements**

- A.** Bored, jacked or tunneled installations shall have a bore hole essentially the same as the outside diameter of the pipe plus the thickness of the protective coating.
- B.** The use of water or other liquids to facilitate casing emplacement and spoil removal is prohibited except when used in conjunction with Directional Boring Method "A" (see section 5.1.6).
- C.** If during installation an obstruction is encountered which prevents installation of the pipe in accordance with this specification, the pipe shall be abandoned in place and immediately filled with grout. A new installation procedure and revised plans must be submitted to, and approved by, NS before work can resume.

##### **5.1.2 Track and Ground Monitoring**

- A.** General track and ground monitoring requirements

- (1) General requirement
  - a. Temporary lighting may also be required by the NS to identify tripping hazards to train crewmen and other NS personnel.
  - b. Any excavation, holes or trenches on the NS property shall be covered, guarded and/or protected. Handrails, fence, or other barrier methods must meet OSHA and FRA requirements.
- (2) Track and ground monitoring are required as follows:
  - a. For crossings with pipe diameter and depth (below base of rail) as shown below in
  - b. For shoring within Zone 1 of any track, as shown below in PLATE VIII.
  - c. Additional monitoring may be required by the NS on a case by case basis.
- (3) Monitoring schedule
  - a. Monitoring shall commence once any construction activity is within Zone 1. See PLATE VIII.
  - b. Monitoring shall continue through completion of installation and may be required after completion for a period of time determined by NS or its representative.

**Table 5.1.2-1**

		Pipe Size, inches										
		<=6	<=12	<=18	<=24	<=30	<=36	<=42	<=48	<=54	<=60	>60
Depth, feet (below base of rail)	<=5	X	X	X	X	X	X	X	X	X	X	X
	<=10	X	X	X	X	X	X	X	X	X	X	X
	<=15	X	X	X	X	X	X	X	X	X	X	X
	<=20			X	X	X	X	X	X	X	X	X
	<=25					X	X	X	X	X	X	X
	<=30								X	X	X	X
	>30										X	X

X = Track Monitoring is required

## B. Track Monitoring

- (1) Track Deflection Limits
- (2) Targets
  - a. Track monitoring shall not require track access other than to place the track monitoring targets.
  - b. Monitoring targets should be placed such that monitoring is possible when a train is present. However, monitoring during the passing of a train is not required as the train will temporarily deflect the track.
  - c. Adhesive backed reflective targets may be attached to the side of the rail temporarily. Targets should be removed once monitoring phase is complete.
- (3) Monitoring Plan
- (4) If the top of rail does deflect more than values listed below, all operations shall stop until the matter is resolved.
  - a. Track monitoring values for Class 3 through Class 4:



1. Threshold value = 1/8 inch permanent vertical or horizontal deflection
2. Installation Shutdown value = 1/4 inch permanent vertical or horizontal deflection
- b. Track monitoring values for Class 1 through Class 2:
  1. Threshold value = 1/4 inch permanent vertical or horizontal deflection
  2. Installation Shutdown value = 1/2 inch permanent vertical or horizontal deflection
- c. Provide established contingency plan, see Section D, in the event of ground loss and/or the rail deviates 1/4 inch vertical or horizontal.
- d. Establish a benchmark in the vicinity of the construction. Establish locations for shooting elevations on the top of rail at each area of construction.
  1. Example locations for shooting rail elevations would be at:
    - At the centerline of an under track crossing.
    - At both outside edges of the crossing i.e. for a wide excavation.
    - At multiple locations from the crossing/excavation edge but no less than 10, 20, 30, 40 and 50 feet from the crossing.
- e. Monitoring shall be continuous and recorded in a field logbook dedicated for this purpose. Copies of these field log entries can be made available to all concerned parties upon request at any time during construction.

#### C. Ground Monitoring

- (1) Provide means for monitoring ground settlement. Submit monitoring plan for NS review.
- (2) Ground monitoring points should be in alignment above the proposed construction activities.

#### D. Contingency Plans

- (1) The Contractor shall supply Contingency Plan(s), which anticipate reaching the Threshold and Installation Shutdown values, for all construction activities which may result in horizontal and/or vertical track deflection.
  - a. Track monitoring values for Class 3 through Class 4:
    1. Threshold value = 1/8 inch permanent vertical or horizontal deflection
    2. Installation Shutdown value = 1/4 inch permanent vertical or horizontal deflection
  - b. Track monitoring values for Class 1 through Class 2:
    1. Threshold value = 1/4 inch permanent vertical or horizontal deflection
    2. Installation Shutdown value = 1/2 inch permanent vertical or horizontal deflection
- (2) The Contingency Plans shall provide means and methods, with options if necessary.
- (3) The Contractor should anticipate the need to implement each Contingency Plan with required materials, equipment and personnel.
  - a. Once the Threshold value is met, the contractor shall determine the appropriate Contingency Plan(s) and immediately discuss this plan with, and receive approval confirmation from, the NS.
  - b. Once the Installation Shutdown value is exceeded all project work shall stop and the chosen Contingency Plan shall commence.

1. The NS may choose to allow and/or require the immediate implementation of specific approved Contingency Plans, submitted by the contractor, once the Installation Shutdown value is exceeded.

### **5.1.3 Open Cut**

- A. Open cut is a non-standard procedure that should be avoided whenever possible. The applicant must request a variance for open cut approval when making application for occupancy. Applicant should be aware that open cut applications and procedures have the potential to result in additional NS charges.
- B. Installations beneath the track by open trench methods will be permitted only with the approval of the AVP Maintenance of Way & Structures.
- C. Installations by open cut will not be permitted under mainline tracks, tracks carrying heavy tonnage or tracks carrying passenger trains. Also, open cut shall not be used within the limits of a highway/railroad grade crossing or its approaches, 25 feet either side of traveled way, where possible.
- D. At locations where open cut is permitted, the trench is to be backfilled with crushed stone with a top size of the aggregate to be a maximum of 2 inches and to have no more than 5% passing the number 200 sieve. The gradation of the material is to be such that a dense stable mass is produced.
- E. The backfill material shall be placed in loose 6 inch lifts and compacted to at least 95% of its maximum density with a moisture content that is no more than 1% greater than or 2% less than the optimum moisture as determined in accordance with current ASTM Designation D – 1557 (Modified Proctor). When the backfill material is within 3 feet of the subgrade elevation (the interface of the ballast and the subsoil) a compaction of at least 98% will be required.
- F. All backfilled pipes laid either perpendicular or parallel to the tracks must be designed so that the backfill material will be positively drained. This may require the placement of lateral drains on pipes laid longitudinally to the track and the installation of stub perforated pipes at the edge of the slopes.
- G. Unless otherwise agreed upon, all work involving rail, ties and other track material will be performed by NS employees, at such times as are consistent with NS work schedules regarding the availability of said employees, and at the sole expense of the applicant.

### **5.1.4 Bore and Jack (Steel Pipe)**

- A. This method consists of pushing the pipe into the earth with a boring auger rotating within the pipe to remove the spoil.
- B. The boring operation shall be progressed on a 24-hour basis without stoppage in Zone 1, 2, and 3 as indicated in Plate VIII (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.
- C. The front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger from leading the pipe so that no unsupported excavation is ahead of the pipe.
- D. The auger and cutting head arrangement shall be removable from within the pipe in the event an obstruction is encountered. If the obstruction cannot be removed without excavation in advance of the pipe, procedures as outlined in Section 5.1.1c. must be implemented immediately.
- E. The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than ½ inch. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1 inch, grouting (see Section 5.2) or other methods approved by NS, shall be employed to fill such voids.

- F. The face of the cutting head shall be arranged to provide a reasonable obstruction to the free flow of soft or poor material.
- G. Plans and description of the arrangement to be used shall be submitted to NS for approval and no work shall proceed until such approval is obtained.
- H. Any method that employs simultaneous boring and jacking for pipes over 8 inches in diameter that does not have the above approved arrangement **will not be permitted**. For pipe 8 inches and less in diameter, augering or boring without this arrangement may be considered for use only as approved by NS.

#### **5.1.5 Jacking (Steel Pipe)**

- A. This method consists of pushing sections of pipe into position with jacks placed against a backstop and excavation performed by hand from within the jacking shield at the head of the pipe. Ordinarily 36 inch pipe is the least size that should be used, since it is not practical to work within smaller diameter pipes.
- B. Jacking shall be in accordance with the current American Railway Engineering Association Specifications, Chapter 1, Part 4 "Jacking Culvert Pipe Through Fills." This operation shall be conducted without hand-mining ahead of the pipe and without the use of any type of boring, auguring, or drilling equipment.

Bracing and backstops shall be so designed and jacks of sufficient rating used so that the jacking can be progressed on a 24-hour basis without stoppage in Zone 1, 2, and 3 as indicated Plate VIII. (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

- C. Immediately upon completion of jacking operation, the installation shall be pressure grouted as per Section 5.2 of this specification.

#### **5.1.6 Tunneling (Tunnel Liner Plate)**

- A. This method consists of placing rings of liner plate within the tail section of a tunneling shield or tunneling machine. A tunneling shield shall be used for all liner plate installations unless otherwise approved by NS.
- B. The shield shall be of steel construction, designed to support a railroad track loading as specified in Section 4.1.3 of this specification, in addition to the other loadings imposed. The advancing face shall be provided with a hood, extending no less than 20 inches beyond the face and extending around no less than the upper 240 degrees of the total circumference. It shall be of sufficient length to permit the installation of at least one complete ring of liner plates within the shield before it is advanced for the installation of the next ring of liner plates. The shield shall conform to and not exceed the outside dimensions of the liner plate tunnel being placed by more than 1 inch at any point on the periphery unless otherwise approved by NS.
- C. The shield shall be adequately braced and provided with necessary appurtenances for completely bulkheading the face with horizontal breastboards and arranged so that the excavation can be benched as may be necessary. Excavation shall not be advanced beyond the edge of the hood, except in rock.
- D. Manufacturer's shop detail plans and manufacturer's computations showing the ability of the tunnel liner plates to resist the jacking stresses shall be submitted to NS for approval.
- E. Unless otherwise approved by NS, the tunneling shall be conducted continuously, on a 24-hour basis, until the tunnel liner extends at least beyond the theoretical railroad embankment line with no stoppage within Zone 1, 2, and 3 as indicated (See Plate VIII).

- F. At any interruption of the tunneling operation, the heading shall be completely bulkheaded.
- G. The liner plates shall have tapped grout holes for no smaller than 1 ½ inch pipe, spaced at approximately 3 feet around the circumference of the tunnel liner and 4 feet longitudinally.
- H. Grouting behind the liner plates shall be in accordance with Section 5.2 of this specification.

#### **5.1.7 Directional Boring / Horizontal Directional Drilling (Steel Pipe)**

##### **Method “A”**

- A. This method consists of setting up specialized drilling equipment on existing grade (launching and receiving pits are not required) and boring a small diameter pilot hole on the desired vertical and horizontal alignment, using a mechanical cutting head with a high pressure fluid (bentonite slurry) to remove the cuttings. The drill string is advanced with bentonite slurry pumped through the drill string to the cutting head and then forced back along the outside of the drill string, carrying the cuttings back to the surface for removal. When the cutting head reaches the far side of the crossing, it is removed and a reamer (with a diameter greater than the cutting head) is attached to the lead end of the drill string. The  
  
pipeline is attached to the reamer and the pilot hole is then back reamed while the pipeline is pulled into place.
- B. This method is used to place pipelines under rivers, wetlands and other obstructions which would be difficult to cross by conventional methods. The length of the bore is generally several hundred feet in length, with installations over a thousand feet possible.
- C. Consideration will be given where the depth of cover is greater than 10 feet below the base of the rail, or the bore is in rock. Factors considered will be track usage, pipe size, contents of pipeline, soil conditions, etc.
- D. The following preliminary information must be submitted with the request for consideration of this type of installation:
  - (1) A site plan of the area.
  - (2) A plan view and profile of the crossing
  - (3) A Pipe Data Sheet
  - (4) Appropriately spaced soil borings along the proposed pipeline route
  - (5) A construction procedure, including a general description of equipment to be used

If NS determines this method of installation is acceptable, final design plans and specifications are to be prepared and submitted for approval.

- E. The project specifications must require the contractor to submit, to NS for approval, a complete construction procedure of the proposed boring operation. Included with the submission shall be the manufacture's catalog information describing the type of equipment to be used.
- F. The over-cut by the cutting head shall be 2" large than the installed pipeline and maximum outside diameter of 36". If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1 inch, grouting (see Section 5.2) or other methods approved by NS, shall be employed to fill such voids. HDD can be progressed on a 24-hour basis without stoppage in Zone 1, 2, and 3 as indicated Plate VIII.

- G. The applicant's engineer shall provide the project geotechnical analysis to the NS representative for review. Specify the maximum drilling fluid pressures so that applicant's engineer can insure that frac-out does not occur. As a general rule of thumb the fluid pressure must not exceed the uplift capacity of the soil (nominally 1 psi per foot of depth).

Reference National Utility Contractors Association (NUCA) "*Trenchless Construction and Rehabilitation Methods*" (4<sup>th</sup> Edition) and ASCE's "*Pipeline Design for Installation by Horizontal Directional Drilling*" (4<sup>th</sup> Edition). Per NUCA, "Important physical properties that need to be determined include strength, grain size, moisture content, plasticity characteristics, compressibility, and permeability of the deposits".

Further geotechnical analysis by the applicant may be required to verify that railroad tracks, property and facilities will not be affected by the proposed bore.

### **Method "B"**

- A. This method is used to place small diameter conduit for electric lines and other utilities. This method consists of using hydraulic jacking equipment to push a solid steel rod under the railroad from a launching pit to a receiving pit. At the receiving pit, a cone shaped "expander" is attached to the end of the rod and the conduit (casing pipe) is attached to the expander. The rod, expander and conduit are then pulled back from the launching pit until the full length of the conduit is in place.
- B. This method may be used to place steel conduit (casing pipe), up to and including 6 inches in diameter, under the railroad.
- C. The project specifications must require the contractor to submit, to NS for approval, a complete construction procedure of the proposed boring operation. Included with the submission shall be the manufacture's catalog information describing the type of equipment to be used.
- D. The over-cut by the cutting head shall be 2" large than the installed pipeline and maximum outside diameter of 36". If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1 inch, grouting (see Section 5.2) or other methods approved by NS, shall be employed to fill such voids. HDD can be progressed on a 24-hour basis without stoppage in Zone 1, 2, and 3 as indicated Plate VIII.
- E. The applicant's engineer shall provide the project geotechnical analysis to NS representative for review. Specify the maximum drilling fluid pressures so that applicant's engineer can insure that frac-out does not occur. As a general rule of thumb the fluid pressure must not exceed the uplift capacity of the soil (nominally 1 psi per foot of depth).

Reference National Utility Contractors Association (NUCA) "*Trenchless Construction and Rehabilitation Methods*" (4<sup>th</sup> Edition) and ASCE's "*Pipeline Design for Installation by Horizontal Directional Drilling*" (4<sup>th</sup> Edition). Per NUCA, "Important physical properties that need to be determined include strength, grain size, moisture content, plasticity characteristics, compressibility, and permeability of the deposits".

Further geotechnical analysis by the applicant may be required to verify that railroad tracks, property and facilities will not be affected by the proposed bore.

### **5.1.8 Tunnel Boring Machines and Microtunneling**

- A. A tunnel boring machine (TBM), also known as a "mole", is a machine used to excavate tunnels with a circular cross section through a variety of soil and rock strata. May also be used called Microtunneling for smaller tunnels.

- B. Use of TBM will be considered for installations of pipelines at least 20-feet below base of rail.
- C. Plans must indicate locations and depth of boring and receiving pits and shoring details as required in Section 5.8, below.
- D. The submission must include a detailed soil analysis and the details of the machine to be used, including the type of boring head, type of slurry to be used (if applicable), and type of guidance system.

#### **5.1.9 Slip Lining**

- A. Slip-lining is the process of replacing an existing carrier pipe within an existing casing pipe.
- B. The submission must demonstrate that the existing casing is constructed of a material described in section 4 of this specification, including appropriate wall thickness and joints.
- C. The submission must demonstrate that the existing casing is of an adequate length to meet the requirements of section 4.3.1 of this Specification.
- D. The submission must include documentation that clearly demonstrates that the casing has not deteriorated to a point where it no longer complies with items B and C, above. If necessary, the applicant may apply for a right-of-entry permit as outlined in Section 1.4 of this Specification in order to excavate the ends of the existing casing for a thorough inspection.

#### **5.1.10 Cured In Place Pipe (CIPP)**

- A. CIPP is a trenchless rehabilitation method used to repair existing pipelines from existing access points.
- B. CIPP will be considered for rehabilitation of existing non-pressurized sewer and storm drains only.
- C. Submission must include details of proposed access to existing pipe on either side of the Railroad right-of-way, and a detailed assessment and analysis of the condition of the existing pipe.
- D. Submission must include details of the proposed pipe bypass system to be used during construction.
  - (1) The submission must include documentation that clearly demonstrates that the casing has not deteriorated to a point where it no longer complies with items B and C, above. If necessary, the applicant may apply for a right-of-entry permit as outlined in Section 1.4 of this Specification in order to excavate the ends of the existing casing for a thorough inspection.

#### **5.1.11 Pipe Bursting and Pipe Ramming**

- A. Pipe Bursting is a trenchless method of replacing buried pipelines such as sewer, water, or natural gas pipes without the need for a traditional trenching by expanding the diameter of the current pipe to receive a new pipe.
- B. Pipe Ramming uses pneumatic percussive blows to drive the pipe through the ground without the use of an auger.
- C. Neither Pipe Bursting nor Pipe Ramming will be considered for installations beneath railroad track. Both methods may be considered at NS's discretion if the installation will not come closer than 25-feet to the centerline of any railroad track or closer than 50-feet to any other railroad structure.

## **5.2 Grouting**

- A. For jacked and tunneled installations a uniform mixture of 1:6 (cement:sand) cement grout shall be placed under pressure through the grout holes to fill any voids which exist between the pipe or liner plate and the undisturbed earth.
- B. Grouting shall start at the lowest hole in each grout panel and proceed upwards simultaneously on both sides of the pipe.
- C. A threaded plug shall be installed in each grout hole as the grouting is completed at that hole.
- D. When grouting tunnel liner plates, grouting shall be kept as close to the heading as possible, using grout stops behind the liner plates if necessary. Grouting shall proceed as directed by NS, but in no event shall more than 6 lineal feet (1.8 m) of tunnel be progressed beyond the grouting.

## **5.3 Soil Stabilization**

- A. Pressure grouting of the soils or freezing of the soils before jacking, boring, or tunneling may be required at the direction of NS to stabilize the soils, control water, prevent loss of material and prevent settlement or displacement of embankment. Grout shall be cement, chemical or other special injection material selected to accomplish the necessary stabilization.
- B. The materials to be used and the method of injection shall be prepared by a Registered Professional Soils Engineer or by an experienced and qualified company specializing in this work and submitted for approval to NS before the start of work. Proof of experience and competency shall accompany the submission.

## **5.4 Dewatering**

- A. When water is known or expected to be encountered, pumps of sufficient capacity to handle the flow shall be maintained at the site, provided the contractor has received approval from NS to operate them. Pumps in operation shall be constantly attended on a 24-hour basis until, in the sole judgement of NS, the operation can be safely halted. When dewatering, close observation shall be maintained to detect any settlement or displacement of railroad embankment, tracks, and facilities.

## **5.5 Safety Requirements**

All operations shall be conducted so as not to interfere with, interrupt, or endanger the operation of trains nor damage, destroy, or endanger the integrity of railroad facilities. All work on or near NS property shall be conducted in accordance with NS safety rules and regulations. The contractor shall secure and comply with the NS safety rules and shall give written acknowledgement to NS that they have been received, read, and understood by the contractor and its employees. Operations will be subject to NS monitoring at any and all times.

- A. All cranes, lifts, or other equipment that will be operated in the vicinity of NS's electrification and power transmission facilities shall be electrically grounded as directed by NS.
- B. At all times when the work is being progressed, a field supervisor for the work with no less than twelve (12) months experience in the operation of the equipment being used shall be present. If boring equipment or similar machines are being used, the machine operator also shall have no less than twelve (12) months experience in the operation of the equipment being used.
- C. Whenever equipment or personnel are working closer than 15 feet from the centerline of an adjacent track, that track shall be considered as being obstructed. Insofar as possible, all operations shall be conducted no less than this distance. Operations closer than 15 feet from the centerline of a track shall

be conducted only with the permission of, and as directed by, a duly qualified NS railroad employee or an authorized NS representative present at the site of the work.

- D. Construction near switching areas may require lighting.
- E. Crossing of tracks at grade by equipment and personnel is prohibited except by prior arrangement with and as directed by NS.

## 5.6 Blasting

- A. Blasting will not be permitted.

## 5.7 Protection of Drainage Facilities

- A. If, in the course of construction, it may be necessary to block a ditch, pipe or other drainage facility, temporary pipes, ditches or other drainage facilities shall be installed to maintain adequate drainage, as approved by NS. Upon completion of the work, the temporary facilities shall be removed, and the permanent facilities restored.
- B. Soil erosion methods shall be used to protect railroad ditches and other drainage facilities during construction on and adjacent to NS right-of-way.

## 5.8 Support of Excavation Adjacent to Track

### 5.8.1 Launching and Receiving Pits

- A. The location and dimensions of all pits or excavations shall be shown on the plans. The distance from centerline of adjacent track to face of pit or excavation shall be clearly labeled. Also, the elevation of the bottom of the pit or excavation must be shown on the profile.
- B. The face of all pits shall be located a minimum of 25 feet from centerline of adjacent track, **measured at right angles to track**, unless otherwise approved by NS.
- C. NS Typical Drawing No. 4 – Shoring Requirements shall govern the limits and type of required excavation support.
- D. All plans and calculations for shoring shall be prepared, signed and sealed by a Registered Professional Engineer licensed in the state of the project. The Engineer will be responsible for the accuracy for all controlling dimensions as well as the selection of soil design values which will accurately reflect the actual field conditions.
- E. The plans shall contain details of the shoring system showing sizes of all structural members, details of connection, *and* embedment depth. The plans shall include a plan view showing all the proposed excavations and distances from centerline of track to face of excavation. Plans shall show a section normal to the track showing the shoring location relative to the centerline of track and showing the height of sheeting and track elevation in relation to the bottom of excavation. The plans must be complete and accurately describe the nature of the work.
- F. Shoring in Zone 1 or 2, AREMA recommended practice is to be used for design. No increase in temporary stresses is permitted. Refer to AREMA Load Section.
- G. Design shall include 2 feet of spoils adjacent to the shoring and the first 1 foot below the dredge line is to be neglected for passive resistance
- H. Shoring location in Zone 2 as shown on NS Typical Drawing No. 4 – Shoring Requirements shall be



designed using interlocking sheeting. Soldier piles and lagging will be considered only when its use is specifically approved by NS. Consideration for the use of soldier piles and lagging will only be made if the required penetration of steel sheet piling cannot be obtained and when dry, stable material will be encountered.

- I. All excavations with the limits shown on NS Typical Drawing No. 4 – Shoring Requirements shall be designed for railroad live load surcharge. All shoring designed for railroad live load surcharge shall be based on Cooper's E-80 live load. AREMA Chapter 8, Part 20, Section 3, Paragraph 2(b), refers to the Boussinesq equation as a method to determine lateral pressure values for railroad surcharge loading. NS Typical Drawing No. 5 – Shoring Design Guide – Lateral Pressures from Train Loads indicates the lateral pressures associated with various depths of excavation and distances from centerline of track as determine by the Boussinesq equation.
- J. Calculations for the proposed shoring shall include deflection calculations. The maximum deflection for excavations within 18'-0" of the centerline of the nearest tack shall be 3/8". For all other cases, the max deflections shall not exceed 1/2".
- K. Railings shall be constructed around all excavations on NS property. Walkways with railings shall be constructed over open excavations adjacent to the tracks located within the normal walkway. Refer to AREMA Section 15 for walkway and railing design criteria. Railings shall not be closer than 10'-0" horizontally from centerline of track. Railing shall be indicated on plans submitted for NS acceptance.
- L. Approval of the excavation plan does not relieve the applicant of ultimate responsibility and liability for the excavation plan.
- M. If the excavation pit design and shoring system will be submitted by the applicant's contractor, the applicant's contract specifications must require the applicant's contractor to obtain NS approval prior to beginning any excavation.

#### **5.8.2 Parallel Trenching and Other Excavation**

- A. NS Typical Drawing No. 4 – Shoring Requirements shall govern the limits and type of excavation support.
- B. The design and construction requirements for this construction shall be in accordance with the requirements of Section 5.8.1.

### **5.9 Inspection and Testing**

- A. For pipelines carrying flammable or hazardous materials, ANSI Codes, current at time of constructing the pipeline, shall govern the inspection and testing of the facility on NS property, except as follows:
  - (1) One-hundred percent of all field welds shall be inspected by radiographic examinations, and such field welds shall be inspected for 100 percent of the circumference.
  - (2) The proof testing of the strength of carrier pipe shall be in accordance with ANSI requirements.

### **5.10 Reimbursement of Costs**

- A. All costs incurred by NS or its representative associated with the pipe installation (construction monitoring, flagging, track work, protection of signal cables, etc.) shall be reimbursed by the applicant.

## PUBLICATION STANDARDS SOURCES

ANSI	American National Standards Institute, Inc. 1899 L Street, NW, 11th Floor Washington, DC 20036 Tel: 202.293.8020
AREMA	American Railway Engineering Maintenance-of-Way Association 4501 Forbes Blvd., Suite 130 Lanham, MD 20706 Tel: 301.459.3200
ASTM	American Society for Testing and Materials 100 Barr Harbor Drive, PO Box C700 West Conshohocken, PA 19428 Tel: 610.832.9500
AWWA	American Water Works Association, Inc. 6666 West Quincy Avenue Denver, CO 80235 Tel: 303.794.7711 or 800.926.7337
NACE	National Association of Corrosion Engineers 15835 Park Ten Place Houston, TX 77084 Tel: 281.228.6200

NOTE: If other than ANSI, AREMA, ASTM, AWWA or NACE specifications are referred to for design, materials or workmanship on the plans and specifications for the work, then copies of the applicable sections of such other specifications referred to shall accompany the plans and specifications for the work.

## Plate I - Pipe Data Sheet

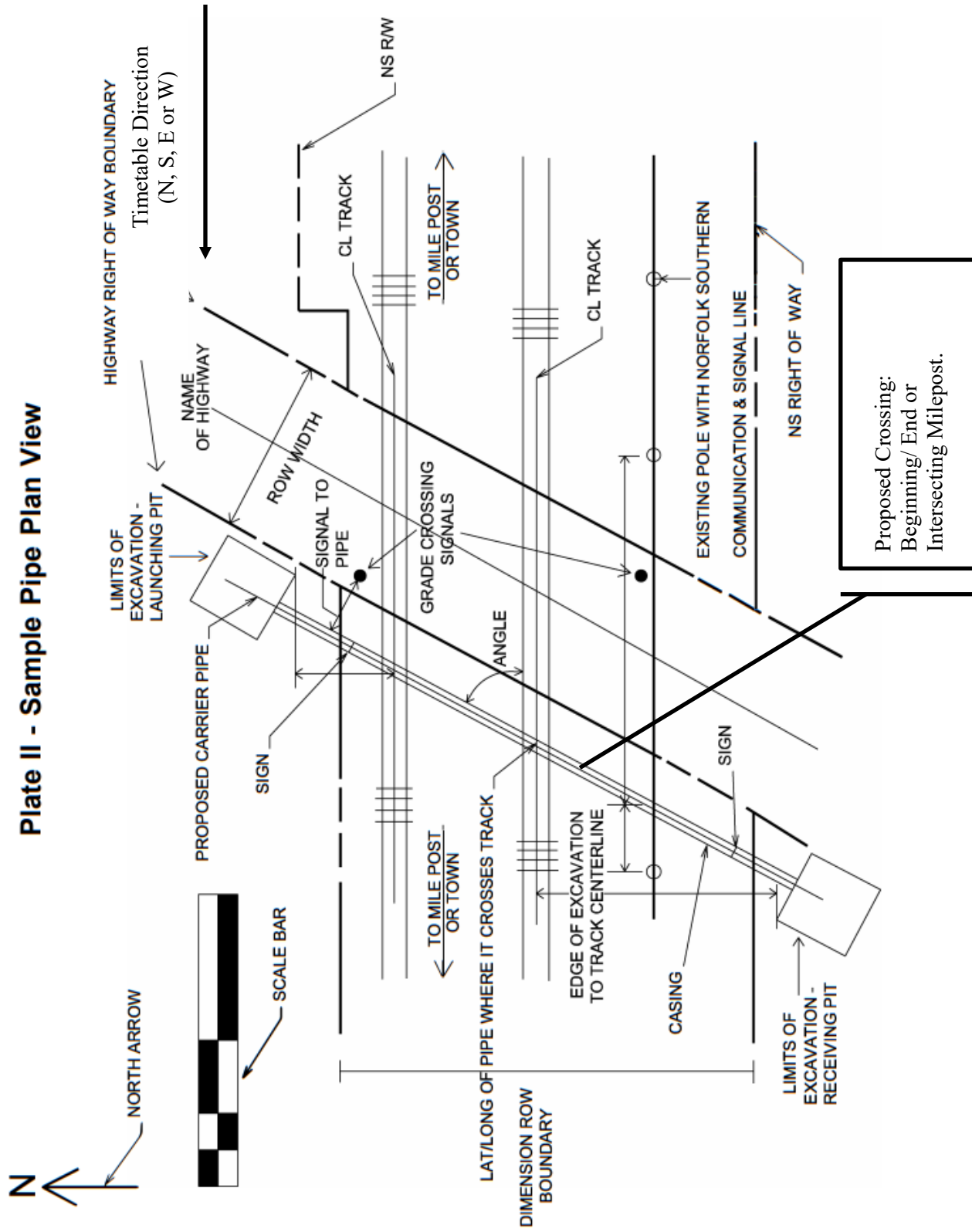
	CARRIER PIPE	CASING PIPE
CONTENTS TO BE HANDLED		
MAX. ALLOWABLE OPERATING PRESSURE		
NOMINAL SIZE OF PIPE		
OUTSIDE DIAMETER		
INSIDE DIAMETER		
WALL THICKNESS		
WEIGHT PER FOOT		
MATERIAL		
PROCESS OF MANUFACTURE		
SPECIFICATION		
GRADE OR CLASS (Specified Minimum Yield Strength)		
TEST PRESSURE		
TYPE OF JOINT		
TYPE OF COATING		
DETAILS OF CATHODIC PROTECTION		
DETAILS OF SEALS OR PROTECTION AT END OF CASING		
CHARACTER OF SUBSURFACE MATERIAL		
APPROXIMATE GROUND WATER LEVEL		
SOURCE OF INFORMATION ON SUBSURFACE CONDITIONS		

Proposed method of installation:

- ☐ Bore and jack (per Section 5.1.3 of NSCE-8)  
☐ Jacking (per Section 5.1.4 of NSCE-8)  
☐ Tunneling (with Tunnel Liner Plate) (per Section 5.1.5 of NSCE-8)  
☐ Directional Bore/Horizontal Direction Drilling – Method A (per Section 5.1.6 of NSCE-8)  
☐ Directional Bore/Horizontal Direction Drilling – Method B (per Section 5.1.6 of NSCE-8)  
☐ Open Cut (per Section 5.1.2 of NSCE-8). *All installations directly under any track must be designed as a bored installation. Open cut installations will be considered on a case-by-case basis by Norfolk Southern's Division Superintendent at the time of installation.*  
☐ Other (Specify): \_\_\_\_\_

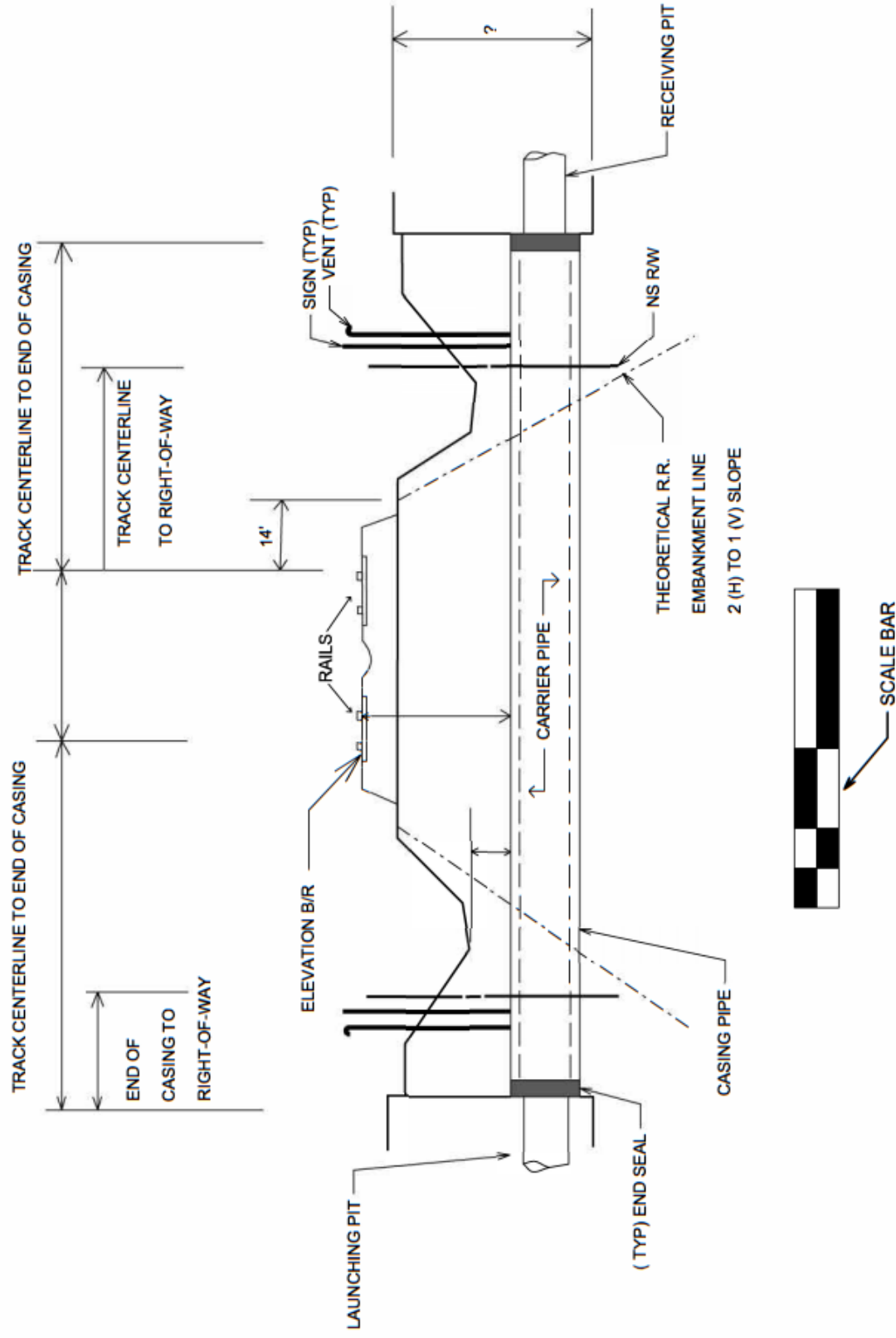
Last Revised: 12/20/17

Plate II - Sample Pipe Plan View

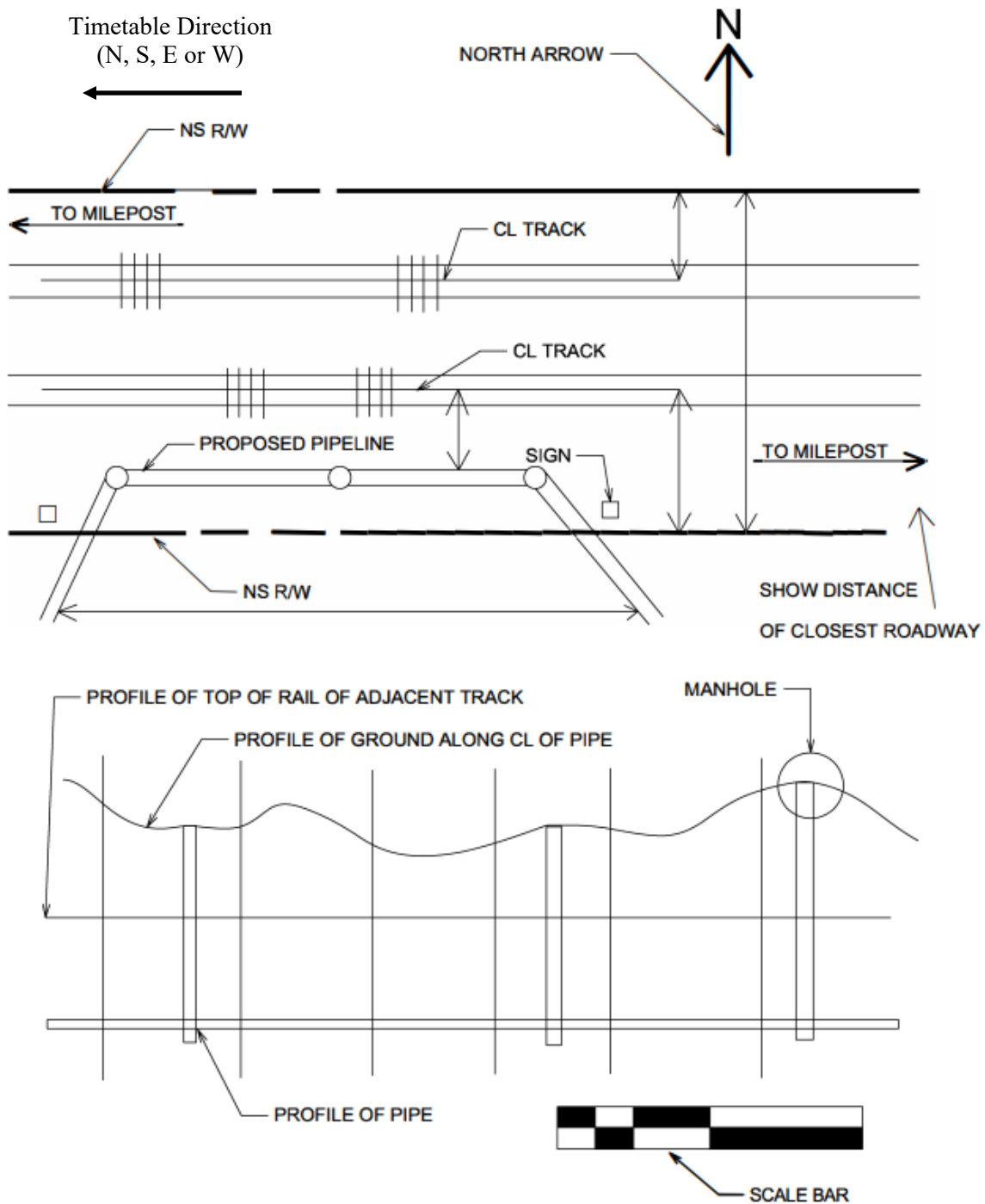


Looking Direction should be  
Increasing and Decreasing Milepost

**Plate III - Sample Pipe Profile View**

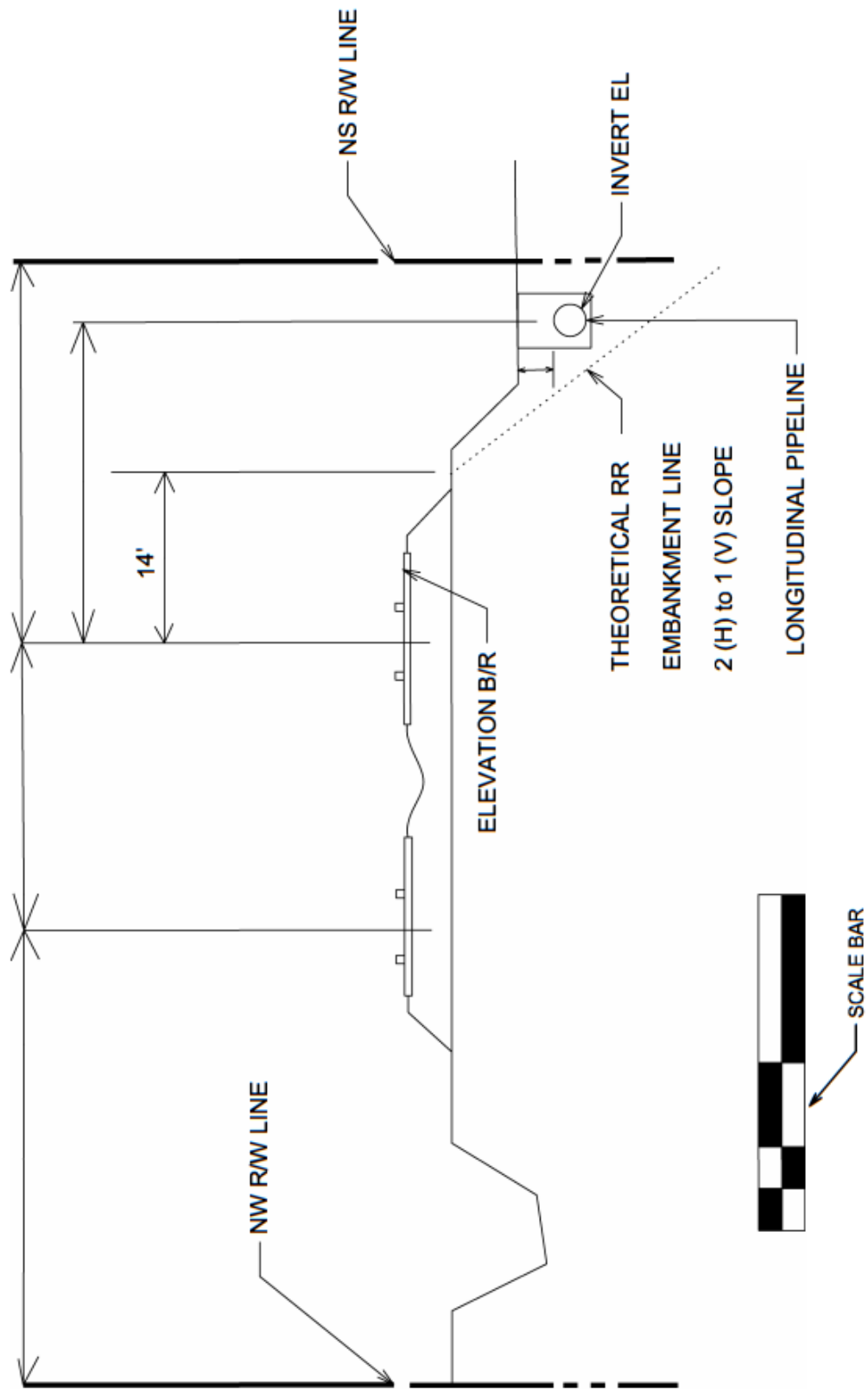


## Plate IV - Sample Pipe Parallel Plan and Profile Views



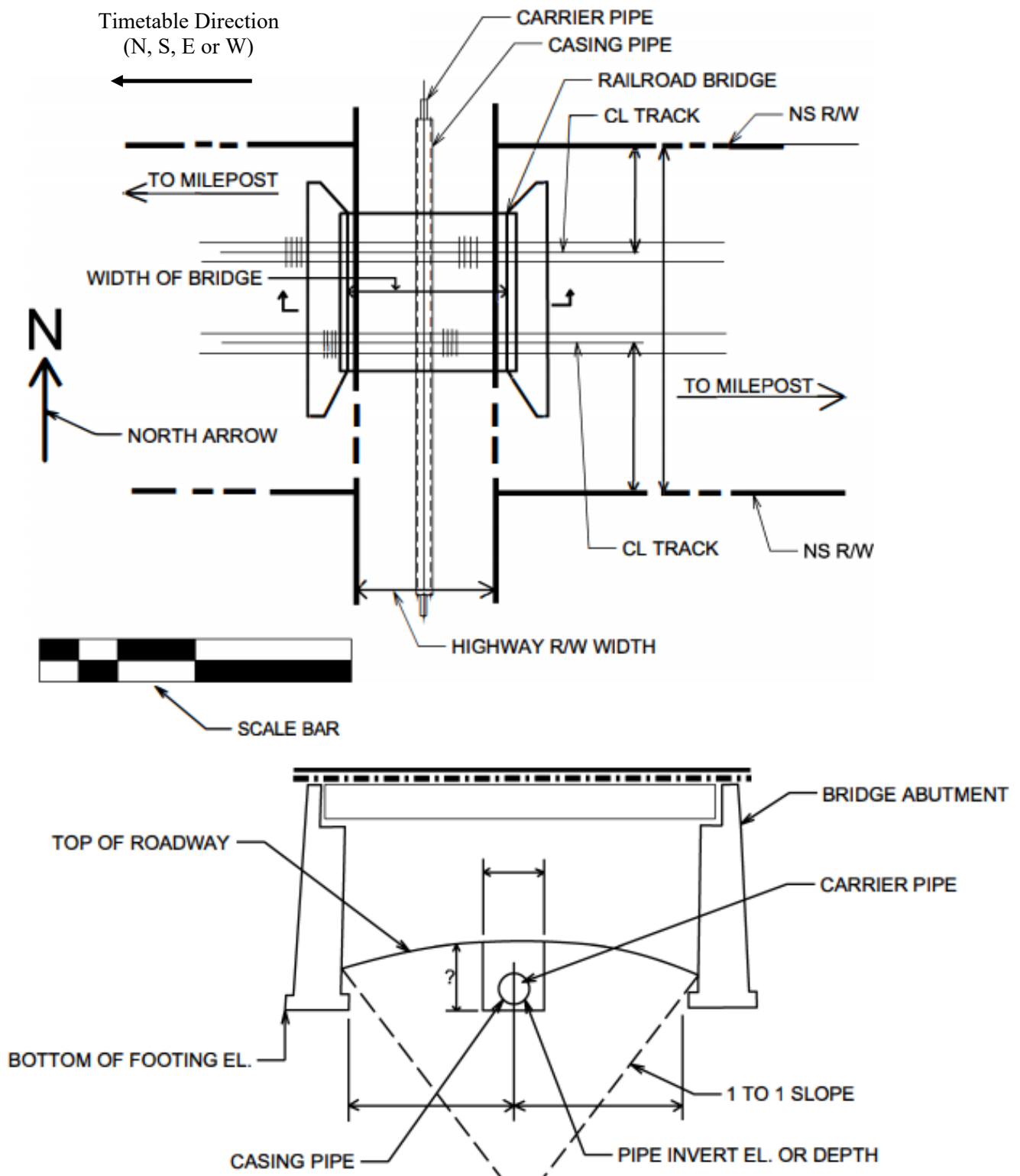
Looking Direction should be  
Increasing and Decreasing Milepost

**Plate V - Sample Pipe Parallel Section View**



Looking Direction should be  
Increasing and Decreasing Milepost

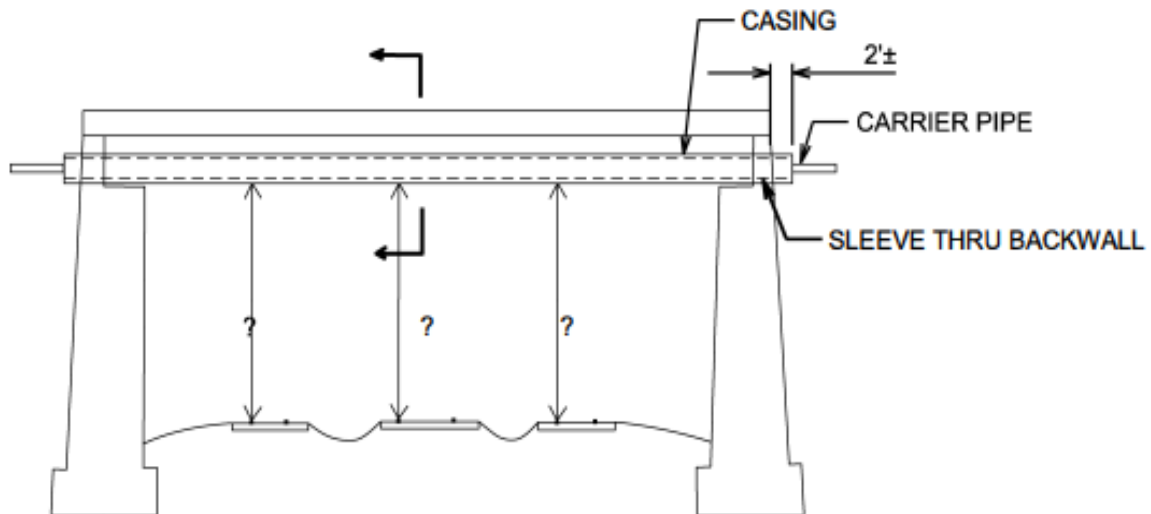
## Plate VI - Sample Pipe Plan and Section Under Railway Bridge



Looking Direction should be  
Increasing and Decreasing Milepost



# PLATE VII - Sample Pipe Profile and Section Views Views Pipe in Highway Over Railway



Looking Direction should be  
Increasing and Decreasing Milepost

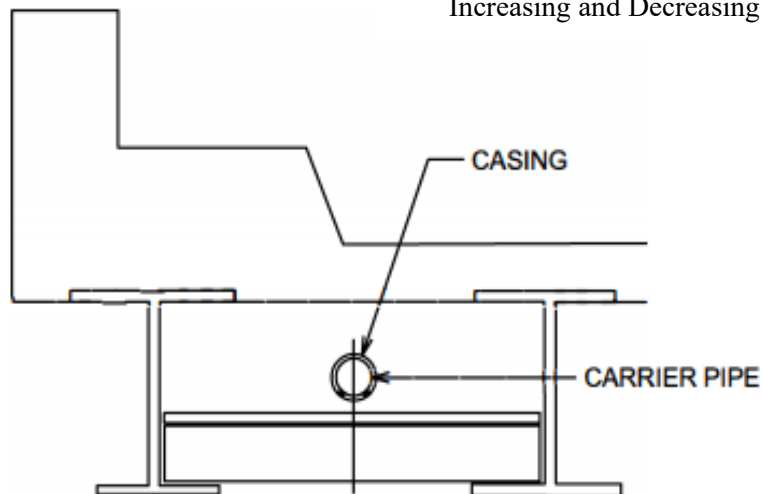
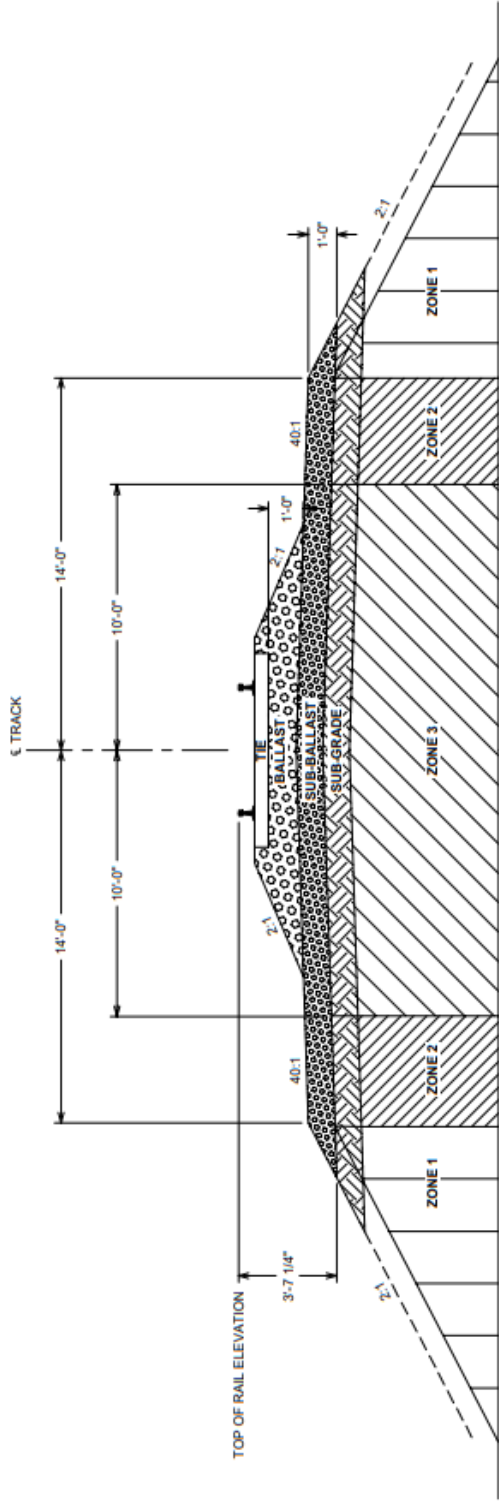


PLATE VIII - Railway Shoring Requirements



ROADBED PROFILE - SHORING REQUIREMENTS (NTS)

- ZONE 1 EXCAVATION WITHIN ZONE 1 WILL REQUIRE SHORING FOR THE PROTECTION OF THE RAILROAD
- ZONE 2 EXCAVATION WITHIN ZONE 2 WILL REQUIRE SHORING CONSISTING OF INTERLOCKING SHEETING FOR THE PROTECTION OF THE RAILROAD
- ZONE 3 NO EXCAVATIONS WILL BE ALLOWED IN ZONE 3

NOTES:

- EXCAVATIONS OUTSIDE OF ZONE 1 MAY REQUIRE SHORING FOR SAFETY. LATERAL PRESSURES DUE TO TRAIN LOADINGS DO NOT AFFECT SHORING DESIGN OUTSIDE OF ZONE 1.
- REFER TO PUBLIC PROJECTS MANUAL APPENDIX H, SECTION H.1.6.A. (OVERHEAD BRIDGE) OR SECTION H.2.8.A (UNDERPASS BRIDGE) AND APPENDIX H FOR ADDITIONAL SHORING LOCATION REQUIREMENTS.



**NORFOLK SOUTHERN**  
PUBLIC PROJECTS MANUAL  
TYPICAL DRAWINGS

SHORING DESIGN GUIDE  
SHORING REQUIREMENTS

REVISIONS	
DATE	DESCRIPTION
03/2013	1 REVISED ZONE 2 DIMENSION AND AREA
11/15	2 REVISED NOTE 2

REF. NO.: SEC 1 - ONE - S - SHT 4

DATE: AUGUST 1, 2015

DRAWING NO.: 4

PLATE IX - Lateral Pressures for Sheet Piling Design

LATERAL PRESSURES FROM COOPERS E-80 TRAIN LOADS

THE BOUSSINESQ EQUATION FOR STRIP LOADS IS SHOWN IN THE AREMA MANUAL FOR RAILWAY ENGINEERING, CHAPTER 8, SECTION 20.3.2.2

BOUSSINESQ EQUATION:

PS = (2q/r) \* (β - SIN(β) \* COS(2α))

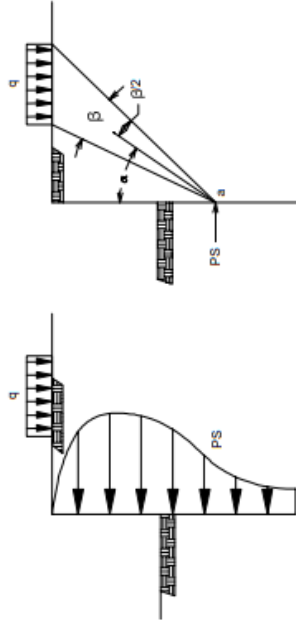
WHERE:

- PS = ACTIVE PRESSURE FROM SURCHARGE LOADING
- β = ATAN((CLT + TL/2) / HS) - ATAN((CLT - TL/2) / HS) IN RADIANS
- α = (β/2 + ATAN((CLT - TL/2) / HS)) IN RADIANS
- q = UNIFORM SURCHARGE LOAD FROM TRAINS = 80 KIPS/(5) (TL)
- CLT = DISTANCE FROM FACE OF RETAINING WALL TO CENTERLINE OF TRACK
- TL = TIE LENGTH = 8.5' STANDARD
- HS = DEPTH BELOW APPLIED SURCHARGE LOADING

Table 1 - Lateral Pressure from E-80 Train Loads  
(from Boussinesq Equation)

Depth (Feet)	0	2	4	6	8	10	12	14	16	18	20
0	0.7	0.685	0.672	0.659	0.646	0.633	0.62	0.607	0.594	0.581	0.568
2	0.535	0.53	0.525	0.519	0.514	0.509	0.503	0.498	0.493	0.487	0.482
4	0.44	0.435	0.43	0.425	0.42	0.415	0.41	0.405	0.4	0.395	0.39
6	0.36	0.355	0.35	0.345	0.34	0.335	0.33	0.325	0.32	0.315	0.31
8	0.29	0.285	0.28	0.275	0.27	0.265	0.26	0.255	0.25	0.245	0.24
10	0.23	0.225	0.22	0.215	0.21	0.205	0.2	0.195	0.19	0.185	0.18
12	0.18	0.175	0.17	0.165	0.16	0.155	0.15	0.145	0.14	0.135	0.13
14	0.14	0.135	0.13	0.125	0.12	0.115	0.11	0.105	0.1	0.095	0.09
16	0.11	0.105	0.1	0.095	0.09	0.085	0.08	0.075	0.07	0.065	0.06
18	0.09	0.085	0.08	0.075	0.07	0.065	0.06	0.055	0.05	0.045	0.04
20	0.07	0.065	0.06	0.055	0.05	0.045	0.04	0.035	0.03	0.025	0.02
22	0.05	0.045	0.04	0.035	0.03	0.025	0.02	0.015	0.01	0.005	0.005
24	0.03	0.025	0.02	0.015	0.01	0.005	0.005	0.005	0.005	0.005	0.005
26	0.01	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
28	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
30	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
32	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
34	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
36	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
38	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
40	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
42	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
44	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
46	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
48	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
50	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

All pressures shown are in kips per sq. ft.  
Values represent the maximum pressure ordinate for each value of "CLT".



NOTES:

- TABLE 1 PROVIDES THE RESULTANT LATERAL PRESSURES FOR VARIOUS DEPTHS AND DISTANCES FROM THE CENTERLINE OF TRACK. THREE REPRESENTATIVE PRESSURE CURVES ARE ALSO SHOWN ON THE PROVIDED SAMPLE CURVES FROM BOUSSINESQ EQUATION.
- FOR A SIMPLIFIED ENGINEERING ANALYSIS, THE RAILROAD LOADING SURCHARGE PRESSURE MAY BE ASSUMED RECTANGULAR WITH WIDTH (P) EQUAL TO 0.8 OF THE MAXIMUM PRESSURE ORIGINATE AS GIVEN BY THE APPROPRIATE RAILROAD CURVE.
- WORK THIS DRAWING WITH PUBLIC PROJECTS MANUAL APPENDIX H, SECTION H.1.6 (OVERHEAD BRIDGE) OR SECTION H.2.8 (UNDERPASS BRIDGE).



PUBLIC PROJECTS MANUAL  
TYPICAL DRAWINGS  
SHORING DESIGN GUIDE  
LATERAL PRESSURES FROM  
TRAIN LOADS

REF. NO.: SEC 3 - BRG 1  
DATE: AUGUST 1, 2016  
DRAWING NO.: 8





P.O Box 348  
12560 Middleton Pike  
Bowling Green, Ohio 43402  
(419) 354-9090

## CHECK LIST FOR CONTRACTORS

The purpose of this check list is to assist District personnel in assessing contractor compliance to District, State and Federal regulations that address occupational and environmental safety. In addition, this check list is designed to assist contractors in developing a safety strategy for District projects.

### YES/NO

#### Trenching and Excavation Work

- /    1. Does the contractor have a Trenching/Shoring policy in accordance with OSHA requirements?
- /    2. Does the contractor have a soil competent person on staff?
- /    3. Does the contractor have the equipment necessary to safely excavate/trench and shore?
- /    4. Is the contractor prepared to secure any trenches or excavations that may need to be left open over night/weekend?
- 5. **List Excavation Competent Person(s):** \_\_\_\_\_
- 6. **List Water Containment Method(s):** \_\_\_\_\_

#### Confined Space Entry

- /    7. Permit required confined space?
- /    8. Does the contractor have a formal CSE program in accordance with OSHA requirements?
- /    9. Does the contractor have the necessary equipment to safely enter the space?
- /    10. Has the District supplied information on the hazards associated with the space(s)?
- 11. **List Confined Space Competent Person(s):** \_\_\_\_\_

#### Fall Protection

- /    12. Does the contractor have a formal fall protection program in accordance with OSHA requirements?
- /    13. Does the contractor have the necessary fall protection equipment to safely perform the tasks?

#### Lockout/Tagout

- /    14. Does the contractor have a written LOTO Program that they can provide to the District?
- /    15. Are the contractors employees provided with locks and tags?

\_\_\_/\_\_\_ 16. Will the District's employees need to lockout energy sources in conjunction with the contractor? **(If Yes- then the District must provide the contractor with a copy of our LOTO Program and notify all parties involved that LOTO will occur.)**

Chemicals

\_\_\_/\_\_\_ 17. Does the contractor plan to use ANY products on District property?

\_\_\_/\_\_\_ 18. Has the contractor provided the District with the Material Safety Data Sheet(s)?

ARC FLASH(AF)

\_\_\_/\_\_\_ 17. Does the contractor have and ARC Flash/Electrical safety policy?

\_\_\_/\_\_\_ 18. Does the contractor poses the appropriate AF PPE?

**List Emergency Contact Numbers:**

- 1.
- 2.
- 3.

**Identify First-Aid Location:**

\_\_\_\_\_  
Printed Name of Company President or Representative

\_\_\_\_\_  
Signature of Company President or Representative

**SECTION 01090**  
**REFERENCE STANDARDS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes reference standards.

**1.02 DESIGNATION OF ASSOCIATIONS, INSTITUTIONS, SOCIETIES AND STANDARDS**

- A. Whenever in these Specifications reference is made to Associations, Institutions, Societies, or Standards, they will be designated as follows:

AA	-	Aluminum Association
AAMA	-	Architectural Aluminum Manufacturers Association
AASHTO	-	American Association of State Highway and Transportation Officials
ACI	-	American Concrete Institute
ADAAG	-	Americans with Disabilities Act Accessibility Guidelines
AFBMA	-	Anti-Friction Bearing Manufacturers Association
AFI	-	Air Filter Institute
AGA	-	American Gas Association
AGMA	-	American Gear Manufacturers Association
AIHA	-	American Industrial Hygiene Association
AISC	-	American Institute of Steel Construction
AISI	-	American Iron & Steel Institute
AITC	-	American Institute of Timber Construction
AMCA	-	Air Moving and Conditioning Association
ANSI	-	American National Standards Institute
API	-	American Petroleum Institute
ARI	-	Air Conditioning and Refrigeration Institute
ASA	-	American Standards Association
ASHRAE	-	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	-	American Society of Mechanical Engineers
ASTM	-	American Society for Testing Materials
AWPB	-	American Wood Preservers Bureau
AWS	-	American Welding Society
AWWA	-	American Water Works Association
BLS	-	Bureau of Labor Standards
CISPI	-	Cast Iron Soil Pipe Institute
FM	-	Factory Mutual
FS	-	Federal Specifications
IBR	-	Institute of Boiler and Radiator Manufacturers
IEEE	-	Institute of Electrical and Electronic Engineers
INETA	-	International Electrical Testing Association

ISA	-	Instrument Society of America
JIC	-	Joint Industrial Council
ODOT	-	Ohio Department of Transportation
NBS	-	National Bureau of Standards
NEC	-	National Electrical Code
NEMA	-	National Electrical Manufacturers Association
NFPA	-	National Fire Protection Association
NICET	-	National Institute for Certification in Engineering Technologies
NSF	-	National Sanitation Foundation
NRTL	-	Nationally Recognized Testing Laboratory
OSHA	-	Occupational Safety and Health Act
SMACNA	-	Sheet Metal and Air Conditioning Contractors National Association, Inc.
SSPC	-	Steel Structures Painting Council
OBC	-	Ohio Building Code
IBC	-	International Building Code
UBC	-	Uniform Building Code
UL	-	Underwriters Laboratories, Inc.
USBM	-	United States Bureau of Mines

- B. Wherever specific standard numbers are indicated, i.e., ASTM C150, it shall be understood to mean the latest revision thereof.

## **PART 2 PRODUCTS**

Not used.

## **PART 3 EXECUTION**

Not used.

## **PART 4 SPECIAL PROVISIONS**

### **4.01 NORTHWESTERN WATER & SEWER DISTRICT SPECIFICATIONS**

- A. The General Notes and Specifications of the Northwestern Water & Sewer District shall be followed for the execution of the work, as modified by these Specifications.
- B. The Contractor shall bring any discrepancies between the District's specifications and these specifications to the attention of the Engineer for interpretation.
- C. References to the "District" shall mean the Northwestern Water & Sewer District.

END OF SECTION



**SECTION 01300  
SUBMITTALS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes requirements for submittals.
- B. Contractor shall adhere to the submittal schedule as submitted under the provisions of the General Conditions. Contractor shall modify the schedule as required to allow sufficient time for submittal review based on current construction schedule.
- C. Owner, Contractor and Engineer shall utilize the electronic project management system EPMS as specified in Section 01320 for the central repository of project related documents including but not limited to submittals, information for the record and Operation and maintenance manuals.

**1.02 COORDINATION OF SUBMITTALS**

- A. The Contractor shall be responsible for the coordination of submittals and field verifications as required for the various parts of the Work.
- B. All submittals to the Engineer, unless otherwise specified, shall be made only by the Contractor. Direct submittals from subcontractors or suppliers will not be accepted.
- C. All submittals shall reference the Specification item that it covers, the Contractor's name, the Contract title and location, and the date of submission. Submittal shall also indicate whether the information is for the Engineer's review and approval, for record purposes, or for the fulfillment of the operation and maintenance requirements.

**PART 2 PRODUCTS**

**2.01 GENERAL**

- A. Two categories of information are normally required:
  - 1. Shop Drawings for review.
  - 2. Information for Record:
    - a. Operation and maintenance manuals.

**2.02 SHOP DRAWINGS FOR REVIEW**

- A. Shop Drawings:
  - 1. The Contractor shall submit Shop Drawings in accordance with the General Conditions, as required by individual Sections, shown on the Drawings or as directed.

2. The Contractor shall indicate all variances from the requirements of the Contract Documents in accordance with the General Conditions.
  3. The Contractor shall clearly indicate quantities and the exact intended use of the equipment or material contained in the submittal.
  4. All Submittals shall be tailored to the project by high-lighting appropriate information and deleting or crossing out nonapplicable information or where applicable the Contractor shall provide a data sheet with all necessary information to correctly identify the applicable Sections of the manuals for the actual material or equipment furnished. All options furnished shall be indicated.
  5. Color charts or samples shall be included for all submittals where a color selection by the Owner is required. Original Color Charts (not Color Copies) and samples shall be delivered to the Site, Engineer's RPR or Owner as required. The Engineer shall be copied on the transmittal letter for record purposes.
- B. Samples shall be provided as required in the individual Sections. Samples shall be of the precise material proposed to be furnished. The number of samples and sample size shall be the industry standard unless otherwise stated in the individual Sections.

### **2.03 INFORMATION FOR RECORD**

- A. Material certificates shall be submitted for materials as indicated in the individual Sections. The certificate shall state that the products have been sampled and tested in accordance with the proper industrial and governmental standards and meet the requirements of the Specifications. Certificates shall be signed by an authorized agent of the manufacturer.
- B. Licenses and Permits - The Contractor shall submit copies of all licenses and permits required by Local, State, and Federal laws.
- C. Installation and calibration certificates shall be submitted for equipment as indicated in the individual Sections. These certificates shall indicate manufacturer's satisfaction with the installation, the accuracy of calibration and alignment, and the operation of the equipment. Such certificates must be signed by an authorized agent of the manufacturer.
- D. Progress Schedules shall be submitted in accordance with the General Conditions and Section 01310.
- E. Schedule of Shop Drawings and Sample Submittals shall be submitted in accordance with the General Conditions.
- F. Schedule of Values shall be submitted in accordance with the General Conditions.
- G. Copy of programming for all PLC's and computers on the project.

### **2.04 OPERATION AND MAINTENANCE INFORMATION**

- A. Operation and maintenance manuals shall be submitted as information for the record.

- B. Operation and maintenance manuals shall be submitted as electronic documents prior to the printing of the record copy.
  - 1. Contractor shall provide one electronic copy of the manuals for preliminary review.
  - 2. The final accepted manuals shall be provided as one electronic copy of the manual and one printed copy as specified below.
- C. Electronic manuals shall be in Portable Document Format (PDF) as generated by Adobe Professional Version 7.0 or newer. The PDF file shall be fully indexed using the table of contents, searchable with thumbnails generated. PDF documents shall have bookmark created in the navigation frame for each major entry (Section, Chapter, Tab) in the table of contents. PDF images shall be at a readable resolution typically 300 dpi or higher. Optical Character Recognition (OCR) capture shall be performed on these images text can be searched, selected and copied from the PDF file.
  - 1. The opening view of each PDF document shall be the bookmarks to the left and cover page or table of contents.
  - 2. The PDF file name shall include the Name of Owner, Project title, Contract Number, and Specification Section. Commonly used abbreviations acceptable to the Owner may be used to minimize length of file name.
  - 3. The Contractors Name shall be the electronic "Author" of the PDF document.
- D. This information will be reviewed only if properly identified with Specification Section numbers and only after revised, where necessary, to conform to the Engineer's notes on previous submittals that have been marked "Make Corrections Noted." Manuals shall be tailored to suit the specific equipment provided.
- E. Submittals shall include but not limited to the following:
  - 1. Descriptive literature, bulletins, or other data covering equipment or system.
  - 2. Complete list of equipment and appurtenances included with system, complete with manufacturer serial number and model number.
  - 3. Utility requirements.
  - 4. General arrangement drawing.
  - 5. Sectional assembly.
  - 6. Dimension print.
  - 7. Materials of construction.
  - 8. Certified performance curve.
- F. Drawings shall be reduced to 8-1/2 by 11 inch or 11 by 17 inch. Where reduction is not possible, larger drawings shall be folded separately and placed in envelopes which are bound into the manual.
- G. Equipment installations shall not be considered substantially complete until all associated operation and maintenance manual submittals are accepted by the Engineer.

- H. Field modifications to equipment during installation shall be included in the manual so that the manual reflects as-built conditions. Revisions to the manual may be submitted for incorporation into the manual where appropriate. However, the Engineer reserves the right to return all six manuals for revision to reflect as-built conditions.

### **PART 3 EXECUTION**

#### **3.01 IDENTIFICATION OF SUBMITTALS**

- A. All submittals shall have a Submittal Identification & Approval cover sheet attached. A sample of the submittal cover sheet is attached for reference. The form will be provided by Engineer and coordinated with Contractor.
- B. All submittals shall be given a consecutive number when they are entered into the Electronic Project Management System (EPMS), See Section 01320.
- C. Resubmittals shall be entered into EPMS as resubmittals.
- D. Submittals to satisfy the operation and maintenance information requirements shall be entered into the EPMS as a submittal. The description shall have the prefix "OM".

#### **3.02 PRINTING AND DISTRIBUTION**

- A. Contractor shall provide printed copies of approved submittals and deliver them to the Owner and Engineers RPR at the Site.
- B. Contractor shall provide one printed copy of the approved operation and maintenance manual and the electronic copy on portable electronic media device to the Owner.
- C. Contractor shall provide printed copies of submittals, project information or documents required to satisfy the building permit and inspections as may be required by the governing agency.
  - 1. The Engineer will provide the stamped/sealed Contract Drawings for the initial filing of the building permit applications.

### **PART 4 SPECIAL PROVISIONS**

Not used.

END OF SECTION



## Submittal Identification & Approval

Date:	Spec Section
Submittal No.	Drawing Sheet No.
Description:	
Manufacturer(s)	
Contractor Comments/Deviations/Measurements	

Contractor	Engineer
<div>Contractor Name</div> <div><input type="checkbox"/> Approved <input type="checkbox"/> Forwarded <input type="checkbox"/> Checked</div> <div>By: _____ Date: _____</div>	<div>SHOP DRAWING REVIEW SUBJECT TO CONTRACT REQUIREMENTS Jones &amp; Henry Engineers, Ltd.</div> <div><input type="checkbox"/> Approved <input type="checkbox"/> Approved—Make Corrections Noted <input type="checkbox"/> Amend &amp; Resubmit <input type="checkbox"/> Rejected—See Remarks <input type="checkbox"/> Distribute for Information</div> <div>REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS. NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS</div> <div>Approval in no way relieves the Contractor of any responsibility for capacities, performance, functions, compliance with Federal, State, and Local Codes; accuracy of dimensions and details; or continuity and completeness of the Project nor does approval constitute or imply any increase in Contract Price.</div> <div>By: _____</div>

Review Comments



**SECTION 01310**  
**CONSTRUCTION SCHEDULES AND DOCUMENTATION**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes the requirements for construction schedules and construction sequences.
- B. This Section includes the requirements for the tracking and documentation of the progress and activities driving the completion of the Work as specified, shown on the Drawings and as directed.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Information for the Record:
    - a. Preliminary Construction Schedule.
    - b. Contractor's Construction Schedule and monthly updates.
    - c. Submittals Schedule.
- B. Contractor shall submit three copies of the 11-inch by 17-inch construction schedule, unless approved otherwise by the Engineer.

**1.03 QUALITY ASSURANCE**

- A. Scheduling conference shall be held prior to the commencement of the construction to discuss the following including, but not limited to:
  - 1. Construction sequencing.
  - 2. Contractor's coordination of subcontractors.
  - 3. Coordination with the Owner's operations.
  - 4. Coordination with other Contractor's or other Work.
  - 5. Project milestones.

**PART 2 PRODUCTS**

**2.01 PRELIMINARY CONSTRUCTION SCHEDULE**

- A. Preliminary construction schedule shall be completed in accordance with the General Conditions and prior to the scheduling conference.

- B. The preliminary schedule shall outline the Contractor's sequencing of tasks, activities, milestones, and all critical path items within the contract time.

## **2.02 CONSTRUCTION SCHEDULE**

- A. The Contractor's submission of the construction schedule will not change the contract completion date, whether reviewed by the Owner and Engineer or not. The Contractor shall incorporate all approved change orders that have resulted in a contract time extension.
- B. The Contractor shall require all subcontractors engaged in the Work to submit to the Contractor construction schedules, as specified herein, for incorporation into the Contractor's construction schedule.
- C. The construction schedule shall include, but not limited to, the following dates:
  - 1. Notice to Proceed.
  - 2. Substantial Completion and Final Completion.
  - 3. Commencement of on-site operations.
  - 4. Milestones as specified, shown on the Drawings, and as directed.
  - 5. Ordering, submittals, fabrication, delivery, startup, and training time of major equipment items.
  - 6. Submittal schedule per the General Conditions.
- D. The Contractor shall incorporate into the construction schedule all constraints and work restrictions specified or otherwise required by the Contractor's operations, including, but not limited to, the following:
  - 1. Construction sequencing.
  - 2. Contractor's coordination of subcontractors.
  - 3. Coordination with the Owner's operations.
  - 4. Coordination with other Contractor's or other work.
  - 5. Project milestones.
  - 6. Owner's partial utilization.

## **2.03 UPDATING CONSTRUCTION SCHEDULE**

- A. The Contractor shall keep the construction schedule current to the progress of the Work continually through closeout of the project. The construction schedule shall be submitted monthly for the Engineer's review.

## **2.04 WEEKLY CONSTRUCTION SCHEDULE**

- A. The Contractor shall submit a schedule of his work for each week. This schedule shall identify the foreman of each work crew and the location and type of work the crew will



be doing each day. It shall be delivered no later than 4:00 p.m. of the next to last regular workday of the preceding week to the Owner and Engineer.

### **PART 3 EXECUTION**

#### **3.01 COORDINATION**

- A. All phases of the Work requiring interference with normal operations of the existing facilities shall be scheduled in accordance with agreements among the Contractor, Owner, and Engineer. The Contractor shall notify the Owner at least one week before such Work is to begin.

### **PART 4 SPECIAL PROVISIONS**

#### **4.01 SCHEDULED NON-WORK DAYS**

- A. The Contractor shall restrict Work to Monday thru Friday between 7:00 a.m. and 7:00 p.m. and consider the following list of holidays as mandatory non-work days, all of which shall be incorporated into the construction schedule:
  - 1. New Year's Day.
  - 2. Memorial Day.
  - 3. Fourth of July.
  - 4. Labor Day.
  - 5. Thanksgiving Day.
  - 6. Day after Thanksgiving Day.
  - 7. Christmas Eve Day.
  - 8. Christmas Day.

END OF SECTION



**SECTION 01320  
ELECTRONIC PROJECT MANAGEMENT SYSTEM (EPMS)**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This section describes the requirements for the Electronic Project Management System (EPMS) which will be required on this project.
- B. The Engineer will be responsible for setting up and paying for the cost of the EPMS.
  - 1. The EPMS shall be provided through eCommunication by Eastern Engineering, 866-884-4115; [www.easternengineering.com](http://www.easternengineering.com).
- C. Engineer will implement an internet/web site based Electronic Project Management System (EPMS) for the administration of the Contract on this project. Owner, Contractors and Engineer shall be responsible to interface with EPMS and collaborating via the EPMS on this project. The EPMS is intended to supplement the Contract Documents and the provisions of the Contract Documents shall not be superseded by the EPMS.
  - 1. The EPMS is intended to provide a mode of communication which is electronic and to reduce the reliance upon printed documents. Printed documents transmitted will not be reviewed, and electronic documents emailed outside of the EPMS will not be reviewed. The Owner, Contractor and Engineer will collaborate on unique situations or circumstances in order to preserve the project electronic records.
- D. The Owner, Contractor and Engineer shall be required to provide project related information/documents via EPMS. In general, the EPMS will receive information via uploaded documents as PDF documents, in their native format (when permitted or required), or other electronic formats designated or required for functionality. The EPMS shall be a central repository for information to all project team members. The EPMS will provide viewing, printing, up/down loading of various information/documents.
- E. In general, the following is a partial list of information/documents which shall be tracked through the EPMS:
  - 1. Drawings, Specifications and Addendums (included revisions as necessary).
  - 2. Insurance.
  - 3. General Project Communication, Emails, Letters, Correspondence and Collaboration or any other document any participant wishes to make part of the project records.
  - 4. Request for Information (RFI).
  - 5. Submittals (Shop Drawings, Operation and maintenance manuals, color selections etc.)

6. Work Change Directives, Change Request and Change Orders.
  7. Schedule of Values, Pay Requests and Certified Payroll Reports.
  8. Reports and Photos (daily, monthly, etc.).
  9. Schedules (project, weekly and monthly).
  10. Meeting Agendas and Minutes.
  11. Permits and Special Inspections Reports.
  12. Laboratory Services (testing and reporting).
  13. Closeout procedures (deficiency list, warranty, substantial completion).
  14. Record Drawings.
- F. In an effort to protect proprietary information and prohibit unauthorized use or modifications, levels of access security will be assigned in order to provide safe and secure access to information with respects to involvement and responsibility on the project. The Owner, Contractor and Engineer shall establish these levels of access and rights which are appropriate for this project.
- G. Owner, Contractor and Engineer shall utilize the mark-up tool integral within the EPMS or have a PDF review software that includes the ability to mark up and apply electronic stamps (such as Adobe Acrobat, or Bluebeam PDF Revu).
- H. A high-speed internet connection is required.
- I. The EPMS will provide notifications regarding new or updated documents through an existing Email account outside of the EPMS.

## **PART 2 PRODUCTS**

Not used.

## **PART 3 EXECUTION**

### **3.01 CONTRACT REQUIREMENTS**

- A. All provisions of the Contract Documents are in full effect and enforcement. The submittal procedures specified in the Contract Documents are applicable with the understanding that they will be electronic documents and submitted via the EPMS.

### **3.02 PRINTING, REPRODUCTION AND DISTRIBUTION**

- A. The Engineer will not be responsible for printing reproduction or preparation of any hard copy documents, or the cost of doing so.
- B. Contractor shall produce printed copies of all submittals as required in Section 01300 and in the Contract Documents.

### **3.03 TRAINING**

- A. One training session by the Engineer and Eastern Engineering, Inc. will be provided to the team members at the beginning of the EPMS implementation. Training will be coordinated with the Preconstruction meeting and held at the same location. There are many tutorials, help features and technical support options located on the Eastern Engineering web site.
- B. Engineer will provide project related support as needed within their ability to provide it. Technical support will be available to all project team members from Eastern Engineering, Inc.

### **3.04 OPERATION**

- A. Contractor and all Subcontractors shall maintain a Windows-based computer system including high speed internet access and ability to create/mark-up documents using Adobe Acrobat (pdf) and to scan documents.
- B. Engineer will facilitate the implementation and overall operation of the EPMS with Eastern Engineering. Eastern Engineering will provide and maintain the EPMS server and will back up the information.

### **3.05 ARCHIVE PROJECT CLOSE OUT**

- A. All files on the EPMS web site will be archived at the end of the project. These archives will be made available to the Owner, Contractors and Engineer for download over the internet, at the end of the warranty period.

### **3.06 ELECTRONIC SUBMITTAL FILE NAMING CONVENTION**

- A. The Contractor shall utilize the following file name convention for PDF files submitted through eComm:
  - 1. Spec Section - Number of Submittal from Section - Number of Times Submitted.
    - a. Example: 02552-01-03.
  - 2. The example represents the first submittal from Specification Section 02552 and the third time this Submittal has been submitted.

## **PART 4 SPECIAL PROVISIONS**

Not used.

END OF SECTION



**SECTION 01350  
COMMON PRODUCT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes general requirements for all materials, equipment and systems furnished or installed under this project.
- B. Additional specific requirements included under a particular Section shall take precedence.
- C. This Section includes, but is not limited to, the following procedural and administrative requirements:
  - 1. Product Delivery Storage and Handling.
  - 2. Warranties.
  - 3. Quality Assurance and Control.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and related specification sections.
- B. The specification sections and Drawings contain the specific submittal requirements.

**1.03 QUALITY ASSURANCE**

- A. Where Contractor is required to provide design services or certification of the design, the specified product, equipment or system shall comply with the specified criteria.
  - 1. Contractor shall submit a written request for clarification when specified criteria is incomplete or insufficient.
- B. Manufacturer's name, make, model number and other designations provided in the contract documents are to establish the significant characteristics, including but not limited to, type, function, dimensions and physical properties, performance, and appearance for the purpose of evaluating comparable products. Contractor shall verify product, equipment or system proposed meets or exceeds the requirements as specified or shown on the Drawings.

**1.04 PROJECT HANDLING**

- A. Schedule delivery to minimize the time goods are kept in storage.
- B. Deliver goods to Site in manufacturer's original packaging.
- C. Inspect the goods to determine if there is visible damage to the packaging.
  - 1. The packaging shall be removed in a manner that will allow resealing for storage.

2. If packaging cannot be removed and reused, the goods shall be repackaged per the manufacturer's recommendations.
- D. Goods that are susceptible to damage by the environmental or project conditions, including but not limited to, switchgear, motor control centers, panelboards, instrument control panels, fixtures shall be stored in a controlled environment per the manufacturer's recommendations. If no such area is available at the time such equipment is received, such space shall be provided by the Contractor at no expense to the Owner.
- E. Where construction is in roads or streets, that portion of the right-of-way not required for public travel may be used for temporary storage purposes unless otherwise prohibited. Materials shall not be stored in areas where such storage creates a hazard. Any other additional space required for construction or storage of materials and equipment shall be obtained by the Contractor at his expense.
- F. The Contractor shall confine his equipment, the storage of materials and equipment, and the operations of his workers to areas permitted by law, ordinances, permits, and the requirements of the Contract Documents, and shall not unreasonably encumber the premises with materials or equipment.

#### **1.05 GUARANTEE**

- A. Manufacturer's warranty, extending beyond one-year after substantial completion for the specified product, equipment or system shall be provided to the Owner and endorsed by the manufacturer.
- B. Requirements for warranties extending beyond one-year after substantial completion are described in individual Sections of these specifications.
- C. Manufacturer's limitations and disclaimers shall not relieve the Contractor from warranty obligations under the Contract Documents.

#### **PART 2 PRODUCTS**

Not used.

#### **PART 3 EXECUTION**

##### **3.01 INSTALLATION**

- A. Products shall be installed in accordance with the manufacturer's instructions and Contract Documents.
- B. Required appurtenances including but not limited to, anchors, grout, and leveling shims, shall be provided.

#### **PART 4 SPECIAL PROVISIONS**

Not used.

END OF SECTION



**SECTION 01410  
LABORATORY SERVICES**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. The Contractor shall retain an independent laboratory.
- B. Testing, inspection(s) and quality control are required to certify compliance with the Contract Documents.
  - 1. The laboratory services do not relieve the Contractor from the responsibility of compliance with the Contract Documents
  - 2. Any test required by the Owner shall not relieve the Contractor from the responsibility of compliance with the Contract Documents.
  - 3. Any test required by the Owner shall not relieve the Contractor from the responsibility of supplying certificates from manufacturers or suppliers to demonstrate compliance with the Specifications.
- C. Specific testing, inspection(s) and quality control requirements are specified in the individual Sections of the specifications.
- D. Specific testing, inspection(s) and quality control requirements of any Federal, State or Local authorities are specified in the related sections of Work.
- E. Testing of materials or equipment for compliance with various national or technical society standards and ordinarily performed by manufacturers, and shop and field tests of equipment are not included under this Section but shall be performed by the Contractor or his supplier as specified elsewhere.
- F. Contractor may conduct material or field test(s), inspection(s) and quality control as they deem necessary.
  - 1. Should the Contractor, at any time, desire the Owner to consider the results of such testing, inspection(s), and quality control, such results shall be certified by an independent testing laboratory acceptable to the Owner. Any testing of this nature shall be conducted at the Contractor's expense.

**1.02 SUBMITTALS**

- A. Submittals of all required field and laboratory test results shall be made by the independent laboratory as soon as they are available to the Owner and Engineer directly.
  - 1. Statement of Compliance per 1.03

### 1.03 QUALITY ASSURANCE

1. The laboratory shall be a recognized and independent commercial laboratory with experience in conducting the required tests.
2. Laboratory shall certify compliance with ASTM E548, ASTM E329, and ASTM C1093 when masonry construction is part of the project scope. In lieu of ASTM certification, the laboratory may submit written documentation demonstrating experience and training relevant to the inspections to be performed. The documentation shall demonstrate experience with projects of similar complexity and quantity of inspections as the project herein.
3. Testing, inspection(s) and quality control shall be certified by a professional engineer specialized in the related field and in the state where the Site is located.

## PART 2 PRODUCTS

### 2.01 TESTS

- A. Aggregates, Bedding Material, and Special Backfill - For each type of material, the laboratory shall perform an ASTM C136 sieve and screen analysis to determine compliance with the contract documents.
  1. Retests shall be performed until the Specifications are met.
  2. Retest shall be performed each time the source of material is changed.
- B. Selected Backfill - At the discretion of the Engineer, but in no case, more than one test for each 1,000 cubic yards or portion thereof, the laboratory shall perform an ASTM C136 sieve and screen analysis to determine whether the material is suitable for backfilling purposes.
- C. Mix Designs:
  1. For each type of controlled density fill, concrete, and asphalt, the laboratory shall review, perform test(s).
  2. Review, perform test(s) and approve change in source of materials.
  3. The asphalt design shall be made in accordance with ASTM D1559, the Marshall Method of Mix Design and as specified.
  4. Approved mix designs shall include sieve analyses and suppliers' certificates for materials incorporated in the mix.
- D. Compaction Tests:
  1. For each type of backfill material, the laboratory shall determine the moisture-density curve according to ASTM D698.
  2. Using ASTM D2922 test methods, the laboratory shall determine the density of placed backfill.

3. Retests shall be performed if the compaction requirements stated in the individual Sections are not met.
  4. The Engineer may at his discretion require the sand cone (ASTM D1556) or the balloon (ASTM D2167) tests for density and compaction to verify questionable results of the ASTM D2922 tests.
- E. The independent testing laboratory shall test and report the soil bearing capacity under all foundations and slabs on grade. The testing shall be conducted at regular intervals in all directions. The independent testing laboratory shall immediately notify both the Contractor and Engineer of any such test not meeting the presumed soil bearing capacity contained in the Structural Design Data on the Drawings.
- F. Asphalt and Concrete Quality Control Testing - Perform tests as indicated in Sections 02600 and 03300.
- G. Miscellaneous Tests - Perform all other tests requested in the individual Sections of the Specifications.

## **2.02 PLANT INSPECTIONS**

- A. Inspect and certify asphalt and concrete plants as indicated in Sections 02600 and 03300, respectively.

## **2.03 EQUIPMENT**

- A. Provide all necessary equipment to extract and store samples and perform the required tests.

## **PART 3 EXECUTION**

### **3.01 COORDINATION**

- A. The Contractor shall provide the source of all materials requiring testing and shall arrange access for the independent laboratory to obtain representative samples and perform required tests at the material source. The information shall be supplied in advance to allow time for testing and reporting. Concrete information shall be supplied at least 45 days prior to the first concrete placement.
- B. Contractor shall coordinate activities to accommodate the required quality assurance/control.
1. Contractor shall not compromise the requirement for quality assurance /control in order to maintain the schedule.
- C. The laboratory shall conduct tests on materials and in locations as directed by the Resident Project Representative.
- D. All tests shall be performed in accordance with the proper test methods mentioned above and in the individual Sections. Results shall be compared to the required values included in the individual Sections.

**3.02 PREPARATION**

- A. Contractor shall prepare all Work to be tested in accordance with the testing procedures as directed and required by independent laboratory, regulatory agency, or Owner and Owner's representative.

**3.03 PROTECTION**

- A. Contractor shall at the completion of testing, repair damage to construction in accordance with these specifications.
- B. Contractor shall be responsible for the protection regardless of the responsibility for quality assurance/control.

**PART 4 SPECIAL PROVISIONS**

Not used.

END OF SECTION

**SECTION 01500  
MAINTAINING TRAFFIC**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes the furnishing of all labor, materials, equipment and services necessary for maintaining and protecting vehicular and pedestrian traffic.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Information for the Record:
    - a. The Contractor shall submit the name, address, and telephone number of a local individual who will be responsible for maintaining traffic facilities when the Contractor is not working.
    - b. Traffic control or maintenance plans with governing authority(s) approval.
    - c. Detour routes with governing authority(s) approval.
    - d. Delivery and haul routes for contractor's activities outside the zone of influence.

**1.03 QUALITY ASSURANCE**

- A. The installation, maintenance, and operation of all traffic controls and traffic control devices shall conform to the requirements of the State Department of Transportation Manual of Uniform Traffic Control Devices for Streets and Highways, hereinafter called the MUTCD.
- B. If, in the opinion of the authority having jurisdiction over traffic in the affected thoroughfares, proper maintenance of traffic facilities and proper provisions for traffic control are not being provided by the Contractor, they may take the necessary steps to place them in proper condition, and the cost of such services will be deducted from any money which may be due or become due the Contractor.
- C. A traffic control conference, attended by Owner, Engineer, Contractor and governing authority, shall be held no later than 14 days prior to any traffic maintenance, placement of traffic control devices, lane closures, detouring of traffic or other activity that impedes the normal traffic flow.

## **PART 2 PRODUCTS**

### **2.01 TRAFFIC CONTROL DEVICES**

- A. Traffic control devices shall be provided with suitable supports of sufficient strength and stability.
- B. Faces of orange construction signs, barricades, vertical panels and drum bands shall be suitably reflectorized with sheeting.
- C. Traffic cones shall be a highly visible orange color.
- D. Pavement markings for traffic maintenance shall conform to the requirements of ODOT, the local authority and the MUTCD.

### **2.02 TEMPORARY TRAFFIC SIGNALS**

- A. The Contractor shall furnish, erect, maintain, and subsequently remove signal and signal controller equipment of a proper type and capacity to provide the required operation, and shall meet the general requirements of ODOT and the MUTCD.
  - 1. Any malfunctions or failures shall be corrected without delay. Temporary traffic signals not in use shall be covered or removed.
- B. The Contractor shall be responsible for the procurement of and payment for electric power for temporary traffic signals.

## **PART 3 EXECUTION**

### **3.01 COORDINATION**

- A. The Contractor shall provide and maintain in safe condition such temporary facilities for vehicular and pedestrian traffic as may be necessary to provide safe vehicular and pedestrian ingress and egress for all property adjacent to the improvements. Such access shall be provided at all times unless workers or machinery are in the immediate area. Access shall be provided to all properties at the end of the Work day.
- B. When the street or highway under construction is being used by vehicular traffic including periods of suspension of the Work, the Contractor shall maintain that portion of the street or highway being used to ensure that it is smooth, free from holes, ruts, ridges, bumps, and dust.
- C. The Owner will enter upon that portion of a project, where the Contractor is responsible for maintaining through traffic on part or the entire project, to place abrasives at its own expense, as may be considered advisable.
  - 1. The Contractor shall be responsible for the removal of abrasives placed, for which no claim for additional compensation shall be allowed nor shall the Contractor be relieved in any way of his obligation for maintenance of traffic.
- D. The Owner will provide for the necessary maintenance of public streets or highways which are used as detour beyond the Work limits of the contract.

### 3.02 TRAFFIC CONTROL

- A. Barricades, vertical panels, and cones shall be protected by adequate advance warning construction signs.
- B. Equipment and material stored on the highway shall be marked at all times. At night, any such material or equipment stored within rights-of-way and easement(s) shall be clearly outlined with dependable lighted devices.
- C. Contractor shall provide any other lights, barricades, etc., that may be needed for the protection of pedestrian traffic in all areas where materials are stored.
- D. Road Closed - When a highway is permitted to be closed to traffic, the Contractor shall provide, erect, maintain, and subsequently remove approved traffic control devices, barricades, and suitable and sufficient red or yellow lights.

### 3.03 TRAFFIC MAINTAINED

- A. Where the street or highway under construction is being used by vehicular traffic, including periods of suspension of the Work, the Contractor shall furnish and maintain pavement markings, lights, warning signs, road construction traffic maintained signs, and end construction signs, barricades, temporary guardrail, and such other traffic control devices, and flaggers as may be necessary to maintain safe traffic conditions within the Work limits.
- B. Existing signs and traffic control devices within the Work limits shall remain in use during the construction period. If the Contractor needs to relocate or modify permanent signs and other traffic control devices as a consequence of his work, he shall provide suitable supports and may modify the devices with prior approval of the Engineer and the concurrence of the maintaining agency. Routine maintenance of permanent traffic control devices will remain the responsibility of the maintaining agency.
- C. The function of existing Stop or Yield signs shall be retained at all times although their position may be adjusted. Existing signs that must be relocated laterally shall be placed in accordance with the MUTCD.
- D. When an existing signal operation must be interrupted for a period, the Contractor shall provide a temporary traffic control method.
- E. The Contractor shall obtain the approval of the Owner and Engineer before closing a traffic lane or establishing a one-way traffic operation.
- F. Flaggers:
  - 1. Whenever one-way traffic is established, at least two flaggers shall be used and signs, cones, barricades, and other traffic control devices shall be erected by the Contractor in accordance with the MUTCD. The Contractor shall maintain positive and quick means of communication between the flaggers at the opposite ends of the restricted area.
  - 2. Flaggers shall be equipped according to the standards for flagging traffic contained in the MUTCD. At night, flaggers' stations shall be adequately illuminated.

3. The Contractor may, in lieu of flaggers, or supplementing them, furnish, install, and operate a temporary traffic signal or signals, for the purpose of regulating traffic.

### **3.04 SNOW AND ICE REMOVAL**

- A. The state and local authority responsible for snow and ice removal will be responsible for removals during the construction provided the following:
  1. The project area is open to public access.
  2. In the opinion of the state and local authority the project area is accessible with their equipment.
  3. In the opinion of the state and local authority the street surface will not cause damage to their equipment or their equipment will not cause damage to the street.
- B. The Contractor shall be responsible for snow and ice removal during construction when:
  1. The project area is closed to public access.
  2. When Limited access is provided for local traffic but area is closed to through traffic.
  3. The project area pavement has removed or damaged to the extent that the state and local authority's equipment will no longer effectively remove snow and ice or will cause damage to project area.

## **PART 4 SPECIAL PROVISIONS**

### **4.01 RESTORATION OF PAVEMENT SURFACES OUTSIDE THE ZONE OF INFLUENCE**

- A. Contractor shall restore all damaged pavement surfaces in streets used by the Contractor for moving materials and equipment to and from the construction area and streets used for bypassing or detouring traffic around the construction area.
- B. Materials used in replacing damaged areas of the road shall be as specified in Section 02600 of these Specifications.
- C. The pavement shall be restored with pavement of the same type and thickness as the existing pavement, in accordance with Section 02600 of these Specifications.

### **4.02 TRAFFIC MAINTAINED**

- A. The following stipulations are provided relative to the proposed work planned in the roadway as part of the project.
  1. Equipment stored on the roadway must be protected with ODOT NJ Type PCBs with illuminated beacons.
  2. One Lane Traffic - A minimum of one-lane shall be maintained when work is occurring in all roadways unless noted otherwise. When work passes through



intersections, the Contractor shall provide the proper signage to prevent vehicles from crossing through the work zone.

3. The Contractor shall provide required signage for lane closures.
4. The Contractor shall furnish the services of law enforcement officer and patrol car equipped with flashing lights if required.

#### **4.03 DRIVEWAY ACCESS**

- A. The Contractor shall notify each resident of any restricted access to their property no later than one week in advance. The Contractor shall make provisions for residents to gain access to their driveways within three days after pavement in front of each residence is removed and subsequently maintain access until such time when the drive apron will be completed removed and replaced. Steel plates shall be available on site for the purpose of maintaining traffic.

#### **4.04 ROAD CLOSURES AND DETOURS**

- A. The Contractor shall be responsible for obtaining the necessary approvals and permits from the Village of McComb relative to road closures and detour routes required for the work.
- B. West Cooper street between Rader Rd and N Church St may be closed to through traffic for a period of 14 days to permit water main construction.
- C. North Todd Street may be closed to through traffic for an 8-hour day to permit water main connection to the existing water main.
- D. South Main Street between E. Main Street and N. Park Drive may be closed to through traffic for a period of 10 days to permit water main construction under Norfolk Southern railroad.
- E. The Contractor shall provide required signage for road closures and detour routes.
- F. Roadways shall be opened to traffic at the end of each day with temporary pavement or steel plates.

END OF SECTION



**SECTION 01565  
TEMPORARY RESTORATION AND MAINTENANCE  
OF PAVEMENTS, CURBS, AND WALKWAYS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes temporary restoration and maintenance of pavements, curbs, and walkways.
- B. Restoration:
  - 1. The Contractor shall promptly restore as herein specified all curbs, walks, driveways, and roadways affected by the Work done under this Contract as soon as any sufficient portion thereof has been completed. Such temporary restoration shall be maintained in satisfactory condition until permanent restoration work replaces the temporary Work.
- C. Maintenance:
  - 1. All temporary pavement, sidewalks, and other pavements affected by the Contractor's operations shall be maintained by the Contractor at his expense in a suitable and safe condition for traffic until permanent replacement is to be made.
  - 2. This Section includes maintenance in or along streets in which construction is taking place; streets used for moving materials and construction equipment to and from the construction area; and streets used for bypassing or detouring traffic around the construction area.

**PART 2 PRODUCTS**

**2.01 BASE AND SURFACE MATERIALS**

- A. Base and surface materials shall be in conformance with Section 02600 of these Specifications unless otherwise shown on the Drawings.

**PART 3 EXECUTION**

**3.01 CONSTRUCTION OF TEMPORARY PAVEMENT, CURBS AND WALKS**

- A. Preparation of Subbase - Before laying any pavements, sidewalks, or curbs, the trenches shall be compacted and all resulting holes and depressions shall be filled and tamped solid.
- B. Curbs - All curbs required to be reset temporarily shall be placed in their original position or as directed but the Contractor will not be required to set them in concrete.
- C. Sidewalks - All sidewalks disturbed shall be temporarily restored immediately upon the placing of the backfill either by relaying the old sidewalk pavement, placing 4 inches of aggregate base, laying a pavement of wooden planks 2-inch-thick, suitably fastened, and

flush with the adjacent sidewalk, or otherwise as directed. Permanent sidewalks shall be replaced as soon as possible.

### **3.02 SEASONAL LIMITATIONS FOR TEMPORARY PAVEMENT CONSTRUCTION**

- A. Weather limitations for placing bituminous seal coat shall conform to ODOT CMS. When weather limitations prevent the placing of asphalt material, the Contractor shall place aggregate base and maintain it until asphalt material can be placed.
- B. When time restrictions are not in effect, the Contractor shall prepare the base and immediately place temporary or permanent pavement surface.

### **3.03 MAINTENANCE – EXISTING AND TEMPORARY PAVEMENTS**

- A. All existing temporary pavement and sidewalk shall be maintained by the Contractor at his own cost and expense in a suitable and safe condition for traffic until permanent replacement is to be made, or the Work finally accepted. Any depressions which develop shall be acceptably repaved when directed. Spots in the pavements which show signs of deficient bitumen or raveling shall be repaired by hand, and if deemed necessary, pavement shall be reconstructed in part or in whole as directed.

### **3.04 SEASONAL LIMITATIONS FOR MAINTENANCE OF BITUMINOUS PAVEMENT**

- A. During that time of year when asphalt concrete cannot be placed in conformance with ODOT Specifications, the Contractor shall remove loose material from holes and fill depressions in the pavement with temporary pavement as required to maintain the road surface in a condition acceptable to the Owner.
- B. As soon as weather conditions permit, the Contractor shall remove the temporary pavement and place bituminous concrete in accordance with Section 02600.

### **3.05 PERFORMANCE**

- A. If, in the opinion of the Engineer, proper maintenance of traffic facilities and proper provisions for traffic control are not being provided by the Contractor, the Engineer may take the necessary steps to place them in proper condition, and the cost of such services will be deducted from any money which may be due or become due the Contractor.

## **PART 4 SPECIAL PROVISIONS**

### **4.01 TEMPORARY PAVEMENT**

- A. Temporary pavement placed on trench repairs that will remain in place for over 30 days shall include the specified permanent aggregate base and either a minimum of 3 inches of cold patch material (ODOT 448) or a minimum of 4 inches of concrete as specified in Section 02600.

END OF SECTION

**SECTION 01568  
POLLUTION CONTROL**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes the requirements for pollution control.

**PART 2 PRODUCTS**

**2.01 GENERAL**

- A. Dust palliatives shall conform to ODOT Item 616.

**PART 3 EXECUTION**

**3.01 OHIO GENERAL REQUIREMENTS**

- A. The Contractor is responsible to obtain and pay for NPDES Permit for storm water discharge.
- B. The Contractor is responsible for following an erosion control plan in accordance with the requirements of the Clean Water Act, 33 USC Section 1251 et seq. and the OWPCA, ORC 6111.01 et seq. and related rules. The Contractor warrants and agrees that it is equipped to limit water pollution for its activity according to applicable Federal and State standards.
- C. It shall be the responsibility of the Contractor to prevent or limit pollution of air and water resulting from his operations.
- D. The Contractor shall perform Work required to prevent soil from eroding or otherwise entering onto all paved areas and into natural watercourses, ditches, and public sewer systems, and to prevent dust attributable to his operations from entering the atmosphere.
- E. Excess soil that is stockpiled shall be removed or regraded within 15 days of the completion of construction.
- F. If Work is suspended for any reason Contractor shall maintain the soil erosion and sedimentation controls in good operating condition during the suspension period. When suspension period will exceed one month the Contractor shall seed fertilize and mulch disturbed areas left exposed during work suspensions.

**3.02 STREETS, SIDEWALKS AND DRIVEWAYS**

- A. Streets, haul roads, and detours and bypass roads shall be swept by automatic self-contained sweepers.
- B. Excessive dirt on pavements shall be removed by means of hand shoveling or appropriate mechanical equipment and the area swept as directed above.

- C. Sidewalks and driveways shall be cleaned by means of shovels and hand brooms or appropriate mechanical equipment.
- D. Dust on unsurfaced streets or parking areas and any remaining dust on surfaced streets shall be controlled with calcium chloride dust palliative.
- E. The Contractor shall comply with the above requirements on a daily basis. If the Contractor fails to perform the above Work in a satisfactory manner, all Work, except cleanup operations, shall be stopped until the Contractor has complied with the above requirement.

### **3.03 EROSION AND SEDIMENT CONTROL**

- A. The Contractor shall initiate appropriate vegetative practices on all disturbed areas to remain dormant (undisturbed) for more than 45 days within seven days.
  - 1. Such practices may include: temporary seeding, permanent seeding, mulching, matting sod stabilization, vegetative buffer strips, phasing and protection of trees.
- B. Permanent or temporary soil stabilization shall be applied to disturbed areas within seven (7) days after final grade is reached on any portion of the Site.
- C. When seasonal conditions prohibit the application of temporary or permanent seeding, non-vegetative soil stabilization practices, such as mulching and matting, shall be used.
- D. A stabilization construction entrance shall be provided to reduce vehicle tracking of sediment. The paved street adjacent to the Site entrance shall be swept a minimum of daily, or as needed, to remove any excess mud, dirt, or rock being tracked from the Site.
  - 1. Dust and sediment along any street due to construction on this Site is to be swept a minimum of once at the end of the day or as necessary to prevent a build-up of dust and soil on the pavement surface.
- E. Dump trucks hauling from the construction site shall be covered with a tarpaulin.
- F. No more than 200-feet of trench shall be open at any given time. Trench opening, laying of pipe, and backfilling should occur so as to minimize the amount of disturbed area.
- G. The Contractor shall minimize the width of his work area.
- H. Existing trees, shrubs, and other ground cover vegetation shall be preserved where possible. Tree removal will be limited to that necessary for construction and will be limited further to the permanent easement wherever possible. No tree removal will be permitted outside the temporary easement.
- I. Storm water runoff and natural stream flow shall be intercepted or diverted when originating upgrade away from the construction site so as to minimize the amount of flow over the construction site.
- J. All dewatering flows are to be settled in siltation basins or directed through filters before discharge to stabilized sites, such as stream or storm sewers, and not onto exposed soils, stream banks, or any other sites where the flow could cause erosion.

- K. When construction occurs near storm sewer inlets, erosion control measures such as inlet filters or hay bales shall be used to prevent silt from entering the storm sewers.
- L. The clean-up and disposal of excess excavated material shall be done as soon as practical after laying of the pipe. However, clean-up work shall not fall behind the pipe laying more than 800-feet. Should the Contractor not keep his clean-up within the aforementioned distance, Work shall stop until the clean-up work is accomplished.

### 3.04 OHIO SEDIMENT CONTROL

- A. Contractor shall control erosion and trap sediment from all sites remaining disturbed for more than 14 days. Such practices shall include among others, sediment traps, sediment basins, silt fences, and storm drain inlet protection. Silt Fence fabric shall be ODOT Item 712.09 type C Geotextile Fabric.
- B. Timing - Sediment control structures shall be functional throughout earth-disturbing activity. Sediment ponds and perimeter sediment barriers shall be implemented as the first step of grading and within seven days from the start of grubbing. They shall continue to function until the upslope development area is restabilized.
- C. Settling Ponds - Concentrated storm water runoff from disturbed areas flowing at rates which exceed the design capacity of sediment barriers shall pass through a sediment settling pond. The facility's storage capacity shall be 67 cubic yards per acre of drainage area.
- D. Sediment Barriers - Sheet flow from runoff from denuded area shall be intercepted by sediment barriers. Sediment barriers, such as sediment fences or diversions directing runoff to settling facilities, shall protect adjacent properties and water resources from sediment transported by sheet flow.
- E. Other erosion and sediment control practices shall prevent sediment-laden water from entering drain systems, unless the storm drain system drains to a settling pond. These practices shall divert runoff from distributed areas and steep slopes where practicable and stabilize channels and outfalls from erosive flows.

### 3.05 CONSTRUCTION OF SLOPES

- A. The Contractor shall comply with the following requirements when working on slopes exceeding 4:1.
  - 1. The pipeline shall be constructed during dry weather, low flow periods as determined by the Engineer. The construction time for this Work shall be limited to the shortest time possible in order to minimize environmental impacts.
  - 2. Construction equipment shall be limited to trenching equipment or rubber tired backhoes in order to prevent soil erosion and maintain slope stabilization.
  - 3. Biodegradable mesh shall be used for slope stabilization. The mesh shall cover the entire width of disturbed ground.

4. The trench shall be backfilled immediately after installation of the pipe. The disturbed areas shall be graded, seeded, and mulched within 24 hours after backfilling. The Contractor shall maintain all seeded and mulched areas in accordance with the specifications until final acceptance of the Work.
5. The Contractor shall place straw or hay bales at the base of the slopes for sedimentation control. The bales shall be placed prior to construction of the pipeline and shall remain until final seeding has germinated and become established.

### **3.06 STREAM CROSSING**

- A. Construction of the stream crossings shall occur only during dry weather low-flow periods. Wherever possible, use of heavy equipment during crossing construction is to be restricted to the stream bank and is not to be permitted in the stream channel.
- B. The width of stream banks disturbed in constructing a stream crossing shall be limited to the width of the trenching machine.
- C. Immediately after the conduit and any required concrete encasement is in place, the re-establishment of channel contours and bank stabilization shall commence. The stream crossing and associated restoration shall be completed within 48 hours of initiation.
- D. To minimize erosion, the Work of clearing, grading, excavation, pipe installation, backfilling, erosion protection, final cleanup and all other Work within 50-feet of the stream shall be performed immediately following installation of the Work within the stream.

### **3.07 PROHIBITED CONSTRUCTION ACTIVITIES**

- A. Disposing of excess or unsuitable excavated material in wetlands or floodplains, even with the permission of the property owner.
- B. Locating stockpile storage areas in environmentally sensitive areas.
- C. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, any wetlands, any surface waters, or outside the easement limits.
- D. Pumping of sediment-laden water from trenches or other excavations directly into any surface waters, any stream corridors, any wetlands, or storm sewers; all such water will be properly filtered or settled to remove silt prior to release.
- E. Discharging pollutants such as chemicals, fuels, lubricants, bituminous materials, raw sewage and other harmful waste into or alongside of rivers, streams, impoundments, or into natural or man-made channels leading thereto.
- F. Permanent or unspecified alteration of the flow line of any stream.
- G. Damaging vegetation outside of the construction area.
- H. Disposal of trees, brush, and other debris in any stream corridors, any wetlands, any surface waters, or at unspecified locations.



- I. Open burning of project debris without a permit.
- J. Discharging injurious silica dust concentrations into the atmosphere resulting from breaking, cutting, chipping, drilling, buffing, grinding, polishing, shaping or surfacing closer than 200 feet to places of residences or places of human occupation.
- K. Storing construction equipment and vehicles and/or stockpiling construction materials on property, public or private, not previously specified on the Drawings or not authorized by the Owner or Engineer for such purpose.
- L. Running well point or pump discharge lines through private property or public property and rights-of-way without the written permission of the property owner and the consent of the Engineer.

#### **PART 4 SPECIAL PROVISIONS**

##### **4.01 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)**

- A. The Contractor shall be responsible for following the SWPPP shown for the work.
- B. The Drawings show recommendations for pollution prevention measures to be provided. The measures shown on the Drawings shall be considered the minimum level of pollution prevention.
- C. The Contractor shall adhere to the SWPPP in accordance with OPEA Guidelines.
- D. The SWPPP shall be updated and maintained throughout the work.
- E. A copy of the SWPPP shall be available at the site's construction office.
- F. The Owner has not submitted the Notice of Intent (NOI) for the work as the disturbed area is less than one acre. The Contractor is not required to apply for coverage as a co-permittee.

END OF SECTION



**SECTION 01800**  
**CONSTRUCTION SURVEY WORK**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes the furnishing of all labor, materials, equipment, and services necessary for the completion of Construction Survey Work in accordance with the Contract Documents.
- B. This Work consists of the layout of all lines and grades shown on the Drawings or as altered or modified by the Engineer, control survey and of miscellaneous survey work related to construction of the project.

**1.02 PROJECTION**

- A. The Contractor shall protect and preserve the established reference points and monuments.
- B. Whenever monuments are encountered in the line of Work, whether shown on the Drawings or not, the Contractor shall notify the Engineer in writing at least 24 hours in advance of moving same, and under no circumstances is such a stone or other monument to be removed or disturbed by the Contractor or by any of his men without a written order of the Engineer and only when a registered surveyor representative of the Owner is present.

**1.03 REPLACEMENT OF LOST SURVEY POINTS**

- A. Whenever a reference point or monument is lost or destroyed or requires relocation, the Contractor shall, at his own expense, accurately relocate and replace all such points so lost, destroyed, and moved.

**1.04 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Information for the Record:
    - a. Layout Sheets including, but not limited to, Benchmarks both temporary and permanent and Pipeline layout staking.
    - b. Field Notes and survey log.
- B. Contractor shall provide the Engineer and Resident Project Representative, no later than five working days prior to installation, all Logs, reports, field notes, drawings and documentation as specified shown on the Drawings or directed.

- C. No pipeline or related Work shall be considered for payment until all logs, reports field notes drawings and documentation as specified, shown on the Drawings or directed has been submitted to the Engineer or Engineers representative.

## **PART 2 PRODUCTS**

### **2.01 CONSTRUCTION STAKING**

- A. All construction points shall be marked with a wooden hub and nail or a PK nails in concrete and asphalt pavements and walks.
- B. All points located in areas of heavy underbrush, inaccessible or limited site distance shall be identified with a wood lath extending a minimum of 3 feet above the ground.
- C. All points located in paved surfaces shall be clearly marked with paint. Contractor shall obtain written permission from owner to use paint for marking.

## **PART 3 EXECUTION**

### **3.01 COORDINATION**

- A. The Contractor shall provide field forces necessary to lay out the location, alignment, elevation, and grade of the Work shown on the Drawings and in conformance with the control points and benchmarks shown on the Drawings.
- B. The Contractor shall use competent personnel and suitable equipment for the layout of the Work required. If the layout Work involves more than a few simple distance and elevations from established reference points, the Contractor shall employ a Registered Surveyor to supervise the layout Work.
- C. Contractor shall furnish the necessary labor to assist the Engineer in checking the installation, if required.

### **3.02 EXISTING CONNECTION POINTS**

- A. The Contractor shall verify critical elevation points of the existing utilities prior to commencing installation of Work. Critical points shall include all points where new Work connects to existing utilities and existing utilities that could be conflicts with Work. All data shall be provided to the Engineer before commencing Work.

### **3.03 RIGHTS-OF-WAY AND EASEMENTS**

- A. Rights-of-way or easement(s) shall be staked at points along the boundaries so that at least two stakes can be seen distinctly from any point along the boundary line. The staking shall not exceed 200-feet in any direction. All points of change in width or direction of the rights-of-way or easement(s) boundary line shall be staked.
- B. When the Contractor performs construction and the zone of influence is within 10-feet of a rights-of-way or easement(s) boundary line, they shall place stakes properly

identifying points of change in width or direction of the boundary line and at points along the boundary line not to exceed 25-feet.

### **3.04 PAVEMENT**

- A. The Contractor shall establish a layout for location and grade on both sides of the road and 5-feet off the edge of the pavement or back of curb. Layout line shall consist of stakes set at station intervals necessary for the topography and environment to assure conformance to planned line and grade. Stakes shall be set at a minimum every 50-feet, at all vertical and horizontal points of curvature and points of tangent, and at all vertical high or low points.
- B. Stakes for line and grade of pavement and curb shall be set at station intervals necessary for the topography and environment, not to exceed 50-feet, and at low and high points of vertical curves to assure conformance to planned line and grade.

### **3.05 PIPE IN OPEN CUT**

- A. The Contractor shall utilize a laser beam for establishing line and grade when installing pipeline in open-cut construction. In order to maintain control during pipeline installation and to obtain the required field data for the record documents (G.C. 6.19) the Contractor shall establish construction and layout stakes. These stakes shall be based on the contract documents and the survey control data as provided by the Engineer.
- B. The construction staking shall be placed along the pipeline route at 50-foot intervals or less, and at location of new manholes, valves, deflections both vertical and horizontal and as specified, shown on the Drawings or as directed. All construction layout stakes shall be offset at a minimum of 10-feet and at a right angle to the pipe line route. Layout shall be referenced to the downstream manhole or valve, in addition it may reference survey of baseline stationing.
- C. Contractor shall provide to the Engineer, no later than five working days prior to the installation of the pipeline, all information of the completed construction layout staking. This information shall include but not be limited to stationing, elevations, control points, project coordinates, offset direction and distance for all deflections both horizontal and vertical, manholes and all other points as specified, shown on the Drawings and directed by the Engineer.
- D. The grade of pipe in open-cut, whether placed by laser beam or other approved methods, shall be checked using surveying equipment. The Contractor shall have a surveyor's level and level rod on the Site at all times when pipeline and appurtenances are being installed. The level rod shall be equipped with an attached "shoe" extension on the bottom for placing on the pipe invert. The pipe invert elevation shall be checked at a maximum of 50-foot intervals or more often as directed by the Engineer. Checks will be performed by the Contractor and results, including but not limited to layout station shall be recorded in contractor's field log.

- E. The Contractor shall furnish all equipment and labor and check his alignment from the offset stakes. Contractor shall record all information in the log.
- F. Any inspection or checking of the Contractor's layout by the Engineer shall not relieve the Contractor of his responsibility to secure the proper dimensions, grades, and elevations of the Work.

### **3.06 PIPE INSTALLED BY DIRECTIONAL DRILLING**

- A. The Contractor shall utilize, as a minimum, RF (radio frequency) transmitter mounted inside the drill bit to track line and grade when installing pilot borehole in directional drilling construction. In order to maintain control during pipe installation and to obtain the required field data as specified, shown on the drawings or directed; the Contractor shall establish construction line stakes. These stakes shall be based on the contract documents and the survey control data as provided by the Engineer.
- B. The construction line staking shall be placed along the centerline of pipeline route and at manholes, valves, deflections, PC and PT both vertical and horizontal and as specified, shown on the drawings or as directed. In addition, offset staking shall be provided at all manholes, valves, deflections and any place of excavation at a minimum of 10-feet and at a right angle to the pipeline route. Staking shall be referenced to the downstream manhole or valve, in addition it may reference survey of baseline stationing.
- C. The depth and alignment of directional drilling pilot hole for pipe shall be checked at each drill rod, using a walkover system or wireline system. The Contractor shall have a surveyor's level and level rod on the Site at all times to confirm ground elevation and borehole elevation. The pipeline elevation and alignment shall be checked at a maximum of 25-feet intervals or more often as directed by the Engineer. Checks will be performed by the Contractor and results, including the layout station the elevation was checked, and recorded in contractor's log. The Contractor's logs must be submitted to the Engineer prior to receiving any payment for the Work.
- D. Any inspection or checking of the Contractor's layout by the Engineer shall not relieve the Contractor of their responsibility to secure the proper dimensions, grades, and elevations of the Work.

### **3.07 RESERVED**

### **3.08 LOCATION OF STRUCTURES AND UNDERGROUND PIPING**

- A. The location of new structures and underground utilities shall be based on the dimensions, coordinates, and requirements shown on the Drawings or specified.
- B. If it is stated on the Drawings or specified that the location and/or elevation of the new structure or underground piping shall depend on the location of existing underground or otherwise hidden facilities, those existing underground or hidden facilities shall be located by the Contractor prior to his determination of the location and/or elevation of

the new facilities. This requirement shall override any other specific location dimensions or coordinates shown on the Drawings for that structure or piping.

- C. If the location or elevation determined by the Contractor, in accordance with the above requirements, appears to cause conflicts with existing structures or utilities or appears to potentially cause functional issues with either the existing or new structures or utilities, the Contractor shall notify the Engineer immediately.
- D. In no case, shall coordinates or other location information be extracted or interpolated from the electronic CAD files that may be provided to the Contractor by the Owner or Engineer without the specific approval of the Engineer.

### **3.09 CURB AND GUTTER ELEVATIONS**

- A. In locations where the existing curb and gutter shall be removed as part of the Work, the Contractor shall be responsible for reconstructing the existing curb and gutter to match existing alignment, elevations and grades. The Contractor shall be responsible for collecting existing curb and gutter elevation information prior to commencing the Work.

### **3.10 BENCHMARKS/VERTICAL CONTROL**

- A. Benchmarks have been set for survey and construction reference purposes.
- B. The Contractor shall protect and transfer these benchmarks as needed to complete the Work.

### **3.11 HORIZONTAL CONTROL**

- A. The centerline stationing provided is not based upon physical control points found or established as part of the design.
- B. The Contractor shall establish horizontal control as necessary.

## **PART 4 SPECIAL PROVISIONS**

### **4.01 REGISTERED SURVEYOR**

- A. The Contractor shall employ the services of a registered surveyor for initial layout and staking of the project. The Registered Surveyor shall be utilized at any time when reestablishing control points, elevations, and on any redesign or extension of the work. All survey work shall be as specified, shown on the drawings or as directed.

END OF SECTION





**SECTION 01810**  
**AUDIO-VIDEO RECORDING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. Under this Section the Contractor shall furnish all personnel, transportation, recording equipment, power, and materials to produce color audio-video records of existing topography along all pipeline routes and designated haul roads, in designated residences, and as directed.

**1.02 SCHEDULE OF WORK**

- A. Unless otherwise directed in writing by the Engineer, video recording shall be scheduled in conformance with the following:
  - 1. No recording shall be started on any portion of the Work until that portion of the Work is under Contract unless otherwise directed by the Owner.
  - 2. Recording shall not precede excavation for construction by more than three months.
  - 3. Video recording shall be performed only when foliage is visible on trees, except as authorized by the Engineer.
  - 4. Video recording shall not be performed when more than 10% of the ground is covered with snow or leaves, unless authorized by the Owner.
- B. Before proceeding with the Work, the audio-video recording Contractor shall consult with the Engineer concerning the following:
  - 1. Scheduling recording to precede construction.
- C. All recording shall be completed on a section of Contract before the Contractor starts excavation or places material or equipment in that section.
- D. In areas where public utilities are to be relocated or replaced, a second audio-video recording shall be made after the public utility has concluded their work but before the Contractor commences operations.
- E. The Owner shall obtain permission for the recording crew to enter private property not included in an easement. The Contractor shall give the Owner sufficient prior notice to obtain the permission.

**1.03 DEFINITIONS**

- A. Audio-Video Recording - Zone of Influence - Shall include producing audio-video records as specified herein for the zone of influence. The zone of influence shall be defined as all surface area within street rights-of-way or easements in which project is to be installed

or within areas 50 feet on each side of a proposed utility centerline, whichever is greater, and additional features in contiguous areas as specified or directed.

- B. Audio-Video Recording of Buildings - Entering - Shall include moving audio-video equipment into buildings or residences (including attached or separate garages) designated by the Engineer for the purpose of recording existing conditions therein.
- C. Audio-Video Recording of Building - Panels - Shall include audio-video recording of designated panels of buildings. Panel as used herein shall mean the full surface of a room wall, ceiling, or floor or the outer side of a building not viewable in any zone of influence recording.

#### **1.04 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Provide a minimum of three copies of the video.

### **PART 2 PRODUCTS**

#### **2.01 AUDIO-VIDEO RECORDING**

- A. Displays - All video shall, by electronic means, display (visible on the playback viewer) continuously and simultaneously generated transparent digital information which shall include the date and time of recording, as well as the corresponding planned station numbers. The date information shall contain the month, day, and year. The time information shall consist of hours, minutes, and seconds, separated by punctuation marks. Below the stationing, periodic transparent alpha/numeric information shall appear. The information shall consist of the name of the project, name of area covered, direction of travel, viewing side, and any other pertinent data.

#### **2.02 AUDIO-VIDEO OUTPUTTING**

- A. Audio-video recording shall be a digital file format such as MPEG, MP4, Wave or WMV or other current standard file formats as approved by Engineer.
- B. The electronic file organization shall reasonably match the project stationing with file names including the station number and street names.
- C. The electronic files shall be stored on a single solid-state memory device, such as a DVD disc or jump/thumb drive, external hard drive. The memory volume on the storage device shall be adequate to store the electronic video files in an unzipped capacity along with any associated or embedded data files.

#### **2.03 AUXILIARY LIGHTING**

- A. Auxiliary lighting shall be used wherever necessary to ensure clarity of picture.

### **PART 3 EXECUTION**

#### **3.01 PERSONNEL**

- A. The Work shall be performed by competent personnel with knowledge of the procedures and methods to produce satisfactory records as specified herein.

#### **3.02 PRODUCTION**

- A. Recording shall be composed in such a manner that Filming shall, in general, proceed in the direction of the project stationing.
- B. Recorded Contents:
  - 1. Video recordings shall be supported by appropriate audio description simultaneous with the visual coverage.
  - 2. All houses or buildings and other readily recognizable objects as required shall be identified visually and audibly in such a manner that they can be referenced to the stationing of the project. Objects selected shall be at intervals not exceeding 100 lineal feet and shall include all houses and buildings identified by house numbers.
  - 3. Within the zone of influence, the recording shall include but not be limited to all sidewalks, driveways, ditches, parkways, lawns, inlets, culvert pipe ends, trees, shrubs, fences, houses, and buildings that could conceivably be affected by the Contractor's operations. The audio shall call attention to existing cracks or uneven areas in walks and driveways, damaged lawns, trees or shrubbery, broken or missing inlet castings, deteriorated fences, and, where feasible, broken or plugged culvert pipes.
  - 4. Within street rights-of-way, the recording shall include but not be limited to all pavement, curbs and inlets, mailboxes, traffic signs, and street signs. The audio shall call attention to damaged mailboxes, signs, curbs and inlet castings. Damaged areas in pavements over proposed project or in pavements scheduled for resurfacing need not be referred to in the audio.
  - 5. Audio-video recording for designated residences shall include documentation of surface conditions inside and outside of the building prior to starting project construction.
- C. Control of Picture Quality - The camera carrier shall travel at a low speed to ensure against blur or distortion of the recorded pictures. A maximum rate of 48-feet per minute is recommended.

#### **3.03 OWNER REVIEW**

- A. As the audio-video recording work progresses, the Contractor shall deliver completed sections to the Owner and Engineer. The Owner and Engineer will review the recordings and determine if they are acceptable for clarity and coverage. The recording may be

rejected if the picture is of poor quality (i.e., blurred, distorted, too light, too dark, improper color), insufficient coverage, poor audio, or does not meet specified requirements.

- B. The area of rejected recording shall be rerecorded by the Contractor and reinserted in the electronic file in the proper sequence.

**PART 4 SPECIAL PROVISIONS**

Not Used.

END OF SECTION

**SECTION 02100  
CLEARING AND GRUBBING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes grubbing, scalping, and otherwise clearing of the construction site in accordance with the Drawings and as specified herein or ordered.
- B. This Work includes the removing and disposing of all trees, stumps, vegetation, and debris as necessary to accommodate new construction or to recontour the Site, and the preservation of all vegetation and other objects designated to remain.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Information for the Record:
    - a. Spoil Site Permit - When the material and debris resulting from the clearing and grubbing operations are disposed of at locations off the project, the Contractor shall obtain and submit as specified written permission from the owner of the property upon which the material and debris are to be placed.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Paint required for cut or scarred surfaces of trees or shrubs designated to remain shall be a suitable asphaltum base paint.

**PART 3 EXECUTION**

**3.01 COORDINATION**

- A. Clearing and grubbing shall be performed only after the Site has been surveyed and staked as required and in accordance with Section 01800.

**3.02 PREPARATION**

- A. The Contractor shall protect and preserve all land survey monuments or property corners along the line of his work.
  - 1. Where monuments, irons, or property corners are disturbed or removed due to operations under this Contract, the Contractor, at his own expense, shall employ the services of a registered land surveyor to establish, reset or replace such monuments, irons, or property corners.

- B. The Contractor shall not damage or destroy trees or shrubs nor remove or cut them without authorization by the Owner. All trees and shrubs except those ordered to be removed shall be adequately protected by the Contractor. No excavated material shall be placed so as to damage such trees and shrubs.
  - 1. Trees and shrubs damaged by the Contractor shall be replaced with new stock of similar size and age, or with other stock size and age satisfactory to the Owner, at the proper season, and at the sole expense of the Contractor. Scarred surfaces shall be treated as indicated in Part 2.
- C. When or where any direct or indirect damage is done to public or private property resulting from Contractor's operations, such property shall be restored by the Contractor, at his expense, to a condition equal or better than that existing before such damage was done or the Contractor shall make good such damage in manner acceptable to the owner of the property.
- D. Prior to clearing and grubbing operation, the Owner, Contractor, and Engineer shall walk the site to designate the trees to be removed or to be protected. Trees shall be marked with paint and a universally accepted designation.

### **3.03 CLEARING AND GRUBBING**

- A. Only those trees and shrubs shall be removed that are in actual interference with excavation or grading work and such removal shall be subject to approval by the Owner. The Owner reserves the right to order additional trees or shrubs removed at no additional cost if, in his opinion, they cannot be maintained or have been damaged by the Contractor's operations.
- B. All trees, stumps, vegetation, and debris not designated to remain shall be cleared and/or grubbed.
- C. In locations to be seeded, stumps, roots, and other protruding obstructions shall be removed to a minimum of 6 inches below the final ground surface.
- D. At all times, the Contractor shall remain within the property lines and/or easement areas.
- E. Except in areas to be excavated, all holes resulting from the clearing and grubbing operations shall be backfilled and compacted in accordance with Section 02200.

### **3.04 SCALPING**

- A. Areas of excavation or embankment shall be scalped of brush, roots, sod, grass, crop residue, decayed vegetable matters, and other organic materials.
- B. Scalping depth shall be only as required to remove the above. Scalping of topsoil is not included under this Section.

**3.05 DISPOSAL OF DEBRIS**

- A. Debris resulting from the clearing and grubbing operations shall be disposed of at designated spoil sites in a legal manner, in full compliance with applicable codes and ordinances.

**3.06 TREE AND VEGETATION REPAIR**

- A. The Contractor shall employ an arborist where necessary for the repair and protection of a tree and vegetation
- B. Contractor shall repair injuries to bark, trunks, limbs, and roots of remaining vegetation by properly dressing, cutting, pruning, bracing and painting utilizing tree surgery methods, tools and materials recommended by the Arborist.

**PART 4 SPECIAL PROVISIONS**

**4.01 TREE REMOVAL**

- A. All trees to be removed shall be removed between October 1 and March 31.
- B. A tree is defined as a live, dying or dead plant with a minimum diameter of 3 inches with snags at 4-feet above the ground surface and a minimum height of 12-feet above the ground surface.

END OF SECTION





**SECTION 02110**  
**REMOVAL OF STRUCTURES AND OBSTRUCTIONS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes demolition of existing structures and removal of pavement, piping, and equipment necessary to clear space for new construction and/or to rehabilitate existing construction.

**1.02 RESERVED**

**1.03 QUALITY ASSURANCE**

- A. Contractor shall execute the work in compliance with all federal, state, and local codes. Any removal or demolition shall not leave the Owner in violation of any such regulations or codes unless approved by the Owner and Engineer.

**1.04 PROTECTION**

- A. Structures shall be removed in such a manner as not to damage any portions of the existing structure which are to remain in place.

**PART 2 PRODUCTS**

**2.01 FILL MATERIALS**

- A. Fill material shall be in accordance with Section 02200.

**PART 3 EXECUTION**

**3.01 COORDINATION**

- A. Demolition work extending beyond the limits as specified, shown on the Drawings, or as required, will be considered unauthorized. The Contractor, at no additional cost to the Owner, shall repair said damage to a condition equal to or better than existed prior to commencement of the Work.
- B. Existing structures and equipment which are damaged in appearance or function by performance of demolition work shall be replaced or repaired, at Owner's discretion and to an approved condition, by the Contractor at no increase in Contract Price.

**3.02 PAVEMENTS, SIDEWALKS, CURBING AND SIMILAR STRUCTURES**

- A. Removal of existing pavements, sidewalks, curbing, and similar structures shall end at an existing joint or a sawed joint. Sawed joints shall be straight, neat, and free from chipped or damaged edges.

- B. For removal of non-reinforced concrete, the minimum depth of saw cut shall be 3 inches.
- C. For removal of reinforced concrete, the depth of saw cut shall be sufficient to cut the steel unless specified otherwise.
- D. If the concrete is coated with a bituminous surface or other material, the depth shall be sufficient to cut into the concrete, not including the coating depth, as specified above.

### **3.03 EXCAVATION OF RIGID PAVEMENT**

- C. The Contractor shall excavate rigid pavement, consisting of concrete or concrete base with a wearing surface of brick or bituminous concrete, wherever such excavation is required for the purposes of this Contract.
- D. Pavement shall be excavated to neat lines and, unless otherwise specified in Part 4 of this Section, only to widths required for trenches for pipe laying and for construction of structures. Adequate provision shall be made to prevent settlement and breakage of pavement beyond the approved limits of excavation. Concrete pavement and sub-base shall be cut with a concrete saw in conformance with Subsection 3.02.

### **3.04 MANHOLES, CATCH BASINS, INLETS, AND SIMILAR STRUCTURES**

- A. Existing Manholes, catch basins, inlets, and similar structures designated to be removed shall be completely removed.
- B. Manholes, catch basins, inlets, and similar structures designated to be abandoned shall be removed to an elevation of at least 3 feet below the finished subgrade or ground surface. The remaining void shall be filled with special backfill material compacted to 100 percent optimum density per ASTM D-698 or controlled density fill, CDF if permitted by the Engineer. All sewer openings in manholes located on sewer lines that are not to be filled, shall be plugged with 8-inch minimum thickness masonry plug.
- C. Sewers designated to remain in service and connected to structures indicated to be removed or abandoned shall be rebuilt through the area with new pipe. Sewer flow shall be maintained between removal and replacement operations. Abandoned sewers shall be sealed and made watertight with approved precast stoppers or masonry bulkheads.
- D. All castings or hydrants salvaged from abandoned or removed structures shall remain the property of the Owner, if requested by the Owner, and shall be cleaned and transported by the Contractor to a site designated by the Owner or incorporated in the work where called for on the Drawings, scheduled, or so directed. If Owner decides salvaged materials are not wanted, the Contractor shall dispose of them at no additional cost to the Owner.

### **3.05 GROUT-FILLED ABANDONMENT OF PIPE, CONDUIT, AND SIMILAR STRUCTURES**

- E. Ends of sewer designated to be abandoned shall be sealed with approved masonry bulkheads or factory caps and plugs.
- F. Contractor shall determine and modify, as necessary, the mix of the flowable fill material to satisfactorily fill the entire abandoned sewers and structures. ACI 229R-99 Table 5.1 provides examples of acceptable mix designs.

- G. Contractor may need to include fill holes and vent pipes to assure thorough filling.
- H. Quantities of flowable fill material used to fill the conduits shall be monitored continuously during the placement.
- I. Bulkheads shall be installed as shown on plans and as needed by the Contractor's method to completely fill the abandoned sewers.
- J. Sites disturbed by the grout-filled abandonment work shall be restored as part of this work.

**3.06 GUARDRAIL AND FENCE**

- A. Where so required by the Drawings, existing guardrail and fence shall be carefully dismantled and stored for reuse or for salvage by the Owner.
- B. Wood posts and other materials not considered salvageable by the Owner shall be disposed of by the Contractor.

**3.07 RESERVED**

**3.08 RESERVED**

**3.09 PRIVATE SIGNS**

- A. Private and commercial signs shall be carefully removed and relocated as directed by the Owner.

**3.10 DISPOSAL OF DEBRIS**

- A. All debris resulting from demolition operations; i.e., broken concrete, masonry, pipe, miscellaneous metal, trees and brush, equipment, etc., shall be trucked from the work site by the Contractor and disposed of at spoil sites in a legal manner, in full compliance with applicable codes and ordinances.
- B. The Contractor shall police the hauling of debris to ensure that all spillage from haul trucks is promptly and completely cleaned up.

**3.11 BACKFILLING**

- A. All trenches, holes, and pits resulting from the removal and abandonment of any structure or obstruction shall be backfilled and compacted in accordance with the requirements of Section 02200, Excavation and Backfill.

**3.12 RESERVED**

**3.13 USE OF EXPLOSIVES**

- A. The use of explosives for the work of removal of structures and obstructions is PROHIBITED.

**3.14 WATERMAIN REMOVAL**

- A. As shown on the plans, existing water main piping, valves, hydrants, accessories, and appurtances shall be removed to permit the installation of the new water main.
- B. The removal of existing water main may include removal and disposal of aggregate backfill and control density backfill.
- C. Existing water main pipe removed shall become the property of the Contractor, and shall be properly disposed of in accordance with the requirements of this Section.

**3.15 OPENINGS AND PATCHING**

- A. The Contractor shall fill all openings created by equipment, piping, and conduit removals.
- B. The Contractor shall patch any marred surfaces created by equipment and piping removals.
- C. All filling and patching work shall be performed in accordance with the specifications.
- D. All anchor bolts shall be removed and holes filled or cut off flush.

**PART 4 SPECIAL PROVISIONS**

**4.01 SCHEDULE OF REMOVALS**

- A. The following list of items once removed shall remain the property of the Owner and shall be delivered to the Owner-designated location.
  - 1. Fire hydrants
  - 2. Manhole castings
  - 3. Valves
- B. Water main pipe and other appurtenances removal not specifically designated to be delivered to the Owner shall become the property of the Contractor and shall be removed from the site.

**4.02 VALVES, BOXES AND VALVE STRUCTURES ABANDONED**

- A. Manholes and valve box castings to be abandoned in place shall be removed to the specified depth below final grade and filled with specified material in accordance to the bottom of the pavement typical section or to 12-inches below final grade in non-paved areas. The pavement section shall be removed and replace an additional 18-inches horizontally outside of the casting area. The void created by the removal of the casting,

structure and valve box shall be backfilled to match the surrounding pavement section or as specified for non-pavement areas.

- B. The abandonment of valves shall include the removal of all existing manhole casting, frame, and structure walls to be specified depths as associated with that particular valve.
- C. Valve shall be abandoned in the off position when possible.

#### **4.03 VALVES AND STRUCTURES REMOVED**

- A. Valves, boxes, and structures to be removed shall be removed in their entirety or as approved otherwise by the Engineer.
- B. All hydrant valves and boxes shall be removed as part of hydrants specified for removal.

END OF SECTION



**SECTION 02200  
EXCAVATION AND BACKFILL**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes all excavations and related Work for the construction of the designated structures, pipelines, and other incidental Work.
- B. Excavation includes the Work of making all necessary excavations for the construction of all Contract Work; of furnishing, placing, and use of sheeting, shoring, and sheet piling necessary in excavating for and protecting the Work and workers; of doing all pumping and fluming necessary to keep the excavation free from water; of providing for uninterrupted flow of existing streams, treatment plant processes, drains and sewers; of damming and cofferdamming where necessary; of supporting and protecting existing structures, pipes, conduits, sewers, culverts of all types of materials of construction, of supporting and protecting railroad tracks, posts, poles, wires, fences, buildings, and other public and private property adjacent to the Work; of removing and replacing existing sewers, culverts, pipelines, and bulkheads where necessary; of removing after completion of the Work all sheeting and shoring not necessary to support the sides of excavations; of removing and disposing of all surplus excavated material or material under structures that does not meet the soil design bearing capacities; of doing all backfilling, of compacting backfill to limits specified or ordered by the Engineer; and restoring all property damaged as a result of the Work involved in this Contract.
- C. The Work includes obtaining and transporting suitable fill material from off-site when on-site material is not available.
- D. The Work includes transporting surplus excavated material not needed for backfill at the location where the excavation is made, to other parts of the Work where filling is required, or disposal of all surplus on other sites selected by the Owner.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Sieve Analysis (ASTM C136) - One test for each material source.
    - b. Submit a moisture density curve (ASTM D698) for each type of material used for backfill. Test shall be referenced to appropriate sieve analysis test. The maximum dry weight and optimum moisture content shall be indicated.
    - c. Controlled Density Fill Material - Design Mix and Certified Test Results.

- d. Test results for conformance with specified “Compaction Requirements”:
  - 1) Retests shall be referenced to the corresponding failing test.
- e. Stripped soil and topsoil test per ODOT 659.
- 2. Information for the Record:
  - a. When excess excavated material is disposed at locations off the Site, the Contractor shall obtain and submit written permission from the Owner of the property upon which the material is to be placed.
  - b. Details of the proposed method of installation and construction of dewatering wells.
  - c. Schedule of the proposed sequence of dewatering well construction.
  - d. Dewatering logs.
  - e. Submit method for abandoning dewatering well.

## **PART 2 PRODUCTS**

### **2.01 TOPSOIL**

- A. Soil stripped from the Site shall consist of loose, friable, loamy topsoil without admixture of subsoil or refuse. It shall be reasonably free from peat, muck, roots, hard clay, coarse gravel, stones, weeds, tall grass, brush, sticks, litter, ground debris and wood products. The stockpiled soil shall be subject to the approval of the Engineer.
- B. Topsoil provided shall be in accordance with ODOT 653 and be loose, friable, loamy soil without admixture of subsoil or refuse. In order for the topsoil to be considered loamy the fraction of topsoil, passing a No. 10 sieve, shall contain not more than 40% clay. Topsoil shall contain not less than 4% nor more than 20% organic matter as determined by loss on ignition of oven-dried samples to constant weight at 212 degrees F.
- C. Excess material shall be removed from Site, unless directed otherwise by Owner or Engineer.

### **2.02 SELECTED BACKFILL**

- A. Selected backfill shall be clean excavated soil. It shall be free of rock and foreign debris of any kind and shall be tested in accordance with ASTM C136 sieve screen analysis and ASTM D2487 soil classification. The material’s use as selected backfill shall be approved by the Engineer.
- B. Engineer may waive material testing of selected backfill. Such waiver shall apply only to the designated location and the source of the selected backfill. Such waiver shall not apply to excavated soil from locations not so designated.

### **2.03 SPECIAL BACKFILL MATERIAL**

- A. Special backfill material shall conform to ODOT 304.



#### **2.04 AGGREGATE BEDDING MATERIAL**

- A. Aggregate bedding material shall be well-graded durable crushed gravel, crushed stone or meeting the graduation requirements of ODOT Table 703.01-1.
- B. Aggregate bedding material shall be as follows:
  - 1. For PVC, HDPE or plastic pipe, bedding material shall be No. 8 (nominal size 3/8-inch to sieve No. 8).

#### **2.05 CONTROLLED DENSITY FILL (CDF) MATERIAL**

- A. Controlled density fill material shall be a cement base fill material that can be deposited in a fluid state. It shall be composed of portland cement and approved filler material, sand and water. The mixture shall have a compressive strength of 100 psi minimum and 500 psi maximum:
- B. Filler material shall consist of mineral aggregates, slag, or fly ash. Metals, soil, or organic material will not be permitted.

#### **2.06 RESERVED**

### **PART 3 EXECUTION**

#### **3.01 COORDINATION**

- A. Construction Through Highways:
  - 1. Permits - The Owner will obtain permits required for open cut construction through highways. Contractor shall be responsible for compliance with and furnishing any item required by permit such as Bond Security.
  - 2. Notification - The Contractor shall give written notice to appropriate officials of the affected Department of Transportation, City, or County at least five days, not including weekends and holidays, before starting construction under highways and as required under other roadways.
  - 3. Contractor shall comply with standard permit conditions of controlling authority and special provisions noted in Part 4 of this Section.
- B. Test Pits:
  - 1. The Contractor shall perform exploratory test pits as may be necessary or ordered by Engineer in advance of excavation to determine the exact location and elevation of subsurface structures, pipelines, and conduits which are likely to be encountered and shall make acceptable provision for their protection, support, and maintenance in operation. Vacuum excavation (pot hole) may be used if adequate information can be obtained by such method. No additional payment shall be made for test pits.
  - 2. Conflicts with existing utilities not located, as specified, far enough in advance of construction, shall not be considered as a basis for delay claims or additional payment.

### 3.02 REMOVING AND REPLACING TOPSOIL

- A. Removal
  - 1. Excavation for trenches in which pipelines, sewers, conduits and other utilities are to be installed: The Contractor may elect to strip soil and stockpile unless the Contract Documents direct stripping and stockpiling prior to excavation.
  - 2. General excavation, other than trench excavation: The Contractor shall remove, and stockpile the top 12 inches of the existing soils from all areas of construction including, but not limited to, excavation and embankment areas, stockpile sites, construction yard, storage areas, etc.
- B. Replacing stockpiled soil and topsoil
  - 1. Trench excavation areas disturbed as a result of trenching operations and which are to be restored with grass or other plantings shall be free of peat, muck, roots, hard clay, coarse gravel, stones, weeds, tall grass, brush, sticks, litter, ground debris and wood products. The surface shall be mechanically conditioned after removal of debris. After surface is prepared, it shall be covered with topsoil or stockpiled soil material to a minimum depth of 4 inches. Topsoils and stockpiled soil material shall meet the requirements specified herein and be tested.
  - 2. General excavation areas which are to be restored with grass or other plantings shall be free of peat, muck, roots, hard clay, coarse gravel, stones, weeds, tall grass, brush, sticks, litter, ground debris, wood products and construction debris including loose stone. The surface shall be mechanically conditioned after removal of debris. After surface is prepared it shall be covered with stockpiled soil and then have a minimum of 4 inches of topsoil placed.
- C. The Work shall be in accordance with applicable portions of ODOT items 652 and 653.

### 3.03 GENERAL EXCAVATION

- A. All necessary excavation shall be performed to accommodate the completion of all Contract Work.
- B. The Drawings show the horizontal and the lower limits of structures, pipelines, sewers and other utilities. The methods and equipment used by the Contractor when approaching the bottom limits of excavation and when trimming the bottom of the excavation to a smooth surface shall be selected to prevent disturbing the soil below the bottom limits of excavation.
- C. Excavation which is carried below the bottom limits shall be classified as Unauthorized Excavation, unless said excavation has been authorized by the Engineer prior to each occurrence.
- D. Unauthorized excavation shall be filled with CDF material to the bottom limits. Under circumstances where structural integrity is not a factor, the Engineer may allow the filling of unauthorized excavation with pipe bedding material or special backfill material compacted to 100% density, as specified under compaction requirements.

E. Sheeting, Shoring, and Bracing:

1. The Contractor shall furnish and install adequate sheeting, shoring, and bracing to maintain safe working conditions, and to protect newly built work and all existing adjacent and neighboring structures and utilities from damage by settlement.
2. Sheeting, shoring and bracing shall be arranged so as not to place a strain on portions of completed Work until the construction has proceeded far enough to provide ample strength. Sheeting and bracing may be withdrawn and removed at the time of backfilling, but the Contractor shall be responsible for all damage to newly built Work and adjacent and neighboring structures and utilities.
3. Sheeting, shoring and bracing shall be removed or cut-off at the time of backfilling to avoid problems with finish grade or future excavation.

F. Construction Sheeting Left in Place:

1. The Contractor shall furnish, install, and leave in place, construction sheeting and bracing when specified or when indicated or shown on the Drawings.
2. Construction sheeting and bracing, placed by the Contractor to protect adjacent and neighboring structures and utilities, may be left in place if desired by the Contractor. All such sheeting and bracing left in place, shall be included in the cost for excavation.
3. Any construction sheeting and bracing which the Contractor has placed to facilitate his work may be ordered, in writing by the Engineer, to be left in place. The right of the Engineer to order sheeting and bracing left in place shall not be construed as creating an obligation on his part to issue such orders. Failure of the Engineer to order sheeting and bracing left in place shall not relieve the Contractor of his responsibility under the Contract.

G. Removal of Water:

1. The Contractor shall at all times during construction provide and maintain ample means and devices with which to remove promptly and dispose of properly all water entering the excavations or other parts of the Work and shall keep said excavations dry until the structures to be built or pipelines to be placed therein are completed. No water shall be allowed to rise over or come in contact with concrete or masonry until the concrete and mortar has attained a satisfactory set, except in cases where the concrete has been tremied into place with the approval of the Engineer. Water shall not be allowed to rise above the bottom of the bedding stone prior to placing pipe. In waterbearing sand, well points and/or sheeting shall be supplied, together with pumps and other appurtenances of ample capacity to keep the excavation free of water and in compliance with government regulations.
2. The Contractor shall dispose of water from the Work in a suitable manner without damage to adjacent property or structures and in compliance with all regulations.

### **3.04 TRENCH EXCAVATION**

- A. Excavation for trenches in which pipelines, sewers, conduits and other utilities are to be installed shall provide adequate space for workers to place and joint the pipe properly. The trench shall be kept to a minimum width. The width of trench at the top of the pipe shall comply with the limits specified or shown on the Drawings.
- B. Excavation shall be to the depth necessary for placing aggregate bedding material under the pipeline, sewer, conduits and other utilities as shown on the Drawings. If over excavation occurs, the trench bottom shall be filled to grade with compacted aggregate bedding material.
- C. The amount of trench open at any one time in advance of completed Work shall be limited to the minimum necessary for conducting laying operations.
- D. In general, backfilling shall begin as soon as the pipeline, sewer, conduits and other utilities are in a condition to receive it and shall be carried to completion as rapidly as possible. New trenching shall not be started when earlier trenches need backfilling or the surfaces of streets or other areas need to be restored to a safe condition.

### **3.05 EXCAVATION OF UNSUITABLE MATERIAL**

- A. Unsuitable materials existing below the Contract bottom limits for excavation shall be removed as required by the Engineer. The Engineer may rely upon the independent laboratory retained on this Project when determining unsuitable soil conditions, removal and backfill. Such excavation shall be conducted at a time when the Engineer and independent laboratory are present and shall not exceed the vertical and lateral limits prescribed by both.
- B. The voids left by removal of unsuitable material shall be filled with special backfill, pipe bedding material, or CDF material as listed in Part 4 or as prescribed by the independent laboratory and as approved and ordered by the Engineer. Special backfill or pipe bedding shall be installed as described in this Section and in general shall be compacted to 100% density as specified under compaction requirements.

### **3.06 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL**

- A. All excavated materials which are unsuitable for use in backfilling trenches or around structures, and materials excavated that are in excess of that required for backfilling and for constructing fills and embankments as shown on the Drawings, shall be disposed of by the Contractor at his expense and at sites provided by him as may be required, except that the Owner reserves the right to require the Contractor to deposit such surplus at locations designated by the Owner within a five-mile radius of the Work.
- B. No surplus excavated material of any class shall be deposited in any stream or watercourse or be dumped on public property without the consent of the Owner. All spoil areas shall be left smooth, level, with drainage to a water course and proper erosion and runoff control shall be used.

### 3.07 BACKFILL AND COMPACTION

- A. Pipe and Conduit Bedding - Unless otherwise directed, pipe, conduits and other utilities shall be installed in specified aggregate bedding material as shown on the Drawings and as specified.
- B. Backfilling Under Existing Pipeline, Sewer, Conduits and Other Utilities - Where it is necessary to undercut or replace existing utility conduits and/or service lines, the excavation beneath such lines shall be backfilled the entire length with aggregate bedding material tamped in place in 6-inch layers to the required density. The aggregate bedding shall extend outward from the spring line of the conduit a distance of 2-feet on all sides and thence downward at its natural slope.
- C. Backfilling with Selected Backfill - Unless otherwise specified or directed, material excavated in connection with the Work may be used for backfilling and other filling purposes, if it meets all requirements given elsewhere in this specification for selected backfill. No material shall be used for backfilling that contains stones, rock, or pieces of masonry greater than 12 inches, frozen earth, debris, earth with an exceptionally high void content, organic material, or marl. No large pieces of rock or masonry shall be deposited closer than 24 inches from the completed outside surface of any structure or pipe.
- D. Backfill Immediately - All trenches and excavations shall be backfilled immediately after completion of construction therein, unless otherwise directed by the Engineer. Under no circumstances shall water be permitted to rise in unbackfilled excavation during construction or after pipe has been placed.
- E. House Leads and water services shall not be backfilled until the pipe ends are referenced and the Engineer has measured the pipe for payment from mainline to termination and photographed as needed.
- F. Backfilling around and over structures, pipelines, conduits and other utilities comprising the Work shall be carefully done by hand and tamped with suitable tools of approved weight when within 2 feet of structures, pipeline, conduit and other utilities. Selected backfill or, where specified, shown on Drawings, or ordered by the Engineer, special backfill material shall be used in this area. The material shall be placed in uniform layers not exceeding 6 inches in depth up each side. Each layer shall be placed, then carefully and uniformly tamped to the specified density so as to eliminate the possibility of lateral displacement of pipe or structure.
- G. Backfilling may be done by machinery after the backfill has been placed and compacted beyond 2 feet horizontally of structures, pipelines, conduits and other utilities and to a minimum depth of 1 foot above the tops of any buried structures, pipelines, conduits, and other utilities. The backfill material shall be deposited in horizontal layers, not thicker than one foot, and each layer shall be thoroughly compacted to the specified density by approved methods before a succeeding layer is placed. In no case, will backfill material from a bucket be allowed to fall directly on a structure or pipe and in all cases the bucket must be lowered so that the shock of the falling material will not cause damage.

- H. Backfilling Under Pavement and Walks - Where existing or new pavement, driveway, parking lot, curb and gutter, or walk is over an excavation, special backfill material shall be used to backfill the entire excavation from the bedding to surface. The material shall be placed and compacted to the required density in accordance with one of the following methods:
  - 1. The backfill material shall be deposited in 6-inch horizontal layers and each layer shall be thoroughly compacted to the proper density by approved compaction method before a succeeding layer is placed.
  - 2. No method of compaction which alters the gradation of the special backfill material or prevents compaction testing by standard testing methods shall be used.
- I. Backfilling with Controlled Density Fill Material (CDF) - Where called for on the Drawings, specified, or ordered, CDF material shall be used in lieu of special backfill or bedding material specified herein. Before placing CDF material, the Contractor shall take required measures to protect the Work against flotation.
- J. Backfilling Under Structures - Where structural slabs, mats or footings are to be placed on a backfilled area, special backfill material shall be used unless otherwise noted on the Drawings. The backfill material shall be placed in 6-inch horizontal layers and each layer shall be thoroughly compacted to the specified density by approved methods before a succeeding layer is placed. Where backfill is to be placed on undisturbed side slopes steeper than one vertical to six horizontal, steps shall be formed into the slope before each layer of the backfill is placed. These steps shall be cut vertically at no more than 2-foot intervals and shall have a horizontal dimension of not less than 3-feet.
- K. Prior to backfilling under structures, the natural subgrade shall be evaluated at regular intervals in each direction by the independent testing laboratory to determine that the subgrade can obtain the design bearing capacity given by the "Structural Design Data" table on the Drawings. If the subgrade cannot obtain the design bearing capacity then the testing laboratory shall submit a remedy to the Engineer for approval and for the Contractor to perform.
- L. Clay Trench Bulkheads - Where trenches are dug through areas of lateral groundwater seepage or in areas below the groundwater table, the Contractor shall, if required by the Drawings, construct bulkheads within the trench at ordered intervals. Bulkheads shall consist of native clay soil or other fines.

### **3.08 COMPACTION REQUIREMENTS**

- A. In areas to be filled, after the top 12-inches of soil is stripped, then the undisturbed subgrade shall be compacted to not less than 100% of maximum dry density per ASTM D698 (Standard Proctor) prior to placing of fill.
- B. Backfill placed under areas receiving concrete slabs, mats, footings, or within the interior of buildings shall be compacted to not less than 100% of maximum dry density per ASTM D698.

- C. Backfill placed around structures where other structures, pipelines, or slabs are to be constructed shall be compacted to not less than 100% of maximum dry density per ASTM D698.
- D. The material used to construct embankments and fills in locations other than under pavements, walks, structures, or slabs and around and over pipelines, shall be compacted to not less than 95% of maximum dry density per ASTM D698.
- E. All other backfill, including backfill around and over pipelines, and backfill around structures not covered in Paragraphs B. and C. above, shall be compacted to not less than 95% of maximum dry density per ASTM D698.
- F. The bottom of excavations upon which concrete slabs or structures are to be placed shall be compacted to obtain 100% maximum dry density per ASTM D698 in the top 12 inches.
- G. All soil subgrade which will provide bearing support for pavements or curbs, shall be compacted to a width of 6 inches beyond the back of curb and to a depth of 12 inches below the bottom of excavation to a density of not less than 100% of maximum dry density per ASTM D698. All fill below the subgrade shall be compacted to not less than 98% of maximum dry density, unless specified otherwise.
- H. Subgrade under the driveways and walks shall be compacted to a depth of 6 inches below the subgrade surface to density of not less than 100% of the maximum dry density determined by ASTM D698.
- I. Subgrade under structures shall be compacted to a depth of 12 inches below bottom of excavation surface to a density of not less than 100% of the maximum dry density determined by ASTM D698.

### 3.09 COMPACTION TESTS

- A. Trenches and excavation around structures shall be backfilled and consolidated in layers, as specified, to the existing ground surface. Initial test series for each type of backfill material shall be continued until the method of consolidation employed has proven to attain the required compaction. Any change in the proven method of consolidations will require additional testing and field verification of compaction.
- B. Subgrade below pavements, curbs, sidewalks, and structures shall be consolidated as specified. Compaction tests shall be performed to verify specified consolidation.
- C. Subsequent tests or series of tests shall be in locations and at depths ordered by the Engineer.

3.10 RESERVED

3.11 RESERVED

3.12 RESERVED

**PART 4 SPECIAL PROVISIONS**

**4.01 FIELD TESTING (MINIMUM REQUIREMENTS)**

- A. The laboratory shall perform the following field tests:
1. Trench Backfill - One test for every 200 cubic yards of backfill material.
  2. Subgrade Compaction - One test for every 300 square yards of subgrade.
  3. If directed by the Engineer, additional tests shall be performed for any of the above.

END OF SECTION



**SECTION 02550**  
**SANITARY SEWERS AND STORM SEWERS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes furnishing and installing sanitary sewers and storm sewers.
- B. Reconstruction of existing sewers, house connections, and catch basin leads shall be in conformance with requirements of this Section.
- C. This Section shall include furnishing and installing all required pipe, bends or beveled pipe, tees, wyes, tee manhole base pipes, bulkheads and stoppers, jointing material, granular material for pipe bedding, concrete used for encasement or bedding, making watertight connections to existing and new sewers and existing manholes, catch basins and inlets, cleaning and testing sewers, removing temporary bulkheads, and other work incidental to the sewer installation unless specifically included under other Items.
- D. Additional product requirements are specified in Section 01350.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturer's Shop Drawings indicating pipe and joint materials, physical dimensions, and joint details for each size, type, and class of pipe, fittings and specials furnished for the project compliance with specified standards.
    - b. Manufacturer's concrete design strength and reinforcing steel for RCP.
  - 2. Information for the Record:
    - a. Manufacturer's certification indicating that the pipe and joints meet specifications for each production run for each size, type, and class of pipe furnished. The Engineer may request test results to verify certification. Certification documents shall be according to the Source Quality Control of this Section.
    - b. Manufacturer's design calculations to verify basis of design.
    - c. Manufacturer's installation instructions.
    - d. The laboratory shall submit test certifications of pipe ordered tested under "Field Quality Control," of this Section.

## **PART 2 PRODUCTS**

### **2.01 SOLID WALLED PIPES**

- A. Polyvinyl Chloride (PVC) Sewer Pipe Specifications:
1. For pipe 15-inch diameter and smaller: Pipe, fittings, and jointing systems shall conform to ASTM D3034, except that the standard dimension ratio of the outside diameter of the pipe to wall thickness shall not exceed 35.
  2. For pipe 18 inch thru 24-inch diameter: Pipe, fittings, and jointing systems shall conform to ASTM F679 with an SDR 26 or PS 115 wall thickness.
  3. Joint systems shall be elastomeric seal (gasket) type. Seals shall conform to ASTM F-477 requirements. Joint materials and testing shall conform to ASTM D3212 requirements.
  4. All service connections shall be made using a wye and a bend. Tees shall be used only as directed by the Engineer. Tees and wyes shall be dye cast or factory fabricated. All service pipe shall be SDR 35.

### **2.02 RESERVED**

### **2.03 ACCESSORIES**

- A. Non-shrinking Mortar Material:
1. Material for non-shrinking mortar used in pointing joints shall be Sauereisen F-100 Grout as manufactured by Sauereisen Cements Co., Pittsburgh, Pennsylvania; Five-Star Grout as manufactured by US Grout Corp., Old Greenwich, Connecticut; or equal.
- B. Flexible Pipe Repair Couplings:
1. Flexible repair couplings shall be made of elastomeric polyvinyl chloride boot with series 300 stainless steel shield and clamps. Couplings shall be Strong Back RC series as manufactured by Fernco Joint Sealer Co., Ferndale, Michigan; Logan Clay Pipe Co., Logan, Ohio; Mission Clay Products Corp., or equal.
- C. Flexible Watertight Joints:
1. Flexible watertight joints used in connecting to existing sewers shall be a "boot" type sealed to the pipe wall with an internal expanding band and around the connecting pipe with an external adjustable band. Other types of applicable flexible joints may be submitted for approval.
- D. Granular Pipe Bedding Material:
1. Granular pipe bedding material shall be as specified in Section 02200.

## **2.04 REPLACEMENT DRAINS, SEWERS AND APPURTENANCES**

- A. Vitrified clay pipe sanitary sewers removed or damaged in completed the Work shall be replaced using pipe and joints as specified in this Section. Connections to existing sewers shall be as specified in this Section.
- B. Reinforced concrete pipe sanitary sewers removed or damaged in completing the Work shall be replaced using pipe meeting ASTM C76, Cl. IV, unless otherwise indicated and joints meeting ASTM C361. Reinforced concrete pipe storm sewers shall also be replaced with ASTM C76 Cl. IV RCP with joints equal to those of the pipe removed.
- C. Nonreinforced concrete pipe removed or damaged in completing the Work shall be replaced using pipe meeting ASTM C14 "Extra Strength Nonreinforced Concrete Pipe." Joints shall be equal to those of the pipe removed. Class IV RCP may be used in lieu of nonreinforced pipe.
- D. Manholes, catch basins, and inlets removed or damaged under these Items shall be replaced in conformance with applicable Drawings and Specifications.
- E. Driveway culverts removed or damaged in completing the Work shall be replaced with existing pipe, if undamaged, or new pipe and joints matching the existing, unless specified otherwise.

## **2.05 SOURCE QUALITY CONTROL**

- A. Pipe Manufacturer's Certification:
  - 1. The pipe manufacturer's certificate shall state that the materials have been sampled and tested in accordance with the provision for and meet the requirements of the designated specification and shall be signed by an authorized agent of the seller or the manufacturer.
  - 2. A test results report shall accompany that manufacturer's certificate. The report shall compare test results to Specification requirements. Test specimens shall be selected in conformance with the designated specification, except that no less than two tests shall be made for each production run of each size, type, and class of pipe furnished, and further, that in case tests are unsatisfactory, additional tests shall be made to the maximum number in the referenced ASTM Specification.

## **PART 3 EXECUTION**

### **3.01 CONSTRUCTION IN HIGHWAY PROPERTIES**

- A. Construction in Highway properties shall conform to the requirements of Section 02200.

### **3.02 PREPARATION OF TRENCH**

- A. Trench excavation shall conform to requirements of Section 02200.
- B. For rigid pipes the width of trench at the top of pipe shall be as shown in the Trench Detail on the Drawings.

- C. Unless otherwise indicated minimum trench widths for flexible pipes shall meet the requirements of ASTM D2321 and the Trench Detail shown on the Drawings.
- D. Unless otherwise indicated all sewer trenches shall be excavated below the proposed pipe invert as required to accommodate the depths of bedding material as shown on the Drawings and specified herein.

### **3.03 RESERVED**

### **3.04 FLEXIBLE PIPE INSTALLATION**

- A. Flexible pipe shall be installed in accordance with ASTM D2321. Bedding, backfill, and compaction shall meet the requirements of this Section and Section 02200.
- B. Concrete bedding and encasement in lieu of bedding material shall be installed as shown on the Drawings or specified.
- C. The laying of pipe in finished trenches shall be commenced at the lowest point, with the bell end or groove end laid upgrade. Pipe shall be laid with ends abutting and true to line and grade. They shall be carefully centered to form a sewer with a uniform invert of line and grade shown on the Drawings.
- D. Pipe shall be laid to lines and grades and checked in conformance with these Contract Documents. Pipes installed more than 0.04-feet above or below specified elevation shall be removed and reinstalled to grade.
- E. Temporary internal supports shall be used as recommended by the pipe manufacturer. Pipes with 48 inches or larger diameter shall have, as a minimum, struts temporarily inserted at the ends of the pipes. Struts shall be in the vertical position when the pipe is installed in the trench. Struts shall remain in place until after the trench has been completely backfilled.

### **3.05 PIPE JOINTS**

- A. O-Ring and Chemically Welded Joints - Pipe jointing surfaces shall be clean and dry when preparing surfaces for joining. Lubricants, primers, adhesives, etc., shall be used as recommended by the pipe or joint manufacturer's specifications. The jointing materials or factory fabricated joints shall then be placed, fitted, joined, and adjusted in such a manner as to obtain a watertight joint. Trenches shall be kept water-free and as dry as possible during bedding, laying, and jointing. As soon as possible after the joint is made, sufficient backfill material shall be placed along each side of the pipe to prevent movement of the pipe from any cause.
- B. Flexible Plastic Gasket Joints - Materials used for gaskets shall be as specified in this Section. Cross section size of gaskets and method of installation shall conform to the manufacturer's recommendations.

### 3.06 CONNECTIONS TO EXISTING SEWERS

- A. Unless indicated otherwise new pipe connections through the side of existing sewers shall be made as follows:
  - 1. Vitrified clay pipe, plain concrete pipe, and asbestos cement pipe, 15-inch diameter and smaller, and larger diameter at the option of the Contractor, shall be connected by removing a section of the existing sewer and inserting connecting fittings using specified flexible repair couplings.
  - 2. Reinforced concrete pipe and larger sizes of asbestos cement pipe and plain concrete pipe, unless otherwise shown on the Drawings, shall be connected by coring the existing sewer pipe wall and inserting a flexible watertight joint to receive the new pipe.
  - 3. Polyvinyl chloride pipe, ABS pipe, and ABS truss pipe shall be connected in conformance with the manufacturer's recommendations as approved by the Engineer.
  - 4. Connections shall be made in conformance with the jointing materials manufacturer's recommendations and as directed by the Resident Project Representative.

### 3.07 FIELD QUALITY CONTROL

- A. The Resident Project Representative may select one sample of pipe on the job site of each production run of each size and type of pipe to be tested by the Contractor's laboratory. The Contractor shall furnish the first test piece or pipe core and any additional samples required because of failures. The Contractor shall pay for tests on the first sample. Should the sample fail to meet specifications, retests shall be conducted by the Contractor's laboratory in conformance with the specifications and shall be at no additional expense to Owner.
- B. Deflection of PVC, PE and ABS Composite Piping Sewers:
  - 1. Vertical Ring Deflection - Before final acceptance of sewer lines, all sections of sewer pipe 8 inches and larger specified diameter shall be measured for vertical ring deflection by the Contractor and witnessed by the Resident Project Representative. Maximum deflection under full load shall not exceed 5% of the ASTM designated average inside diameter as determined by the laboratory for the specified piping.
  - 2. Failures - Should a pipe exceed the allowable deflection; the Contractor shall replace those pipes and retest the section.
  - 3. Equipment used in testing shall be go-no-go pull through gauges of a type approved by the Engineer. A metal or plastic gauging ring of diameter equal to 95% of the specified average inside pipe diameter shall be furnished with each gauge.
  - 4. The Contractor shall furnish testing equipment and personnel and perform the required tests. Tests must be witnessed by the Resident Project Representative.

5. Use of mechanical pulling devices is not permitted.
  6. Deflection testing shall not be performed until the completed and accepted trench backfill has been in place for at least 30 days.
- C. Field Inspection:
1. Individual sections of pipe may be rejected at any time because of defective joints, dimension variations, fractures, cracks, chips, or blisters exceeding the permissible tolerances.
  2. Rejected pipe shall be so marked with a lumber crayon or paint and shall be removed from the job site before the end of the following work day.

**3.08 RESERVED**

**3.09 RESERVED**

**PART 4 SPECIAL PROVISIONS**

**4.01 PIPE SCHEDULE**

- A. The following letter designations are used in the Piping Schedule:

Material Designation:

- DIP - Ductile Iron Pipe  
PVC - Polyvinyl Chloride

- B. Sanitary Sewer Schedule

Size	Thickness Class	Material	Spec Section	Remarks
4"-12"	SDR 35	PVC	2.01, A.	Repairs to Existing Sewers

- C. Storm Sewer Schedule

Size	Thickness Class	Material	Spec Section	Remarks
4"-12"	SDR 35	PVC	2.01, A.	Repairs to Existing Sewers

- D. Schedules are not guaranteed to be complete. All piping shown on the Drawings or specified shall be furnished and installed by the Contractor whether or not listed in the above schedule.
- E. Pipe Sewer Repairs:
1. Repairs to pipe sewers 12-inch diameter and less shall be made using materials specified in Subparagraph 2.01, A. with couplings per Subparagraph 2.01, A.
  2. Repairs to pipe sewers larger than 12-inch diameter shall be made with pipe materials to match the existing pipe material unless otherwise approved.

**4.02 TESTING**

- A. Testing for exfiltration and infiltration shall not be required due to the need to immediately reconnect repaired sewer segments.

END OF SECTION





**SECTION 02555  
PRESSURE PIPE**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes furnishing and installing pressure pipe of the materials, class, size, and length as shown on the Drawings, specified, or directed.
- B. Pressure pipelines constructed under this Section shall include but not be limited to water mains and sewer force mains.
- C. This Section shall include furnishing and installing all required pipe, fittings, specials, adaptors, closure pieces, tees, bends, joint restraints, granular pipe bedding material, concrete used for encasement or bedding, removing and relaying existing pressure pipe as required, providing temporary services and temporary blocking or harnessing, making connections to new and existing pressure pipe, installing temporary bulkheads and plugs, testing pipe, cleaning and sterilizing water mains, and other work incidental to the pressure pipe installation, unless specifically included under other Items.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturer's Shop Drawing indicating physical dimensions, joint details, fittings, and special details for each size, type, and class of pipe furnished for the project. Shop Drawings shall also note salient features of a specific pipe, i.e., concrete strength and reinforcing details.
    - b. Samples, if requested by the Engineer.
  - 2. Information for the Record:
    - a. Manufacturer's certification indicating that the pipe and joints meet Specifications for each production run for each size, type, and class of pipe furnished. The Engineer may request test results to verify certification.

**1.03 PRODUCT HANDLING**

- A. Care shall be taken in handling and transporting to avoid damaging pipes and their coatings. Loading and unloading shall be accomplished with the pipe under control at all times and under no circumstances shall the pipe be dropped. Pipe shall be securely wedged and restrained during transportation and supported on blocks when stored in the shop or field.

## PART 2 PRODUCTS

### 2.01 PRESSURE PIPE SPECIFICATIONS

A. Ductile Iron Pressure Pipe (DIP):

1. Ductile Iron Pressure Pipe shall conform to ANSI A21.51 or AWWA C151 and shall be pressure class 350 psi for sizes 12-inch and below, and pressure class 300 psi for larger sizes unless otherwise specified herein.
2. Pipe buried underground, unless otherwise specified, shall be jointed with rubber gasket (push-on) type joints and shall meet the requirements of AWWA C111 for push-on joints. The gasket shall be a single molded rubber ring fitted into a specially shaped recess in the bell forming a pressure tight seal. The spigot end of each pipe shall be marked to indicate when the pipe is "home."
3. Ductile Iron pipe shall be used for all water mains larger than 16-inches in diameter up to 24-inches in diameter.
4. Internal restrained bell joints, wherever shown or required, shall be mechanical joint with retainer glands, US Pipe TR Flex Joint System, US Pipe Field LOK Gasket System, or equal.
5. Interior Coating – Unless otherwise specified, pipe interiors shall be covered with a standard thickness cement lining meeting ANSI A21.4 and AWWA C104. A seal coat of petroleum asphaltic material shall be applied in conformance with the above Specifications. Pipe used for compressed air shall not receive a concrete lining.
6. Exterior Coating - All buried ductile iron pipe shall be coated on the outside with a standard petroleum asphaltic coating, 1 mil thick, meeting AWWA C110, unless otherwise specified. The finished coating shall be continuous, smooth, neither brittle when cold nor sticky when exposed to the sun, and shall be strongly adherent to the pipe. The coating materials, after drying 48 hours, shall impart no objectionable color, odor, or taste to water standing in contact with the coating for a minimum of 48 hours.
7. Where approved, the petroleum asphaltic material specified for interior lining may be used for exterior coating of pipe buried underground.

B. Polyvinyl Chloride Pipe (PVC):

1. RESERVED
2. Medium Diameter – 4-inches to 16-inches
  - a. PVC pipe 4 inches to 12 inches in diameter shall meet the requirements of AWWA C900 or AWWA C909, and unless otherwise specified, shall be Pressure Class 235 (C909), or have a standard pipe dimension ratio (D.R.) of 18 (C900).

- b. PVC pipe 14-inch diameter and larger shall meet the requirements of AWWA C905 and unless otherwise specified shall have a standard thermoplastic pipe dimension ratio (D.R.) of 18 or less.
- c. Pipe OD shall be equivalent to ductile iron pipe OD for the same nominal pipe size.
- d. Pipe shall have integral bell push-on type joints meeting the requirements of ASTM D3139.
- e. Joints for pipe shall be push-on gasket style. Gaskets shall meet the requirements of ASTM F477 for high-head (50 feet of head or higher) applications.
- f. Restrained Joints, where required or shown, shall meet the requirements of the UNI-Bell Plastic Pipe Association Performance Standard UNI-B-13, similar to EBAA Iron Sales, Inc., Series 2000 PV for mechanical joints and Series 1500 for push-on joints.

## 2.02 PRESSURE PIPE FITTINGS

### A. Ductile Iron Pipe Fittings:

- 1. All Ductile Iron Pipe, PVC or PVCO pressure pipe shall utilize Ductile Iron Pipe fittings with mechanical joints as specified in this section.
- 2. Mechanical joint fittings shall be ductile iron and conform to ANSI A21.10 or AWWA C110 and ANSI A21.53 or AWWA C153. All fittings shall have a pressure rating of 250 psi for all pipe sizes unless otherwise specified.
- 3. Fittings shall have mechanical joints with retainer glands unless otherwise specified or shown. Retainer glands shall be ductile iron. The restraining mechanism shall impart multiple wedging actions against the pipe. Restraining devices shall be of heat treated ductile iron. Twist-off nuts shall be used to ensure proper actuation of the restraining device. The mechanical joint retainer gland shall be Ebaa Iron, Inc., Series 1100 Megalug, or equal.
- 4. Mechanical joints
  - a. Mechanical Joints shall conform to ANSI A21.11 (AWWA C111), except as specified herein.
  - b. The mechanical joint retainer gland shall be Ebaa Iron, Inc., Series 1100 Megalug, or equal
  - c. Mechanical couplings, if required or permitted, shall be Dresser Style 38, or equal.  
  
Victaulic or equal joints, if required or permitted, shall be of the shouldered type, unless otherwise specified. If a grooved joint is permitted, a thicker pipe shall be used.

## 2.03 ACCESSORIES

- A. Nuts and bolts for buried pipe shall be as follows:
  - 1. Nuts and bolts used in wall castings shall be of stainless steel Type 316.
  - 2. Nuts and bolts encased in grout on concrete pressure pipe shall conform to recommendations of the pipe manufacturer.
  - 3. Nuts and bolts used on buried pressure pipe and fittings in contact with earth shall be Cor-Blue coated low alloy steel and have a minimum yield strength of 45,000 psi complying with ANSI A21.11 and AWWA C111.
  - 4. All other nuts and bolts shall be low carbon steel in conformance with the chemical and mechanical requirements of ASTM A307, Grade B. Higher strength bolts will be acceptable.
- B. Tracing Wire shall be installed on all pipe.
  - 1. Tracer wire shall be in accordance with the District's Specifications.
  - 2. Tracer wires shall terminate inside all structures including but not limited to, air relief structures, valve box assemblies, indicated on plans. Tracer wire shall extend 4-feet above the opening on structures.
  - 3. Tracer wire shall be tested for continuity after installation and considered acceptable when a continuous read is obtained between terminals.
- C. Utility Markers and Locator stations shall be installed as noted in Part 4 and on the drawings.
  - 1. Utility Markers shall be flexible above ground, impact resistant, UV stabilized fiberglass Reinforce composite material. Utility markers shall be a minimum of 3-3/4 inches wide and 66 inches long. Color shall be integral to the material and selected by the Owner.
  - 2. Locator stations shall be impact resistant, UV stabilized, and fiberglass reinforced composite material, 3 inches in diameter. Locator stations shall have a polycarbonate cap assembly with brass or stainless-steel terminal board for tracer wire. The cap assembly color shall be selected by the Owner.
  - 3. Utility markers and locator stations shall have a 3-inch-wide by 13-inch-long label readable from 100 feet. Label color shall be selected by the Owner. The wording of the label shall be as specified in Part 4.
  - 4. A polypropylene identification tape marked "buried water main" shall be installed 24 inches above all water mains installed by open-cut methods. The tape shall be blue.

## 2.04 POLYETHYLENE ENCASEMENT FOR DUCTILE IRON PIPE

- A. Buried ductile iron pipe shall be encased in a loose wrapping of polyethylene film at the time of installation. The polyethylene material and method of installation shall meet the requirements of AWWA C105/A21.5.

## **2.05 SOURCES QUALITY CONTROL**

- A. Pipe Manufacturer's Certification:
  - 1. The pipe manufacturer's certificate shall state that the materials have been sampled and tested in accordance with the provision for and meet the requirements of the designated specification and shall be signed by an authorized agent of the seller or the manufacturer.
  - 2. A test results report shall accompany the manufacturer's certificate, if requested by the Engineer. The report shall compare test results to Specification requirements. Test specimens shall be selected in conformance with the designated specification for each production run of each size, type, and class of pipe furnished and further, that in case tests are unsatisfactory, additional tests shall be made to the maximum number in the referenced ASTM Specification.

## **PART 3 EXECUTION**

### **3.01 COORDINATION**

- A. Construction in Highway Properties
  - 1. Construction in highway properties shall conform to the requirements of Section 02200.

### **3.02 PREPARATION OF TRENCH**

- A. Trench excavation shall conform to requirements of Section 02200.
- B. Unless otherwise specified or called for on the Drawings, the width of trench at the top of pipe 24 inches in diameter or less shall not exceed the outside diameter of the pipe or encasement, plus 9 inches on each side of the pipe measured to the face of the trench or to the back of the sheeting when used. For pipe having a diameter greater than 24 inches, the width of trenches at the top of the pipe shall not exceed the outside diameter of the pipe or encasement, plus 15 inches on each side of the pipe measured as specified above.
- C. Unless otherwise directed or called for on the Drawings, all sewer trenches shall be excavated below the proposed pipe invert as required to accommodate the depths of pipe bedding material as scheduled on the Drawings.

### **3.03 PIPE INSTALLATION**

- A. All pipe fittings and specials shall be laid in accordance with the manufacturer's instructions, with AWWA C600, and as supplemented herein.
- B. Precautions shall be taken during construction to protect the pipe interiors, fittings, and valves against contamination. Pipe interiors shall be thoroughly cleaned of dirt and foreign matter before laying, by brushing, swabbing or other method approved by the Engineer, and means shall be provided to prevent entry of dirt during the progress of installation. Groundwater shall be kept out of the pipe at all times.

- C. Bedding and Backfilling:
  - 1. Bedding and backfilling shall be in conformance with Section 02200.
  - 2. At joints, enough depth and width shall be provided to permit working entirely around the pipe as needed to make the joints in the proper manner.
- D. Handling and Cutting:
  - 1. Suitable tools and appliances for cutting, handling, and laying of the pipes and special castings shall be used and care shall be taken to prevent damage to pipe coatings.
  - 2. Where new or existing pipe requires cutting in the field it shall be done in a manner to leave a smooth end at right angles to the pipe centerline. The finished cut must be approved by the Engineer.
- E. Pipe Laying:
  - 1. Pipe and appurtenances shall be installed true to line, grade, and location; with joints centered, spigots home; pipe properly supported and restrained against movement; and all valve stems plumb.
  - 2. All elbows, tees, plugs, etc., shall be properly anchored, blocked, or otherwise restrained to prevent movement of the pipe in the joints due to internal or external pressure.
  - 3. The open ends of all pipes and special castings shall be plugged or otherwise closed with a watertight plug to the approval of the Engineer before leaving the Work for the night, and at other times of interruption of the Work. All pipe ends which are to be permanently closed shall be plugged or capped and restrained against internal pressure.
- F. Pipe Jointing:
  - 1. Gaskets - Just prior to joining the pipes, the surfaces of the joint rings shall be wiped clean and the joint rings and rubber gaskets shall be liberally lubricated with an approved type of vegetable oil soap. The spigot end, with the gasket placed in the groove, shall be entered into the bell of the pipe already laid, making sure that both pipes are properly aligned. Before the joint is fully "home," the position of the gasket in the joint shall be determined by means of a suitable feeler gauge supplied by the pipe manufacturer. If the gasket is found not to be in proper position, the pipes shall be separated and the damaged gasket replaced. The pipe is then forced "home" firmly and fully. In its final position, the joint between the pipes shall not be deflected more than 1/2 inch at any point.
- G. Anchoring Pipe:
  - 1. Disjointing hydrostatic pressure at bends, plugs, tees, and wyes shall be counteracted by restrained joints as specified.
  - 2. Approved joint restraints shall be installed in locations shown or scheduled on the Drawings.

**3.04 RESERVED**

**3.05 FIELD INSPECTION**

- A. All pipe sections, specials, and jointing materials shall be carefully examined for defects and no piece shall be laid that is known to be defective. Any defective piece discovered installed shall be removed and replaced with a sound one in a manner satisfactory to the Engineer at the Contractor's expense.
- B. Defective material shall be marked with lumber crayon and removed from the job site before the end of the following day.

**3.06 PRESSURE AND LEAKAGE TESTS**

- A. The Contractor shall furnish the pump, pipe connections, taps, gauges, auxiliary water container, bulkheads, plugs, and other necessary equipment and make pressure and leakage tests of all lines unless otherwise directed by the Engineer.
- B. Tests shall be conducted on all pipelines or valved sections thereof as directed by the Engineer. Testing of pipelines laid in embankments or bedded in concrete shall be done prior to backfilling or placing concrete cover unless otherwise permitted by the Engineer. Tests on lines anchored or blocked by concrete shall not be conducted until the concrete has taken permanent set. A maximum of 1,000 feet of pipe may be included in a test section. All valves shall be tested for leakage.
- C. The line or section thereof to be tested shall be filled slowly with water to expel all air. Hydrostatic pressure shall be applied by pumping water from an auxiliary supply. The test pressure shall be maintained six hours minimum and additional time as required for thorough inspection to find any leaks or defects in the force main and appurtenances. The test pressure shall be per the District's Specifications or 50% above the normal operating pressure, whichever is greater. Should the pipe section fail to pass the tests, the Contractor shall find and correct failures and repeat the tests until satisfactory results are obtained.
- D. Leakage tests shall be made simultaneously with or following completion of pressure tests of all lines or valved sections thereof. Leakage is defined as the quantity of water added to the pipe under test to maintain the required test pressure for a specified time. The duration of the leakage test shall be in accordance with the District's Specifications.
- E. Pressure testing shall be performed in accordance with AWWA C600 and C605.

**3.07 DISINFECTION OF POTABLE WATER PIPING**

- A. After the pressure test and prior to disinfecting, the lines shall be thoroughly flushed through hydrants or by other means as approved by the Engineer.
- B. The Contractor shall furnish required materials and apparatus and perform the Work of disinfection.
- C. All water piping shall be cleaned and disinfected in accordance with AWWA C651 and one of the following:

1. Liquid sodium hypochlorite by means of a suitable solution feed machine or pump. Sodium hypochlorite storage conditions and durations shall be controlled to minimize deterioration.
  2. Calcium hypochlorite as tablets, powder. Tablets or powder shall be placed in the water line during construction. The water line shall be filled, carefully, with potable water to produce a uniform solution.
  3. Calcium hypochlorite as a water mixture. The calcium hypochlorite powder shall be mixed with water to form a paste and then thinned to a slurry, to be introduced into the pipe by pumping.
- D. The dosage of chlorinating agent shall be of the amount to produce a chlorine residual of 40 to 50 parts of chlorine per million. Tests with the DPD drop dilution method shall be made at selected points to determine the residual.
- E. Treated water shall be retained in the lines for sufficient time to accomplish the desired disinfection but not less than 12 hours. Valves in the line shall be operated during the retention period.
- F. Following disinfection, all treated water shall be flushed from the lines at their extremities until the replacement water throughout the lines shall, upon testing, be chemically and bacteriologically acceptable.
1. Two or more successive sets of samples taken at 24-hour intervals shall indicate microbiologically satisfactory water before the lines are placed into service.
  2. Should the initial treatment prove ineffective, the disinfection shall be repeated until the test shows acceptable results.
  3. The disposal of heavily chlorinated water shall be coordinated with the Owner and regulatory agencies. The heavily chlorinated water may require the addition of a dechlorinating chemical prior to release to a storm sewer or the environment. The dechlorinating method shall be approved by the Owner and Engineer. The heavily chlorinated water shall not be released to sanitary sewers without permission from the Owner of the sanitary sewer system.
- G. All testing shall be done by a laboratory acceptable to the public authority having jurisdiction, and all costs shall be paid for by the Contractor.

#### **PART 4 SPECIAL PROVISIONS**

##### **4.01 PIPING SCHEDULE**

- A. The following letter designations are used in the Piping Schedule:
- Material Designation:
- |      |   |                                    |
|------|---|------------------------------------|
| DIP  | - | Ductile Iron Pipe                  |
| PVC  | - | Polyvinyl Chloride                 |
| PCCP | - | Prestressed Concrete Pressure Pipe |
- B. Schedule:



Service	Size	Pressure Class Thickness Class	Material	Remarks
Water Main	6"	Class 350	DIP	Section 2.01, A.
Water Main	6" - 10"	PC 235	PVC C-909	Section 2.01, B.2.
Water Main	8"	DR 18	PVC C-900	Section 02955, 4.01 Pipe Installed in 16" Bored Casing
Water Main	10"	DR 18	PVC C-900	Section 02955, 4.01 Pipe Installed in 20" Bored Casing

- C. Schedules are not guaranteed to be complete. All piping shown on the Drawings or specified shall be furnished and installed by the Contractor whether or not listed in the above schedule.

#### 4.02 PERMANENT AND TEMPORARY BLOWOFFS/TAPS

- A. The Contractor shall provide all blowoffs and taps as necessary to properly exhaust air from test sections, flush and disinfect the new pressure pipe system.
- B. Blowoff assemblies shall be removed and plugged following the successful testing and disinfection of that section of water main.

#### 4.03 PRESSURE PIPE ELEVATIONS

- A. Elevations shown on the plans shall be checked as specified in this Section.
- B. Any deviation in the pipe elevations shall be brought to the Engineer's attention to permit the Engineer to evaluate the impact upon air release mechanism placements.

#### 4.04 PIPE CLEARANCES

- A. The elevation of sanitary and storm sewer taps is unknown. The Contractor shall provide all necessary fittings to provide 18 inches of vertical clearance for perpendicular sanitary sewer crossings and 12 inches of clearance for all storm sewer connections.
- B. All other utilities shall be provided with 12 inches of vertical clearance from the outside of the other utility to the outside of the new water main.
- C. The Contractor shall excavate all utilities shown crossing the water main alignment ahead of the water main construction to avoid conflicts with existing utilities.

#### 4.05 WINTER CONSTRUCTION

- A. The Contractor shall provide measures to prevent flushing water from freezing and accumulating on the roadway.

END OF SECTION



**SECTION 02556**  
**FIRE HYDRANT ASSEMBLIES**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes furnishing and installing fire hydrant assemblies as specified herein, including 6-inch ductile cast iron pipe, valves and boxes, and fire hydrants.
- B. All tees in water main shall be included under main line work.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. The Contractor shall indicate all variances from the requirements of the Contract Documents.
    - b. Manufacturer's assembly drawings and parts list including model numbers and materials of construction.
  - 2. Information for the Record:
    - a. Operation and maintenance manual.

**PART 2 PRODUCTS**

**2.01 HYDRANTS**

- A. Fire hydrants shall comply with AWWA C-502. Fire hydrants shall be Mueller "Super Centurion 250" as manufactured by the Mueller Co., American-Darling B62B as manufactured by American Flow Control, K81D as manufactured by Kennedy Valve, or equal.
- B. Hydrant shall have a minimum barrel diameter of 7 inches with a 5-inch compression opening with a 6-inch mechanical joint connection to hydrant lead. The main valve shall be of high grade rubber or neoprene not less than 5-1/4 inch in diameter.
- C. Operating and nozzle cap nuts shall be pentagon shaped and shall measure 1-1/2 inch from point to flat. The operating nut shall open in accordance with District's Standards.
- D. Hydrants shall be furnished with two 2-1/2-inch diameter hose nozzles and one 5-inch diameter pumper nozzle. Nozzle diameter and thread shall be per local fire district standards. Pumper nozzle shall be provided with a Storz fitting compatible with 5-inch diameter coupled fire hoses as manufactured by Harrington, Inc., or approved equal. The Storz fitting shall be factory mounted. Add-on Storz fittings are not acceptable.
- E. Hydrants shall be painted in accordance with the District's Standards.

**2.02 LEAD PIPE**

- A. The 6-inch ductile cast iron pipe used for hydrant lead shall be as specified under Section 02555.

**2.03 VALVE AND VALVE BOX**

- A. Six-inch valves and valve boxes shall meet the requirements specified in Section 02557.
- B. Valves shall have mechanical joints.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. The hydrant lead, including the valve, shall be laid on firm ground and backfilled as specified in Section 02555. The length of hydrant lead shown on the Drawings is approximate only and may vary according to field conditions.
- B. The base of the hydrant shall be set on two 4 inch by 8 inch by 16-inch solid concrete block, or 6 inch (minimum thickness) by 8 inch by 16 inch poured base of Class B concrete on undisturbed earth. The hydrant barrel shall be set plumb.
- C. One cubic yard of pipe bedding shall be placed around the barrel of the hydrant between the end of the trench and the valve. The stone shall not be placed closer than 2-feet to the ground surface.
- D. Restraining glands shall be used on the entire hydrant lead from the branch run of the main line tee to the hydrant.
- E. Proper barrel lengths shall be used to extend hydrant assembly to finished grade. Barrel lengths may vary to accommodate finished grade.

**PART 4 SPECIAL PROVISIONS**

Not used.

END OF SECTION

**SECTION 02557  
VALVES**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes furnishing and installing valves, valve boxes, floor boxes, extension stems, and appurtenances as specified, shown on the drawing.
- B. Valves in hydrant assemblies are included in this Item.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturer's assembly drawings and parts list including model number and materials of construction.
  - 2. Information for the Record:
    - a. A certificate of compliance with appropriate AWWA Standards shall be submitted, if required by the Engineer.
    - b. Certification of NSF approval.

**PART 2 PRODUCTS**

**2.01 GATE VALVES**

- A. Gate valves shall be cast iron body, bronze mounted, AWWA C-509 or C 515 resilient seat, non-rising stem type with mechanical joint ends. Gate valve shall be Mueller A-2361, Mueller A-2362, Kennedy C-509 or C-515.
- B. Valves shall be furnished with an O-ring seal incorporating two rubber O-ring seals.
- C. Valves shall be designed for 200 psi working pressure and shall be shop tested at 300 psi pressure, with the pressure held on the valve for at least one minute.
- D. Valves shall open as specified with an arrow indicating the direction for opening. Wrench nuts shall be 2-inch square.
- E. Iron parts shall be painted before leaving the shop with two coats of acceptable high grade bituminous paint or epoxy paint.
- F. Bolts and nuts on buried valves shall be a low alloy steel cathodic to the valve body and having a minimum yield strength of 45,000 psi. All other nuts and bolts shall be low 304 stainless steel.

**2.02 RESERVED**

**2.03 RESERVED**

**2.04 RESERVED**

**2.05 ACCESSORIES**

A. Valve Boxes:

1. All buried valves shall be provided with valve boxes. Valve boxes shall be standard, three-piece screw type, cast iron adjustable boxes, with tops of boxes set flush to finished grade. Valve boxes shall not be less than 5 inches in diameter and shall have a minimum thickness at any point of 3/16 inch. The cover shall have cast thereon an appropriate name for the kind of service for which the valve is used.
2. A valve box shall be provided for each curb stop. At least three keys shall be furnished to operate curb stops.
3. All parts of valve boxes, bases, and covers shall be coated by dipping in bituminous varnish.
4. Extension stems shall be provided for buried valves when the operating nut is more than 5 feet below finished grade. Extension stem shall extend operating nut to within 16 inches of the ground surface, shall be provided with spacers which will center the stem in the valve box, and shall be equipped with a 2-inch square wrench nut. Extension stems shall meet the requirements of this Section.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

A. Gate, Check and Butterfly Valves:

1. Valves shall be installed in their respective positions, free from distortion and stress. Connecting joints shall be as specified in Section 02555.
2. Where specified, the anode caps shall be installed on exposed bolts and nuts on valve.

B. Accessories:

1. Valve Boxes shall be installed in a plumb position and in alignment with the operating nut.
2. Valve Box with extension stems.
3. Extensions stems and stem guides shall be in alignment with operating nut and prevent binding and stresses on connecting pins.

**PART 4 SPECIAL PROVISIONS**

**4.01 VALVE MANHOLES**

- A. Valves larger than 10-inches in diameter shall be placed in manholes, unless shown otherwise in the Contract Documents.

**4.02 VALVE OPENING DIRECTION**

- A. Valves shall open in accordance with the District's Specifications.
- B. The Contractor shall note that not all valves required for this work open in the same direction. District's Specifications shall be consulted.

**4.03 TAPPING SLEEVES AND VALVES**

- A. Tapping valves shall be Mueller T-2361, T-2362 or approved equal.
- B. Tapping sleeves shall be Mueller H-304 stainless steel tapping sleeve with test plug or approved equal.

END OF SECTION





**SECTION 02558  
WATER SERVICES**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes furnishing and installing corporation stops and copper tubing needed to connect existing services to the new water lines, and curb stops and boxes for new service where shown on the Drawings or directed by the Engineer.
- B. Reconstruction of existing water services and installation of temporary services shall be in conformance with requirements of this Section.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for review:
    - a. Manufacturer's assembly drawing and parts list of the corporation stops, curb stops, and curb boxes indicating materials of construction and model numbers.
    - b. Manufacturer's recommendations for installation.
    - c. Manufacturer of copper tubing and verification of compliance with Specification.

**PART 2 PRODUCTS**

**2.01 CORPORATION STOPS**

- A. Corporation stops and tapping saddles shall be in accordance with the District's Standards.

**2.02 SERVICE LINES**

- A. Service lines shall be provided in accordance with the District's Standards.
- B. Fittings shall be compression, or pack joint and have threads that conform to "Threads for Underground Service Line Fittings", as specified in AWWA C800.
- C. Services installed under existing pavement surfaces may be installed by boring, pushing, or using a vibratory mole so that the paved surface is not disturbed, or by open-cut.

## **2.03 COMPONENTS OR ACCESSORIES**

- A. Curb stops and curb boxes shall be provided in accordance with District's Standards. Cast iron curb boxes shall be coated with the petroleum asphaltic coating specified in Section 02555.
- B. Tracer wire shall be installed with all water services, terminated on the outside of the curb box as specified in Section 02555.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. The Contractor shall install saddles and corporation stops on the water line. The Contractor may install corporation stops at the time the pipe is installed or may tap the line under pressure after testing and sterilizing.
- B. The Contractor shall bore a hole 1/4 inch larger than the outside diameter of the corporation stop to be used. Saddles shall be installed on water lines. The Contractor shall then center the corporation stop and the saddle over this hole and tighten straps to provide a watertight seal. The saddle and corporation stop shall be installed at the time the mainline is installed, if the location of the service connection is known. If the location of the service connection is unknown at the time the mainline is installed, and upon approval of the Engineer, the line may be tapped under pressure after testing and sterilization.
- C. Service Lines:
  - 1. Service lines shall be laid in accordance with Section 02555 and the restoration of all surfaces and all structures shall be in accordance with the appropriate Sections.
  - 2. Service lines shall not be laid until main line has been tested, sterilized, and put in operation.
- D. Curb Stops and Boxes:
  - 1. Curb stops shall be installed in the upright position with at least 4-feet of cover at the property line.
  - 2. Curb boxes shall be installed plumb and according to the manufacturer's instructions. The top of all boxes shall be level with final ground surface.

### **3.02 CONNECTION TO EXISTING SERVICES**

- A. The Contractor shall install corporation stops and copper tubing to the new water line as specified above. The Contractor shall then shut off existing corporation stop, disconnect existing service from existing water line, and connect new copper tubing to the existing service.
- B. If the existing service crosses the new water line, the service shall be cut and connected to new line after the new line is in service. The Contractor shall dig up and shut off all old corporation stops for any service so connected to the new line.

### 3.03 EXISTING LEAD SERVICE LINES

- A. The Contractor shall immediately notify the Owner of any lead service lines encountered.
- B. Existing lead service lines which are encountered shall be replaced from the water line to full extend of the lead pipe as it exists subject to the sequence of construction described herein.
- C. The Owner will provide notice to properties served by (or suspected to be served by) lead service lines a minimum of 45 days in advance of the commencement of water main replacement work or water service replacement work.
- D. The Owner will provide the owner of the property with drinking water treatment unit filters.
  - 1. The filters will be provided for with 3 refills (choose units with 3-month lifecycle).
  - 2. The filters will meet NSF/ANSI 53.
- E. The Contractor will mobilize to the site and construction will commence.
- F. The Contractor will complete water main replacement (or other underground work), testing and placing the new water main (if project involves new water main) into service.
- G. Water Service replacements will commence. If the water service is encountered as part of the work not part of a water main project go to Step H.
- H. The extent of each existing lead pipe will be determined prior to starting work at each service. Determining the extent of lead pipe will be necessary to avoid starting the replacement and creating a Partial Lead Service Replacement (PLSR) if work cannot be completed in entirety
  - 1. If no lead pipe is found beyond the right-of-way, a Full Lead Service Replacement (FLSR) will be performed entirely within the right of way. Go to Step I.
  - 2. If lead pipe is found beyond the right-of-way:
    - a. The Contractor will redeploy to a new location to permit the Owner to evaluate the feasibility of replacing the private lead pipe.
    - b. The Owner will offer to replace the private pipe for the property owner.
      - 1) FLSR – If the property owner opts to have the private pipe replaced, the work will be included in the construction contract.
      - 2) PLSR – If the property owner opts against having the private portion of the pipe replaced or lead pipe cannot be replaced due to site constraints. The Contractor will replace the portion that can be replaced. The Owner will:
      - 3) Document the PLSR.

- 4) Inform residents they may temporarily experience an increase in lead levels.
  - 5) Provide guidance on measures the property owner make take to minimize lead exposure.
  - 6) Inform the residents that the Owner will collect a sample for lead content analysis be OAC 3745-81-86. (by Owner)
  - 7) Collect sample within 72-hours of completion of PLSR.
  - 8) Provide sample result within 2 business days to the property owner (post-marked mail or physical delivery).
- I. A new tap connection will be made to the water main.
  - J. The lead pipe will be removed and replaced from the water tap to the extent determined (PLSR or FLSR).
  - K. A new meter pit or meter will be provided (if included in the project).
  - L. Upon the completion of lead service piping replacement by the Contractor, the Owner will:
    1. Flush water through customer's line using an outside spigot if available.
    2. Instruct the customer to flush water once every 2 weeks for 3 months (per AWWA C810-17,4.4.2). Notice will be provided via a door hanger.

## **PART 4 SPECIAL PROVISIONS**

### **4.01 WATER METER PITS**

- A. New water meter pits as shown on the drawings shall be provided by the Contractor. The Contractor shall install meters pits and shall provide all necessary fittings and accessories to connect the new and existing water service pipe to the new water meter pit.
- B. Water meters shall be provided by the Owner and installed by the Contractor. The Contractor shall coordinate the startup of water meters with the Owner's staff.
- C. Water meters shall be 5/8-inch unless otherwise directed by the Engineer. Meters between sizes of 5/8-inch and 1-inch shall be Sensus iPERL Smart Water Meter. Meters between the sizes of 1-1/2-inch and 2-inch shall be OMNI C<sup>2</sup> Compound Water Meter with strainer.

### **4.02 SERVICES LARGER THAN 3 INCHES**

- A. Water services larger than 3 inches in diameter shall be constructed in accordance with the requirements of Specification Section 02555.

**4.03 TRENCHLESS WATER SERVICE CONSTRUCTION**

- A. Services to be constructed by horizontal directional drilling shall be constructed in accordance with Specification section 02790.
- B. If a pulling type construction method is to be used, the existing service must have a minimum of 5-feet of cover.
- C. Pipe materials for water services shall be as specified in this section.
- D. No joints will be permitted in the section of pipe installed by trenchless methods.

END OF SECTION



**SECTION 02600**  
**PAVEMENTS, CURBING AND WALKS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes the construction of sidewalks, curbing pavements, and berms of various designated types as shown or scheduled on the Drawings, specified or directed.
- B. This Section includes preparation of the base and subgrade construction of walks, curbs, pavements and base courses, adjustment of manhole castings, and valve boxes to conform to new pavement courses, and other work and materials incidental to the construction of pavements, curbing and walks.
- C. Existing curbs and walks of stone or concrete shall be replaced using concrete.
- D. This Section includes temporary and restoration of permanent pavement markings as they exist at the time of bidding unless otherwise shown on the Drawings, specified or directed.

**1.02 OWNER'S STANDARDS AND SPECIFICATIONS**

- A. Sidewalks, curbs, driveways, parking areas, and street pavement and berms disturbed by construction shall be restored in accordance with the Owner's present standards and specifications.

**1.03 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturers' and suppliers' material certificates.
    - b. A sieve analysis (ASTM C136) shall be furnished for each material source.
  - 2. Information for the Record:
    - a. Delivery tickets from the asphalt and aggregate suppliers shall be given to the inspector at the unloading site. Tickets shall include (as a minimum) name of source, date, type of material, and weight.
    - b. Test results and certificates.

**PART 2 PRODUCTS**

**2.01 AGGREGATE BASE AND SURFACE**

- A. The aggregate shall meet the requirements of ODOT Item 304 and Item 411, respectively.

**2.02 RESERVED**

**2.03 TACK COAT**

- A. The tack coat shall meet the requirements of ODOT Item 407.
- B. The tack coat material shall be RS-1 or SS-1, SH-1h, or CSS-1h, and shall meet the requirements of ODOT Item 702.04.

**2.04 RESERVED**

**2.05 ASPHALT CONCRETE BASE, LEVELING AND SURFACE COURSES**

- A. Bituminous Material - The asphalt cement shall meet the specified performance grade (design temperature) and shall meet the requirements of ODOT Item 702.01.
- B. Aggregate - The aggregate shall meet the requirements of ODOT Items 301.02 and 703.04 for asphalt concrete base and ODOT Item 703.05 for asphalt concrete.
- C. Design Mix - All bituminous mixes shall meet the requirements of ODOT Item 401.
  - 1. Bituminous aggregate base mix shall meet the requirements of ODOT Item 301.
  - 2. Asphalt concrete mix for leveling course shall meet the requirements of ODOT Item 448.
  - 3. Asphalt concrete mix for surface course and overlays shall meet the requirements of ODOT Item 448.

**2.06 CONCRETE (CAST-IN-PLACE)**

- A. All concrete used for pavement, curbing driveways and sidewalk shall be as specified in ODOT Item 499 and 451 or 452.
- B. Reinforcing steel and dowel bars shall be as specified in ODOT Items 709.09, 709.10, 709.12, and 709.13
- C. Other materials required for placing concrete shall be as follows:
  - 1. Rubber-Asphalt Joint Sealer:
    - a. Hot Applied Sealer - ODOT Item 705.04.
  - 2. Preformed Elastic Joint Sealer - ODOT Item 705.11.
  - 3. Preformed Filler - ODOT Item 705.03:
    - a. Fiber Filler - ASTM D1751 (AASHTO M213).
    - b. Sponge Filler - ASTM D1752, Type I (AASHTO M153, Type I).
  - 4. Curing Materials:
    - a. Burlap Cloth - ODOT Item 705.5 (AASHTO M182, Class 2).



- b. Sheet Materials - ODOT Item 705.06.
- c. Transparent Membrane - ODOT Item 705.07 (ASTM C309 Type I Class B).
- d. White Membrane - ASTM C309 Type II Class B as modified by ODOT Item 705.07.

## **2.07 PAVEMENT MARKING**

- A. Contractor shall provide temporary and permanent pavement markings equal to those markings that existed on the paved surfaces prior to commencement of the Work unless otherwise shown on the Drawings, specified in Part 4, or directed.
- B. Pavement markings shall be in accordance with the requirements of ODOT Section 640.
- C. Pavement markings shall match existing or adjoining pavement markings.
- D. Pavement markings partially disturbed by construction shall be replaced entirely.

## **PART 3 EXECUTION**

### **3.01 COORDINATION**

- A. All soil subgrade under pavements, driveways, curbs, curb and gutter, and walks shall be compacted in accordance with Section 02200.
- B. All service boxes, manholes, inlets and other structures shall be adjusted or reconstructed to the required grades in both new and resurfacing pavement areas.

### **3.02 PAVEMENT INSTALLATION**

- A. All construction shall be in conformance with applicable portions of ODOT Specifications, except as otherwise specified or called for herein.
- B. Unless otherwise directed by Engineer all aggregate bases which are to receive bituminous courses shall be primed as specified.
- C. A tack coat at a rate as specified shall be applied to all existing pavements which are to be overlaid, and between subsequent courses when directed by the Engineer.

### **3.03 TRANSITION JOINTS FOR BITUMINOUS CONCRETE PAVEMENT OVERLAY**

- A. Types of Transition Joints:
  - 1. Transition joints shall be either butt type or feathered type as directed by the Engineer.
  - 2. Butt joints shall be used on State and Federal roads and main thoroughfares and feathered joints used elsewhere unless otherwise specified.
  - 3. Butt Joints:

- a. When a butt joint is called for on the Drawings or specified, the old surface shall be cut back for at least 3 feet to a depth of at least 1 inch for the full width of the joint and pavement installed.
- b. A bituminous seal shall be placed on the finished surface at the junction of the new and old pavements.
- 4. Feathered Joint:
  - a. Feathered joints shall be constructed by manually raking the paving material to a smooth transition from the full depth material to the existing pavement surface.
  - b. Existing pavement surface shall be bond-coated to include the transition area.
  - c. Feathering shall be done by a workman skilled in the operation and shall be approved by the Resident Project Representative.

### **3.04 CURBING**

- A. Curbing shall be constructed in conformance with applicable portions of ODOT Item 609 and the ODOT Standard Construction Drawings.
- B. Place 1-inch dowelled expansion joints at inlets and at spring lines of street and driveway returns. If intersecting streets and driveways are more than 300-feet apart, place expansion joints at 300-foot intervals.
- C. Contraction joints shall be placed at approximately 10-foot intervals.

### **3.05 CONCRETE SIDEWALK**

- A. Sidewalk shall be constructed in conformance with applicable portions of ODOT Item 608.
- B. Unless otherwise indicated on the Drawings, concrete sidewalks shall be a minimum of 4-feet-0-inch wide and 4-inch thickness of concrete. Concrete walk removed and replaced shall be equal to the section removed.
- C. The surface of the walks shall be divided into equally spaced blocks at approximately 5-foot intervals. Expansion joint filler 1/2-inch thick shall be installed between the walk and any fixed structure, at all changes in direction or shape and at intervals of 20-feet maximum. The expansion joint filler shall be 1-inch thick where the walk is installed against the back of curb. The filler shall be recessed 1/2-inch from top of finished surface.
- D. Surface of new sidewalks shall be broomed to slightly roughen surface. On sections of sidewalk to be replaced, the surface texture shall match the adjoining.

### **3.06 CONCRETE DRIVEWAYS**

- A. Concrete driveways shall be constructed in conformance with applicable portions of ODOT Item 452.

- B. Dowelled contraction joints shall be placed at a maximum spacing of 20-feet. Lesser spacing shall be used on irregular areas as directed by the Engineer.
- C. Expansion joint filler 1/2-inch thick shall be installed at intervals of 24-feet maximum. One-inch expansion joint filler shall be installed between the driveway and any fixed structure.

### **3.07 BITUMINOUS AND AGGREGATE DRIVEWAYS**

- A. Bituminous driveways and parking lots shall be constructed as shown on the Drawings and indicated in Part 4 using materials specified for asphalt concrete pavements. Placement shall be in accordance with ODOT Item 401.
- B. Aggregate driveways and parking lots shall be constructed as shown on the Drawings using base aggregate meeting the requirements of ODOT Item 411.
- C. Replacement of bituminous or aggregate driveways and parking lots shall conform to Section 01565 and this Section but in no case, be inferior to that being replaced.

### **3.08 RESERVED**

### **3.09 INSPECTION**

- A. Laboratory services shall be in accordance with the requirements of Section 01410 and shall include:
  - 1. A compaction test on the subgrade, aggregate base, and each layer of asphalt shall be performed for every 300 square yards of material placed.
  - 2. Asphalt Concrete:
    - a. Quality Control Testing - A sample of the mix shall be taken for each 200-cubic yard of bituminous material or fraction thereof delivered to the project. An extraction test AASHTO T164-70 and a mechanical analysis AASHTO T30-70 shall be performed on the mix samples.
  - 3. Cast-in-Place Concrete:
    - a. The following tests shall be performed by an independent testing laboratory acceptable to the Engineer during progress of the work:
      - 1) Compression Tests Cylinders – Strength test shall consist of three cylinders molded and cured. Cast three cylinders for each 50 cubic yards, or fraction thereof, for each class of concrete placed on any one day, but at least three for each day. Test one cylinder at seven days and two at 28 days in accordance with ASTM C39.
      - 2) Slump Tests – ASTM C143. Slump shall be measured for first batch of each concrete class delivered in morning and afternoon, for each strength tests, and whenever consistency of concrete appears to vary.

- 3) Air Entrainment – ASTM C173 or C231. Perform one test for every second ready mix truck load.
- 4) Temperature – ASTM C1064. Perform with each slump test.

### 3.10 PROTECTION

- A. No heavy construction vehicle shall operate on any pavement, curbing or walk after it has been installed.
- B. Traffic shall be prohibited on newly installed asphalt pavement until it has cooled sufficiently to avoid marking.
- C. Asphalt Pavements:
  1. Bituminous mixtures shall be transported and placed in accordance with ODOT Item 401
- D. Concrete Pavements, Curbing and Walks:
  1. Concrete shall be mixed, transported, placed, and finished in accordance with the temperature and environmental requirements of ODOT Item 451 or 452 depending on the pavement type being placed.
  2. No concrete shall be mixed, transported, placed, or finished when the temperature of the base, subgrade, or air is below 40 degrees F or whenever, in the opinion of the Engineer, the temperature may fall below 40 degrees F within 24 hours after the concrete has been placed.
  3. The Contractor shall take such precautions as are necessary to protect the concrete from rain.
  4. The Contractor shall protect the concrete from freezing for no less than seven days or until such time that specimen beams have attained a modulus of rupture of at least 600 psi.

## PART 4 SPECIAL PROVISIONS

### 4.01 NON-REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

- A. All non-reinforced concrete pavement or base material required shall be installed to match the thickness of the adjacent concrete pavement meeting the minimum thickness requirements as specified and shown on the Contract Documents.
- B. All concrete pavement base shall be Class MS moderate set course.

### 4.02 SERVICE BOXES, VALVE BOXES, AND WATER MANHOLES ADJUSTED TO GRADE

- A. Service boxes, valve boxes and water manhole castings shall be constructed to final grade in areas with concrete pavement wearing course.
- B. In areas with asphalt concrete wearing course, the contractor shall adjust all valve boxes and water manhole castings to final grade prior to the placement of the surface course of asphalt.

- C. The Contractor shall provide temporary asphalt wedges as necessary around service boxes, valve boxes and water manhole castings. The maintenance of all temporary asphalt wedges shall be the Contractor's responsibility.
- D. The adjustment of valve boxes and manholes to final grade, asphalt wedges or any required maintenance of asphalt wedges shall be included in the cost of the new water valve.

END OF SECTION



**SECTION 02790**  
**HORIZONTAL DIRECTIONAL DRILLING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes furnishing and installing pipelines by directional drilling of the sizes, types and lengths as shown on the Drawings, specified, or directed.
- B. Pipelines constructed under this Section shall include but are not limited to sewer force mains, water mains, pressurized sanitary sewers, gravity sewer mains, and gravity house leads.
  - 1. This Section shall include furnishing all labor, components, materials, tools and appurtenances necessary or proper to install, locate, and test pipeline.
- C. Horizontal directional drilling is a method of trenchless construction using a surface launched steerable drill tool controlled from a mobile drilling frame, and includes a field power unit, drilling fluid mixing system, and mobile spoils extraction system.
  - 1. The Work generally consists of three phases, beginning with drilling a pilot hole from the surface or pit at a starting point to an exit pit at the surface beyond the obstacle or area that is to be avoided. The second phase consists of reaming the pilot hole to make it large enough for the pipeline to be installed. Finally, the pipeline is pulled into place. During the pipe pulling operation, drilling fluid (a bentonite, water, and polymer solution) is injected to stabilize the hole, remove cuttings, and lubricate the pipe.

**1.02 QUALIFICATIONS**

- A. Directional drilling Contractors or subcontractors shall have actively engaged in the installation of pipe using directional drilling for a minimum of five years.
- B. Field supervisory personnel employed by the directional drilling Contractor or subcontractor shall have at least three years experience in the performance of the Work and tasks required.
- C. Contractor shall provide a list of jobs with contact names and phone numbers where he has performed directional drilling operations during the last five years. A similar list of jobs shall be provided for the field supervisor personnel.

**1.03 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturer's Shop Drawing indicating physical dimensions, joint details, fittings, and special details for each size, type, and class of pipe

furnished for the project. Shop Drawings shall also note salient features of a specific pipe, i.e., concrete strength and reinforcing details.

- b. Samples, if requested by the Engineer.
  - c. Contractor shall submit the Work plans for all segments of drilling including but not limited to the launch and recovery location and requirements, and the drill path survey.
  - d. The Contractor shall submit to the Engineer for review and comment, and compliance with permit requirements prior to commencing any Work, a detailed statement of the drilling equipment, with a pulling gauge monitor, and tracking transmitter/devices selected and procedures to be used in performance of the Work. A drilling fluid disposal plan shall also be submitted.
    - 1) During the construction, a data sheet or drilling log for each pilot hole shall be prepared to document the location and depth of the drill head in relation to the found elevation and centerline of the drilling path at a minimum of 10-foot intervals. Locating and guidance can be completed by hand wire tracing or by wireless steering tool system.
2. Information for the Record:
- a. Manufacturer's certification indicating that the pipe and joints meet Specifications for each production run for each size, type, and class of pipe furnished. The Engineer may request test results to verify certification.

## **PART 2 PRODUCTS**

### **2.01 RESERVED**

### **2.02 PVC PIPE (C900/RJ)**

- A. PVC pipe for horizontal directional drill installation method shall have restrained joints and meet AWWA C900, SDR-18 test requirements.
- B. PVC pipe joints shall be restrained by non-metallic couplings. The pipe ends and coupling shall be grooved; restraint shall be provided by a nylon spline inserted in the grooves between the pipe and coupling. The pipe joint shall be made watertight by a flexible elastomeric seal (O-ring) in compression between the pipe and the coupling.
- C. The pipe shall be Certa-Lok C900/RJ by Certainteed or equal.



### **2.03 DIP (DUCTILE IRON PIPE)**

- A. The ductile iron pipe shall conform with the specifications in Section 02555. The pipe shall be pressure class 350. All joints shall be restrained using TR FLEX joints, Flex-Ring joints or equal.
- B. If the direction drill length is greater than 36-feet (Or two lengths of pipe), in addition to the restrained joints specified, the contractor shall also install a cable through the center of the process pipe. The cable shall be restrained at the end of the pipe and the reamer to relieve the pull-out forces on the joints.
- C. The ductile iron pipe shall be fully encased in an 8-mil linear low density (LLD) polyethylene file in accordance with AWWA C105 and ANSI A21.5. The polyethylene encasement shall be color coded and marked potable, reclaimed, or wastewater as appropriate. The installation of the polyethylene film shall be in accordance with method A as outlined in AWWA C105 and ANSI A21.5, which incorporates a tube pulled over the barrel of the pipe with overlapping polyethylene tubes at the joints. All excess polyethylene tube material shall be folded over the back of the pipe and taped in place. Any penetrations discovered must be repaired with adhesive tape.

### **2.04 SOURCE QUALITY CONTROL**

- A. Pipe Manufacturer's Certification:
  - 1. The pipe manufacturer's certificate shall state that the materials have been sampled and tested in accordance with the provision for and meet the requirements of the designated specification and shall be signed by an authorized agent of the seller or the manufacturer.
  - 2. A test results report shall accompany the manufacturer's certificate, if requested by the Engineer. The report shall compare test results to Specification requirements. Test specimens shall be selected in conformance with the designated specification for each production run of each size, type, and class of pipe furnished and further, that in case tests are unsatisfactory, additional tests shall be made to the maximum number in the referenced ASTM or AWWA Specification.

### **2.05 RESERVED**

### **2.06 RESERVED**

### **2.07 TRACER WIRE**

- A. Direct Burial #12 AWG Solids (0.0808-inch diameter), 21% conductivity copper-clad annealed high carbon steel high strength tracer wire, 1150-pound average tensile break load, 45 mil, high molecular weight, high density polyethylene jacket complying with ASTM D1248, 30 volt rating. Soloshot™ extra high strength No. 1245 as manufactured by

Copperhead Industries, LLC, or equal. Wire shall be secured to the pipe with tape at intervals not to exceed 10 feet.

1. Tracer wire installed on pipe by horizontal directional drilling shall be continuous without any splices.
  2. Heat shrink splices are permissible only on tracer wire at connection pipe.
- B. Tracer wires shall terminate inside all structures including but not limited to, air relief structures, valve box assemblies, indicated on plans. Tracer wire shall extend 4-feet above the opening on structures.

### **PART 3 EXECUTION**

#### **3.01 COORDINATION**

- A. Drilling operations shall not interfere with, interrupt or endanger surface features or surface activities.
- B. When rock stratum, boulders, underground obstructions, or other soil conditions that impede the progress of drilling operations are encountered, the Contractor and Engineer shall review the situation and jointly determine the feasibility of continuing drilling operations, making adjustments or switching to an alternative construction method.
- C. The Contractor shall familiarize himself with the geologic characterization of the soil stratum at the proposed drilling path. Contractor shall be responsible for informing the Engineer of any changes that are required in the directional drilling procedure due to geologic conditions.
- D. If any obstruction is encountered that stops the forward progress of the drilling operation or the pullback process, the Contractor and Engineer shall review the situation and jointly determine the feasibility of continuing drilling operations, making adjustments or switching to an alternative construction method.
- E. Launching and recovery pits shall be as small as practicable. Dewatering of pits and excavations shall be done in accordance with the General Provisions and Specifications Section 02200. When water is encountered, the Contractor shall provide a dewatering system of sufficient capacity to keep any excavation free of water until the backfill operation is in progress. Dewatering shall be performed in a manner that removal of soil particles are held to a minimum. Water from the dewatering system shall be desilted before discharge. Methods of dewatering and desilting, including all costs shall be the Contractor's responsibility.
- F. Utilities shown on the contract Drawings are approximate. In areas where there is potential conflict, the Contractor shall dig up and verify the location and elevation of the utility at no additional expense to the Owner. The Contractor shall assume full responsibility for the protection of all utilities, structures and their foundations which may be affected by the Work.

- G. Prior to any alterations to Work site, the Contractor shall photograph or videotape the entire Work area, including entry and exit points. One copy of which shall be given to Engineer and one copy to remain with Contractor for a period of one year following the completion of the project. The Work site, as indicated on Drawings, within right-of-way or easements, shall be graded or filled to provide a level working area. No alterations beyond what is required for the Work are to be made. Contractor shall confine all activities to designated Work areas.
- H. Before beginning the drilling operation, the field survey and drill log shall be completed as specified in Section 01800.

### 3.02 DRILL PATH SURVEY

- A. Drilling path shall be walked in the presence of the Engineer, and Contractor with the guidance system that shall be used for each segment of drill path. The Contractor shall locate and record any surface and subsurface magnetic variations or abnormalities and all points of interference, as well as verifying all utility(ies) location and corresponding utility maps. Should any discrepancy arise between utility maps, field locations, and guidance system findings the Contractor shall clarify all discrepancies prior to beginning drilling operations. The drill path survey shall be performed no earlier than two days prior to commencing drilling operations. Provide Engineer 48-hour notice of drill path survey.

### 3.03 EQUIPMENT

- A. Equipment:
  - 1. The drilling equipment shall be capable of placing the pipe within the planned line and grade without inverted slopes.
  - 2. The drilling equipment shall be capable of pulling product pipe from either the downstream or upstream manhole location. The equipment must be adequately sized for the application.
  - 3. The guide system shall have the capability of measuring inclination, roll and azimuth. The guidance system shall have an independent means to ensure the accuracy of the installation. The Contractor shall demonstrate a viable method to eliminate accumulated error due to the inclinometer (pitch or accelerometer). The guidance system shall be capable of generating a plot of the borehole survey for the purpose of a record drawing. The guidance system shall meet the following specifications.

Inclination:	Accuracy	+ 0.05
	Range	+ 90
	Repeatability	+ 0.02
Roll:	Accuracy	+ 0.05
	Range	+ 90
Azimuth:	Accuracy	+ 0.05
	Range	+ 90

4. Equipment set-up requirements at the launch and recover locations shall be determined by the Contractor in accordance with the Contract Drawings and submitted to the Engineer per the requirements of Specification Section 01300.
- B. Pilot Hole Drilling:
  1. The entry angle of the pilot hole and the drilling process shall maintain a curvature that does not exceed the allowable bending radii of the product pipe. Unless the Contractor can demonstrate this, the minimum radius shall be 95% of the pipe minimum bend radius.
  2. Alignment, Adjustments, and Restarts.
- C. The Contractor shall follow the pipeline alignment as shown on the Drawings, within the specification requirements. The location and depth of the drill head in relation to the profile and centerline of the alignment shall be determined at a maximum of 10-foot intervals. Acceptable tolerance shall be 0.5 feet variation from the centerline of the pipe in both vertical and horizontal directions (1-foot window).
- D. In the event of difficulties at any time during drilling operations requiring the complete withdrawal from the tunnel, the Contractor shall either be allowed to withdraw and abandon the tunnel and begin a second attempt at a different location; or excavate at the point of the difficulty and install the product pipe by an alternate method of installation. Either alternative shall be approved by the Engineer before the Contractor withdraws.
- E. Access pits shall be at the beginning and end of the segments shown on the Drawings. Intermittent pits shall be approved by the Engineer prior to proceeding with drilling operations. No intermittent access pits shall be allowed in wetland areas.
- F. Installing Product Pipe:
  1. After the pilot hole is completed, the Contractor shall install a swivel to the reamer and commence pullback operations.
  2. Reaming diameter shall not exceed 1.5 times the diameter of the product pipe being installed.
  3. The product pipe being pulled into the tunnel shall be protected and supported so that it moves freely and is not damaged by stones and debris on the ground during installation.
  4. Tracer wire shall be attached to product pipe before pullback operations begin.
  5. Pullback forces shall not exceed the allowable forces for the product pipe.
- G. The Contractor shall allow sufficient lengths of product pipe to extend past the termination point to allow connections to adjacent pipe sections, manholes, or tees. Pulled pipe shall be allowed 24 hours of stabilization prior to making tie-ins. The length of extra product pipe shall be at the Contractor's discretion.

**3.04 RESERVED**

**3.05 RESERVED**

**3.06 FIELD INSPECTION**

- A. All pipe sections, specials, and jointing materials shall be carefully examined for defects and no piece shall be laid that is known to be defective. Any defective piece discovered installed shall be removed and replaced with a sound one in a manner satisfactory to the Resident Project Representative at the Contractor's expense.
- B. Defective material shall be marked with lumber crayon and removed from the job site before the end of the following day.

**3.07 PRESSURE AND LEAKAGE TESTS FOR FORCE MAINS AND WATER LINES**

- A. Pressure and leakage testing shall be in conformance with Section 02555.
- B. Contractor shall perform a hydrostatic test of pipe to be installed by horizontal directional drill prior to commencing pull back operation.

**3.08 CLEANING WATER MAINS**

- A. All water mains shall be cleaned in accordance with AWWA C651.
- B. Cleaning and sterilizing of water mains shall be in conformance with Section 02555.

**3.09 STERILIZING WATER MAINS**

- A. All water mains shall be sterilized in accordance with AWWA C651.
- B. Cleaning and sterilizing of water mains shall be in conformance with Section 02555.

**PART 4 SPECIAL PROVISIONS**

**4.01 PIPE SCHEDULE**

Service	Size	Thickness Class	Material	Section	Comments

**4.02 BORE AND RECEIVING PITS**

- A. The locations and dimensions of bore and receiving pits shown on the Drawings are recommendations. The locations and dimensions may be changed by the Contractor to accommodate the Contractor's equipment and methods subject to the approval of the Owner and the Engineer.
- B. Modification of the location and dimensions of bore and receiving pit shall be permitted to the extent that the horizontal centerline alignment of the proposed pipeline is not changed.

**4.03 FRAC-OUT CONTINGENCY PLAN**

- A. The Contractor shall provide a contingency plan to address the "frac-out" of any directional drilling fluids during the horizontal directional drilling operation.
- B. The contingency plan shall address the following areas of concern:
  - 1. Temporary Barriers installed at drilling entrance and exit point to contain drilling fluids.
  - 2. List of materials available on site to control frac-out of drilling fluids including:
    - a. Sandbags.
    - b. Hand tools.
    - c. Portable pumps and hoses.
    - d. Straw bales.
    - e. Silt fence.
    - f. Spill kits.
    - g. Backhoe or excavator.
  - 3. In the event of a frac-out, the person discovering the release will notify the Contractor, Engineer and Owner. The Contractor shall coordinate notification of appropriate agencies and obtaining permission for clean-up operations.
  - 4. Measures for monitoring for excessive fluid loss during drilling through terrestrial, wetland areas or streams.
  - 5. Plans for addressing excessive fluid loss while drilling including:
    - a. Measures to suspend forward progress of the drilling operations if excessive loss of bentonite circulation is observed.
    - b. Measures to isolate areas where frac-out has occurred or to remove releases with a vacuum truck.
    - c. Measures to restore affected areas to match conditions prior to commencing the Work.
  - 6. If the frac-out occurs in a wetlands or stream area, Ohio EPA Northwest District Office shall be notified.
  - 7. After containment has been achieved, the drilling contractor and the inspector will make every effort to determine why the frac-out occurred and develop corrective measures to minimize the chance of recurrence.

END OF SECTION

**SECTION 02800**  
**SODDING, SEEDING AND MULCHING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes fine grading, placing sod, and seeding and mulching areas designated on the Drawings, specified, or ordered.
- B. The Work consists of fine grading; furnishing and placing topsoil; sod seed, mulching material; and fertilizer; and watering seeded or sodded areas until growth is established.
- C. The Contractor shall restore all grass areas damaged by his operations in construction of facilities included in the Contract.
- D. Unless otherwise specified herein or directed, Work shall be in conformance with ODOT Item 659 Seeding and Mulching, and Item 660 Sodding.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Manufacturer's project information for materials.
  - 2. Information for the Record:
    - a. Submit to Resident Project Representative:
      - 1) Invoices showing the weight, brand, and composite analysis of all fertilizer used on the Project.
      - 2) Bag tickets showing weight and composition of all seed used on the Project.

**PART 2 PRODUCTS**

**2.01 SOD**

- A. Sod shall conform to ODOT Item 660.02, unless otherwise specified in Part 4.

**2.02 SEED**

- A. Seed mixtures shall be in conformance with the requirements of ODOT Item 659.07 and ODOT Item 659.09 Class 1, unless otherwise specified in Part 4.

**2.03 FERTILIZER**

- A. Commercial fertilizers shall be from a dealer or manufacturer whose brands and grades are registered or licensed by the State of Ohio, Department of Agriculture. The content of nutrients shall be 12-12-12, unless otherwise approved by the Engineer.

**2.04 MULCHING MATERIAL**

- A. Mulching material shall be straw, wood fiber, or compost reasonably free of weed seed, and other foreign materials. Mulch shall meet the requirements of ODOT Item 659.13, and either Item 659.14, 659.15, or 659.16.

**2.05 MATTING MATERIAL**

- A. Matting material shall be in conformance with the requirements of ODOT Item 712.11 Type A or B.

**2.06 TOPSOIL**

- A. Topsoil furnished by the Contractor shall be as specified in Section 02200.

**PART 3 EXECUTION**

**3.01 FURNISHING AND PLACING TOPSOIL**

- A. Areas from which the top layer of soil has been removed or disturbed shall be recovered with a minimum of 4 inches of topsoil placed in conformance with Section 02200 or ODOT Item 659.11.

**3.02 PREPARATION**

- A. The operation of finish grading and sowing shall not be performed when the ground is frozen or muddy.
- B. Areas to be Sodded:
  - 1. Preparation of areas to be sodded shall be in conformance with ODOT Item 660.04.
- C. Areas to be Seeded:
  - 1. Unless otherwise shown on the Drawings or specified in Part 4, all areas of disturbed soils on the Site shall be seeded.
  - 2. The area to be seeded shall be prepared in accordance with Section 02200 or ODOT Item 659.
  - 3. Fertilizer shall be applied at a standard dry application rate of 10 pounds per 1000 square feet. Either dry or liquid fertilizer may be used and shall be distributed in an even pattern over the specified area, then thoroughly disked, harrowed, or raked into the soil to a depth of not less than 1 inch.



### 3.03 INSTALLATION

- A. Sodding:
  - 1. Sod shall be placed in conformance with ODOT Items 660.05 and 660.06.
  - 2. No sod shall be placed when the temperature is below 32 degrees F. No frozen sod shall be placed nor shall any sod be placed upon frozen soil. When sod is placed between the dates of June 1 and October 15, it shall be covered immediately with a straw mulch 1-inch thick, loose measurement.
- B. Seeding:
  - 1. The seed shall be mixed thoroughly and sown evenly at a rate specified in ODOT Item 659.09. The seed mixture may be sown dry or hydraulically unless directed otherwise in Part 4 of this Section.
  - 2. The seed mixture shall be applied when the soil is in a workable condition and shall be raked into a depth of approximately 1/4 inch.
  - 3. Seed shall be sown only between May 1 and October 15, unless otherwise permitted by the Engineer.
- C. Mulching:
  - 1. Within 24 hours after an area has been seeded, it shall be mulched in conformance with one of the following specified methods as designated in Part 4.
  - 2. Mulch:
    - a. Mulching with straw shall be in conformance with ODOT Item 659.14, except that in front of residences, the mulching material shall be kept in place by an approved non-tracking adhesive or other approved method in lieu of the specified asphalt emulsion. Mulching with wood fiber shall be in accordance with ODOT Item 659.15 and mulching with compost shall be in accordance with ODOT Item 659.16.
    - b. Matting shall be used as mulch on slopes greater than 3:1 and shall be placed in conformance with the applicable portions of ODOT Item 671.
- D. Seeded and sodded areas shall be watered and maintained as specified below until they are established.
  - 1. The seed bed shall be thoroughly watered, as soon as the seed is mulched.
  - 2. Water shall be applied by a hydro-seeder or water tank under pressure with a nozzle producing a spray that will not dislodge the mulching material.
  - 3. Water applications shall be made at rates and at frequencies necessary to establish the growth of grass to its full density and to a minimum height of 2 inches.
  - 4. The rate application shall be 120 gallons per 1,000 square feet.

5. The Contractor shall keep all sodded areas, including the subgrade, thoroughly moist for two weeks after sodding. After the two-week period, the Contractor shall water the sod as necessary to maintain its healthy condition until accepted by the Owner.
6. Matting areas shall be maintained until all Work on the Contract has been completed and accepted.
7. Seeded and sodded areas shall be maintained by the Contractor until acceptance by the Owner. The Contractor shall repair and restore any damaged areas. Repair of the damaged area shall be performed using the same materials and procedures as used for the original installation of the area.
8. The Contractor shall clean all surfaces coated with hydro-seeding overspray. Contractor shall be responsible for surface staining or damage caused by hydro-seeding and restoration damage or staining.

**PART 4 SPECIAL PROVISIONS**

Not Used.

END OF SECTION

**SECTION 02955  
CARRIER PIPE IN BORED CASINGS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes furnishing all materials, equipment, and labor to construct carrier pipe in bored steel casing pipe in locations and between limits as shown on the Drawings, specified, or required. The type, material, class, and size of casing pipe and carrier pipe installed shall be as specified herein, shown on the Drawings, and designated in the Bid.
- B. This Section shall include excavation and disposal of material of any nature encountered including rock, furnishing and installing boring pits, casing pipe, carrier pipe, blocking, grout fill, control of water; sheeting, shoring, and bracing; railroad charges; and other incidental work.
- C. The Contractor will be held responsible for any settlement of street surfaces, railroad tracks, or damage to pavement, sidewalk, curbing, or public utilities caused by the construction and shall repair or have repaired any damage caused thereby.

**1.02 OSHA REQUIREMENTS**

- A. Methods and procedures shall conform to OSHA Standards 1926.800 Tunnels and Shafts.

**1.03 CONSTRUCTION UNDER RAILROADS**

- A. Permits:
  - 1. The Contractor shall not commence Work on any railroad property until a permit for the Work has been issued.
- B. Railroad Company Notification:
  - 1. The Contractor shall consult with designated officers of the railroad owner concerning any special conditions relating to the Work. The officers shall be notified at least 72 hours, not including weekends and holidays, before any Work is started.
- C. Railroad Company Charges:
  - 1. The railroad owner will be reimbursed by the Owner for a flagman and/or inspector on the job when the Contractor is working within railroad rights-of-way. Payment will be only for time spent on the job, and the railroad employee shall report in and out to the Owner's inspector.
  - 2. The Contractor shall reimburse the railroad owner for all expenses incurred during the operation and for any damage that may occur because of the

Contractor's operations, such as settlement of tracks, damage to underground signal and communication cables, settlement of foundations, and obstruction of drainage, and so forth.

**1.04 RESERVED**

**1.05 SUBMITTALS**

- A. For Engineer's Approval:
  - 1. Manufacturer's Shop Drawings:
    - a. Specified carrier pipe and joints.
  - 2. Suppliers and Test Certificates:
    - a. Specified pipe.
    - b. Casing pipe.
  - 3. Drawings showing location and design of boring pits.
  - 4. Plans and description of the boring arrangement to be used.

**1.06 PROTECTION**

- A. All operations shall be conducted in such a manner that will not interfere with, interrupt, or endanger the operation of traffic; nor damage, destroy, or endanger the integrity of railroad pavements or private or public facilities in the area.

**1.07 DRAINAGE**

- A. The Contractor shall furnish, install, and maintain all facilities for collecting, conveying, and disposing of water in conduits and boring pits until the completion of the Work. The Contractor shall have on hand at all times sufficient machinery for all emergencies that are likely to arise on Work of this character and such machinery shall be kept in good working order. Effective and continuous control of water during the grouting operations will be required.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Casing Pipe:
  - 1. Casings shall be welded steel pipe meeting ASTM A139, Grade B.
  - 2. Nominal pipe diameter shown on the Drawings or specified shall be minimum. A larger diameter may be used subject to approval by the Engineer.
  - 3. Pipe wall thickness shall be minimum shown on the Drawings or specified but in no instance, less than 0.500 inch.
  - 4. Pipe ends shall be beveled for field butt welding.

- B. Carrier Pipe approved for installation in bored casing shall be the type and class specified in Part 4 of this section, shown on the Drawings, or designated in the Bid.
- D. Casing Spacers
  - 1. The carrier pipe shall be supported using stainless steel casing spacers as manufactured by BWM, CCI, Advanced Products & Systems, Inc. (APS, Pipeline Systems or approved equal. The casing spacers shall be designed for use with the specified carrier pipe material.
  - 2. The carrier pipe shall be provided with joint restraints as specified.

### **PART 3 EXECUTION**

#### **3.01 INSTALLING CASING PIPE**

- A. The casing shall be installed by pushing the pipe horizontally through the ground with a boring auger rotating within the pipe to remove the spoil. The front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger and cutting head from leading the pipe so that there will be no unsupported excavation ahead of the pipe. The arrangement shall be removable from within the pipe in the event an obstruction is encountered. The face of the cutting head shall be arranged to provide reasonable obstruction to the free flow of soft or poor material. The use of water or other liquids to facilitate casing emplacement and spoil removal is prohibited.
- B. Bored installations shall have a bored hole essentially the same as the outside diameter of the pipe plus the thickness of the protective coating. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1 inch, grouting or other methods approved by the Engineer shall be employed to fill such voids.
- C. Before pushing the casing pipe, joints shall be welded full circumference as required to provide a minimum joint strength equal to the pipe strength.
- D. If an obstruction is encountered during installation to stop the forward action of the pipe, and it becomes evident that it is impossible to advance the pipe, operations shall cease and the pipe shall be abandoned in place and filled completely with grout and a parallel casing installed or another approved method employed to complete the installation.

#### **3.02 INSTALLING CARRIER PIPE**

- A. After encasement pipe is installed, pressure treated wood blocks, or approved stainless steel or polyethylene casing spacers specifically designed for centering a carrier pipe within a casing pipe, shall be banded to each length of carrier pipe as shown on the Plans to prevent displacement and the pipe pulled into place.

#### **3.03 LINE AND GRADE**

- A. The line and grade shall be checked in accordance with Section 01800.

- B. Should the pipe or the tunnel liner deviate more than 0.06-feet from the proposed grade or 0.25-feet from the proposed line, the Contractor shall notify the Resident Project Representative and immediately make adjustments necessary to bring the installation back to the proposed location.
- C. The Owner may require removal and replacement of pipe installed more than 0.25-feet off proposed grade and 0.5-feet off the proposed alignment.

#### **PART 4 SPECIAL PROVISIONS**

##### **4.01 CARRIER PIPE IN BORED CASING**

- A. PVC PIPE
  - 1. PVC pipe to be used as a carrier pipe in bored casings shall have restrained joints and meet AWWA C900/C905, DR-18.
  - 2. PVC pipe joints shall be restrained by non-metallic couplings. The pipe ends and coupling shall be grooved; restraint shall be provided by a nylon spline inserted in the grooves between the pipe and coupling. The pipe joint shall be made watertight by a flexible elastomeric seal (O-ring) in compression between the pipe and the coupling.
  - 3. The pipe shall be Certa-Lok C900/RJ by Certainteed or C900/905 RJ/RJIB by North American Specialty Products or approved equal.

END OF SECTION

**SECTION 05540  
IRON CASTINGS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This Section includes manhole covers and frames, inlet grates and frames, stop plank grooves, and other iron castings shown on Drawings.

**1.02 SUBMITTALS**

- A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:
  - 1. Shop Drawings for Review:
    - a. Product literature that shall be included; General Specifications, Surface Coating, Anchor Bolts, Machine Bearing Surface.
    - b. Independent Shop Drawings shall be submitted for the frame and the cover.
    - c. A submittal of a casting schedule that clearly notes either the structure number or in what circumstances the casting is intended to be installed, shall be included, i.e., roadway.
    - d. All dimensions for both the frame and the cover/grate shall be included.
  - 2. Information for the Record:
    - a. Material certification.
    - b. Proof-load test data.
    - c. Manufacturer's installation instructions.
    - d. Manufacturing Capabilities and Quality Control Measures.

**1.03 PRODUCT HANDLING**

- A. Castings shall be delivered in sufficient time to permit proper placement in pavement and slabs.
- B. Castings shall be stored in such a way as to prevent warping prior to installation.
- C. Additional product handling requirements are specified in Section 01350.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Castings shall be manufactured by Neenah Foundry Company, East Jordan Iron Works, Inc., or equal.

**2.02 MANHOLE COVER AND FRAME**

- A. Castings located in roadways, driveways, or other areas subject to vehicular traffic shall be suitable for heavy-duty service. Other castings shall be suitable for light-duty service.

**2.03 INLET GRATE AND FRAME**

- A. Castings shall be suitable for heavy duty service.

**2.04 RESERVED**

**2.05 PERFORMANCE REQUIREMENTS**

- A. Castings shall be gray iron conforming to ASTM A48, Class 35.

**2.06 FABRICATION**

- A. Castings shall be free from pouring faults, sponginess, cracks, blowholes, blisters, shrinkage strains, and other defects. Plugging of defective castings is not permitted.
- B. Castings shall be true to pattern in form and dimension. Weight of castings shall not vary by more than 5% from published weight. Contractor shall submit invoices showing actual weight of casting as certified by manufacturer.
- C. Castings shall have machined bearing surfaces.
- D. All castings shall be coated with a non-toxic, nonflammable, water-based, asphalt paint.
- E. Lettering shall be cast on covers. Unless indicated otherwise, the manufacturer's name shall be cast in cover.
- F. Covers for sanitary sewer manhole shall be solid lids and labeled as specified.
- G. Castings for storm sewer structures shall include the phrases "DUMP NO WASTE" and "DRAINS TO WATERWAYS" with the "eco-fish" symbol. All storm sewer manhole covers shall be vented.
- H. Covers shall be furnished with bolts, locks, hinges, perforations, lifting rings, and pick holes as specified, shown on Drawings, or as directed.

**PART 3 EXECUTION**

**3.01 PREPARATION**

- A. Contractor shall examine surfaces to receive castings and shall report unacceptable conditions to Engineer before proceeding with the Work.

**3.02 ERECTION AND INSTALLATION**

- A. Castings shall be accurately set, aligned, and anchored as shown on Drawings.



- B. Castings shall be installed in accordance with manufacturer's instructions or shown on the drawings. If any discrepancies exist, then the more stringent requirements shall take precedence.

#### **PART 4 SPECIAL PROVISIONS**

##### **4.01 CASTING SCHEDULE**

- A. Heavy duty manhole cover and frame shall be Northwestern Water & Sewer District Standard.

##### **4.02 CONCRETE COLLARS**

- A. Concrete collars shall be provided for all manholes and valve boxes located in paved areas.

##### **4.03 REPLACEMENT OF INLET FRAMES & GRATES**

- A. New inlets provided on basins replaced shall be of similar design (shape) with an open area equivalent to the existing basin.
- B. If existing castings can be reused, the Owner may request a credit for new castings not needed. For the purpose of developing bid pricing the Bidder / Contractor shall assume all new castings.

END OF SECTION



