Project Manual for

Village of Whitehouse, Ohio

Wabash Cannonball Trail Interceptor Sewer

& Finzel Road Pump Station Rehabilitation

2020

<u>Administration</u>

Village Administrator – Jordan Daugherty

Public Service Director – Steve Pilcher

Jones & Henry
ENGINEERS, LTD.

STATE OF OHIO
THEODORE A. BENNETT
E-70768
REGISTERED PROFESSIONAL ENGINEER

5/29/2020

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VILLAGE OF WHITEHOUSE

WHITEHOUSE, OH
WABASH CANNONBALL TRAIL INTERCEPTOR SEWER
& FINZEL ROAD PUMP STATION REHABILITATION

ADVERTISEMENT FOR BIDS

Sealed Bids for Wabash Cannonball Trail Interceptor Sewer, will be received by the Village of Whitehouse, at the 6925 Providence Street P.O. Box 2476, Whitehouse, Ohio 43571, until 11:00 AM, local time, on November 4, 2020, at which time they will be publicly opened and read.

In general, the work consists of installing approximately 6,300 linear feet of 24-inch and 18-inch sanitary sewer. The work also includes a bored casing stream crossing under Blue Creek, demolition of two pump stations and structural repairs to the Finzel Rd. Pump Station Wet Well.

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 A. Bennett, P.E. at 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. 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.

Jordan Daugherty

Village Administrator

To Newspaper:

Advertise: October 14, 2020

October 21, 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, Bidder shall submit with its Bid (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 6925 Providence Street P.O. Box 2476, Whitehouse, Ohio 43571.

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.

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, no later than 11:00 AM on October 29, 2020 in order to receive a response.

ARTICLE 33 – ENGINEER'S ESTIMATE

33.01 The Engineer's Opinion of Probable Construction costs is $2,660,400.00

BID FORM

VILLAGE OF WHITEHOUSE, OHIO

WABASH CANNONBALL TRAIL INTERCEPTOR SEWER

& FINZEL ROAD PUMP STATION REHABILITATION

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Village of Whitehouse

6925 Providence Street

Whitehouse, Ohio 43571

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:

Addendum No.	Addendum, Date
_____	_____
_____	_____
_____	_____
_____	_____

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 e 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 price(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 Price in Numbers		Unit Price in Words	Total Estimated Cost of Item	
1	Mobilization and Demobilization	1	LS					
2a	6-inch Lateral Sewer Connection, Type B	3	EA					
2b	8-inch Sanitary Sewer, Type B	56	LF					
2c	10-inch Sanitary Sewer, Type B	15	LF					
2d	12-inch Sanitary Sewer, Type B	98	LF					
2e	14-inch Sanitary Sewer, Type B	43	LF					
2f	15-inch Sanitary Sewer, Type B	30	LF					
2g	18-inch Sanitary Sewer, Type B	292	LF					
2h	24-inch Sanitary Sewer, Type B (Less than or equal to 20-feet Deep)	741	LF					
2i	24-inch Sanitary Sewer, Type B (Greater than 20-feet Deep)	907	LF					

Item No.	Description	Estimated Amount	Unit	Unit Price in Numbers		Unit Price in Words	Total Estimated Cost of Item	
2j	24-inch Sanitary Sewer, Type C (Less than or equal to 20-feet Deep)	3865	LF					
2k	24-inch Sanitary Sewer, Type C (Greater than 20-feet Deep)	226	LF					
2l	24-inch DIP Sanitary Sewer in 42-inch Bored Casing	289	LF					
2m	8-inch Sanitary Sewer Connection to Existing	2	EA					
2n	10-inch Sanitary Sewer Connection to Existing	1	EA					
2o	12-inch Sanitary Sewer Connection to Existing	3	EA					
2p	15-inch Sanitary Sewer Connection to Existing	3	EA					
2q	24-inch Sanitary Sewer Connection to Existing	1	EA					
2r	Sewer Pipe Repair, Less Than 15-inches in Diameter	50	LF					
2s	8-inch Force Main Removed, Type B	60	LF					

Item No.	Description	Estimated Amount	Unit	Unit Price in Numbers		Unit Price in Words	Total Estimated Cost of Item	
2t	12-inch Sanitary Sewer Removed, Type B	7	LF					
2u	4-inch Plug	4	EA					
2v	8-inch Plug	13	EA					
2w	12-inch Plug	6	EA					
2x	15-inch Plug	1	EA					
2y	Sanitary Sewer Abandoned	659	LF					
2z	8-inch Storm Sewer, Type C	33	LF					
2aa	18-inch Storm Sewer, Type C	65	LF					
2ab	36-inch Storm Sewer, Type C	680	LF					
2ac	36-inch Culvert Repair, Type B	25	LF					
3a	Tapping Sleeve, Valve and Manhole for Bypass Connection to Force Main	1	EA					
3b	14-inch Inserting Valve and Box	1	EA					

Item No.	Description	Estimated Amount	Unit	Unit Price in Numbers		Unit Price in Words	Total Estimated Cost of Item	
3c	8-inch Valve and Box Abandoned	4	EA					
4	Nyloplast Catch Basin	2	EA					
5a	Sanitary Sewer Manhole, Type I	60	VLF					
5b	Sanitary Sewer Manhole, Type II	250	VLF					
5c	Sanitary Sewer Manhole, Type II with Drop	130	VLF					
5d	Sanitary Sewer Manhole, Type III	23	VLF					
5e	Storm Sewer Manhole, Type III	7	VLF					
5f	Manhole Abandoned	3	EA					
5g	Manhole Removed	4	EA					
6a	ODOT Item 202 Pavement and Base Removed	2550	SY					
6b	ODOT Item 202 Driveway and Sidewalk Pavement Removed	90	SY					
6c	ODOT Item 254 Pavement Planing	680	SY					

Item No.	Description	Estimated Amount	Unit	Unit Price in Numbers		Unit Price in Words	Total Estimated Cost of Item	
7a	ODOT Item 304 Aggregate Base	870	CY					
7b	ODOT Item 301 Asphalt Concrete Base	130	CY					
7c	ODOT Item 407 Tack Coat	320	GAL					
7d	ODOT Item 441 Asphalt Concrete Intermediate Course, Type 2 (448)	130	CY					
7e	ODOT Item 441 Asphalt Concrete Surface Course, Type 1 (448)	130	CY					
7f	ODOT Item 204 Subgrade Compaction	2630	SY					
7g	Temporary Pavement Repair	2630	SY					
8a	4-inch Concrete Sidewalk	320	SF					
8b	6-inch and 8-inch Concrete Sidewalk and Curb Ramp with Detectable Warning Surface	130	SF					
8c	8-inch Concrete Driveway	50	SY					
9a	Curb or Curb and Gutter Removed	810	LF					

Item No.	Description	Estimated Amount	Unit	Unit Price in Numbers		Unit Price in Words	Total Estimated Cost of Item	
9b	Concrete Curb and Gutter, Type 2	810	LF					
10	Maintenance of Traffic	1	LS					
11	Storm Water Pollution Prevention	1	LS	10,000	00	Ten Thousand and 00/100 Dollars	$10,000	00
12	Clearing and Grubbing	1	LS					
13	Post-Construction Sewer Televising 8-inch Through 24-inch Sewer	6522	LF					
14a	Blue Grass Farms Pump Station Demolition	1	LS					
14b	Field Avenue Pump Station Demolition	1	LS					
15	Remove and Replace Pedestrian Signal	1	EA					
16	Pavement Markings for Cemetery Road	1	LS					
17	Finzel Road Pump Station Rehabilitation	1	LS					
18	Bypass Pumping	6	WEEK					
19a	Water Main Repair, Less Than or Equal to 12-inch Diameter	40	LF					

Item No.	Description	Estimated Amount	Unit	Unit Price in Numbers		Unit Price in Words	Total Estimated Cost of Item	
19b	Water Service Repair	2	EA					
20	Topsoil Stripped, Stockpiled and Placed	1	LS					
21	Dump Rock Fill, Type D	90	CY					
22	Ditch Enclosure Fill	1990	CY					
23	Video Recording of the Zone of Influence	1	LS					
Total Estimated Construction Cost:								

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:

_____

_____

_____

_____

_____

Telephone Number: _____

Email Address: _____

Contact Name: _____

_____

Bidder's License No.: _____
(where applicable)

PERSONAL PROPERTY TAX AFFIDAVIT

STATE OF OHIO)
)ss.
COUNTY OF _____)

_____, being first duly sworn, deposes and says as follows: answering whichever is applicable by placing an "X" before items 1 or 2.

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 $_____.

_____
Bidder

By: _____

Title: _____

Sworn and subscribed before me this _____ day of _____ 20 _____.

_____
Notary Public in and for

_____ State

My Commission Expires:

_____ 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 the Village of Whitehouse 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 _____ _____.

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: _____

By _____
Attorney-in-Fact

Surety Company Address:

_____
Street

_____
City State Zip

Surety Agent's Address:

_____
Agency Name

_____
Street

_____
City State Zip

NOTICE OF AWARD

Date of Issuance:

Owner:	Village of Whitehouse	Owner's Contract No.:	
Engineer:	Jones & Henry Engineers, Ltd.	Engineer's Project No.:	334-7448.002
Project:	Wabash Cannonball Trail Interceptor Sewer & Finzel Road Pump Station Rehabilitation	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:

_____ .

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

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 Village of Whitehouse ("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 installing approximately 6,300 linear feet of 24-inch and 18-inch sanitary sewer. The work also includes a bored casing stream crossing under Blue Creek, demolition of two pump stations and structural repairs to the Finzel Rd. Pump Station Wet Well.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Village of Whitehouse, Wabash Cannonball Trail Interceptor Sewer & Finzel Road Pump Station Rehabilitation.

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by Jones & Henry Engineers, Ltd..

3.02 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 4 – CONTRACT TIMES

4.01 *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.

4.02 *Contract Times: Days*

A. The Work will be substantially completed within 270 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 300 days after the date when the Contract Times commence to run.

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4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial 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 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 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.

4.04 *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 5 – 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.

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ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on 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.

6.03 *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 7 – INTEREST

7.01 All amounts not paid when due shall not bear interest.

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ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 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.

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ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *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-641-1 to C-641-3, inclusive).
6. General Conditions (pages C-700-1 to C-700-69, inclusive).
7. Supplementary Conditions (pages ___ to ___, 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.

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 10 – MISCELLANEOUS

10.01 *Terms*

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

10.02 *Assignment of Contract*

A. 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

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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.

10.03 *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.

10.04 *Severability*

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

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *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.

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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:

Village of Whitehouse, Ohio

By: _____

Title: _____

Attest: _____

Title: _____

Address for giving notices:

_____

_____

_____

CONTRACTOR:

_____

By: _____

Title: _____

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

Attest: _____

Title: _____

Address for giving notices:

_____

_____

_____

License No.: _____
(where applicable)

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: _____

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APPROVAL BY OWNER'S LEGAL OFFICER

By: _____

Title:

Date: _____

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NOTICE TO PROCEED

Owner:	Village of Whitehouse, Ohio	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:	Jones & Henry Engineers, Ltd.	Engineer's Project No.:	334-7448.002
Project:	Wabash Cannonball Trail Interceptor Sewer & Finzel Road Pump Station Rehabilitation	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:

Submit required documentation for funding sources and insurance in compliance with the Contract.

Owner**:** Village of Whitehouse, Ohio

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 Village of Whitehouse, Ohio, 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 Wabash Cannonball Trail Interceptor Sewer & Finzel Road Pump Station Rehabilitation (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. 2020.

Witnesses:

Principal:

_____ _____
Printed Printed

_____ _____ (Seal)
Signature Principal Signature

_____ _____
Printed

_____ _____ (Seal)
Signature Surety Signature

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 Village of Whitehouse, 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 (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. 2020.

Signed, Sealed, and Delivered

In the Presence of:

Witnesses:

_____	_____
Printed	
_____	_____ (Seal)
Signature	Principal
_____	_____
Printed	
_____	_____ (Seal)
Signature	Surety

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 recevied 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

CONTRACTOR'S AFFIDAVIT
CURRENT ESTIMATE

STATE OF _____)
) ss
County of _____)

The undersigned, _____, hereby represents that on _____ it was awarded a contract by Village of Whitehouse, Ohio, hereinafter called Owner, to construct _____, 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 _____

CONTRACTOR'S AFFIDAVIT
WAIVER OF LIENS/FINAL ESTIMATE

STATE OF _____)
) ss
County of _____)

The undersigned, _____

hereby represents that on _____ it was awarded a contract by the Village of Whitehouse, Ohio hereinafter called the OWNER, to construct the

_____ in

accordance with terms and conditions of Contract No. _____; and the undersigned further represents that the subject work has now been accomplished and the said Contract has now been completed.

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.

The undersigned, for a valuable consideration, the receipt of which is hereby acknowledged, does further hereby waive, release and relinquish any and all claims or right of lien which the undersigned now has or may hereafter acquire upon the subject premises for labor and material used in accomplishing said project owned by the OWNER.

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

By _____
CONTRACTOR

Title _____

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

_____
Notary Public

(Seal) My Commission Expires _____

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	Village of Whitehouse, Ohio	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:	Jones & Henry Engineers, Ltd.	Engineer's Project No.:	334-7448.002
Project:	Wabash Cannonball Trail Interceptor Sewer & Finzel Road Pump Station Rehabilitation	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: _____	By: _____	By: _____
(Authorized signature)	Owner (Authorized Signature)	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

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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

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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.

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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

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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

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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.

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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.

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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

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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:

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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.

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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.

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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.

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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

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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

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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

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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.

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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.

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~~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

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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.

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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

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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.

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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.

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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,~~

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~~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

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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.

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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

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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

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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.

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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

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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

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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

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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.

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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

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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.

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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.

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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

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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.

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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;

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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,

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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

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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.

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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.

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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.

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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.

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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.

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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.

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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:

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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

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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.

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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.

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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

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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

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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, expediters, 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.

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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~~

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~~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.

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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

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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.

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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.

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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

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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;

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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;

l. 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

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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.

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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,

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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.

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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

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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

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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.

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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.

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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.

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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.

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.

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:

C. The following reports of explorations and tests of subsurface conditions at or adjacent to the Site are known to Owner:

1. Geotechnical Subsurface Investigation Wabash Cannonball Interceptor Sewer, Village of Whitehouse, Ohio TTL Project No. 1897501, by TTL Associates, Inc., Toledo, Ohio (3/2020).

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. Field Avenue Pump Station and Force Main Village of Whitehouse, Ohio. 1992, by Poggemeyer Design Group, Inc. Bowling Green, Ohio.

2. Main Pump Station Improvements Village of Whitehouse, Ohio. 1989, by Poggemeyer Design Group, Inc. Bowling Green, Ohio.

3. Sanitary Sewer Plans for Blue Grass Farms Village of Whitehouse , Lucas County Ohio. 2000, by R.C. Twining & Associates 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-6.03 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:

State:	**Statutory**
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	$ 5,000,000
Products - Completed Operations Aggregate	$ 5,000,000

Personal and Advertising Injury $ 4,000,000

Each Occurrence (Bodily Injury and Property Damage) $ 4,000,000

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

Bodily Injury:

Each person $ 2,000,000

Each accident $ 2,000,000

Property Damage:

Each accident $ 2,000,000

[or]

Combined Single Limit of $ 4,000,000

4. Excess or Umbrella Liability:

Per Occurrence $ 5,000,000

General Aggregate $ 5,000,000

5. Contractor's Pollution Liability:

Each Occurrence $ 1,500,000

General Aggregate $ 1,500,000

☒ 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

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, 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 RESPONSIBLITIES

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:

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.

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:

    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.
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 five 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

EXHIBIT 1

WAGE RATES
(TO BE PROVIDED BY ADDENDUM)

EXHIBIT 2

FUNDING REQUIREMENTS (WPCLF)

WPCLF 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 the 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 of 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 of 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 vender. 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.

_____

(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 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/

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 of State antitrust statues or commission if 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 as well as the ODOT website 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 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 1st).

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 1st).

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:

Adrianne 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 1st**). 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
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[1] subcontractor's[2] 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: ____DOT ____SBA ____Other: _____	Meets/ exceeds EPA certification standards? ____YES_____NO_____Unknown	

[1] 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.

[2] 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.

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).

Prime Contractor Signature	**Print Name**
Title	**Date**

Subcontractor Signature	**Print Name**
Title	**Date**

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[1] subcontractors[2] 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	___YES	___NO
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		

[1] 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.

[2] 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.

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).

Prime Contractor Signature	**Print Name**
Title	**Date**

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[1] subcontractor[2] 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

[1] 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.

[2] 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.

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

Subcontractor Signature	Print Name
Title	**Date**

OMB CONTROL NO. 2030-0020
APPROVED: 06/30/2014
APPROVAL EXPIRES: 06/30/2017

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) ☐ 1st (Oct-Dec) ☐ 2nd (Jan-Mar) ☐ 3rd (Apr-Jun) ☐ 4th (Jul-Sep) ☐ Semi-Annual (Oct-Mar) ☐ Semi-Annual (Apr-Sep) ☐ Annual ☐ 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), **CHECK** and **SKIP** 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. Accomplishments, in this context, are procurements made with MBEs and/or WBEs. ☐

5C. Total Procurements This Reporting Period
(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, **including MBE/WBE expenditures.**)

5D.
Were sub-awards issued under this assistance agreement? Yes ☐ No ☐ Were contracts issued under this assistance agreement ? Yes ☐ No ☐

5E. MBE/WBE Accomplishments This Reporting Period

Actual MBE/WBE Procurement Accomplished:
(Include total dollar values awarded by recipient, sub-recipients, SRF loan recipients and Prime Contractors.)

	Construction	Equipment	Services	Supplies	Total
$MBE:	_____	_____	_____	_____	_____
$WBE:	_____				

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[A] (Enter Code)	6. Name/Address/Phone Number of MBE/WBE Contractor or Vendor
Recipient	Sub-Recipient and/or SRF Loan Recipient	Prime	Minority	Women				

Type of product or service codes:

1 = Construction 2 = Supplies 3 = Services 4 = Equipment

Note: Refer to Terms and conditions of your Assistance Agreement to determine the frequency of reporting. Recipients are required to submit MBE/WBE reports to EPA beginning with the Federal fiscal year quarter the recipients receive the award, continuing until the project is completed.

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 1st through September 30th (**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. 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 l 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 Village of Whitehouse ("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 Contactor 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: Andrew D. Sawyers, Director
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.

State of Ohio

WATER POLLUTION CONTROL LOAN FUND (WPCLF/SRF)

CONTRACT CHANGE ORDER

RECIPIENT_____ CHANGE ORDER NBR _____

LOAN NUMBER_____ CONTRACT _____

OWDA PROJECT No. _____ DATE _____

Description of Change:

RECOMMENDED BY: _____ DATE: _____
(Engineer)

APPROVED BY: _____ DATE: _____
(Recipient)

ACCEPTED BY: _____ DATE: _____
(Contractor)

_____
(Company)

Original Contract Amt		
Previous Changes (+ / --)		
This Change (+ / --)		
Adjusted Contract Amt		

OWDA APPROVAL

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.

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.

The dedicated e-mail address for the electronic submittal of WSRLA Change Orders is 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.

EXHIBIT 3

FORMS

M E M O R A N D U M

To: Contractor

Subject: Village of Whitehouse, Ohio
Wabash Cannonball Trail Interceptor Sewer & Finzel
Road Pump Station Rehabilitation
Electronic Document Release
AutoCAD File for Base Drawing
334-7448.002

From: Ted Bennett, P.E. 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 via posting to Dropbox

SECTION 01010
DEFINITION OF CONTRACT ITEMS

0.01 FOREWORD

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

0.02 WORK INCLUDED

A. 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.

B. 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

A. 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

A. 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. Alternative Bid Items shall be measured and paid in accordance with their corresponding Base Bid Item number. The Owner may award the Alternative 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, electronic project management system, 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
SEWER PIPE

2.01 DESCRIPTION

A. Under these Items, the Contractor shall furnish and perform all Work necessary for the installation of the sewer pipe as schedule, shown on the Drawings and specified, in conformance with relevant section of the Specifications.

B. These Items shall include all Work to install the sewers by open-cut methods, including but not limited to the following: excavation; saw-cutting; clay dams, removal and replacement of fences including fabric, railings and posts, hauling excess spoil material

from project site; backfill; special backfill compaction; bedding; pipe materials; fittings; connections to existing sewers; construction, maintenance and removal of temporary access to the work area; and related work such as performing deflection and infiltration tests.

C. This Item shall include all work to install the new sewers by trenchless methods, including, but not limited to, the following additional items, bore and receiving pit excavation and backfill, bore-hole reaming, casing pipe installation, casing accessories, and pipe connection materials.

D. The furnishing and placing of special backfill in areas excavated for this work included under these Items is included in these Items.

E. Connections of new pipe to new and existing manholes or pipe stubs shall be included under these Items.

F. Lateral tap connection for existing or new sewer pipe to the new sewer including vertical risers, tapping material and connections to existing pipe to remain shall be included under these Items.

G. The removal and abandonment of existing sanitary sewer mains or force mains, including existing fittings, backfill, bedding, structures, concrete encasements, grout fill material, grout fill holes, vent tubes, bulkheads and other associated appurtenances shall be included under these Items.

H. Maintaining existing sewers in operation including temporary flow stoppages and diversions

I. All work required to dewater trenches is included under these Items.

J. All repair of existing utilities damaged or encountered during sewer construction is included under these Items. This shall include the repair of field tile, storm sewer, or drainage pipe encountered during the work.

K. Vertical pipe sections and riser pipes for 6-inch and 8- inch laterals and cleanouts shall be included under these Items.

L. Cleanouts shall be included under lateral sewers constructed under these Items at locations shown on the Drawings.

M. Required testing for compaction shall be included under these Items.

N. Closed circuit television inspection of new sewers 8-inches in diameter and larger installed as part of the Work are included under these Items.

O. Temporary support of existing utilities, locating existing utilities, exploratory excavation and backfill required by the utility owner for existing utilities encountered during sewer construction is included under these Items.

P. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed areas shall be included under these Items. All areas disturbed by the Work and shown shall be seeded as specified.

2.02 WORK NOT INCLUDED

A. Pavement, curbs and sidewalks removal and replacement within the Contract limits are included under other Items.

B. Closed circuit television inspection of new sewers 8-inches in diameter and larger installed as part of the work are included under other Items.

C. Sewers installed to convey sewage around or through the work during construction is not measured for payment.

D. Bypass pumping is included under other Items.

2.03 DEFINITION OF ITEMS

A. Item 2a - 6-inch Lateral Sewer Connection, Type B.

B. Item 2b - 8-inch Sanitary Sewer, Type B.

C. Item 2c - 10-inch Sanitary Sewer, Type B

D. Item 2d - 12-inch Sanitary Sewer, Type B.

E. Item 2e - 14-inch Sanitary Sewer, Type B.

F. Item 2f - 15-inch Sanitary Sewer, Type B.

G. Item 2g - 18-inch Sanitary Sewer, Type B.

H. Item 2h - 24-inch Sanitary Sewer, Type B (Less than or equal to 20-feet Deep).

I. Item 2i - 24-inch Sanitary Sewer, Type B (Greater than 20-feet Deep).

J. Item 2j - 24-inch Sanitary Sewer, Type C (Less than or equal to 20-feet Deep).

K. Item 2k - 24-inch Sanitary Sewer, Type C (Greater than 20-feet Deep).

L. Item 2l - 24-inch DIP Sanitary Sewer in 42-inch Bored Casing.

M. Item 2m - 8-inch Sanitary Sewer Connection to Existing.

N. Item 2n - 10-inch Sanitary Sewer Connection to Existing.

O. Item 2o - 12-inch Sanitary Sewer Connection to Existing.

P. Item 2p - 15-inch Sanitary Sewer Connection to Existing.

Q. Item 2q - 24-inch Sanitary Sewer Connection to Existing.

R. Item 2r - Sewer Pipe Repair, Less Than 15-inches in Diameter.

S. Item 2s - 8-inch Force Main Removed, Type B.

T. Item 2t - 12-inch Sanitary Sewer Removed, Type B.

U. Item 2u - 4-inch Plug.

V. Item 2v - 8-inch Plug.

W. Item 2w - 12-inch Plug.

X. Item 2x - 15-inch Plug.

Y. Item 2y - Sanitary Sewer Abandoned.

Z. Item 2z - 8-inch Storm Sewer, Type C.

AA. Item 2aa - 18-inch Storm Sewer, Type C.

AB. Item 2ab - 36-inch Storm Sewer Type C.

AC. Item 2ac - 36-inch Culvert Repair, Type B.

2.04 MEASUREMENT & PAYMENT

A. The quantities to be paid for Item 2a shall be full compensation for each lateral sewer reconnected to the new sewer. This item includes up to 10-feet of horizontal pipe length installed at each location.

B. The quantities to be paid under Items 2b through 2l, 2r, 2s, 2t 2y, 2z, 2aa, 2ab and 2ac will be the measured horizontal length of sewers constructed, removed or abandoned at the ground surface of the specified sizes and trench detail.

C. The depth of the pipe shall be the depth below the original ground surface of the pipe invert. The resident project representative and Contractor shall agree on locations where the depth of the pipe changes payment categories at the end of pipe laying for a segment of sewer (manhole to manhole).

D. Horizontal measurement will be to the center of the existing and new manholes and the inside face of the poured chambers. No deduction will be made for precast manholes on lines of the same size. Where branches or lines of different diameters enter such manholes, each will be measured to the center thereof.

E. The quantities to be paid for Items 2m through 2q shall be full compensation for each connection to existing sewer mains.

F. The quantities to be paid for Items 2u through 2x shall be full compensation for each plug installed on existing sanitary sewers and force mains.

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, tapping sleeves 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 walls to the specified depths.

E. The furnishing and placing of special backfill in areas excavated for this work included under these Items is included in these Items.

3.02 WORK NOT INCLUDED

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

3.03 DEFINITION OF ITEMS

A. Item 3a - Tapping Sleeve, Valve and Manhole for Bypass Connection to Force Main.

B. Item 3b - 14-inch Inserting Valve and Box.

C. Item 3c - 8-inch Valve and Box Abandoned.

3.04 MEASUREMENT AND PAYMENT

A. The quantities to be paid for under Items 3a though 3c shall be the full compensation for each valve and box or manhole installed or abandoned in accordance with the Specifications and Drawings.

ITEM 4
CATCH BASINS

4.01 DESCRIPTION

A. Under this Item, the Contractor shall perform all Work necessary for the construction of new catch basins, 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; sloping & shoring excavations; hauling and disposal of material from Site; backfill; special backfill; catch basin concrete collars; 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.

4.02 WORK NOT INCLUDED

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

B. Sewer Pipe, including the catch basin lead, shall be included under the respective sewer pipe item.

4.03 DEFINITION OF ITEMS

A. Item 4 - Nyloplast Catch Basin.

4.04 MEASUREMENT AND PAYMENT

A. The quantities to be paid under Item 4 shall be the full compensation for each new catch basin furnished and installed in accordance with the Specifications and Drawings.

B. The prices stated in the Bid for Item 4 shall be full compensation for each new catch basin installed or existing catch basin removed in accordance with the Specifications and Drawings and so measured.

ITEM 5
MANHOLES

5.01 DESCRIPTION

A. Under these Items, the Contractor shall construct manholes and sewer drop connections in locations and of types shown and scheduled on the Drawings and in conformance with relevant Sections of the Specifications. These Items shall include all testing in conformance with relevant Sections of the Specifications.

B. The furnishing and placing of special backfill in areas excavated for this work included under these Items is included in these Items.

C. These Items include the adjustment to manhole castings grade and construction of concrete collars in paved areas.

D. The temporary support of utilities as required to complete the work, shall be included under these Items.

E. The removal of existing sanitary sewer manholes for the purpose of abandonment in place shall be included in these Items. The removal shall include all necessary excavation, removal of the specified sections of the existing manhole and castings, backfill of excavated area and the filling of the manhole with the specified grout fill material as shown on the Drawings and in the Specifications.

F. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed lawn areas shall be included in these Items.

5.02 WORK NOT INCLUDED

A. Replacement of existing manholes or catch basins removed or damaged as a result of sewer construction outside the specified pay limits shall be done at the Contractor's expense.

B. Pipe connections to manholes shall be included under other Items.

C. The abandonment of pipe sewers is included under other Items.

5.03 DEFINITION OF ITEMS

A. Item 5a - Sanitary Sewer Manhole, Type I.

B. Item 5b - Sanitary Sewer Manhole, Type II.

C. Item 5c - Sanitary Sewer Manhole, Type II with Drop.

D. Item 5d - Sanitary Sewer Manhole, Type III.

E. Item 5e - Storm Sewer Manhole, Type III.

F. Item 5f - Manhole Abandoned.

G. Item 5g - Manhole Removed.

5.04 MEASUREMENT & PAYMENT

A. The quantities to be paid under Items 5a though 5e shall be the full compensation for each vertical foot of complete manhole. Measured height of manholes or drop connections, as built, measured from the invert of the deepest pipe to the top of the manhole casting at the ordered placement, to which will be added 1-foot allowance for the base.

B. The quantities to be paid under Items 5f and 5g shall be the full compensation for each existing manhole abandoned or removed along the alignment of the new sewer in accordance with Specifications and Drawings.

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 removal of pavement by milling or planing is included in these Items.

D. 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.

C. Item 6c - ODOT Item 254 Pavement Planing.

6.04 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

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.

C. The Contractor may choose to remove temporary pavement from the trench areas by planing, however the area measured under the Item 6c shall not include trench areas excavated for sewer pipe construction.

6.05 PAYMENT

A. The quantities to be paid under Items 6a through 6c shall be full compensation for each square yard of pavement removed within the prescribed limits as specified, so measured.

ITEM 7
FLEXIBLE PAVEMENT REPAIRS

7.01 DESCRIPTION

A. Under these Items, the Contractor shall construct pavement base and surface courses to replace pavement removed for pipe construction as scheduled, shown on the Drawings and specified herein.

B. The provision of required testing of pavement materials shall be included under these Items.

7.02 WORK NOT INCLUDED

A. Pavement replacement beyond specified pay limits for construction of manholes and chambers shall be at the Contractor’s expense.

B. Pavement, sidewalk, and curb and gutters damaged or destroyed beyond specified pay limits shall be replaced at the Contractor’s expense.

7.03 DEFINITION OF ITEMS

A. Item 7a - ODOT Item 304 Aggregate Base.

B. Item 7b - ODOT Item 301 Asphalt Concrete Base.

C. Item 7c - ODOT Item 407 Tack Coat.

D. Item 7d - ODOT Item 441 Asphalt Concrete Intermediate Course, Type 2 (448).

E. Item 7e - ODOT Item 441 Asphalt Concrete Surface Course, Type 1 (448).

F. Item 7f - ODOT Item 204 Subgrade Compaction.

G. Item 7g - Temporary Pavement Repair.

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 Typical Sections provided in 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, 7b, 7d, and 7e shall be full compensation for each cubic yard of pavement placed within the prescribed limits and specified, so measured.

B. The unit prices stated in the Bid for Item 7c shall be full compensation for each gallon of material placed within the prescribed limits as specified, so measured.

C. The unit prices stated in the Bid for Items 7f and 7g shall be full compensation for each square yard of pavement placed within the prescribed limits and specified, so measured.

ITEMS 8
RIGID PAVEMENT REPAIRS

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 in included under other Items.

8.03 DEFINITION OF ITEMS

A. Item 8a - 4-inch Concrete Sidewalk.

B. Item 8b - 6-inch and 8-inch Concrete Sidewalk and Curb Ramp with Detectable Warning Surface.

C. Item 8c - 8-inch Concrete Driveway.

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

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 Items 8a and 8b shall be full compensation for each square foot 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 Item 8c shall be full compensation for each square yard of rigid pavement placed within the prescribed limits as specified, so measured.

ITEMS 9
CURB REPLACEMENT

9.01 DESCRIPTION

A. Under these items, the Contractor shall remove and replace concrete curb and gutters damaged by sewer construction and additional areas as shown the drawings and as specified.

9.02 WORK NOT INCLUDED

A. Curb and gutters damaged or destroyed beyond the specified limits shall be replaced at the Contractor's expense.

9.03 DEFINITION OF ITEM

A. Item 9a - Curb or Curb and Gutter Removed.

B. Item 9b - Concrete Curb and Gutter, Type 2.

9.04 MEASUREMENT & PAYMENT

A. The unit prices stated in the Bid for Item 9a and 9b shall be full compensation for each linear foot of curb and gutter removed or placed within the prescribed limits and specified, so measured.

ITEM 10
MAINTENANCE OF TRAFFIC

10.01 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.

10.02 WORK NOT INCLUDED

Not used.

10.03 DEFINITION OF ITEM

A. Item 10 - Maintenance of Traffic.

10.04 MEASUREMENT & PAYMENT

A. The quantities to be paid for under Item 10 shall be lump sum for all maintenance of traffic measures.

ITEM 11
STORM WATER POLLUTION PREVENTION

11.01 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. This Item includes the installation of curb inlet protection devices, filter fabric fence, concrete washout, construction entrance, and any other material necessary to meet the requirements of the SWPPP.

C. Temporary restoration of surface improvements including seeding, mulching, and fertilizing all disturbed areas shall be included in this Item.

D. The weekly inspection and reporting of all Storm Water Pollution Prevention measures shall be included under this item.

E. Obtaining permits and co-permittee coverage specified shall be included under this item.

11.02 WORK NOT INCLUDED

Not used.

11.03 DEFINITION OF ITEM

A. Item 11 - Storm Water Pollution Prevention.

11.04 MEASUREMENT & PAYMENT

A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 11.

B. Payment shall be made in the amount of 20% of the lump sum Bid price for Item 10 for the first monthly estimate and 5% for each monthly estimate thereafter until the lump sum Bid amount for Item 11 has been paid.

C. The Engineer may reduce the amount to be paid under Item 11 if the percentage requested is not represented by the actual amount performed.

ITEM 12
CLEARING AND GRUBBING

12.01 DESCRIPTION

A. This Item shall include, but not necessarily be limited to, all clearing and grubbing for land required to complete the work as shown in the Contract Documents and as directed by the Engineer.

B. This work shall include 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 within the limits shown on the Contract Documents and as approved by the Engineer.

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.

12.02 WORK NOT INCLUDED

A. Any work specifically included under other Bid Items.

12.03 DEFINITION OF ITEMS

A. Item 12 - Clearing and Grubbing.

12.04 MEASUREMENT & PAYMENT

A. The lump sum stated in the Bid shall be full compensation for all Work required under Item 12.

ITEM 13
TELEVISING SEWER MAINS

13.01 DESCRIPTION

A. Under these Items, the Contractor shall furnish and perform all work necessary to clean and televise new sewers installed for the work, in conformance with relevant Sections of the Specifications.

B. These Items shall include the removal of debris accumulated in the sewer to permit the television inspection work in sewer mains.

C. The furnishing and installing any plugs required to control sewer flow during cleaning and testing or any bypass pumping that might be required to prevent the backup of sewage into buildings and residents shall be paid for under these Items. Bypass pumping necessary to permit cleaning and television work is included under this Item.

13.02 WORK NOT INCLUDED

A. Replacement of damaged surface structures as a result of Contractor’s operations shall be replaced at the Contractor's expense.

13.03 DEFINITION OF ITEMS

A. Item 13 - Post-Construction Sewer Televising 8-inch Through 24-inch Sewer.

13.04 MEASUREMENT & PAYMENT

A. The quantities to be paid for under the Item 13 shall be the linear feet of pipe televised. The footage shall be measured using the Contractor’s television equipment reel.

ITEM 14
PUMP STATION DEMOLITION

14.01 DESCRIPTION

A. Under this Item, the Contractor shall demolish the existing pump stations and abandon the existing wet wells as shown on the Drawings and according to the relevant sections of the Specifications. The removal and salvaging of existing equipment as shown on the Drawings or Specified shall be included under this Item. This Item shall include above grade and below grade removals.

B. All parts, fittings, materials, and accessories required to demolish the existing pump station shall be included under this Item.

C. The backfilling of the existing pump station structure as specified is included under this Item.

D. This Item includes all excavation of materials not included for payment under other Items, including hauling excess spoil material from Site and the placement and compaction of backfill in excavated areas.

E. This item includes the maintenance of trenches and excavations including dewatering and others measures to maintain open excavations necessary for work included under this Item.

F. The furnishing and placing of special backfill and soils in areas excavated or voids created by this work is included under these Items

G. The temporary support of utilities as required to complete the Work, shall be included under these Items. All repairs to existing utilities damaged, as a result of construction, are included under these Items.

H. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed lawn areas shall be included under this Item.

I. The coordination of the termination of the electrical service for the pump station shall be included in these items.

J. The temporary support of utilities as required to complete the Work, shall be included under these Items. All repairs to existing utilities damaged, as a result of construction, are included under these Items.

14.02 WORK NOT INCLUDED

A. The removal and replacement of pavement is included under other items.

14.03 DEFINITION OF ITEMS

A. Item 14a - Blue Grass Farms Pump Station Demolition.

B. Item 14b - Field Avenue Pump Station Demolition.

14.04 MEASUREMENT & PAYMENT

A. The quantities to be paid for under Items 14a and 14b shall be lump sum for the identified scope of work in accordance with the Specifications and Drawings.

ITEM 15
PEDESTRIAN SIGNAL

15.01 DESCRIPTION

A. Under this Item, the Contractor shall remove the existing pedestrian signal and concrete pole base as shown in the Drawings and replace the base and signal after the completion of sewer work in the area.

B. The temporary support of utilities as required to complete the Work, shall be included under these Items. All repairs to existing utilities damaged, as a result of construction, are included under these Items.

C. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed lawn areas shall be included under this Item.

15.02 WORK NOT INCLUDED

Not used.

15.03 DEFINITION OF ITEMS

A. Item 15 - Remove and Replace Pedestrian Signal.

15.04 MEASUREMENT & PAYMENT

A. The quantities to be paid for under Item 15 shall be full compensation for each pedestrian signal removed and replaced in accordance with the Specifications and Drawings.

ITEM 16
PAVEMENT MARKINGS

16.01 DESCRIPTION

A. Under this Item, the 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 ITEMS

A. Item 16 - Pavement Markings for Cemetery Road.

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.

ITEM 17
FINZEL ROAD PUMP STATION REHABILITATION

17.01 DESCRIPTION

A. Under this Item, the Contractor shall rehabilitate the existing Finzel Road Pump Station as shown in the Drawings and according to the relevant sections of the Specifications.

B. The temporary support of utilities as required to complete the Work, shall be included under these Items. All repairs to existing utilities damaged, as a result of construction, are included under these Items.

C. Restoration of landscape surface improvements including seeding, mulching, and fertilizing all disturbed lawn areas shall be included under this Item.

17.02 WORK NOT INCLUDED

A. The removal and replacement of pavement is included under other items.

17.03 DEFINITION OF ITEMS

A. Item 17 - Finzel Road Pump Station Rehabilitation.

17.04 MEASUREMENT & PAYMENT

A. The quantities to be paid for under Item 17 shall be lump sum for the identified scope of work in accordance with the Specifications and Drawings.

ITEM 18
BYPASS PUMPING

18.01 DESCRIPTION

A. Under this Item, the Contractor shall include materials, equipment and labor required to maintain sanitary sewer service during periods when the existing pump stations or new equipment are not in service as needed to complete the scope of work identified for the Contractor in the Contract Documents including; all pumping equipment, piping, accessories, maintenance and controls.

B. Maintaining existing sewers in operation and temporary flow stoppage, diversions and sewer flow by-pass connections shall be included under this Item.

C. This item shall include the cost of mobilizing and demobilizing bypass pumping equipment to the site.

18.02 WORK NOT INCLUDED

Not Used.

18.03 DEFINITION OF ITEMS

A. Item 18 - Bypass Pumping.

18.04 MEASUREMENT & PAYMENT

A. The quantities to be paid for under Item 18 shall be measured per week that the bypass pumping equipment is on site and functioning. No payment will be paid for periods when the equipment is on site, but not functional. A week shall be defined as 7 working days.

B. Payment for periods less than 7-days shall be measured as a percentage of a week.

ITEM 19

WATER MAIN REPAIR

19.01 DESCRIPTION

A. These Items shall include all work to install the new water main, including but not limited to the following: excavation; backfill; special backfill; compaction; bedding; pipe materials; fittings; maintenance of trenches; temporary pavement; connections to existing water mains; and related work and materials such as blow offs to perform disinfection, flushing, performing pressure and bacteriological tests as shown on the Drawings and specified in conformance with relevant Sections of the Specifications.

B. 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.

C. The furnishing and placing of special backfill in areas specified under Section 02200 is included under these Items.

D. All repairs of existing utilities damaged, as a result of construction, are 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.

19.02 WORK NOT INCLUDED

Not Used.

19.03 DEFINITION OF ITEMS

A. Item 19a - Water Main Repair, Less Than or Equal to 12-inch Diameter.

B. Item 19b - Water Service Repair

19.04 MEASUREMENT & PAYMENT

A. The quantities to be paid for under Items 19a 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 for under Items 19b shall be full compensation for each water service connection repaired in accordance with the Specifications and Drawings.

ITEM 20
TOPSOIL STRIPPING AND STOCKPILING

20.01 DESCRIPTION

A. Under this Item, the Contractor shall strip topsoil, to a depth as specified, from areas designated as "cultivated areas" and to be disturbed by the work, transport stripped topsoil to temporary easement areas as shown on the Drawings, outside the work limits and stockpile topsoil at the site.

20.02 WORK NOT INCLUDED

A. Any work specifically included under other Bid Items.

20.03 DEFINITION OF ITEM

A. Item 20 - Topsoil Stripped, Stockpiled and Placed.

20.04 MEASUREMENT & PAYMENT

A. The lump sum stated in the Bid for Item 20 shall be full compensation for all topsoil stockpiled, furnished as needed, and placed as specified, so measured.

B. Payment in the amount of 50 percent of the quantity for Item 20 shall be made following the completion of all topsoil stripping and stockpiling.

ITEM 21

DUMP ROCK FILL

21.01 DESCRIPTION

A. Under these Items, the Contractor shall place dump rock fill material to construct a riprap zone at the end of the culvert extension and prevent stream channel erosion as scheduled, shown on the Drawings and specified herein.

21.02 WORK NOT INCLUDED

Not used.

21.03 DEFINITION OF ITEM

A. Item 21 - Dump Rock Fill, Type D.

21.04 MEASUREMENT & PAYMENT

A. Quantities to be paid for under Item 21 shall be the actual quantity constructed, measured in place within the limits as scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

B. The unit prices stated in the Bid for Item 21 shall be full compensation for each cubic yard of dump rock placed within the prescribed limits and specified, so measured.

ITEM 22

DITCH ENCLOSURE FILL

22.01 DESCRIPTION

A. Under these Items, the Contractor shall place fill material to backfill the existing drainage ditch as shown on the Drawings and specified herein.

22.02 WORK NOT INCLUDED

A. Fill material shall not include pipe bedding materials.

22.03 DEFINITION OF ITEM

A. Item 22 - Ditch Enclosure Fill.

22.04 MEASUREMENT & PAYMENT

A. Quantities to be paid for under Item 22 shall be the actual quantity constructed, measured in place within the limits as scheduled on the Drawings, unless otherwise authorized by the Engineer; in which case, measurement will be made to the authorized limits.

B. The unit prices stated in the Bid for Item 22 shall be full compensation for each cubic yard of fill placed within the prescribed limits and specified, so measured.

C. If flexible pipe is used for the pipe enclosure, the quantity of fill material shall be reduced by the limits shown for flexible pipe bedding material.

ITEM 23

VIDEO RECORDING OF THE ZONE OF INFLUENCE

23.01 DESCRIPTION

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

23.02 WORK NOT INCLUDED

Not used.

23.03 DEFINITION OF ITEM

A. Item 23 - Video Recording of the Zone of Influence.

23.04 MEASUREMENT & PAYMENT

A. The quantities to be paid for under Item 23 shall be a lump sum for video recording of the defined zone of influence along specified routes.

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 shutdowns 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 or 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. State Historical Preservation Phone number 614-298-2000.

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. Permanent pavement and final restoration shall be completed prior to the close of the last paving season prior to the Contract's final completion.

1.07 PERMANENT PAVEMENT AND FINAL RESTORATION

A. When sewer construction is being done between April 15 and November 1, the final pavement restoration work shall be complete by November 1.

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 no further behind the pavement restoration than 30 days.

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 laying will be permitted until the Contractor is in compliance.

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.

1.09 TEMPORARY PARKING FACILITIES

A. 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. The parking areas shall consist of temporary parking areas or new permanent parking areas shown on the Drawings. Temporary parking areas are to be located in the area designated by the Owner and Engineer. At the completion of the project, temporary parking areas shall be removed and the surface restored as specified, shown on the Drawings, as directed or to its original condition.

B. The Contractor's personnel shall not utilize existing permanent parking areas unless specifically noted otherwise on the Drawings.

1.10 TEMPORARY WATER, HEATING, LIGHTING AND POWER

A. The Contractor shall provide all water, heat, lighting, and power required to construct and protect the Work until Final Completion.

B. The source for temporary power shall be from the electric utility or portable power source.

C. The source for temporary water can be from the water utility if available. The Contractor shall furnish all backflow prevention devices, flow meter and appurtenances as may be required by the water utility. Should the water utility impose a charge for furnishing, to the Contractor, the meter or appurtenances the Contractor shall pay all the fees. The Contractor shall pay all charges for the water metered.

1. If a water utility is not available, the Contractor shall be responsible for furnishing water and all cost associated including, but not limited to, procurement, hauling, pumping equipment, and appurtenances.

D. The Contractor shall pay for all significant amounts of electric power utilized by the Contractor in the construction of the facility. All electric power used for such significant uses as pumping groundwater and heating shall be separately metered and paid for by the Contractor.

E. The installation for electric power shall meet the requirements of federal, state, and local authorities and regulatory agencies.

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 SMOKE PREVENTION

A. Strict compliance with all ordinances regulating the production and emission of smoke will be required, and 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 DEBRIS AND DUST CONTROL

A. Contractor shall perform debris and dust control in accordance with Section 01568.

1.15 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. 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.

1.16 USE OF EXPLOSIVES

A. When the use of explosives is prohibited for the prosecution of the Work.

1.17 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. 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 as specified in GC 6.2 of the General Conditions.

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.

1.18 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.

1.19 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 b 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 o private places of human occupancy.

1.20 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 MAINTAINING FLOW IN EXISTING SEWERS

A. Flow in existing storm, sanitary and private sewers shall be maintained at all times during construction of this project. The Contractor shall furnish and install all necessary temporary facilities required to maintain the flow in existing sewers including bulkheads, plugs, stop planks, flumes, coffer dams, pumping equipment, valves, etc.

B. The Contractor shall provide bypass pumping equipment to handle the full range of flows, due to daily flow patterns including elevated flow rates resulting from wet weather conditions, maintenance or other conditions in the upstream service area.

B. Bypass Pumping Requirements

1. The Contractor shall provide a minimum of two pumps each with the firm pumping capacity outlined herein.

2. The pumps shall be operated by a power source supplied by the Contractor.

3. The pumps shall be provided with a level monitoring system with automatic dialing capabilities to notify the Contractor of pump failure or high levels in the bypass manhole.

4. The Contractor should take note of the allowable surcharge levels when evaluating bypass pumping units to ensure priming and snore capabilities of the pumping equipment are appropriate for this application.

5. The C-factors given for the existing force mains are as derived from field testing. Nominal diameters may be used for computations as the combination of diameters and C-factors were used to develop existing system curves and the guidance provided herein.

6. Finzel Road Pump Station

a. Performance Requirements

1) The Contractor is expected to use the existing 14-inch nominal diameter force main for conveying wastewater around the Finzel Road Pump Station as specified in the sequence of construction using the bypass connection included in the scope of work.

2) The C-factor for the existing force main is believed to be roughly 115 as derived from field testing.

3) The 14-inch force main high point is believed to be 640 (same datum as design plans).

4) The 14-inch force main is approximately 22,350-feet in length.

5) The average influent flow to the pump station is 580 gpm.

6) The bypass pumping system should be designed to deliver a minimum of 1400 gpm with one pump and 1500 gpm with two pumps.

7) Water in the manhole (MH SA 1.11-2) provided for bypassing shall not be permitted to rise above elevation 633 due to existing basements with floor elevations of roughly 635. Adequate alarms shall be provided below the maximum water elevation to alert the Contractor of trouble with the pumps or a need to increase pumping capacity.

8) The new 24-inch sewer constructed for the work may be used for storage of water as long as the pipe is cleaned and in accordance with the requirements of these Specifications prior to cctv inspection for acceptance.

b. The Contractor shall assume bypass pumping will be required for a period of not less duration provided in the bid for this item (total for the project). Costs associated with longer duration bypass pumping resulting from delays beyond the Contractor's control shall be negotiated as a change order.

c. The Contractor shall submit a bypass pumping plan for review by the Engineer. The bypass pumping plan shall include any details required to connect to the existing force main as well as measures required to block flow in gravity sewers and piping proposed for discharging flow into existing manholes. The plan shall show the proposed locations for pumping equipment. The bypass pumping plan provided shall be considered the minimum requirements.

d. All bypass pumping discharge piping shall be provided with check valves and air release structures as needed.

e. The Contractor is expected to provide bypass pumping equipment will level sensing and autodialer capabilities to alert 24-hour contacts of trouble with the bypass pumping equipment.

4.02 POTENTIALLY HAZARDOUS ENVIRONMENT

A. The environment in portions of the Site is rated as Class I Division 1 or 2 or some areas of the Site are designated as permitted Confined Spaces. As a minimum, whenever the Contractor is performing Work in these areas, the Contractor shall provide Factory Mutual- and UL-approved continuous monitoring of the atmosphere for the presence of hydrogen sulfides, of low oxygen concentration, and of explosive gases (both lighter and heavier than air). The Contractor shall evacuate all personnel from the areas whenever the detection system registers hydrogen sulfide levels of greater than 20 ppm, oxygen levels less than 19.5% or combustible gas levels of greater than 10% of the LEL. In addition, whenever the Contractor is using tools producing open flames or sparks, such as cutting torches, saws, and grinders, the Contractor shall provide for the forced air exhaust ducted from the immediate area of the Work.

4.03 REQUIRED SAFETY DOCUMENTATION TO BE SUBMITTED

A. On all projects that require the Contractor's or subcontractor's personnel to occupy permitted confined spaces and/or hazardous atmospheres on the Site, the Contractor shall submit to the Owner, a written proposed safety program. The safety program shall comply with all Federal, State, and local requirements.

B. If the Owner has a safety plan that is more stringent than the Federal and State requirements, it will be made available to the Contractor for review. The submittal of the proposed safety program to the Owner shall be made well in advance of the start of construction at the Site. The submittal shall include a written Safety Management Plan including Confined Space Entry procedures.

C. The Contractor shall be responsible to maintain documentation that anyone employed by the Contractor, subcontractors, or suppliers of any tier to the Contractor occupying such hazardous locations has received the appropriate confined space entry training and other applicable training. The Contractor is also responsible to maintain completed confined space entry permits.

4.04 WATERMAIN REPAIRS

A. If approved by Owner, the Contractor may cut and remove sections of watermain or water services crossing the sewer trench.

B. Watermains shall be reconnected to existing pipes with mechanical joint solid sleeves with a section of watermain pipe matching the existing watermain material.

C. Water service materials shall be provided in accordance with the Village's standards with compression style couplings on both ends of the repair.

4.05 TC ENERGY PIPELINE LOCATION AND VERIFICATION

A. The Contractor shall coordinate with TC Energy or their designated representative to locate and verify the high-pressure gas main. The work shall be performed in accordance with the TC Energy requirements following this specification.

B. The Contractor shall coordinate with TransCanada or their designated representative when working within 15 feet of their pipeline, crossing their pipeline, and placing spoils on the designated mats on top of their pipeline to permit TransCanada time to provide a field representative to the location of the work.

C. A failure to perform necessary coordination with TransCanada or their designated representative in advance of new sewer pipe construction shall not be the basis for a delay claim by the Contractor.

D. The Contractor shall provide laminated mats or measures as approved by TC Energy at grade, above the pipeline to mark existing grade level when stockpiling soil over the pipeline.

4.06 POLE HOLDING

A. To schedule utility poles to be held, contact Toledo Edison Call Center at (800) 447-3333.

4.07 OVERHEAD HIGH-TENSION ELECTRIC

A. The Contractor shall ensure work is constructed, operated and maintained in accordance with all applicable laws, government orders, permit terms and conditions, rules and regulations, and furthermore accordance to the safety and construction notes add to the drawings.

B. The Contractor is responsible to know and maintain all Occupational Safety and Health Act (OSHA) required clearances, including personal and excavating equipment. The Contractor is to assume that the conductors are always charged.

C. The Contractor shall install OSHA compliant Danger signage reading “Danger High Voltage Above”, in or adjacent to the Transmission Rights-of-Way until work adjacent or under the Transmission Rights-of-Way is completed.

D. The Contractor shall purchase and maintain Comprehensive General Liability Insurance, including contractual liability covering the indemnifying provision that meet a minimum limit of liability outlined in Supplementary Conditions.

E. The Contractor shall furnish a copy of Comprehensive General Liability Insurance to First Energy by mailing documentation to (RE Reps Name), Real Estate Department, 76 South Main Street, Akron, Ohio 44308. The Contractor shall cause the policy to be endorsed to require written notice from the insurer to First Energy at least thirty (30) days prior to the effective date of any cancellation or change therein.

F. The work shall be in accordance with the Agreement following this specification.

4.08 EARTH MOVING WORK

A. The Contractor is expected to develop a plan within the easements for on-site storage of striped topsoil while excavation of trenches for the new sewer is performed.

B. The contractor is expected to construct the Spoils Disposal Mound prior to removing any materials from the site unless approved in advance by the Owner.

4.09 SEQUENCE OF CONSTRUCTION

A. The following is a suggested sequence of construction to complete the interceptor sewer.

B. The Contractor may modify this sequence but will still be responsible for meeting the contract complete dates outlined in the Contract.

C. The existing Field Avenue Pump Station is expected to stay in service until the connection between the existing sewer on Logan Street is connected to the Finzel Road Pump Station by the new 24-inch interceptor sewer.

1. Strip and stockpile topsoil as needed for sewer installation.
2. Remove the SSMH 7658 and construct MH SA-1.11-2. This also requires replacing a pipes connecting to the manhole in all directions, as shown on the Drawings.
3. Construct 24-inch RCP gravity sewer between MH SA-1.11-2 to MH SA-1.11-1 as shown on the Drawings.
4. Install 42-inch steel casing and bore the 24-inch DIP gravity sewer from MH SA-1.11-1 to MH SA-1.10-2.
5. Construct 24-inch RCP gravity sewer between MH SA-1.10-2 and MH SA-1.7-1 as shown on the Drawings. This also includes installing manhole drops on manholes for future connections as shown on the Drawings and as specified.
6. Tie two existing 8-inch force mains into MH SA-1.7-1.
7. Construct 24-inch RCP gravity sewer between MH SA-1.7-1 thru MH SA-1.2-2. This also includes installing manhole drops on manholes for future connections as shown on the Drawings and as specified.
8. Construct 24-inch RCP gravity sewer from MH SA-1.2-2 to MH SA-1.1-1. This includes replacing a minimum of 10 feet of pipe at the manhole connection in all directions as shown on the Drawings and as specified.
9. Construct 12-inch PVC gravity sewer from MH SA-1.1-2 to MH SA-2.1-1. This includes replacing a minimum of 10 feet of pipe at the manhole connection in all directions as shown on the Drawings and as specified.
10. Test manholes and gravity sewer as specified.
11. Shut off Field Avenue Pump Station to discontinue service.
12. End bypass pumping and resume normal operation at Finzel Road Pump Station.

13. Dewater the Field Avenue Pump Station and remove accumulated debris and sludge.
14. Remove specified equipment for salvage from the Field Avenue Pump Station.
15. Remove structural components of the Field Avenue Pump Station.
16. Fill the Field Avenue Pump Station with CDF to the indicated elevation.
17. Abandon existing 8-inch force mains downstream of the Field Avenue Pump Station and 12-inch upstream of the Finzel Road Pump Station by capping ends as shown on the Drawings and as specified. Disconnect 8-inch force main tie ins to MH SA-1.7-1 and cap ends as specified.
18. Complete final grading, landscape restoration and surface restoration on Logan Street and Field Avenue.
19. Replace SSMH 7657 with MH SA-5.1-1 and connect the south invert to the new pipe from the north invert on MH SA-1.11-2.
20. Complete final grading, landscape restoration and surface restoration on the Wabash Cannonball Trail and Finzel Road.
21. Construct 18-inch RCP gravity sewer between MH SA-1.9-3 and MH SA-4.1-1. This also requires installing a minimum of 10 feet of 12-inch pipe west of MH SA-3.1-1 and 8” east of MH SA-4.1-1 as shown on the Drawings.
22. Test manholes and gravity sewer as specified.
23. Shut off Blue Grass Farms Pump Station to discontinue service.
24. Dewater the Blue Grass Farms Pump Station and remove accumulated debris and sludge.
25. Remove specified equipment for salvage from the Blue Grass Farms Pump Station.
26. Remove structural components of the Blue Grass Farms Pump Station.
27. Fill the Blue Grass Farms Pump Station with CDF to the indicated elevation.
28. Complete final grading, landscape restoration and surface restoration on Cemetery Road and Saddle Bridge Drive. Stockpile

D. Refer to Sheet PS-1 for Finzel Road Pump Station rehabilitation sequence of construction. The 12-inch force main may be connected to the new 24-inch sewer at which time work is to begin at Finzel Road Pump Station. Reference the bypass pumping plan provided in this Specification Section.

4.10 STREAM CROSSING PERMIT

A. The modification and maintenance of the stream crossing for the new sewer construction shall be only and limited in scope to:

1. Horizontally Directional Drilling – boring pits are to be sized as shown in the drawings. A 42-inch steel carrier pipe for the 24-inch DIP shall be directionally drilled below the stream cleanout at elevations specified on the plans and in the profile.

2. Erosion Control Measures – silt fencing shall be installed as shown in the plans to prevent any excess material from eroding into the stream.

B. See attached Stream Crossing Permit.

END OF SECTION

TC Energy

ANR Pipeline Company

ENCROACHMENT AGREEMENT

Village of Whitehouse
6925 Providence Street
Whitehouse, Ohio 43571

May 29, 2020

Re: Upgrading Sewer
Lucas County, OH

TC Energy's Pipeline Integrity Group Engineer has completed a review of your proposal for the above referenced project (the "**Project**"). The results of the review are contained in the Engineering Guidelines dated **May 29, 2020** (the "**Guidelines**"), which are attached hereto and incorporated herein as Exhibit A. Village of Whitehouse hereinafter "**Applicant**"), and its contractors will be held responsible to adhere to the terms herewith provided by which ANR Pipeline Company (hereinafter "**ANR**"), issues this Encroachment Agreement (the "**Agreement**").

1. **Term: This Agreement shall remain in effect for so long as ANR or its successors and assigns continue to own or operate the ANR's property and/or facilities and the ANR's property and/or facilities are impacted by the encroachment. Any construction activity permitted under this agreement must be completed within One Year (365 days) from the {May 29, 2020} of this document.**

2. All work must comply with the Guidelines and Applicant's design plans and drawings which have been approved and stamped "Reviewed and Approved as Noted by TC Energy Engineering Pipeline Integrity Group Engineer" and which are attached hereto and incorporated herein as Exhibit B (the "**Approved Plans**"). Any changes to the design, description, and/or construction within the Approved Plans must be approved in writing, and in advance of any construction, by TC Energy's Pipeline Integrity Group Engineer. Such approval, if given, shall be deemed to be subject to all the terms and conditions hereof. Upon separate written request, subsequent to installation of the facility, Applicant will provide **ANR** with an as-built drawing related to the encroachment(s) on the property. If Applicant terminates the work before completion, it shall comply with all Guidelines and Approved Plans to place the **ANR** property and/or existing facilities into as good of condition as they were prior to the Applicant's work.

3. **Applicant's** work and encroachment upon the Company's property and/or facilities shall be performed in accordance with all applicable laws, rules and regulations. **Applicant** agrees to maintain all facilities installed pursuant to the Project in good condition at all times, and that such maintenance shall conform to all applicable laws, rules and regulations.

4. Prior to commencement of **Applicant's** construction and/or installation activities, **Applicant** shall provide **ANR** with a schedule of its proposed activities. **ANR** must have a representative on site at all times when work is being performed over/near its facilities and/or within its property, right-of-way, or easement.

5. Except for emergency situations, notice of at least seventy-two (72) hours in advance of any work or maintenance must be provided. You must contact Company's Operations representative: **Mark Reynolds, at 419.439.0720.** *Please note that voice messages do not constitute 72-hour notice. Person to person contact must be made.*

6. Compliance with these terms and those contained in the Guidelines does not suggest or imply that **Applicant**, its contractors, consultants or any other associated party is relieved of any responsibility or liability in the event **ANR's** property and/or facilities are damaged in any way before, during or after the construction of the encroachment. **ANR** does not waive any rights that it may have against any third parties who cause any damage or injury to Company, its affiliates, parent and subsidiary companies, and **ANR** will hold all parties responsible for damages, claims, or costs incurred for any issues arising from **Applicant's** activities.

7. The rights and consent granted by this Agreement may not be assigned without **ANR's** prior written consent. The responsibilities and obligations of Applicant pursuant to this Agreement shall extend to its successors and assigns.

8. All rights granted hereunder shall be subject and subordinate to the paramount rights granted to **ANR** to occupy and use all or any portion or portions of its property, right-of-way, or easement in its operations, and the operations conducted by Applicant will be performed at no direct cost or expense to **ANR**.

9. Please be advised that **ANR** is now and will continue to utilize the property, right-of-way, or easement and in doing so, may at any time, or from time to time, enter upon said land, place and transport machinery and equipment thereon, excavate trenches and ditches thereon, and operate and maintain **ANR**'s land and facilities. **ANR**'s facilities will not be removed from service, nor will the placement of such facilities be adjusted because of Applicant's Project or facilities.

10. Applicant, on behalf of itself and any other person or entity claiming by or through Applicant, hereby waives, releases, discharges and agrees to save, defend, hold harmless and indemnify **ANR**, its affiliates, parent and subsidiary companies, and each of their respective successors, assigns, affiliates, owners, members, officers, directors, shareholders, employees, agents, contractors and subcontractors, and any other individuals or entities claiming by or through any of them (collectively, the "Releasees"), from and against all claims, causes of action, suits, debts, expenses, damages, interest, costs and demands whatsoever, against the Releasees, which arise out of, are connected with, or relate in any way to Applicant's encroachment or activities as contemplated herein.

11. Applicant shall secure all necessary permits from all governmental agencies having jurisdiction thereof for the Project or construction, installation, maintenance and operation of Applicant's facilities and shall comply with all applicable laws, rules and regulations at all times hereafter. **ANR's** consent hereby granted is subject to the existing easement rights and/or leasehold interests of the **ANR** at the above referenced location. **ANR** cannot, and does not, by execution of this Agreement, grant a right-of-way or other land use rights to Applicant but executes this Agreement solely to signify that insofar as **ANR's** interests are concerned and insofar as such is required under applicable law, **ANR** consents to the Applicant's proposed Project, provided such Project is completed and maintained in accordance with the provisions of this Agreement and all applicable laws, rules and regulations. Therefore, Applicant agrees to secure any other rights-of-way, easements and/or permits from any parties holding interests in the real property concerned and which are necessary for Applicant's Project or the construction, installation, operation and maintenance of Applicant's facilities. Nothing herein contained shall be construed as impairing any rights or privileges or obligations of the Company under its easement and/or leasehold rights, including the construction of additional facilities and appurtenances from time to time (if allowed for therein).

12. Prior to any construction activities near **ANR's** property and/or facilities, Applicant must provide all contractors a copy of this Agreement, including the Guidelines dated **{May 29, 2020}** and the Approved Plans, and all contactors must maintain copies in their possession to confirm that they are aware of the conditions, requirements and obligations for the encroachment pursuant to this Agreement.

13. Applicant acknowledges and agrees that, in the interest of public safety and pipeline security, construction activities at or near **ANR's** property and/or facilities must be closely monitored, and

specific procedures followed. FAILURE TO FOLLOW THIS AGREEMENT MAY RESULT IN PERSONAL INJURY, LOSS OF LIFE OR SERIOUS PROPERTY DAMAGE. Applicant's construction, installation, maintenance and operation of Applicant's facilities and Project shall comply with industry standards and applicable law to prevent damage to **ANR's** property and/or facilities and to prevent safety issues, including, but not limited to, impairment of support, access to, stability, integrity or protection of **ANR's** property and/or facilities.

14. **ANR requires that Applicant and/or each of Applicant's contractors/subcontractors on this project submit State One Call tickets (call 811) in accordance with the applicable One Call system's advance notification requirements for each different phase of the Project that involves earth disturbance (grading, excavating, trenching, digging, etc.).**

The Company looks forward to working with you to minimize impact resulting from this Project and also provide for the safety of the general public and the integrity of Company's facilities. Should you have any further questions regarding this Agreement please contact Company at **1.800.562.8931.**

No work is permitted under the terms of this Encroachment Agreement until the Encroachment Agreement has been countersigned, dated and a copy returned to: us_crossings@tcenergy.com.

ANR Pipeline Company:

By: Karen Macejewski

Name: Karen Macejewski

Title: Land Representative and As Authorized Signatory

Date: May 29, 2020

By: A. C. Osborne

Name: Alex Osborne

Title: Manager, Land Services and As Authorized Signatory

Date: May 29, 2020

COUNTERSIGNED AND AGREED TO:

By: Steven P. Pilcher

Name: Steven P. Pilcher

Title: Director of Public Service

Date: 6/8/2020

The signature below is to be secured on site prior to construction activity within the Company's property, right-of-way, or easement to confirm presence of Company.

ANR Representative: _____

Printed Name: _____

cc: Land Representative w/att
Field Tech(s) w/att

March 25, 2020

The crossing application submitted by Village of Whitehouse has been reviewed. Village of Whitehouse plans to construct a 24” sanitary sewer in Lucas County, Ohio.

Work within the TC Energy right-of-way will be performed in accordance with TC Energy procedures to protect the safety of TC Energy facilities. The following guidelines, although not inclusive, are provided in order to accommodate your request and protect our pipelines and facilities:

1. No ground disturbance shall be made within TC Energy’s right of way or within 25 ft., measured at right angles, of our pipeline(s) except in the presence of our company representative.

2. Notice of at least seventy-two (72) hours in advance of construction must be provided. Village of Whitehouse must contact the following TC Energy field representatives:

Name: Mark Reynolds Cell: 419-439-0720

TC Energy will arrange for a representative to be on site when work is occurring on or near the Right of Way area, or within 25’ of the pipelines. After hours call 1-800-447-8066.

3. Village of Whitehouse, or its contractor must hydro-vac or hand expose TC Energy’s buried pipeline(s) prior to use of mechanical equipment within 15ft. of the pipeline(s).

4. No sidecutters may be used.

5. No part of powered equipment shall come within three ft of TC Energy’s pipelines, or according to applicable State or Federal requirements.

6. No bucket, any attachment or load may be swung over TC Energy’s pipeline(s) where there is less than 24” of cover.

7. Bored crossings are an acceptable method for constructing a crossing of a TC Energy pipeline(s) for cables, pipes, drains, etc. provided the following conditions are met:

- A drawing detailing the proposed bored crossing must be submitted to TC Energy for review and approval prior to construction. The items to be included on

the drawing include; location of bore pits, alignment of the new facility, location of existing underground facilities, elevation profiles, etc.

- The top and side (side closest to the drill) of all TC Energy pipelines or buried facilities must be exposed by hand digging or hydrovac.
- Sight holes must be excavated at a minimum of five (5) feet and a maximum of ten (10) feet from the side (nearest to the drill) of each buried facility, and parallel to the existing TC Energy buried facility.
- Any bore pits required to set up and stage equipment shall be outside of TC Energy's buried facility ROW
- The new crossing facility should maintain a continuous depth or consistent profile and straight horizontal alignment across the full width of the TC Energy Right-of-Way.
- The crossing facility must pass the TC Energy facility with a minimum clearance of three (3) feet.

8. When existing TC Energy buried pipelines are exposed, resulting in an unsupported length of 5 times the diameter of the existing pipeline, as a minimum, the following requirements shall be met:

- A layer of select bedding material, sand or a mixture of sand and crushed stone, shall be placed on the bottom of the trench 2 feet wider than the pipeline. This bedding shall be a minimum of 4" thick and be compacted.
- Structural backfill sand shall then be carefully placed in 6 inch lifts and compacted up to the middle of the TC Energy pipeline.
- The backfill, sand or native soil, above the pipe shall be free of rocks, cobbles and boulders and be compacted enough to prevent excessive settlement.

9. In the event of equipment crossings outside of existing road right of way or wherever our technician determines that inadequate cover exists, the contractor shall install and maintain temporary crossings of TC Energy's pipeline(s) at location(s) specified by TC Energy and that are/is perpendicular to TC Energy's pipeline(s). A minimum of five (5) feet of total cover over TC Energy's pipeline(s) is required. If fill is required to obtain the minimum cover, a suitable material (preferably a bank run gravel material, or a combination of wooden mats and bank run gravel, or a TC Energy approved "Portable Land Bridge") will be placed on the existing surface of the ground over the pipeline(s) from a point fifteen (15) feet ahead of the pipeline crossing to a point fifteen (15) feet beyond the pipeline crossing. The crossing area should be a minimum of twenty (20) feet wide so as to adequately bear the crossing weights of the heavy equipment. All vehicular traffic will cross TC Energy's pipeline(s) at these designated locations only.

10. The applicable state one-call system must be contacted at 811 in accordance with its advance notification requirements prior to any ground disturbance.

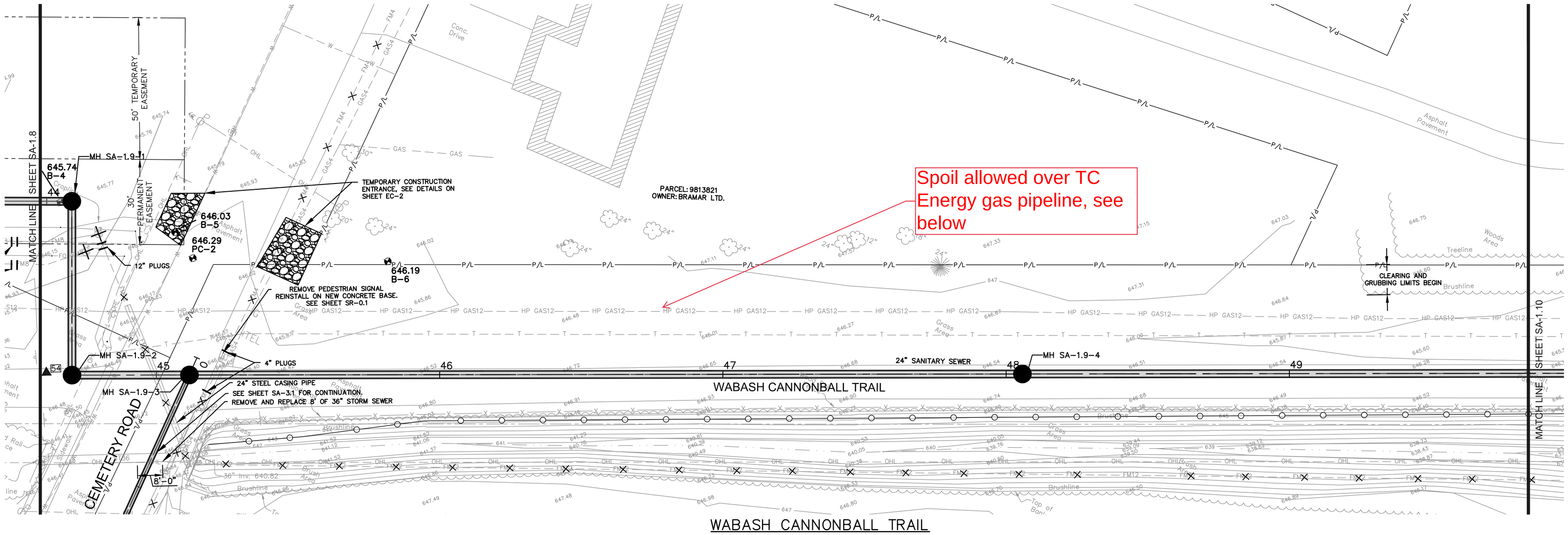
11. Village of Whitehouse will be crossing one or more of TC Energy's transmission pipeline(s). These pipeline(s) are coated with a material to protect them from corrosion. The coating may contain asbestos. If the excavation results in exposing TC Energy's pipeline(s) and there is any damage to the coating, you will be responsible for

all costs, including any disposal costs, associated with the coating repair. If necessary, you will also be required, to halt all work activity while the coating material is being analyzed. The coating repair, including the removal of the original material, will be performed by TC Energy personnel or a qualified third party contractor selected by TC Energy. All work will be done in accordance with TC Energy's current engineering and environmental standards. During the course of the excavation work, Contractor agrees to cooperate with TC Energy to insure all federal, state and local environmental and safety regulations are followed.

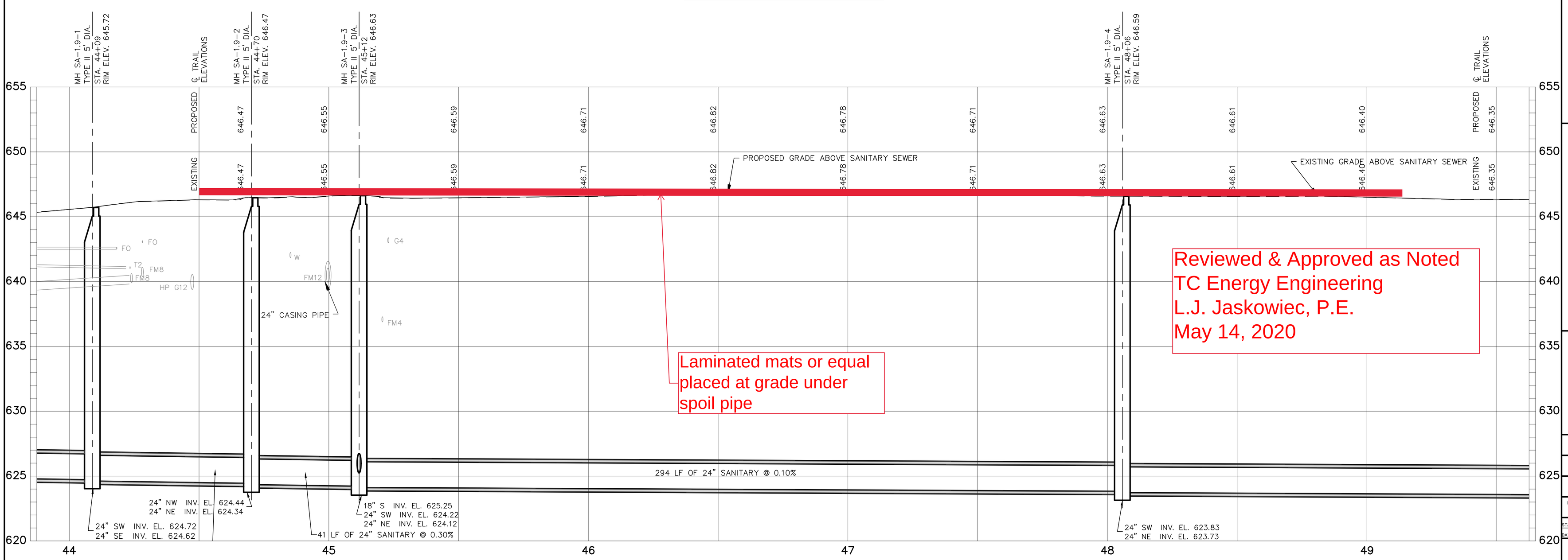
12. Should it be necessary for a TC Energy employee/representative to enter the excavation to inspect its pipeline(s), the excavation at the crossing shall be sloped, permitted safe with trench boxes, or shored in accordance with the requirements of the Occupational Safety and Health Administration.

Respectfully Submitted,

Lawrence Jaskowiec, P.E.
Senior Engineer
Pipeline Integrity
TCEnergy US Pipelines
5250 Corporate Drive ~ Troy, MI 48098
Phone: 248-205-7550 ~ Fax: 248-205-4750



WABASH CANNONBALL TRAIL



WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 44+00 TO 49+50

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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3			
2			
1			

Jones & Henry Engineers, Ltd.
Fluid thinking®
www.JHeng.com

JOB NO. 334-7448.002
SCALE 1"=20' HOR. 1"=4' VERT.
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
AMM	AMM	TAB

STATUS: PRELIMINARY
DATE: AUGUST 2019
SHEET NO.
SA-1.9
19 OF 34

TOL-7448002SA-STA. 44+00 TO 49+50
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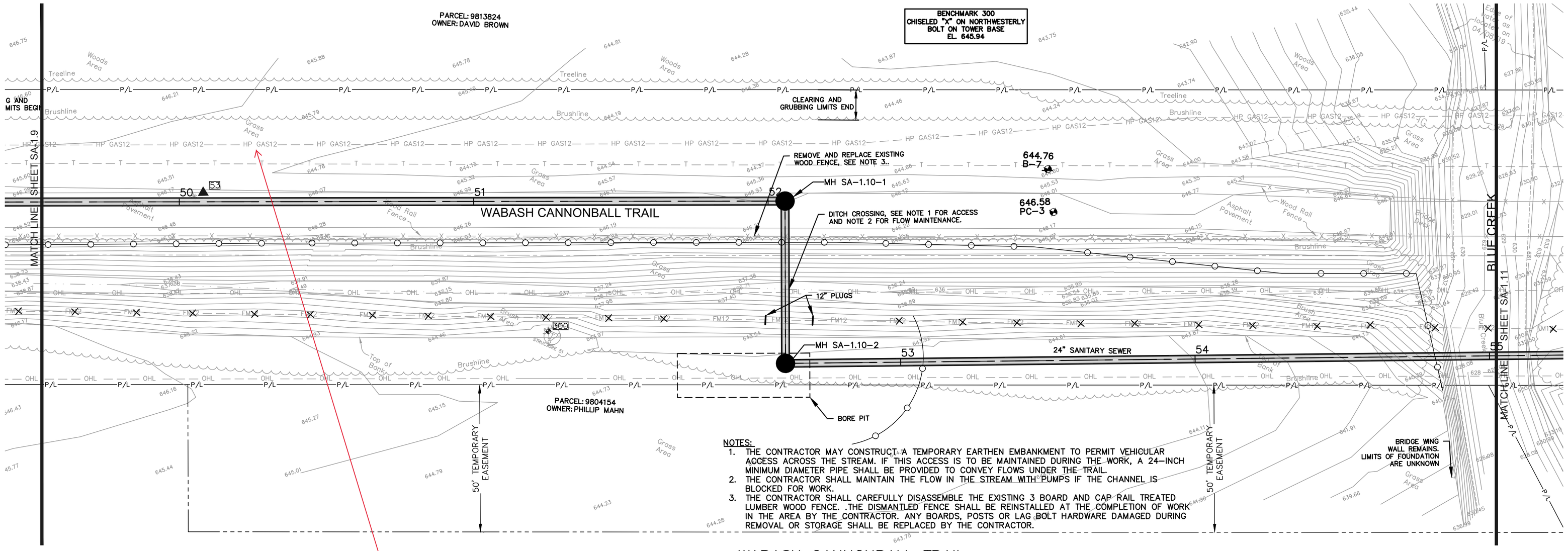
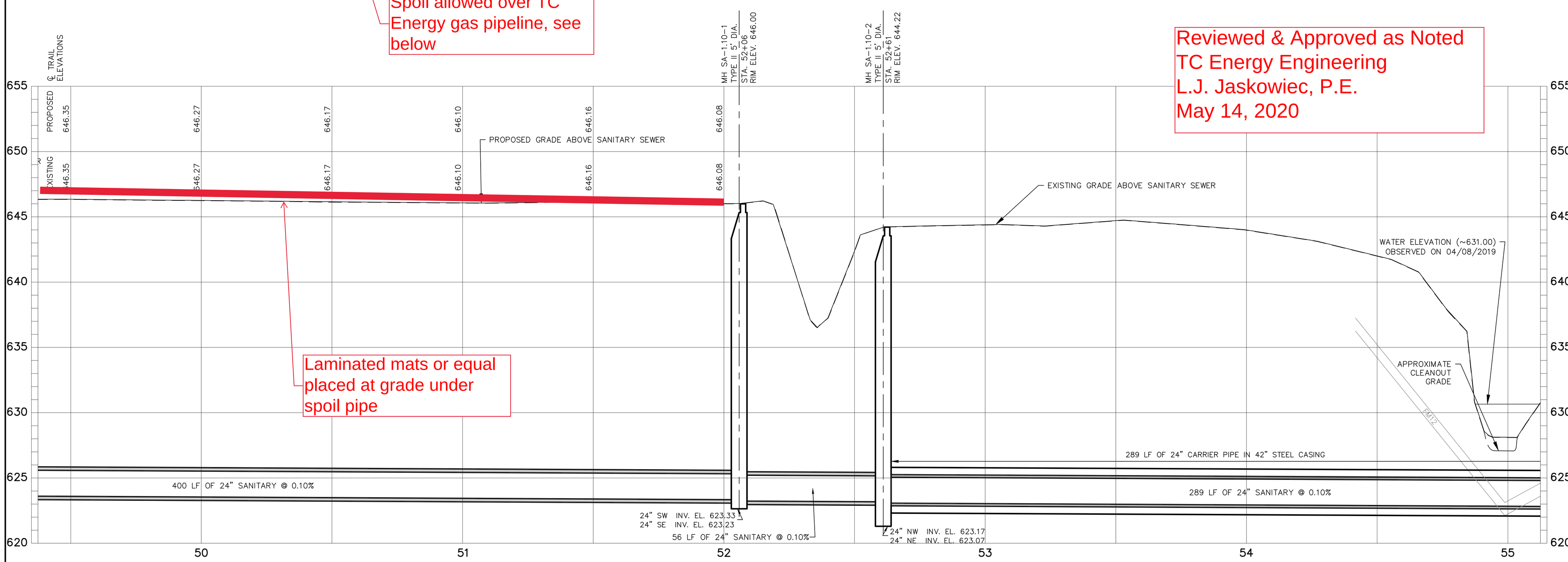


Spoil allowed over TC Energy gas pipeline, see below

Reviewed & Approved as Noted
TC Energy Engineering
L.J. Jaskowiec, P.E.
May 14, 2020



Laminated mats or equal placed at grade under spoil pipe

WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 49+50 TO 55+00

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILTATION

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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Jones & Henry Engineers, Ltd.
Fluid thinking®
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JOB NO. 334-7448.002
SCALE 1"=20' HOR. 1"=4' VERT.
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
AMM	AMM	TAB

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SHEET NO.
SA-1.10
20 OF 34

TOL-7448002SA-STA. 49+50 TO 55+00
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5/12/2020 2:03 PM

FirstEnergy

76 South Main Street
Akron, Ohio 44308

1-800-646-0400

07/07/2020

R/W File No. 2-242-328

CONSENT AGREEMENT

WHEREAS, The Toledo Edison Company (the "Company") was granted an easement for electrical facilities on the property by instrument dated July 31, 1925 and recorded on August 3, 1925 in Volume 663, Page 244 in Lucas County, Ohio Official Records (the "Transmission Rights-of-Way");

WHEREAS, The Village of Whitehouse, Ohio, 6925 Providence Street, Whitehouse, OH 43571 and their agents, affiliates, and contractors (collectively the "Requestor"), requests to perform work within the Transmission Rights-of-Way for the installation of over 6000 linear feet of 24 inch reinforced concrete pipe as part of the Wabash Cannonball Trail Interceptor Sewer and Finzel Road Pump Station Rehabilitation project improvement (the "Work") as shown on Exhibit "A", attached hereto and made a part hereof.

NOW THEREFORE, in consideration of the mutual covenants and conditions contained herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Requestor, intending to be legally bound hereby, agrees as follows:

Requestor, for itself, its successors and assigns, agrees to indemnify and hold harmless, and defend the Company, its officers, directors, successors, parent, subsidiaries, affiliates, assigns and employees, from and against all claims, demands, damages, actions, or causes of action, together with any and all losses, costs or expenses in connection therewith or related thereto including reasonable attorneys' fees with such attorneys acceptable to the Company, asserted by any person or persons for bodily injury, death or property damage arising or in any manner arising from Requestor's Work and/or use within the Transmission-Rights-of-Way.

The Company is not responsible or liable for any damages to Requestor's facilities within the Transmission-Rights-of-Way unless said damages are caused by the willful misconduct or sole negligence of the Company, its agents or employees.

Requestor agrees the said Work shall be constructed, operated and maintained in accordance with all applicable laws, governmental orders, permit terms and conditions, rules and regulations, and furthermore in accordance to the safety and construction notes added to plan sheets titled Wabash Cannonball Trail Interceptor Sewer & Finzel Road Pump Station Rehabilitation, prepared by Jones and Henry Engineers, Ltd., Project Number 334-7448.002, Page(s) 1 - 39, with the last revision date of 7/1/2020, attached hereto and made a part hereof as Exhibit "A", with official drawings being retained in Company R/W file 2-242-328. No additional grade changes or improvements shall be permitted without the prior written approval of the Company. If Requestor violates this provision, this Consent Agreement shall become null and void and Requestor shall immediately vacate the Transmission-Rights-of-Way.

Requestor is responsible to know and maintain all Occupational Safety and Health Act ("OSHA") required clearances, this includes all personnel and excavating equipment. It shall be assumed that the conductors are energized at all times. The nominal voltages of the transmission lines associated with this Consent Agreement shall be assumed as follows: 345,000-volts (maximum of 362,250-volts); 138,000-volts (maximum of 144,900-volts); and 69,000-volts (maximum of 72,450-volts). NOTICE: The conductor/wire position changes continuously depending on load, ambient temperature, wind speed, etc. The Company is not responsible for providing conductor/wire position to determine OSHA safe-working clearance. NOTE: The conductors are to be assumed as energized at all times. Physical contact with conductors is not required for electricity to flow in unwanted directions.

Prior to construction, there shall be installed in/adjacent to the Transmission-Rights-of-Way, appropriately placed, OSHA-compliant, Danger signage reading "Danger High Voltage Above", or similar, to remain until construction adjacent to/under the Company's Transmission-Rights-of-Way is completed.

Requestor shall abide by the additional restrictions, not already addressed in the main body of this Consent Agreement, as described in Exhibit "B", Transmission Rights-of-Way Restrictions, attached hereto and made a part hereof.

Requestor further agrees to purchase and maintain Comprehensive General Liability Insurance, including contractual liability covering the above indemnifying provision with minimum limits of $1,000,000, combined single limit for bodily injury and property damage, which limits may be increased in a reasonable amount from time to time by the Company. A Certificate of Insurance evidencing coverage shall be furnished to the Company and shall be mailed to (RE Reps Name), Real Estate Department, 76 South Main Street, Akron, Ohio 44308. Requestor shall cause the policy to be endorsed to require written notice from the insurer to Company at least thirty (30) days prior to the effective date of any cancellation or change therein.

Requestor shall be responsible for obtaining and following any and all permits and property rights including but not limited to environmental permits and easement agreements that might be necessary for the Work contemplated herein.

The Company or its authorized representative shall have the right to inspect the Work area at any time.

No soil spoils, construction equipment, or vehicles can be stored beneath FirstEnergy transmission lines for any period of time.

No fuels tanks, fuel dispensers, fuel valves or vents, propane tanks, or dumpsters are permitted within the Transmission-Rights-of-Way.

No equipment shall be operated within the Transmission-Rights-of-Way that cannot maintain minimum Occupational Safety and Health Association (OSHA) working clearances of any energized overhead conductor of the Company.

Access for emergency or maintenance operations to the Company's facilities is required at all times. Anything left in the Transmission-Rights-of-Way will be subject to removal at the expense of the Requestor.

Temporary concrete jersey barriers are to be placed around FirstEnergy structures where indicated on the project drawing for the duration of construction.

Requestor is responsible for all damages to the Company's facilities, during construction and while any operations or activities occur in the Transmission-Rights-of-Way, including but not limited to poles, hardware, guy wires, anchors, conductor wires and shield wires.

If construction traffic activities come closer than 25-feet to the Company's facilities, safety shaped protective barriers must be installed to protect the facility.

Requestor's facilities shall be registered with Ohio Utilities Protection Services (OUPS).

FirstEnergy

76 South Main Street
Akron, Ohio 44308

1-800-646-0400

All underground facilities shall incorporate the expectation that the Company will be using heavy equipment on the Transmission-Rights-of-Way, and all underground facilities shall be capable of withstanding H25 (40,000 lb. axle load) loading. All underground facilities within the easement shall be registered with the appropriate "One Call", or "811" agency.

If any tree removal is required for the Work, it shall be performed with extreme care. Trees shall not be allowed to fall in the direction of the Company's facilities.

By signature below, Requestor acknowledges and agrees to the terms and conditions set forth in this above.

Accepted and Agreed to this 8 day of July, 2020

Requestor
Village of Whitehouse, Ohio

By: Steven P. Pilcher
Steve Pilcher

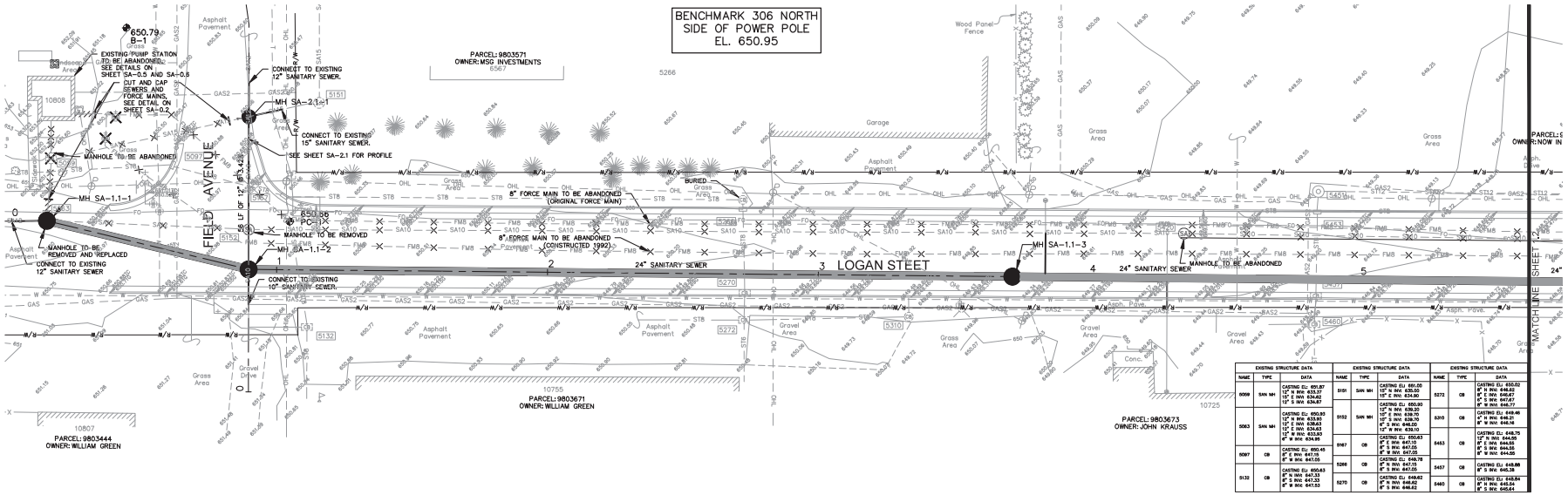
Its: Director of Public Works

Company
The Toledo Edison Company

By: Wm R. Beach
William R. Beach

Its: Director, Real Estate for FirstEnergy Service Company on behalf of The Toledo Edison Company

This instrument prepared by: The Toledo Edison Company



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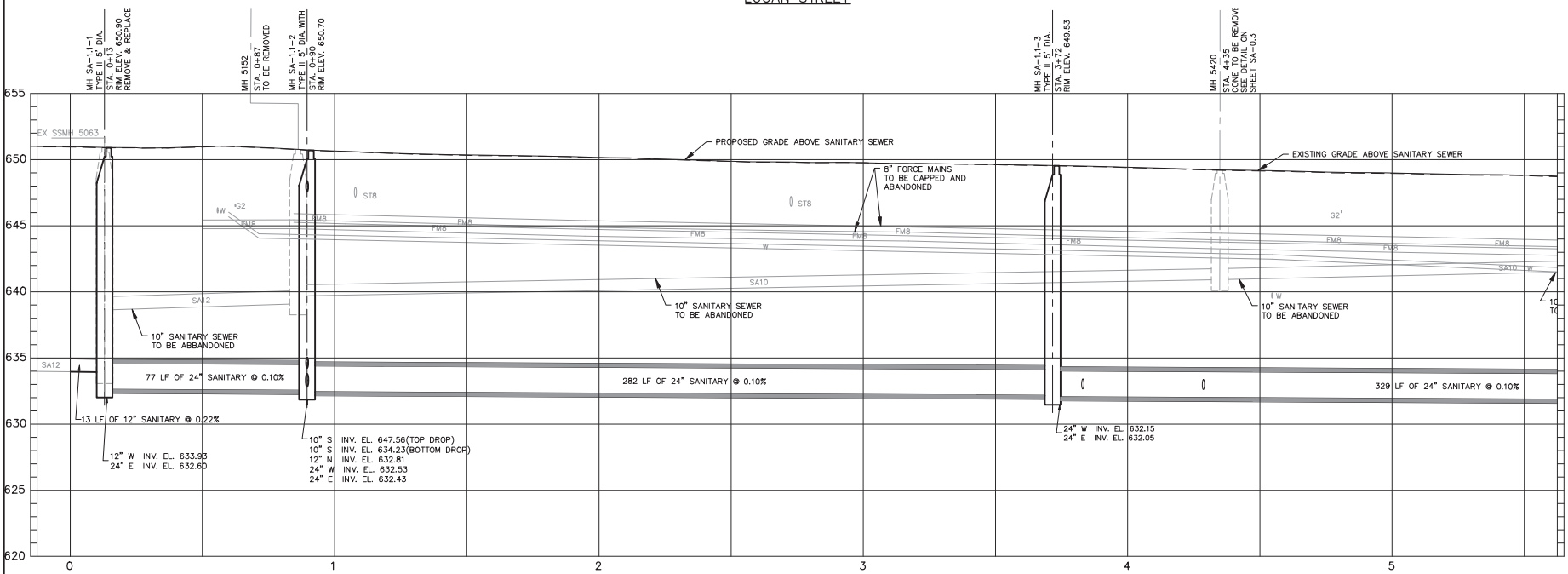
5063	SAN MH	CASTING EL: 650.90 12" N INV: 633.93 12" E INV: 633.93 12" S INV: 634.93 12" W INV: 633.93 8" W INV: 634.98	5152	SAN MH	CASTING EL: 650.90 12" N INV: 639.20 12" E INV: 639.20 12" S INV: 639.70 8" S INV: 646.00 12" W INV: 639.10	5310	CB	CASTING EL: 649.46 6" N INV: 646.21 8" W INV: 646.16
5097	CB	CASTING EL: 650.45 8" E INV: 647.10 8" W INV: 647.05	5167	CB	CASTING EL: 650.63 8" E INV: 647.10 8" S INV: 647.05 8" W INV: 647.05	5453	CB	CASTING EL: 649.79 12" N INV: 644.50 8" E INV: 644.55 8" S INV: 644.55 8" W INV: 644.55
5132	CB	CASTING EL: 650.63 8" E INV: 647.33 8" S INV: 647.33 8" W INV: 647.33	5268	CB	CASTING EL: 649.78 8" N INV: 647.05 8" S INV: 647.05	5457	CB	CASTING EL: 649.80 8" S INV: 646.38
			5270	CB	CASTING EL: 649.62 8" N INV: 646.62 8" S INV: 646.62	5460	CB	CASTING EL: 649.84 8" N INV: 645.84 8" S INV: 645.84

LOGAN STREET



LOGAN STREET
SANITARY SEWER
PLAN AND PROFILE
STA. 0+00 TO 5+50

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

Jones & Henry Engineers, Ltd.
Fluid thinking.
www.JHeng.com

JOB NO.	334-7448.002
SCALE	1"=20' HOR. 1"=4' VERT.
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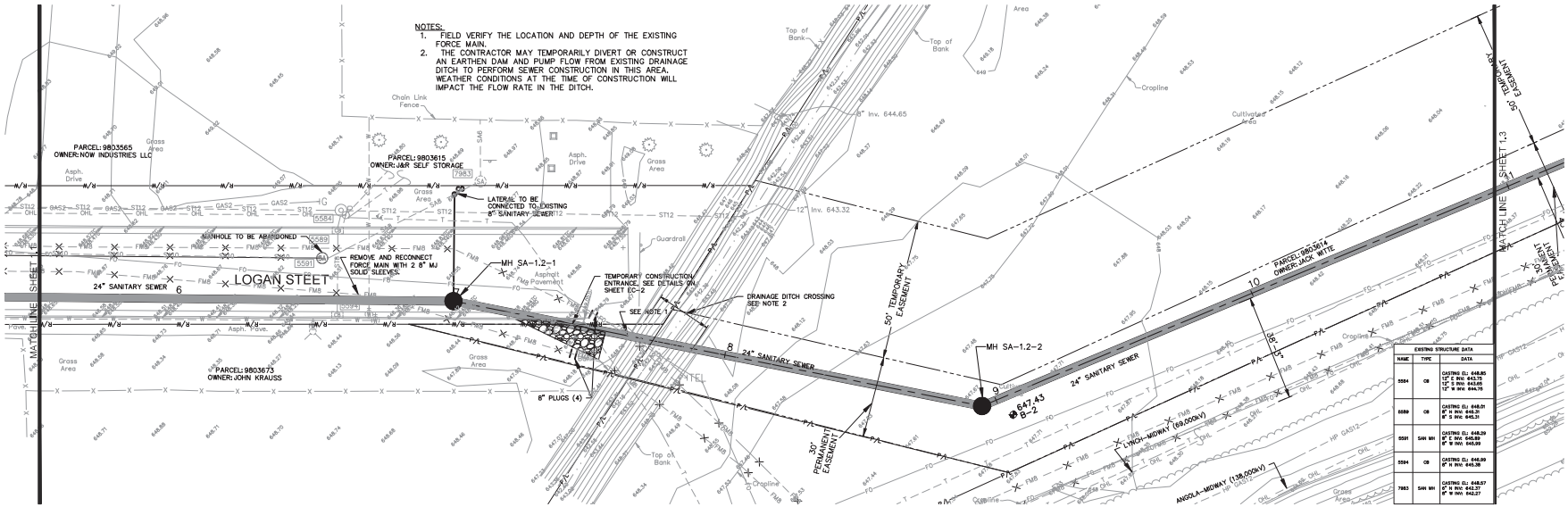
DESIGNED AMM	DRAWN AMM / CHECKED TAB
STATUS	ISSUED FOR BID
DATE	SEPTEMBER 2020
SHEET NO.	SA-1.1
	11 OF 39

T:\0L-Tuk\0025\FE-STA. 0+00 TO 5+50
7/17/2020 11:04 AM JAYCOBELL
7/17/2020 11:04 AM

NOTES:
1. FIELD VERIFY THE LOCATION AND DEPTH OF THE EXISTING FORCE MAIN.
2. THE CONTRACTOR MAY TEMPORARILY DIVERT OR CONSTRUCT AN EARTHEN DAM AND PUMP FLOW FROM EXISTING DRAINAGE DITCH TO PERFORM SEWER CONSTRUCTION IN THIS AREA. WEATHER CONDITIONS AT THE TIME OF CONSTRUCTION WILL IMPACT THE FLOW RATE IN THE DITCH.



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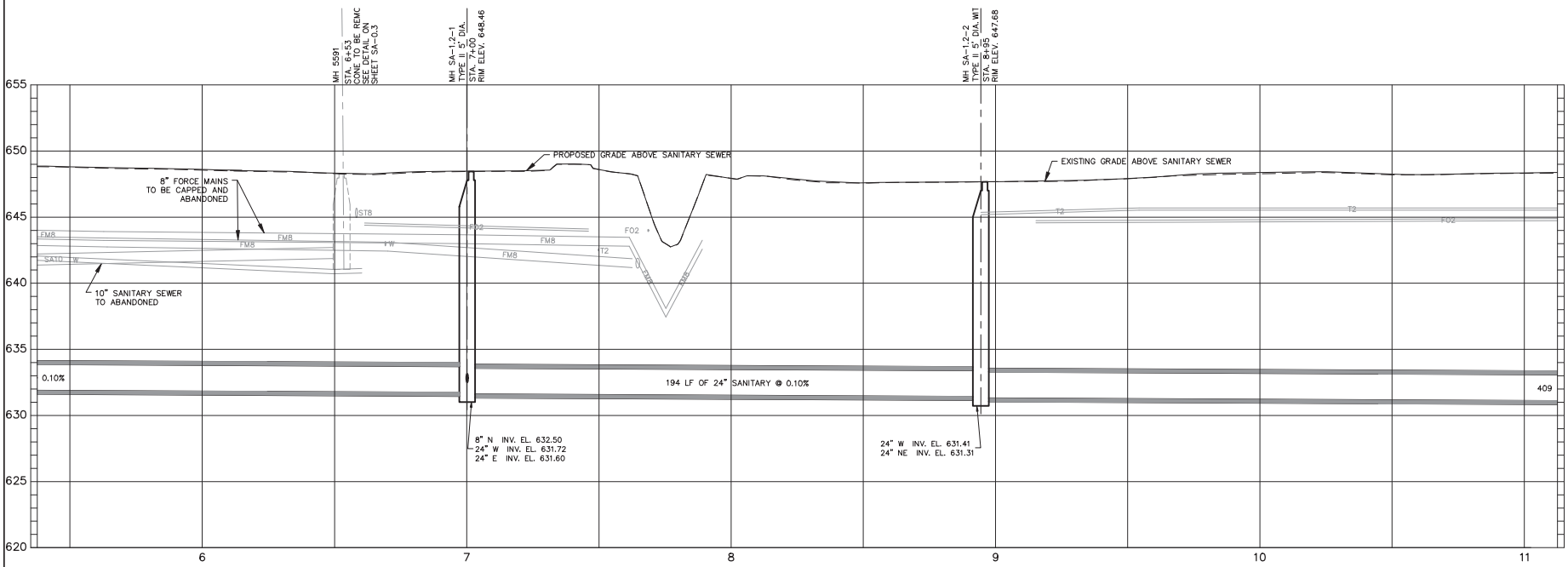
5591	SAN MH	CASTING EL: 648.29 8" E INV: 646.89 8" W INV: 646.99
5594	CB	CASTING EL: 646.99 8" N INV: 646.38
7983	SAN MH	CASTING EL: 648.87 8" N INV: 641.27 8" W INV: 642.27

LOGAN STREET



LOGAN STREET
SANITARY SEWER
PLAN AND PROFILE
STA. 5+50 TO 11+00

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

Jones & Henry Engineers, Ltd.
Fluid thinking.
www.JHeng.com

JOB NO.	334-7448.002
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DESIGNED AMM	DRAWN AMM / CHECKED TAB
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SHEET NO.	SA-1.2
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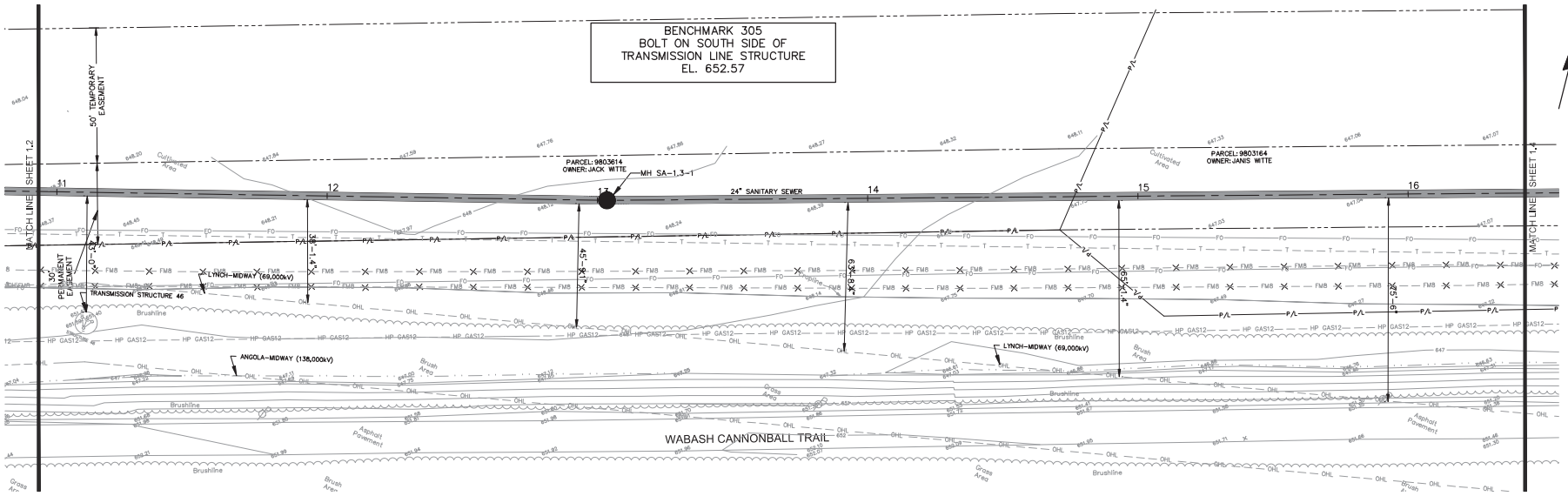
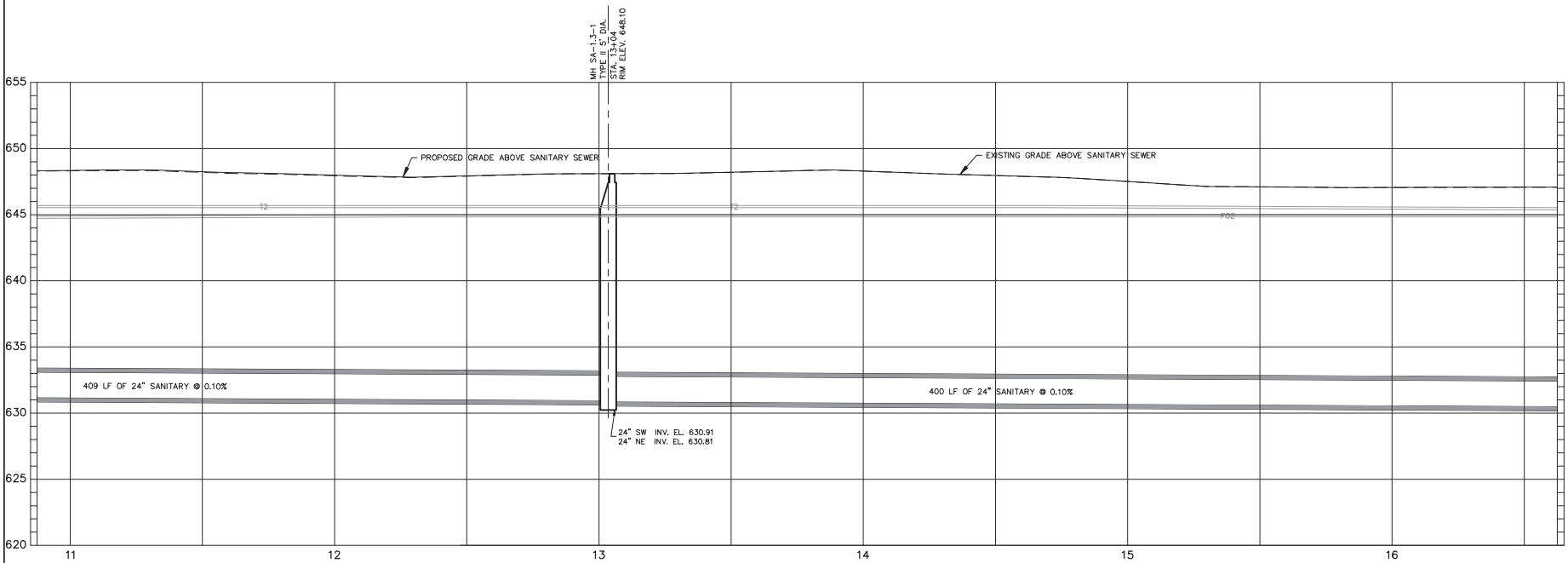


WABASH CANNONBALL TRAIL



WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 11+00 TO 16+50

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

Jones & Henry Engineers, Ltd.
Fluid thinking.
www.JHeng.com

JOB NO.	334-7448.002
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CHECKED	TAB
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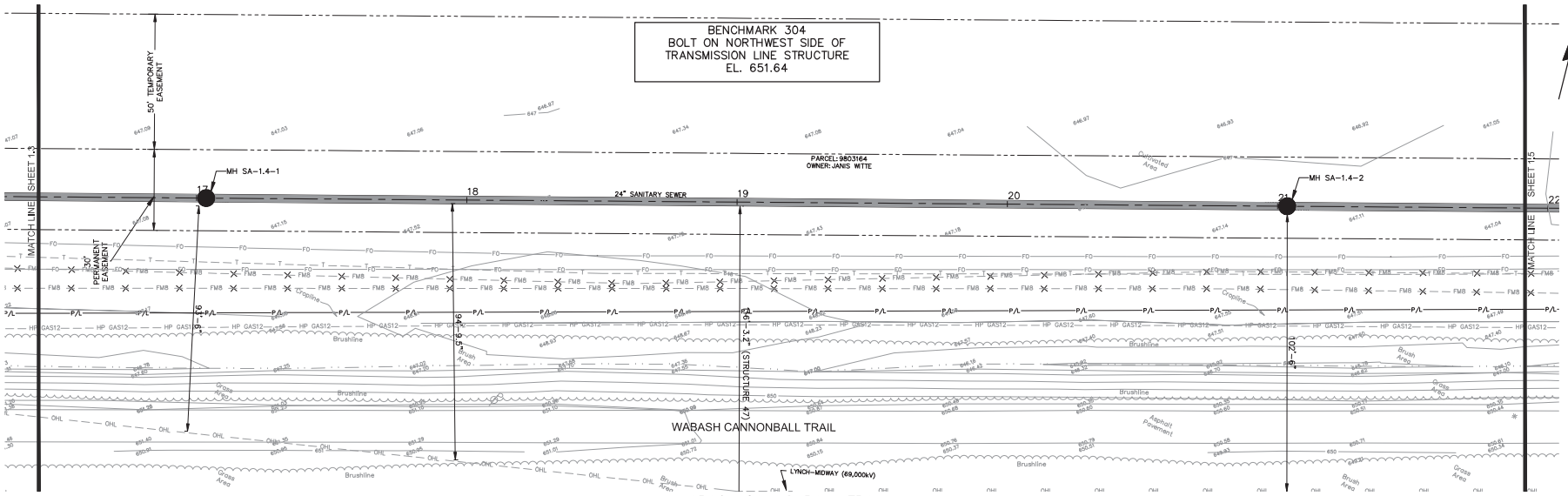

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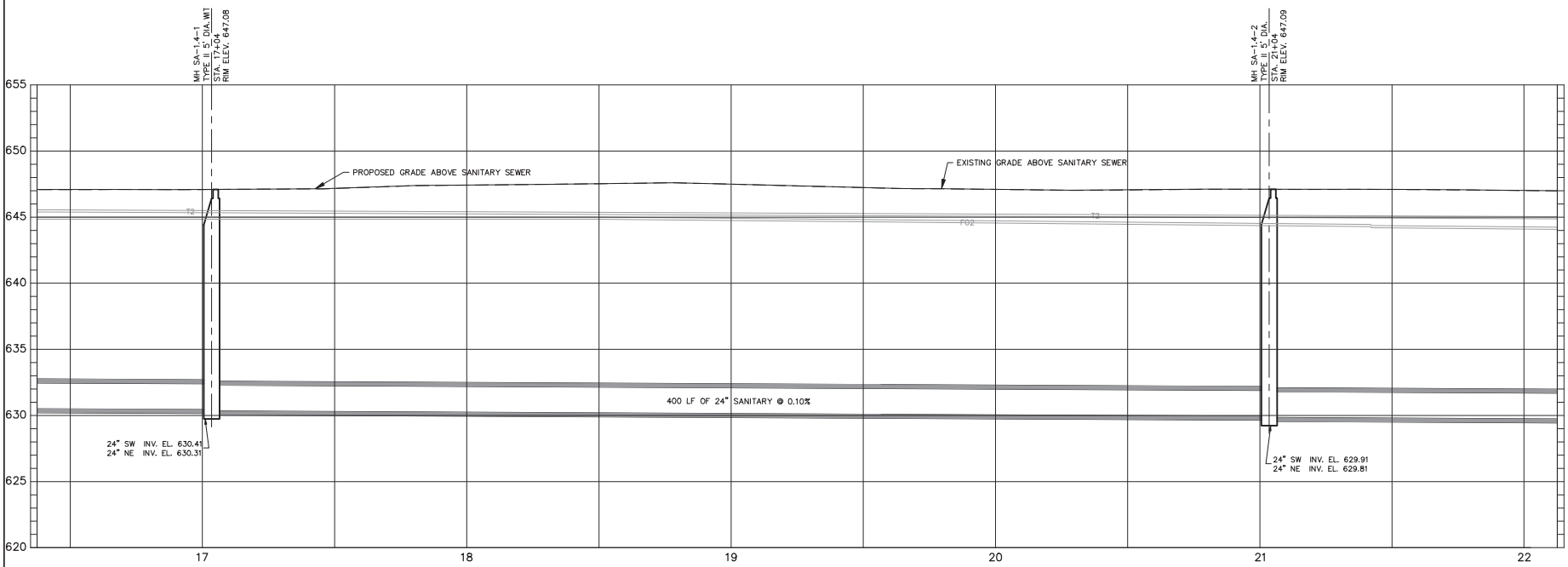

WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 16+50 TO 22+00

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

Jones & Henry Engineers, Ltd.
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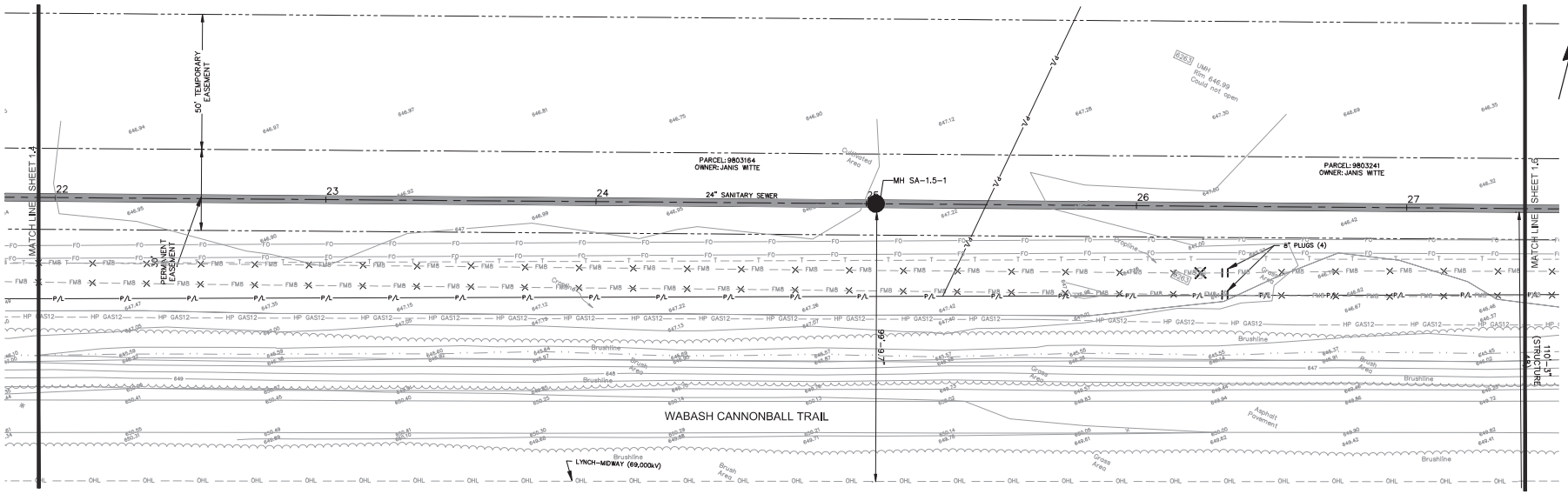
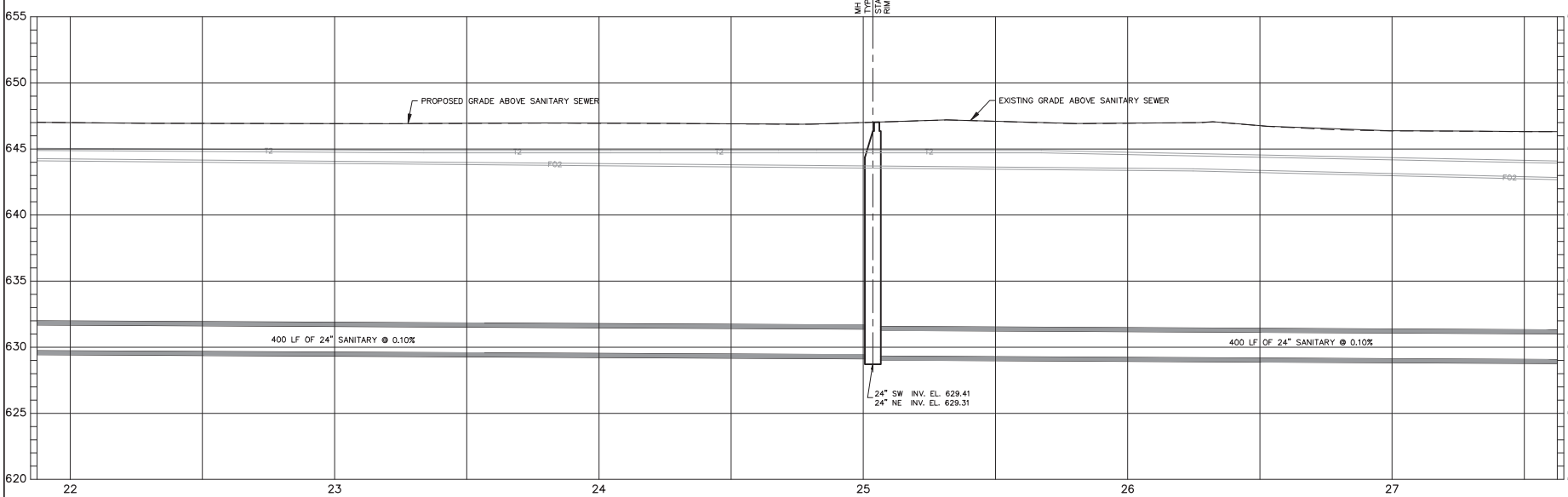


WABASH CANNONBALL TRAIL



WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 22+00 TO 27+50

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

Jones & Henry Engineers, Ltd.
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JOB NO.	334-7448.002
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DATE	SEPTEMBER 2020
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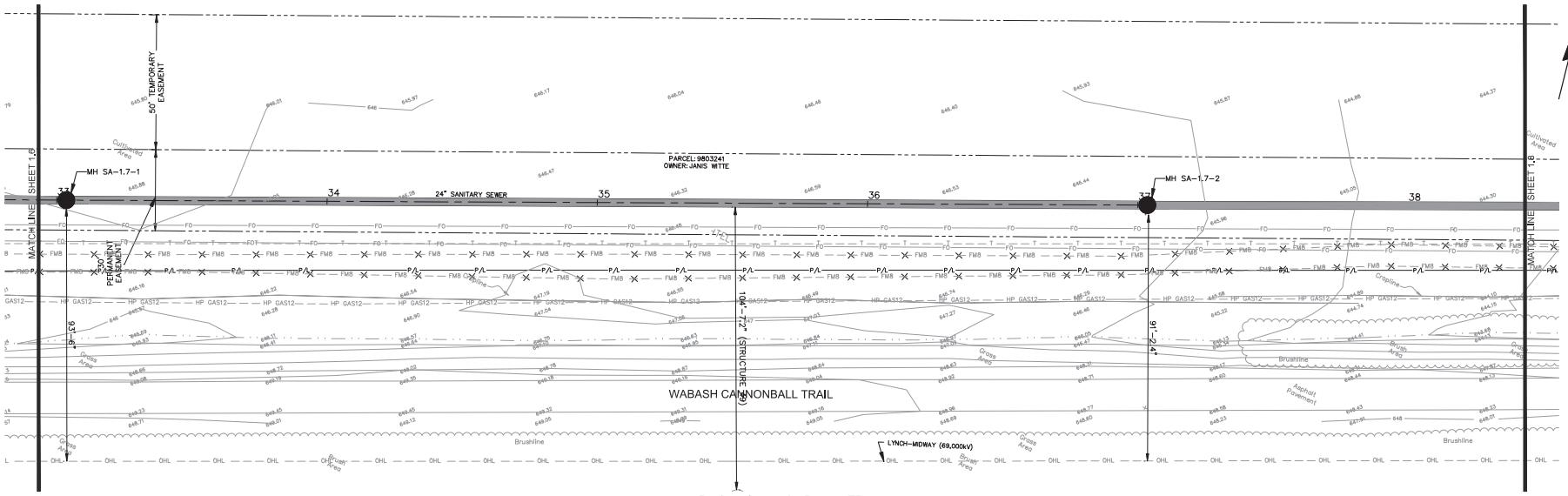

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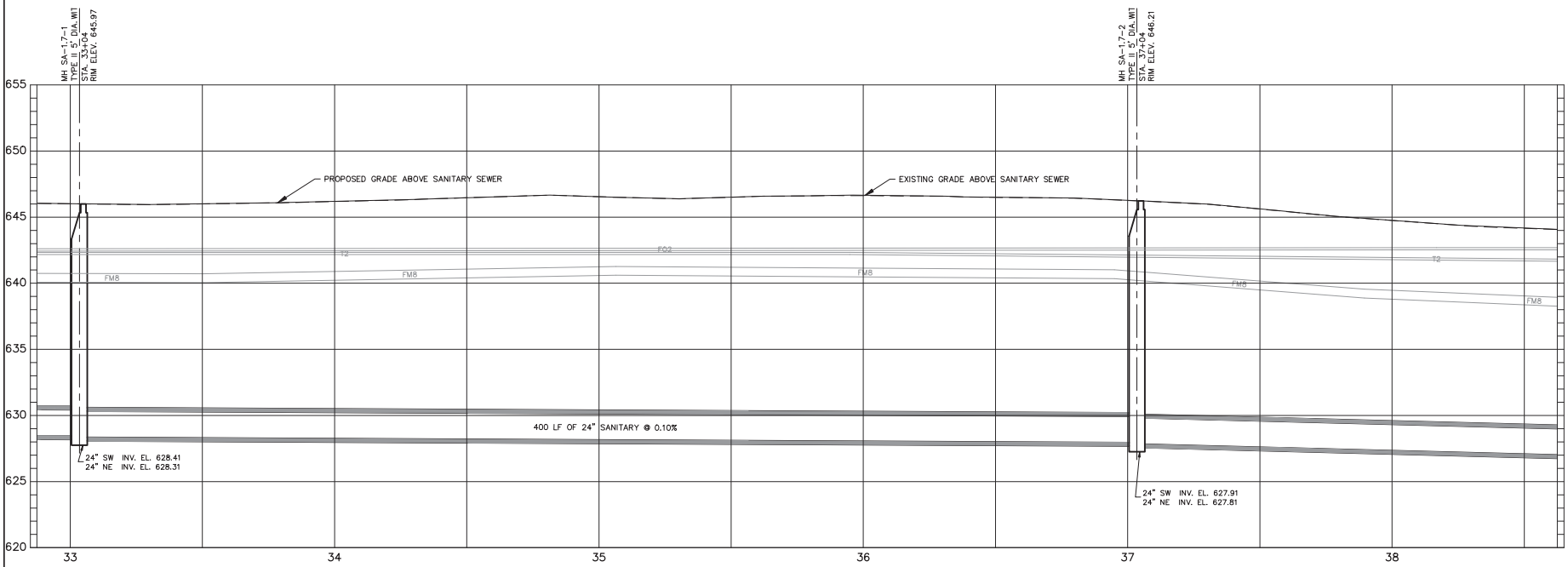

WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 33+00 TO 38+50

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

Jones & Henry Engineers, Ltd.
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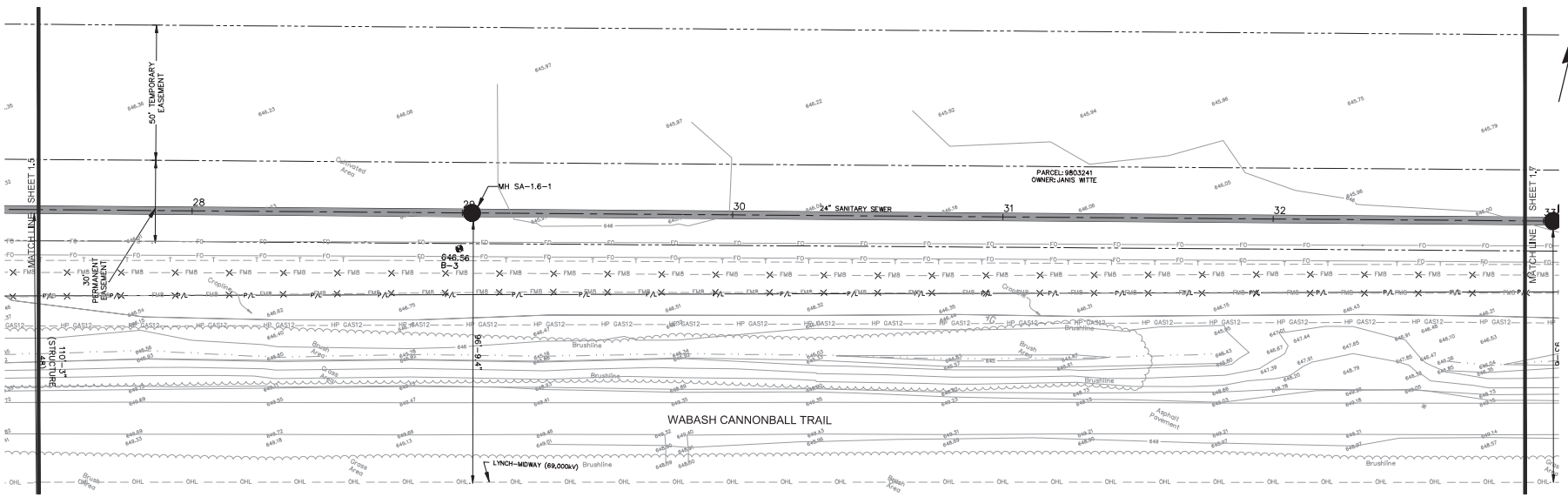
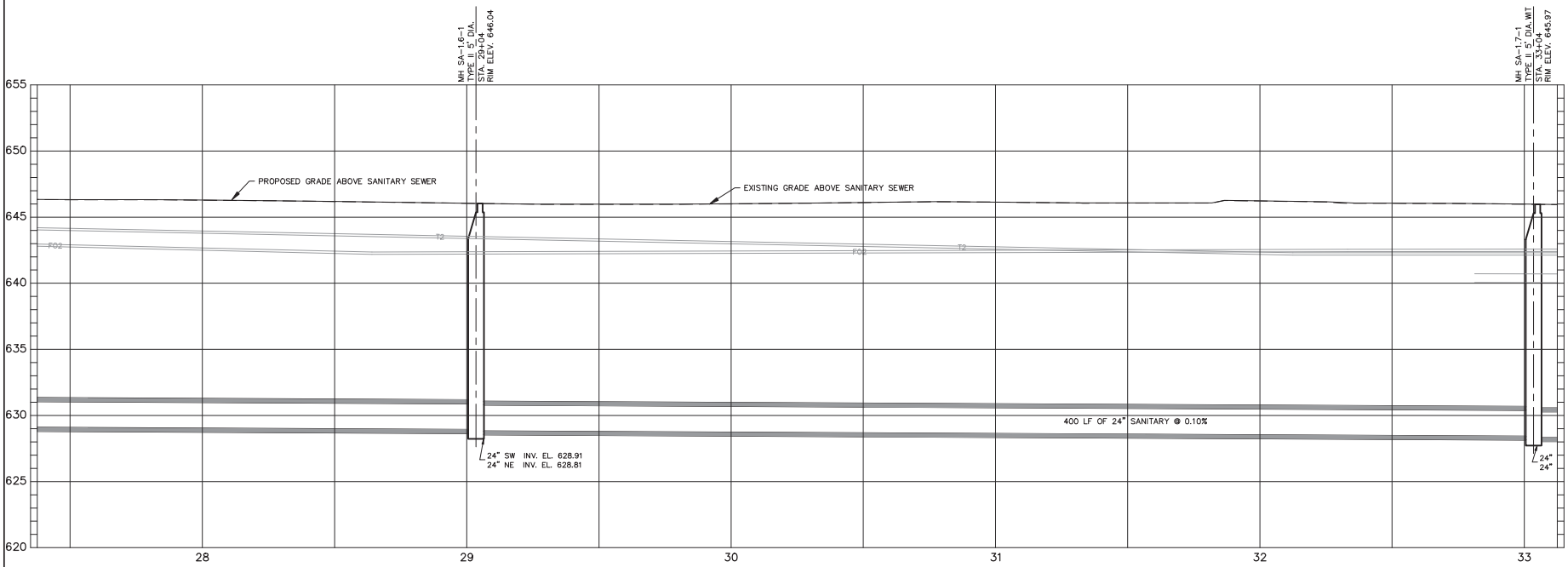


WABASH CANNONBALL TRAIL



WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 27+50 TO 33+00

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

Jones & Henry Engineers, Ltd.
Fluid thinking.
www.JHeng.com

JOB NO.	334-7448.002
SCALE	1"=20' HOR. 1"=4' VERT
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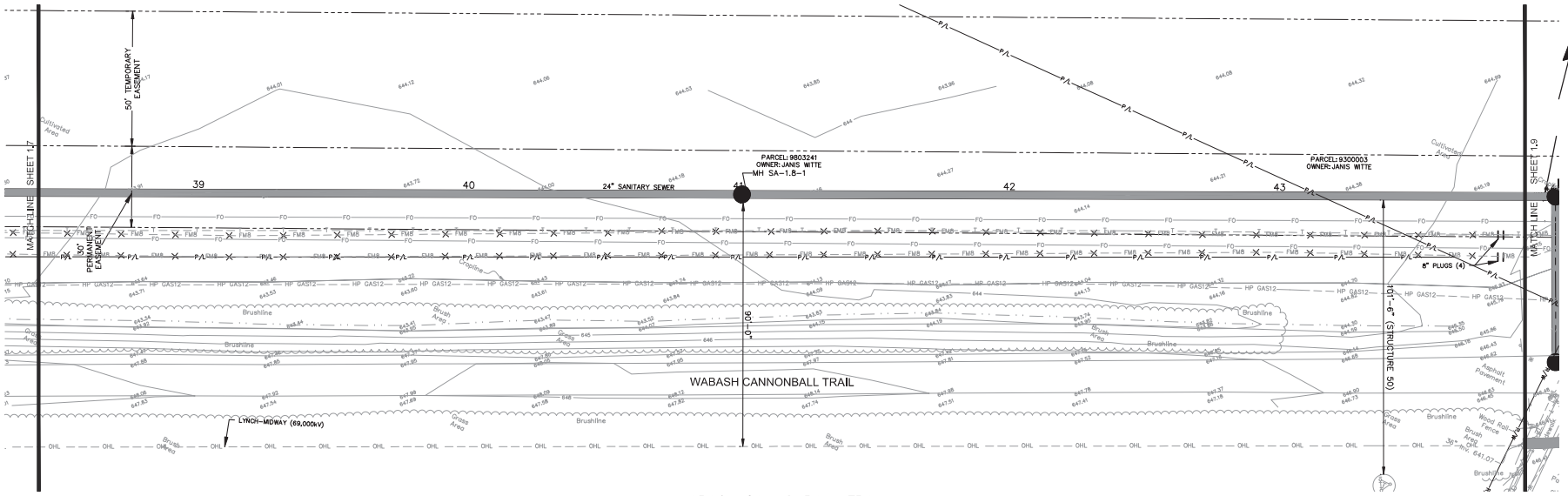
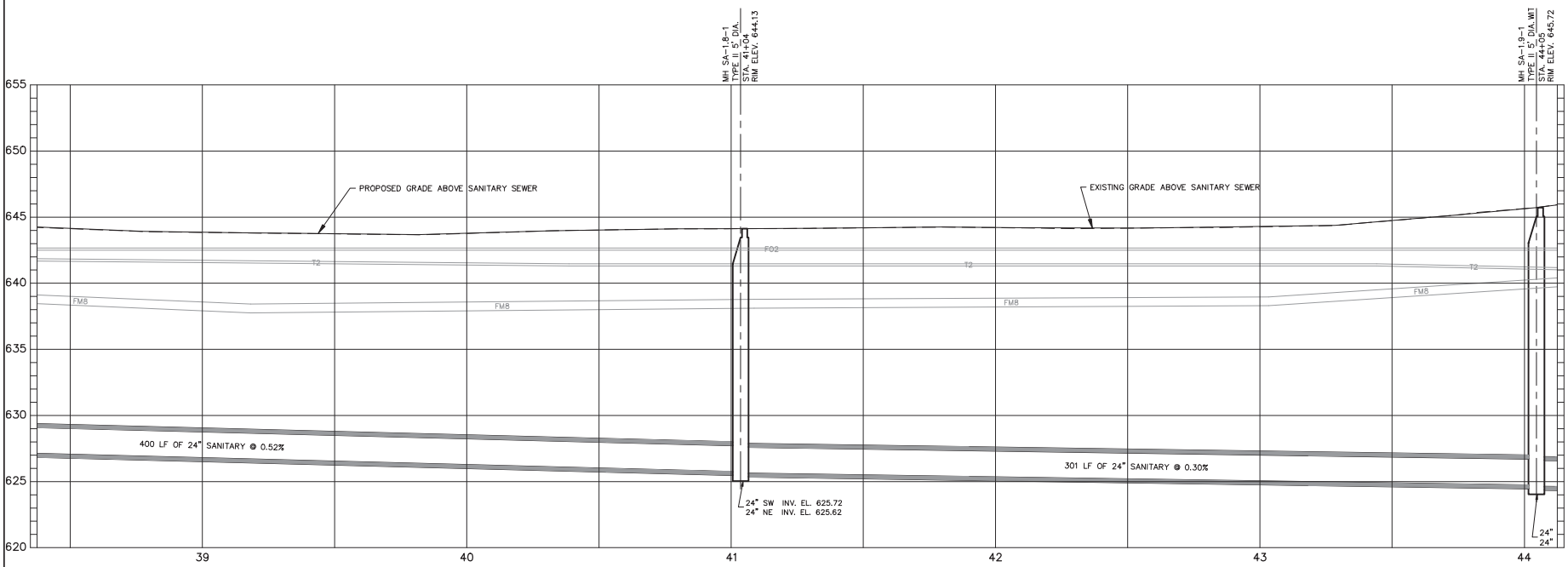


WABASH CANNONBALL TRAIL



WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 38+50 TO 44+00

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

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Fluid thinking.
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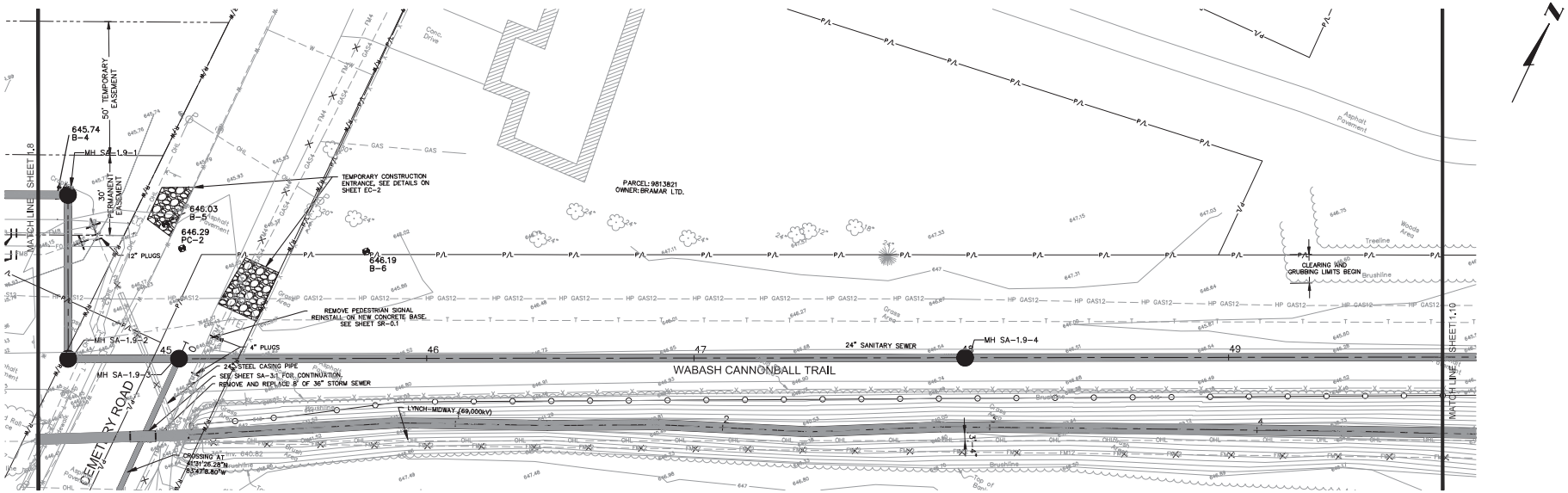

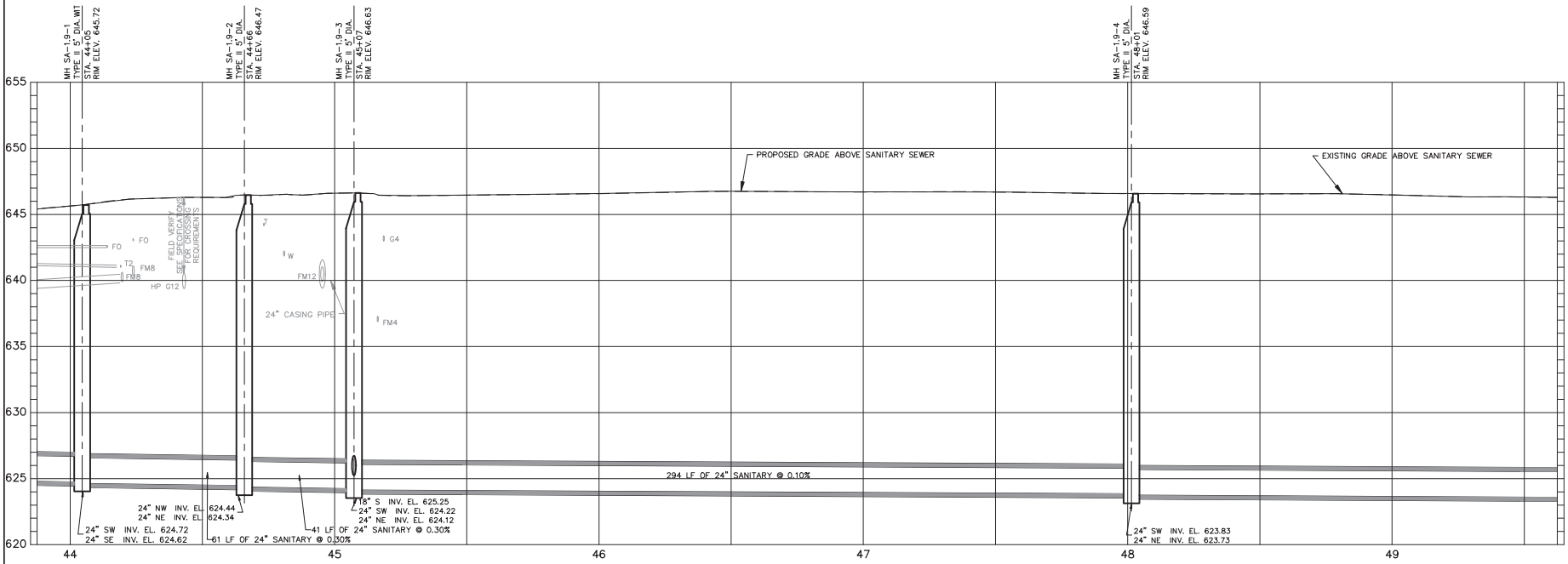

WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 44+00 TO 49+50

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

Jones & Henry Engineers, Ltd.
Fluid thinking.
www.JHeng.com

JOB NO.	334-7448.002
SCALE	1"=20' HOR. 1"=4' VERT.
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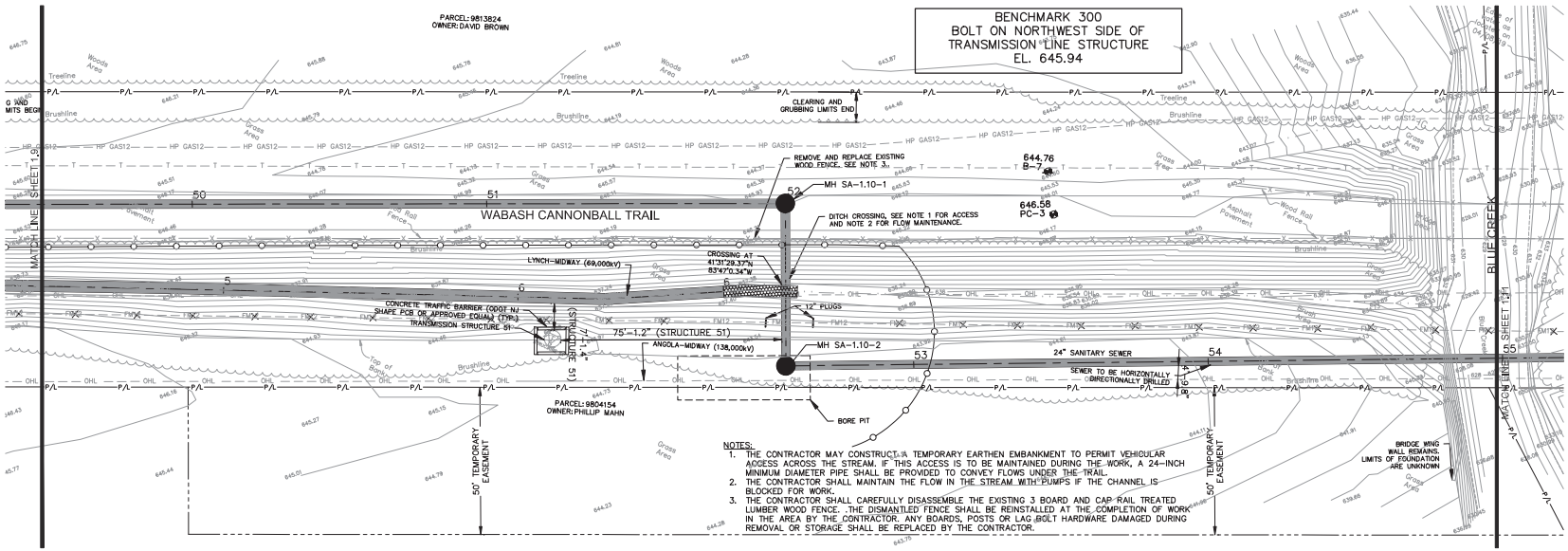
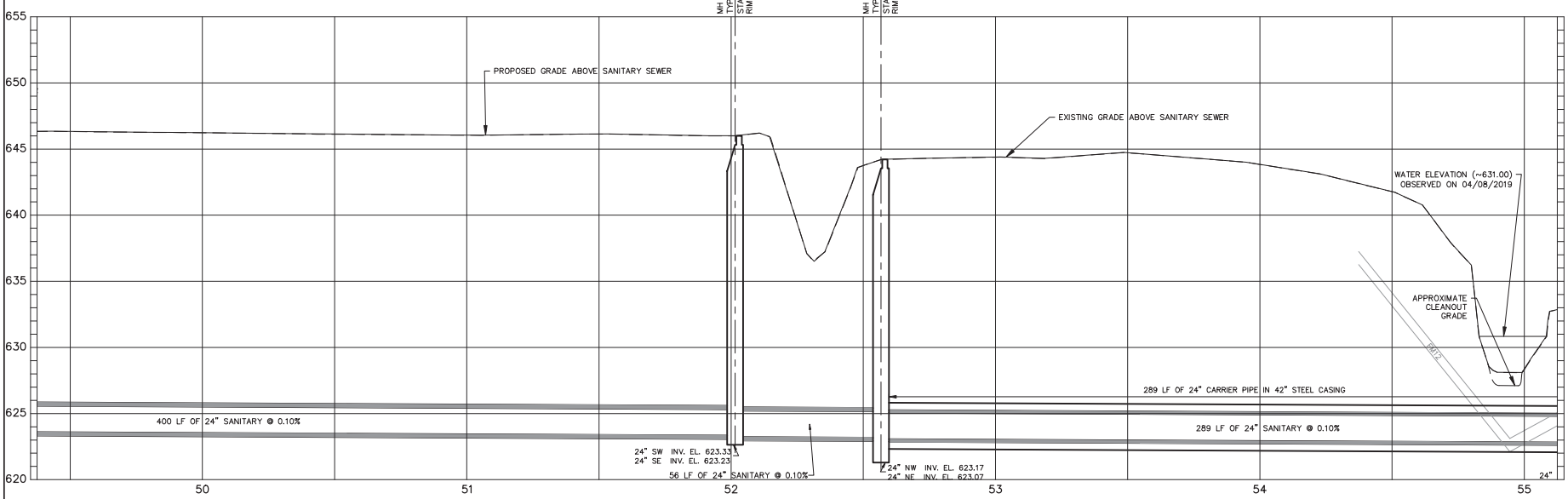


NOTES:

1. THE CONTRACTOR MAY CONSTRUCT A TEMPORARY EARTHEN EMBANKMENT TO PERMIT VEHICULAR ACCESS ACROSS THE STREAM. IF THIS ACCESS IS TO BE MAINTAINED DURING THE WORK, A 24-INCH MINIMUM DIAMETER PIPE SHALL BE PROVIDED TO CONVEY FLOWS UNDER THE TRAIL.
2. THE CONTRACTOR SHALL MAINTAIN THE FLOW IN THE STREAM WITH PUMPS IF THE CHANNEL IS BLOCKED FOR WORK.
3. THE CONTRACTOR SHALL CAREFULLY DISASSEMBLE THE EXISTING 3 BOARD AND CAP RAIL TREATED LUMBER WOOD FENCE. THE DISMANTLED FENCE SHALL BE REINSTALLED AT THE COMPLETION OF WORK IN THE AREA BY THE CONTRACTOR. ANY BOARDS, POSTS OR LAG BOLT HARDWARE DAMAGED DURING REMOVAL OR STORAGE SHALL BE REPLACED BY THE CONTRACTOR.

WABASH CANNONBALL TRAIL



WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 49+50 TO 55+00

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

Jones & Henry Engineers, Ltd.
Fluid thinking.
www.JHeng.com

JOB NO.	334-7448.002
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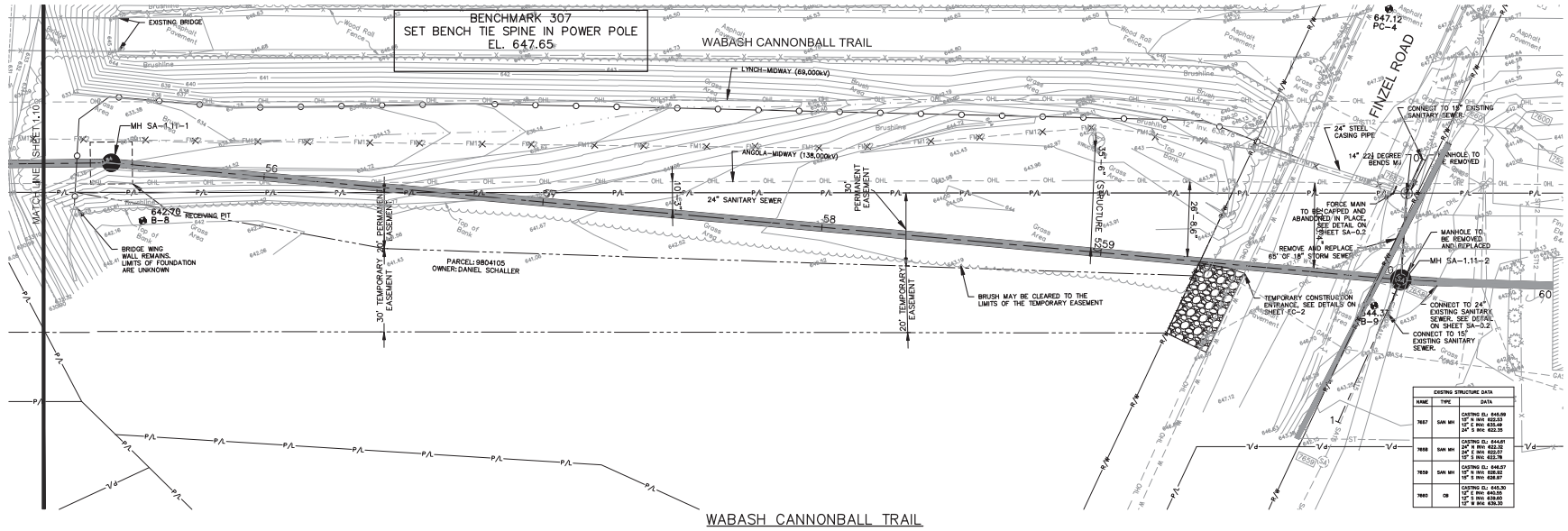
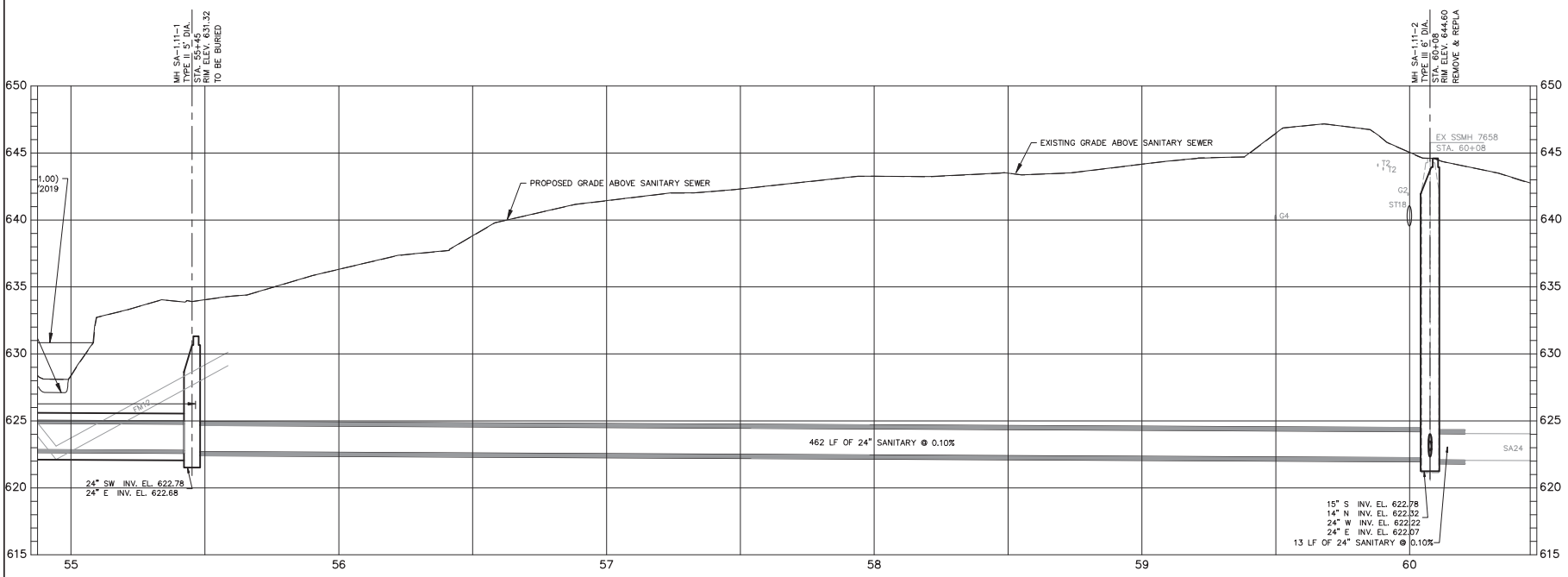


EXISTING STRUCTURE DATA		
NAME	TYPE	DATA
7657	SAN MH	CASTING EL: 645.09 10" N INV: 622.53 12" E INV: 623.48 24" S INV: 622.35
7658	SAN MH	CASTING EL: 644.61 24" N INV: 622.32 24" E INV: 622.07 15" S INV: 622.78
7659	SAN MH	CASTING EL: 646.07 15" N INV: 628.02 15" S INV: 628.87
7660	OB	CASTING EL: 645.50 12" E INV: 640.00 12" W INV: 639.60 12" N INV: 639.35



WABASH CANNONBALL TRAIL
SANITARY SEWER
PLAN AND PROFILE
STA. 55+00 TO 60+27

VILLAGE OF WHITEHOUSE, OHIO WABASH CANNONBALL TRAIL
INTERCEPTOR SEWER & FINZEL ROAD PUMP STATION REHABILITATION

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www.JHeng.com

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7/17/2020 11:07 AM

76 South Main Street
Akron, Ohio 44308

1-800-646-0400

Exhibit "B"
(Transmission Rights-of-Way Restrictions)

FirstEnergy High Voltage Transmission Rights-of-Way Restrictions

Warning: Failure to comply with the following may cause property damage, serious bodily injury and/or death

Working Safety Restrictions

Compliance is required for all Occupational Safety Health Administration (OSHA) **safe-working clearances** between persons, conductive objects and energized conductor/wire. **NOTICE**: The conductor/wire position changes continuously depending on load, ambient temperature, wind speed, etc. FirstEnergy is not responsible for providing conductor/wire position to determine OSHA safe-working clearance.

Parking or operating a vehicle or equipment within or adjacent to a FirstEnergy transmission right-of-way may induce an electrical charge. Induced electric charges may also be transmitted to objects such as fences, signs, or any other conductive object. The use of a proper grounding system designed by a licensed engineer is required. Construction vehicles, vehicles with booms and equipment operating within or adjacent to a FirstEnergy transmission right-of-way must be properly grounded.

Right-of-Way Access

FirstEnergy authorized personnel, vehicles and equipment must have continuous access to the right-of-way and all FirstEnergy structures.

Right-of-Way Restrictions

- Changes to grade elevations within the FirstEnergy transmission right-of-way are NOT permitted. Ground disturbance or excavations are NOT permitted within 25' of any FirstEnergy structures (poles, towers, guys, etc.).
- Buildings, solar panels, lighting fixtures, signs, billboards, swimming pools, decks, flag posts, sheds, barns, garages, playgrounds, fences, equipment, trailers, materials or any other permanent or temporary objects are NOT permitted within the FirstEnergy transmission right-of-way. Other restrictions may apply under specific situations as defined by FirstEnergy.
- Protective barriers must be used for any driveway or parking area within 15 feet of any FirstEnergy structure (poles, towers, guys, etc).
- All vegetation on or adjacent to the FirstEnergy transmission right-of-way shall be low growing within the wire zone. The wire zone is defined as the area directly under the conductors which extends approximately 15 feet on each side. Vegetation that is 10-foot maximum mature height, 3-foot in NJ is under certain circumstances permissible on FirstEnergy transmission right of ways. It is preferred that the planting of any woody vegetation be done outside of the wire zone of FirstEnergy transmission facilities and are not permitted to be closer than 10 feet in any direction from the FirstEnergy structure (poles, towers, guys, etc.). All approved shrubbery planted near FirstEnergy structures shall allow for working area and accessibility at ground level.
- Explosives or combustible liquids, substances, or materials are not permitted within the right-of-way. Prohibited materials included but are not limited to fuel, wood chips, mulch, brush, and tires.
- Septic systems leach beds and/ or wells are not permitted within a FirstEnergy transmission right-of-way.
- Kite flying, model airplane flying, or similar activities is strictly prohibited on or near a FirstEnergy transmission right-of-way.

LUCAS COUNTY ENGINEER PERMIT # _____

SPECIAL FLOOD HAZARD AREA (SFHA) DEVELOPMENT PERMIT APPLICATION

Application is hereby made for a DEVELOPMENT PERMIT as required by the Special Purpose Flood Damage Reduction Regulations for development in an identified flood hazard area. All activities shall be completed in accordance with the requirements of said regulations. The development to be performed is described below and in attachments hereto. The applicant understands and agrees that:

- The permit applied for, if granted, is issued on the representation made herein;
- Any permit issued may be revoked because of any breach of representation;
- Once a permit is revoked all work shall cease until the permit is reissued or a new permit is issued;
- Any permit issued on this application will not grant any right or privilege to erect any structure or use any premises described for any purposes or in any manner prohibited by the ordinances, codes, or regulations of municipality;
- The applicant hereby gives consent to the Floodplain Administrator to enter and inspect activity covered under the provisions of the floodplain regulations;
- If issued, the SFHA Development Permit form will be posed in a conspicuous place on the premises in plain view; and,
- If issued, the permit will expire if no work is commenced within one (1) year of issuance.

Owner's Name: Village of Whitehouse

Address: 6925 Providence St. PO Box 2476

City, St, Zip: Whitehouse, OH 43571

Phone: 419-877-5383

Builder/Developer: Village of Whitehouse

Address: 6925 Providence St. PO Box 2476

City, St, Zip: Whitehouse, OH 43571

Phone: 419-877-5383

LOCATION OF DEVELOPMENT SITE

1. Location of proposed development site address: Intersection of Blue Creek & Wabash Cannonball Trail Whitehouse, OH 43571
2. Legal Description: Parcel ID : 98038864

Attach a location map showing the location of the development site relative to adjacent sites. A location map may be a copy of the tax or plat map, including scale, showing the parcel where development activity will occur.

DESCRIPTION OF WORK – SEE FEE SCHEDULE

3a. Kind of development proposed (check all that apply):

- ☐ Residential Structure
- ☐ Non-Residential Structure
- ☒ Accessory Structure: Dimensions: Sanitary Manhole (6' ϕ, 9' deep)
- ☐ Filling or Grading (the owner of a property is solely responsible for any drainage problems caused)
- ☒ Dredging or Excavation or Mining
- ☐ Materials/Equipment Storage: Describe Type: _____
- ☐ Watercourse Alteration (any change that occurs within the banks of a watercourse)
- ☐ Subdivision greater than 50 lots or 5 acres
- ☐ Bridge or Culvert Placement/Replacement
- ☒ Other
- ☐ Other development greater than 5 acres

Additional activity description: Sanitary Sewer Construction

3b. If the proposed construction is an addition, renovation, repair or maintenance to an existing structure, indicate the cost of proposed construction $_____. What is the estimated market value of the existing structure? $_____.

SPECIAL FLOOD HAZARD AREA (SFHA) DEVELOPMENT PERMIT APPLICATION

- In addition to completion of this form the applicant agrees to submit any additional information required by the floodplain administrator in order to determine that the proposed development is compliant with the local and federal for development in an identified flood hazard area. All activities shall be completed in accordance with the requirements of said regulations. The development to be performed is described below and in attachments hereto. The applicant understands and agrees that:

    * Be drawn to scale with north arrow.
    * Show property boundaries, floodway, and floodplain lines.
    * Show dimensions of the lot.
    * Show dimensions and location of existing and/or proposed development on the site.
    * Show areas to be cut and filled.

- Applications for residential and non-residential structures must also include:

    * The proposed lowest floor elevation based on the datum used on the effective Flood Insurance Rate Map and base flood elevation for the site.
    * Identification of whether the structure has a basement or enclosure below the lowest floor, and if it contains a basement or enclosure, detailed drawings showing foundation openings to allow passage of floodwaters.
    * Description of how building utilities will be protected from flood waters including drawings showing locations of such utilities.
    * Detailed description of anchoring system for all mobile and manufactured homes.
    * Description of construction materials that will be used below the flood protection elevation.

- An existing structure must comply with the flood protection standards if it is substantially improved (an improvement equal to or greater than 50% of the market value of the structure.) The "substantial improvement" definition applies to existing structures only and that once a structure meets the definition of "new construction" any further improvements to that structure must meet "new construction" requirements. For floodplain management purposes "new construction" means structures for which "start of construction" began on or after the effective date of the initial Flood Insurance Rate Map issued by FEMA for the community.

- Any Pre-FIRM structure within the SFHA that has sustained damage from any source (flood, fire, etc....) must be evaluated to determine if the structure is "substantially damaged" (damaged to 50% or more of the market value of the structure). If the structure is "substantially damaged", the structure must be brought into compliance with the flood protection standards.

- For subdivision proposals greater than 5 acres or 50 lots, or large-scale developments greater than 5 acres, a hydrologic and hydraulic analysis must be conducted to determine flood elevations in flood hazard areas where no base flood elevations are provided.

- A Conditional Letter of Map Amendment must be submitted for projects that propose a 1.0 foot increase in BFE on a watercourse that has been studied through detailed hydrologic and hydraulic analyses where BFE's have been specified, but no floodway has been designated OR when a projects proposed (totally or partially within the floodway) along a watercourse for which detailed analyses have been conducted and BFE's and a floodway have been designated would result in any (greater than 0.0 foot) increase in the BFE.

- Applications for non-residential structures proposed to be flood proofed must have a completed FEMA flood proofing certification form attached (can only be completed by a Registered Professional Engineer or Architect).

- All development proposals determined to be located in a floodway must be accompanied by a hydrological and hydraulic analysis showing impacts on of the development on flood heights (can only be completed by a Registered Professional Engineer).

- Development proposals that are considered alterations of a watercourse must be accompanied by an analysis showing that the flood carrying capacity of the watercourse has not been reduced.

I AGREE THAT ALL STATEMENTS IN AND ATTACHMENTS TO THIS APPLICATION ARE A TRUE DESCRIPTION OF THE EXISTING PROPERTY AND THE PROPOSED DEVELOPMENT ACTIVITY. I UNDERSTAND THE DEVELOPMENT REQUIREMENTS FOR SPECIAL FLOOD HAZARD AREA ACTIVITIES PER THE APPROPRIATE ORDINACE OR RESOLUTION AND AGREE TO ABIDE THERETO. I UNDERSTAND IT IS MY RESPONSIBILITY TO OBTAIN ALL OTHER APPLICABLE FEDERAL, STATE, AND LOCAL PERMITS. I UNDERSTAND THAT THIS FLOODPLAIN PERMIT MAY IMPACT MY STRUCTURE, ELECTRICAL AND MECHANICAL PERMITS.

Applicant's Signature: Steven P. Pilcher Date: 2/28/20

Floodplain Administrator: [illegible] Date: 2/28/20

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

Not used.

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.

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”.

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

Contractor Name

- ☐ Approved
- ☐ Forwarded
- ☐ Checked

By: _____ Date: _____

Engineer

SHOP DRAWING REVIEW
SUBJECT TO CONTRACT REQUIREMENTS

Jones & Henry Engineers, Ltd.

- ☐ Approved
- ☐ Approved—Make Corrections Noted
- ☐ Amend & Resubmit
- ☐ Rejected—See Remarks
- ☐ Distribute for Information

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS. NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS

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.

By: _____

Review Comments

Sample

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 24-inch by 36-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.

6. Owner's partial utilization.

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 Resident Project Representative's office.

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 7:00 a.m. to 5:00 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. Christmas Eve Day.
7. 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. 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.

C. 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/downloading of various information/documents.

D. 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, Memorandums, 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. Schedules (project, weekly and monthly).
9. Meeting Minutes.

10. Permits and Special Inspections Reports.

11. Laboratory Services (testing and reporting).

12. Closeout procedures (deficiency list, warranty, substantial completion).

E. 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.

F. Owner, Contractor and Engineer shall utilize the mark-up tool integral within the EMPS 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).

G. A high-speed internet connection is required.

H. 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 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.

3.03 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.

3.04 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.

3.05 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

2.01 SHOP PAINTING

A. Non-galvanized ferrous surface shall be painted.

B. Shop painting of ferrous surfaces shall be as follows:

1. Surfaces shall be thoroughly cleaned of dirt, grease, oil, rust, scale, or other foreign substances. All metal surfaces shall, as a minimum, be abrasive blasted in accordance with SSPC-SP6, Commercial Blast Cleaning. More stringent surface preparation shall be provided where required by Section 09900.

2. Surfaces shall receive a shop coat of a primer compatible with the finish coating to be used by the Contractor and specified in Section 09900.

2.02 GALVANIZING

A. Where galvanized metal is indicated, unless otherwise specified, galvanizing shall conform to ASTM A123 (Hot Dip Galvanized). Threaded parts and hardware shall be galvanized in conformance with ASTM A153.

2.03 REGULATORY REQUIREMENTS

A. Materials, equipment, coatings, and chemicals in contact with potable water or water being treated for potable water use shall comply with the applicable NSF Standards.

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 govern 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 Village of Whitehouse and 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 TRAFFIC MAINTAINED

A. The following stipulations are proved 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. Logan Street – A minimum of one lane shall be maintained when work is occurring along Logan Street. When work passes through the intersection of Logan Street and Field Avenue, the Contractor shall provide the proper signage to prevent vehicles from crossing through the work zone.

3. Cemetery Road and Wabash Cannonball Trail Intersection – The intersection may be closed for a period of 30 days with the prior approval of the Village of Whitehouse.

4. Finzel Road and Wabash Cannonball Trail Intersection – The intersection may be closed for a period of 21 days with the prior approval of the Village of Whitehouse.

5. Cemetery Road – A minimum of one lane shall be maintained when work is occurring along Cemetery Road. When work passes through an intersection, the Contractor shall provide the proper signage to prevent vehicles from crossing through the work zone.

6. Wabash Cannonball Trail Bike Path shall be rerouted to Rupp Road for a period of 60 days during the work.

B. The detour route will be signed and maintained by the Contractor including all signage as required by the Ohio MUTCD and as shown on the attached page titled Figure 6H-8 Road Closure with Off-Site Detour.

END OF SECTION

Notes for Figure 6H-8—Typical Application 8
Road Closure with Off-Site Detour

Guidance:

1. Regulatory traffic control devices should be modified as needed for the duration of the detour.
2. If the road is opened for some distance beyond the intersection and/or there are significant origin/destination points beyond the intersection, the ROAD CLOSED and DETOUR signs on Type III Barricades should be located at the edge of the traveled way.

Option:

3. If the road is closed a short distance beyond the intersection and there are few origin/destination points beyond (for example, a few residences), the Type III Barricade shown in the figure may be moved to the center of the traveled lanes.

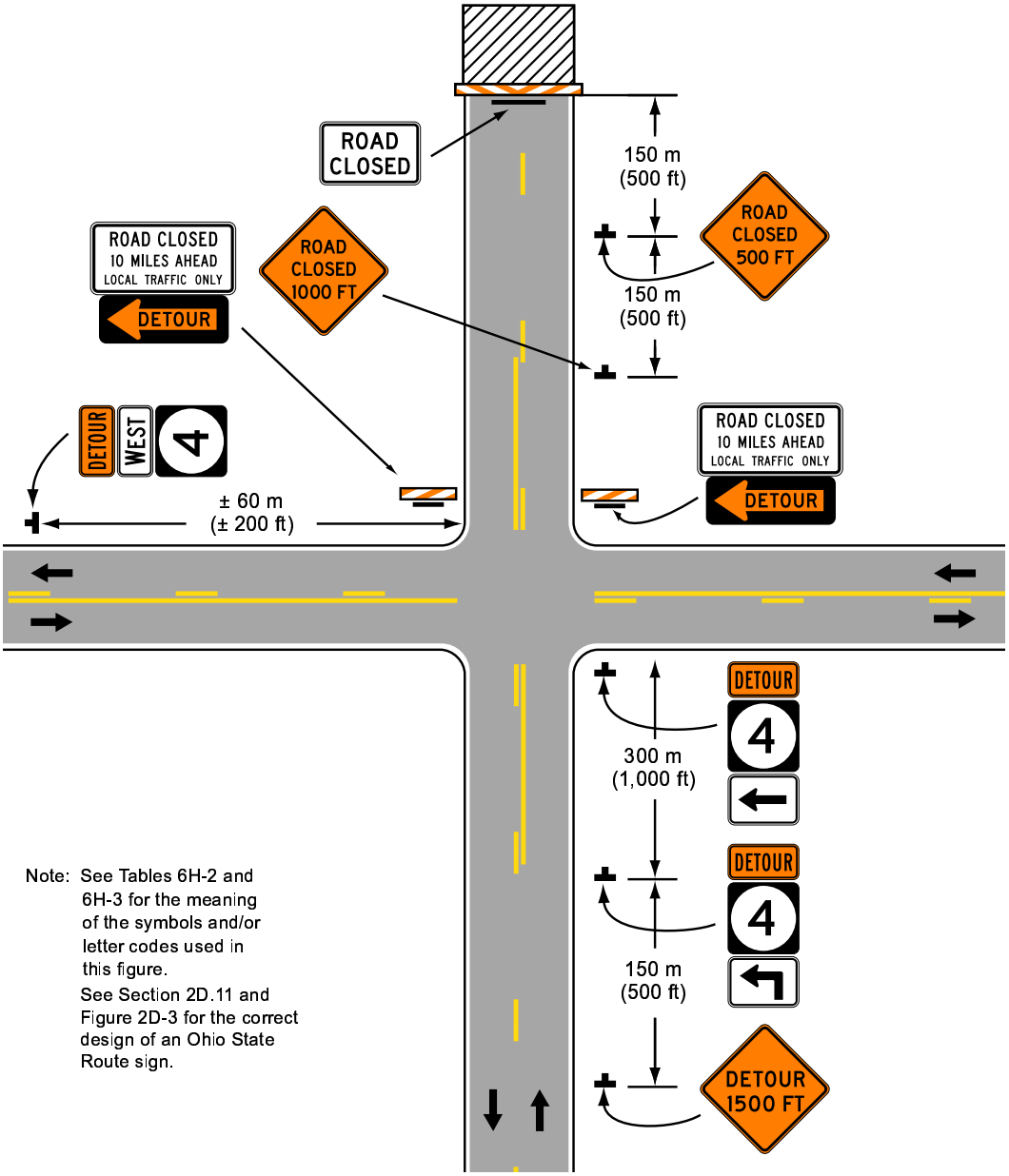
Standard:

4. **If the barricades are located as in Item 3 above, the ROAD CLOSED and DETOUR signs shall be placed only on the barricade centered in the lane of travel of traffic approaching the closure. The barricade centered in the lane of travel of departing traffic shall not be signed. The barricades in adjacent lanes shall be offset longitudinally from each other an adequate distance in order to permit traffic to travel around the barricades (the barricade in the road user's lane located in advance of the barricade located left of the center line).**

Option:

5. A Route Sign Directional assembly may be placed on the far left corner of the intersection to augment or replace the one shown on the near right corner.
6. Flashing warning lights and/or flags may be used to call attention to the advance warning signs.
7. Cardinal direction plaques may be used with route signs.

Figure 6H-8. Road Closure with Off-Site Detour (TA-8)



Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.
See Section 2D.11 and Figure 2D-3 for the correct design of an Ohio State Route sign.

Typical Application 8

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.

D. Pavement - Temporary pavement shall consist of aggregate base course and bituminous surface treatment as specified below:

1. Subgrade - The subgrade for the temporary pavement shall be thoroughly rolled or rammed and brought to the required grade and cross section to receive the pavement. The subgrade for pavements over trench openings large enough to be compacted with a roller shall be rolled to a firm unyielding surface with an approved power roller weighing not less than 10 tons. For smaller trench openings, the subgrade shall be thoroughly rammed.

2. Aggregate Base Course - The aggregate base course shall be 8 inches thick and shall conform with all requirements of ODOT Item 304 Aggregate Base.

3. Bituminous Seal Coat - After the aggregate base course has been prepared, a bituminous seal coat consisting of a prime coat and one application each of bituminous material and coarse aggregate shall be applied. All Work and materials shall conform to ODOT Specifications for Chip Seal, Item 422. A bituminous binder coat shall be applied at a rate not less than 0.4 gallon per square yard. After application of the binder coat, cover aggregate shall be applied at a rate not less than 30 pounds per square yard and rolled.

3.02 SEASONAL LIMITATIONS FOR TEMPORARY PAVEMENT CONSTRUCTION

A. Weather limitations for placing bituminous seal coat shall conform to ODOT 422.04. When weather limitations prevent the placing of seal coat, the Contractor shall place 8 inches of aggregate base and maintain it until seal coat can be applied.

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

Not used.

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. Prior to the onset of any stream crossing silt barriers shall be placed along banks, where vegetation and trees are removed, or soil will be exposed.

B. A stream crossing shall not commence until Contractor is prepared to complete the Work in a continuous operation. Once started the Work in the stream shall be continued until it is completed.

C. Construction of the stream crossings shall occur only during dry weather low-flow periods.

D. The width of stream banks disturbed in constructing a stream crossing shall be limited to the width of the trenching machine.

E. 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.

F. 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.

G. To the extent possible, construction equipment shall be kept out of the stream channel.

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 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.

B. The Contractor shall adhere to the SWPPP in accordance with OEPA Guidelines.

C. The SWPPP shall be updated and maintained throughout the Work.

D. A copy of the SWPPP shall be available at the Site.

E. The Owner has submitted a Notice of Intent (NOI) for the Work and the permit is attached following the end of this section. The Contractor is required to apply for coverage as a co-permittee.

END OF SECTION

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

Jun 26, 2020

Village of Whitehouse
Steven Pilcher
6925 Providence Street
Whitehouse, OH 43571

Re: Approval Under Ohio EPA National Pollutant Discharge Elimination System (NPDES) - Construction Site Stormwater General Permit - OHC000005

Dear Applicant,

Your NPDES Notice of Intent (NOI) application is approved for the following facility/site. Please use your Ohio EPA Facility Permit Number in all future correspondence.

Facility Name:	Wabash Cannonball Trail Interceptor Sewer
Facility Location:	From Field Avenue to Finzel Road near Bucher Road
City:	Whitehouse
County:	Lucas
Township:	Waterville
Ohio EPA Facility Permit Number:	2GC06042*AG
Permit Effective Date:	Jun 26, 2020

Please read and review the permit carefully. The permit contains requirements and prohibitions with which you must comply. Coverage under this permit will remain in effect until a renewal of the permit is issued by the Ohio EPA.

If more than one operator (defined in the permit) will be engaged at the site, each operator shall seek coverage under the general permit. Additional operator(s) shall submit a Co-Permittee NOI to be covered under this permit. There is no fee associated with the Co-Permittee NOI form.

Please be aware that this letter only authorizes discharges in accordance with the above referenced NPDES CGP. The placement to fill into regulated waters of the state may require a 401 Water Quality Certification and/or Isolated Wetlands Permit from Ohio EPA. Also, a Permit-To-Install (PTI) is required for the construction of sanitary or industrial wastewater collection, conveyance, storage, treatment, or disposal facility; unless a specific exemption by rule exists. Failure to obtain the required permits in advance is a violation of Ohio Revised Code 6111 and potentially subjects you to enforcement and civil penalties.

To view your electronic submissions and permits please Logon in to the Ohio EPA's eBusiness Center at http://ebiz.epa.ohio.gov.

If you need assistance or have questions please call (614) 644-2001 and ask for Construction Site Stormwater General Permit support or visit our website at http://www.epa.ohio.gov.

Sincerely,

Laurie A. Stevenson

Laurie A. Stevenson
Director

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.

c. Profile over Proposed Tunneled, Jacked, or Bored Pipe.

d. Certified Survey of Tunneled, Jacked, or Bored Pipe.

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 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-feet 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 RESERVED

3.07 TUNNELING, JACKING OR BORING PIPE

A. Control of line and grade of pipe Work installed in tunnel or by jacking or boring shall be the responsibility of the Contractor.

B. The line and grade of pipes installed shall be checked from lines and elevations established in the pipe and the construction shaft by a registered surveyor.

C. The Contractor shall furnish, install, and adjust ready for use such equipment as required to check at any time the line and grade of pipe or tunnel liner being installed.

D. 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 immediately make adjustments necessary to bring the installation back to the proposed location.

E. Upon completion of a section of pipe or tunnel liner, the Contractor shall provide the Engineer with a certified survey by a registered surveyor showing the location and invert elevation of the installation at a maximum of 50-feet intervals.

F. Prior to construction of sewers by tunneling, jacking, or boring, the Contractor shall provide the Resident Project Representative with ground elevations above the centerline of the proposed sewers taken at 25-feet interval stations, shaft locations, and manhole locations.

G. The Contractor shall establish temporary benchmarks outside the tunnels zone of influence, a minimum of 50-feet each side of centerline, before commencing construction. Temporary benchmarks shall be a maximum of 2,000-feet apart with a minimum of two benchmarks per tunnel run. The Contractor shall determine the final elevation of all original benchmarks shown on the Contract Drawings at the project completion.

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 the 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.

4.02 CONSTRUCTION BENCHMARKS

A. In areas where vertical control benchmarks have not been provided, the Contractor shall set temporary benchmarks (hubs) at 200-foot intervals.

B. Any benchmarks lost during the work may be replaced if so directed by the Engineer.

C. The Contractor shall submit a bench circuit (forward and return), closing within 0.01' to the engineer for the record.

D. The bench circuit shall be performed under the supervision of a surveyor registered in Ohio.

END OF SECTION

SECTION 01810
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 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 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 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. Video Recording - Zone of Influence - Shall include producing 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. Video Recording of Buildings - Entering - Shall include moving video equipment into buildings or residences (including attached or separate garages) designated by the Engineer for the purpose of recording existing conditions therein.

C. Video Recording of Building - Panels - Shall include 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 four copies of the video.

PART 2 PRODUCTS

2.01 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 VIDEO OUTPUTTING

A. Video recording shall be a digital file format such as MPEG, MP3, 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. Solid state memory devices shall have a USB for connection to a computer. 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. All houses or buildings and other readily recognizable objects as required shall be identified visually 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.

2. 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 video 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.

3. 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 video shall call attention to damaged mailboxes, signs, curbs and inlet castings.

4. 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. 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, 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 01820
VIDEO RECORDING OF UNDERGROUND INFRASTRUCTURE

PART 1 GENERAL

1.01 SCOPE

A. This Section includes the requirements for video documentation of underground facilities.

B. The Contractor shall provide personnel, transportation, recording equipment, power, and materials, to produce color video records of existing or new underground pipelines, structures, designated service pipes and as directed.

C. The Contractor shall provide traffic control, flow control, by-pass pumping and cleaning of underground pipelines, structures and designated service pipe in order to produce video documents.

1.02 SCHEDULE OF WORK

A. Before proceeding with the Work the video recording contractor shall consult with the Engineer concerning the following:

1. Scheduling recording to precede construction.

B. The Owner will obtain permission for the recording crew to enter private property not included in an easement. The Contractor shall provide a schedule of locations 30 days in advance of Work. The Contractor shall coordinate access with Owner and adhere to the schedule.

1.03 DEFINITIONS

A. Video recording shall include producing video records of the area within the underground infrastructure as designated and as specified herein.

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 two copies of the video.

2. Information for the Record:

a. The Contractor shall submit, prior to starting Work, at his own expense, a sample color USB flash or USB hard drives meeting the contract requirements and upon request, must submit at least three letters of reference for the video firm pertinent to the performance and

satisfactory completion of color video projects from various municipalities.

PART 2 PRODUCTS

2.01 VIDEO RECORDING

A. Picture Quality - Video output from camera(s) shall be produced at a minimum of 1024 by 480 resolution. Camera(s) shall also produce optimum color imagery with a minimum of 20-foot-candles of illumination.

B. 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 VIDEO OUTPUTTING

A. Video recording shall be a digital file format such as MPEG, MP3, 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, street names and manhole numbers with distances measured from entry to exit manholes. The system shall start at the lower end of sections of the planned system and proceed upstream, completing one section before starting another.

C. The electronic files shall be stored on a single solid-state memory device, such as a jump/thumb drive, external hard drive. The solid-state memory device shall have a USB for connection to a computer. 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:

1. Filming shall, in general, proceed in the direction of the planned stationing.

B. Recorded Contents:

1. Readily recognizable objects shall be identified visually and audibly in such a manner that they can be referenced to the planned stationing. Objects selected shall be at intervals not exceeding 100 lineal feet and shall include all house leads/taps identified by measured distance.

2. The recording shall include but not be limited to all inlets, culvert pipe ends, house leads or taps. The video shall call attention to existing cracks or uneven areas, or missing pipe.

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 30-feet per minute is required.

D. Depth of flow in section being inspected shall be no greater than 25%.

3.03 RESERVED

PART 4 SPECIAL PROVISIONS

4.01 POST CONSTRUCTION SEWER INSPECTION

A. The Contractor shall conduct a video recording of the inspection of new and repaired sanitary sewers after the installation is complete as specified herein.

B. The Owner and Engineer shall be present for all video inspection during the initial recording.

C. Final acceptance, by Owner and Engineer, of sewer installations shall be based upon the video inspection of the sewers.

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 VEGITATION 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.

C. Large clusters of trees have not been individually marked and removals in such areas are noted as “clear and grub”, with work to be performed in accordance with the requirements of these specifications.

4.02 TREES OR BRUSH TRIMMING

A. Trees or brush scheduled for trimming shall have only branches or foliage in conflict with the clear passage of equipment or work removed with the prior approval of the Engineer.

B. Limbs or branches shall be removed back to a branch greater than 3-inches in diameter or the main tree trunk.

C. Trimming shall be performed in a manner to prevent damage to the portion of the tree remaining.

4.03 CLEARING AND GRUBBING ON EASEMENT AREAS

A. The Contractor shall strictly adhere to the cleaning and grubbing limits shown on the plans.

B. A meeting shall be held on site with the Contractor, Owner and Engineer prior to commencing clearing and grubbing within easement areas.

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 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, as specified, a copy of a signed permit from the owner of the property upon which the debris, removed under this Section, will be disposed.

b. Dust and noise control measures

c. Record documents, in accordance with the General Conditions, and photograph or video recording indicates the location of, but not limited to, the following existing, new, and abandoned:

1) Utilities.

2) Mechanical.

3) Electrical.

4) Structural.

5) Any embedded items.

d. Inventory and documentation list for removed and salvaged materials for the Owner.

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 MATERIAL

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 per ODOT 202. 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

A. The Contractor shall excavate rigid pavement, consisting of concrete or concrete base with a wearing surface of brick or bituminous concrete per ODOT 202, wherever such excavation is required for the purposes of this Contract.

B. 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% optimum density per ASTM D698 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

A. Specified pipe, conduit, and structures are to abandoned by completely filling with a specified controlled density fill material and aggregate stone.

B. Ends of sewer designated to be abandoned shall be sealed with approved masonry bulkheads or factory caps and plugs.

C. Contractor may need to include fill holes and vent pipes to assure thorough filling. The locations of grout tubes, vents and inspection ports for grout filling pipes to be abandoned shown on the Drawing shall be considered the minimum number. The Contractor may choose to provide more grout tubes, vents, and inspection ports at no additional cost. The repair of paved areas as needed for addition grout fill holes or vent pipes shall not be measured for payment.

D. Quantities of flowable fill material used to fill the conduits shall be monitored continuously during the placement.

E. Bulkheads shall be installed as shown on plans and as needed by the Contractor's method to completely fill the abandoned sewers.

F. Sites disturbed by the grout-filled abandonment work shall be restored as part of this Work.

G. See Specification Section 02200, 2.05 for CDF material requirements.

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 EQUIPMENT REMOVAL

A. All equipment, valves, piping, fittings, and miscellaneous steel structures that are removed shall remain the property of the Owner and shall be stored at a site selected by the Owner. The Owner reserves the right to require the Contractor to dispose of certain unwanted portions of removed equipment and materials. The Owner shall have the right to reject any or all materials removed during construction, and the Contractor shall haul away and dispose of these materials in a suitable manner at no additional cost to the Owner.

B. See Drawings for removal of electrical equipment and appurtenances.

C. The Contractor shall replace, at no cost to the Owner, equipment designated to be turned over to the Owner that is lost or damaged.

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.

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 PIPING REMOVAL

A. At the location where pipe removal stops, the remaining pipe end shall be capped. The cap must be pressure tight and restrained from movement due to pressures inside the pipe.

B. Piping removal includes, but not limited to, all hangers, stands, and anchoring devices.

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 FIELD AVENUE PUMP STATION DEMOLITION

A. The pump station and wet well shall be demolished in accordance with the details and to the limits shown on the Drawings and specified herein. The following list of items once removed shall remain the property of the Owner and shall be delivered to the Owner-designated location. The pump station will be filled with the specified CDF material.

B. Equipment to be salvaged is specified herein.

C. Materials and Equipment not specifically identified for salvage may be abandoned in place.

D. The wet well shall be drained of all liquid and accumulated non-cementitious debris shall be removed.

1. Solid debris removed from the wet well shall be disposed of at a landfill facility.
2. Liquid containing sewage shall be disposed of at a wastewater treatment facility.
3. The Contractor is asked not to dispose of liquid material into the new gravity sewer.
4. The nature and composition of the debris in the pump station is unknown.
5. The contractor shall consider the cost of all testing required to complete the disposal as part of the cost of work.

E. The Contractor should consider the dimensional information provided for the existing structures as approximate. Should the Contractor require more accurate measurement during the bid phase, the Contractor (as a Bidder) should make arrangements with the Owner to visit the site and obtain their own measurements.

4.02 SCHEDULE OF SALVALGED MATERIALS

A. The following list of items once removed shall remain property of the Owner and shall be delivered to the Owner-designated location.

1. Pumps, motors, valves and level transducer
2. Manhole castings
3. Field Avenue Pump Station generator
4. Blue Grass Farms Pump Station fiberglass enclosure
5. Generator at the Field Avenue Pump Station – The Contractor shall load and deliver the generator and accessories to a location as designated by the Owner within 5 miles of the Field Avenue Pump Station.

4.03 SANITARY SEWER AND WATER MAIN REMOVAL

A. As shown on the Drawings, existing force main, sanitary sewer main piping, accessories, and appurtenances shall be removed within limits shown on the Drawings or as specified.

B. The removal shall include removal and disposal or aggregate backfill, pipe bedding and control density backfill.

C. Existing pipe removed shall become the property of the Contractor and shall be properly disposed of in accordance with the requirements of this Section.

D. At locations where the pipe removal is terminated, a water-tight sewer plug shall be placed in the end of the pipe to remain.

4.04 ELECTRICAL EQUIPMENT DEMOLITION

A. The Contractor shall remove existing electrical equipment including the following major components and accessories:

1. Electrical wiring to be removed.
2. Electrical Panels and Cabinets including structural supports and footings.

B. All items removed shall be disposed of at a waste facility permitted to accept the type of waste generated by the components removed..

4.05 SANITARY SEWER AND FORCE MAIN ABANDONMENT

A. Select sections of pipe connected to the existing pump station are to be abandoned.

B. These pipes shall be abandoned in accordance with Section 02110, 3.05.

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. Dimensional drawings of shaft and shaft liner construction, layout and related appurtenances and description of shaft construction and removal sequence.

c. Design certifications and calculations for shaft and shaft liner systems sealed by a Professional Engineer in the State where the project is located.

d. Manufacturer's product literature and details of shaft construction and shaft liners and accessories.

e. Shaft information provided as indicated in this Section shall be provided.

f. Details of the proposed method of installation and construction of dewatering wells.

g. Schedule of the proposed sequence of dewatering well construction.

h. Dewatering logs.

i. 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 diameters 10 inches and less, bedding material shall be No. 8 (nominal size 3/8-inch to sieve No. 8).
2. For PVC, HDPE or plastic pipe diameters over 10 inches, bedding material shall be No. 67 (nominal size 3/4-inch to sieve No. 4) or No. 8 (nominal size 3/8-inch to sieve No. 8).
3. For Ductile Iron Pipe, bedding shall be sand or manufactured sand.
4. All other aggregate bedding shall be No. 8, No. 67 or No. 57 stone. No. 57 (nominal size 1-inch to sieve No. 4) shall not be used for bedding PVC, HDPE or plastic pipes.

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 and 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.

C. The Contractor shall select and submit for approval a mix design with properties to fill the annular space (structure and conduit).

2.06 SLOPE AND CHANNEL PROTECTION

A. Riprap shall be in accordance with ODOT 601.04

B. Crushed aggregate slope protection shall be in accordance with ODOT 601.06.

C. Dumped rock fill shall be in accordance with ODOT 601.08.

D. Rock Channel protection shall be in accordance with ODOT 601.09.

PART 3 EXECUTION

3.01 COORDINATION

A. 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, weeks, 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 peak, muck, roots, hard clay, coarse gravel, stones, weeks, 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-feet 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 STREAM CROSSINGS

A. Construction of public utilities under streams shall be in accordance with applicable sections of the local, state, and federal regulations and agencies (Clean Water Act, Corps of Engineers, Department of Natural Resources, etc.) the specific permit requirements for the crossing, and as specified herein.

B. Excavation shall be only as required for installing the Work by the approved permits.

C. Excavated material to be used for backfill shall be stockpiled upland, out of the floodplain, and in a manner that it will not be washed into streams or drains.

D. Immediately following installation of the Work, the stream shall be restored to its original cross section using only the material excavated in constructing the crossing.

E. Excavated material not used for backfill shall be disposed of as specified in this Section.

F. To minimize erosion occurring from wind and precipitation, the Work of clearing, scalping, grading, slope erosion protection, ditching, backfilling, and final cleanup within 50 feet of streams shall be performed immediately following installation of the Work within the stream.

G. The stream banks and stream bottom shall be surveyed in accordance with Section 01800 before and after construction at 10 foot intervals and major grade breaks.

3.11 STREAM BANK PROTECTION

A. Following the installation of the pipeline or other structures, all Work areas along or crossing streams shall be restored immediately in accordance with procedures outlined below and in accordance with applicable permits.

B. Excavated areas shall be backfilled and compacted as specified herein and in no case, shall the density be less than the surrounding area.

C. Permanent riprap shall be placed 12 inches thick over disturbed areas of the stream's bank as shown on the Drawings or required. Excavated areas to be riprapped shall be backfilled and consolidated as specified for pavement and sidewalks. Installation of and materials for riprap shall conform to ODOT Item 601.08 "Dumped Rock Fill," (703.19-Type B).

D. All soil exposed above the permanent riprap protection line shall be either sodded or seeded, fertilized, and mulched. Temporary jut matting or synthetic matting shall be used to protect slopes until climatic conditions permit seeding or sodding. Exposed banks shall not remain unprotected over five days unless permitted by the Engineer in writing.

E. Seeding and sodding shall be as specified in Section 02800.

3.12 SHAFT CONSTRUCTION

A. This paragraph covers construction of shafts; whether shown on the Drawings, required by governing agencies or desired by Contractor. Construction shafts and appurtenances are temporary structures and are considered as means and methods used by the Contractor in completing the Work and therefore, are the responsibility of the Contractor. The following describes the minimum requirements of the construction shafts.

1. Design, fabrication, and erection of shafts shall be in accordance with, but not limited to, the Bureau of Mines, OSHA, NFPA.

2. Contractor shall comply with requirements of applicable permits and governing agencies.

3. Shaft liners shall be utilized and material selection shall be Contractor's responsibility.

4. The Contractor shall be responsible for any settlement of structures, utilities, street surfaces, railroad tracks; damage to structures, pavement, sidewalk, curbing surface improvements, or public and private utilities in the vicinity of the shaft and shall repair or have repaired any damage caused thereby.

5. The excavation for the shaft shall be kept to the outside diameter of the shaft liner or timbers and any voids that might occur due to over excavation, sloughing, rock displacement, etc. shall be filled with CDF, Grout or Class B concrete to avoid any settlement/shifting of the overburden.

6. Pipes, conduits and their trenches (which can conduct water) discovered during excavation of shaft shall be redirected or relocated, permanently or temporarily, to avoid settlement, undermining of surrounding area and water infiltration into shaft.

7. Drainage - The Contractor shall minimize groundwater entering the shaft by installing additional sheeting, grouting, or other methods as required to prevent movement of soil that may impact structures, utilities, street surface, railroad tracks, sidewalks, curb, or any other facilities in the vicinity. The Contractor shall furnish, install, and maintain all facilities for collecting, conveying, and disposing of water in shafts in an acceptable manner and in compliance with applicable regulations until the completion of the Work. The pumps and power supply to the pumps shall be the responsibility of the Contractor. Effective and continuous control of water during the placing of concrete will be required.

8. Contractor shall design the shaft and appurtenances. Contractor's design of the shaft shall take into account additional loads that may be imparted on the shaft from construction equipment on the surface; lifting and hoisting; jacking and pushing operations, and adjacent structures.

9. Shaft size, if shown on the Drawings, is a recommendation based on the design intent. Should Contractor's operation require a shaft of a different size, it may be modified after reviewing it with the Owner and Engineer.

10. Coordinate size and location of concrete foundations and casting of anchor-bolt inserts into foundation walls and footings required for installation of pipe or structure. Concrete, reinforcement, and formwork requirements are specified in Division 3 of the specifications.

11. The Contractor shall have on hand at all times, sufficient machinery for emergencies that are likely to arise on Work of this character and such machinery shall be kept in good working order.

12. When operations within shaft or tunnel are not active, the shaft shall be covered.

13. Contractor shall conduct operations and work as expeditiously as possible to minimize the length of time the shaft is open.

14. Ventilation - The Contractor shall keep the shaft air in a condition suitable for the health of the occupants. A sufficient supply of fresh air for the safety and efficiency of occupants shall be provided at all times. Ventilation shall also take into account the ventilation requirements of any spaces connected to the shaft such as tunnels.

15. Methods and procedures used shall conform to applicable OSHA standards including 29CFR Part 1926 Subpart S-Underground Construction, Caissons, Cofferdams, and Compressed Air.

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.

4.02 CULTIVATED AREA TOPSOIL STRIPING

A. The Contractor shall use special care in excavating, storing and placement of topsoil in agricultural areas listed on the plans as “cultivated area”.

B. The Contractor shall remove and separately store the top 12-inches of topsoil for all excavations and soil disturbances occurring in areas designated as “cultivated area.

C. The excavation and storage of top soil shall be performed in a manner that protects the top soil from contamination from other soils.

D. The stored topsoil shall be placed over the backfilled trench and areas previously stripped with a thickness not less than 12-inches.

E. Any topsoil contaminated, lost or otherwise not available to be placed back into areas where topsoil was removed, shall be replaced at the Contractor's cost.

F. The requirements of this Section shall supersede the requirements of Section 3.02 in areas designated as agricultural.

4.03 DITCH ENCLOSURE FILL MATERIAL

A. The Contractor is expected to use material removed from the sanitary sewer trenches to backfill the area of drainage ditch to be enclosed.

B. The specified pipe bedding materials shall be used around the pipe as required by the details included in the Drawings.

C. The material to be used for filling the ditch shall be clean soil material meeting the requirements of ODOT 203.02, R unless otherwise approved by the Engineer.

D. Topsoil shall be provided on the surface of the ditch enclosure as specified.

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 installation instructions.

   c. 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 Pipe (PVC):

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 a 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 die cast or factory fabricated. All service pipe shall be SDR 35.

B. Reinforced Concrete Pipe (RCP):

1. Reinforced concrete pipe and specials for sewers other than sanitary or combined shall conform to ASTM C-76 Wall B (minimum) of classes designated on the Drawings.
2. Reinforced concrete pipe joints shall conform to ASTM C-443 with gasket materials meeting the requirements of ASTM C-361.
3. Reinforced concrete pipe for sanitary sewer shall be produced using a Type II (MS) cement in accordance with ASTM C-150.
4. Reinforced concrete pipe shall be produced using Xypex C-1000 Admixture or approved equal.

2.02 COMPOSITE AND PROFILE WALLED PIPES

A. Polyvinyl Chloride (PVC) Profile Sewer Pipe:

1. Pipe shall have a smooth interior with a solid concentric exterior rib. Pipe, fittings, and jointing systems shall conform to ASTM F794. Pipe stiffness shall be 46 psi minimum, when measured in accordance with ASTM D2412.
2. Joint systems shall be elastomeric seal (gasket) type. Seals shall conform to ASTM F477 requirements. Joint materials and testing shall conform to ASTM D3212 requirements.
3. Fittings shall include couplings, tees, wyes, elbows, plugs, and adapters. Tees and wyes shall be die cast or factory fabricated.

B. High Density Polyethylene (HDPE) Profile Wall Sewer Pipe

1. Pipe shall have a smooth interior with a profile wall. Pipe, fittings, and jointing systems shall conform to ASTM F894. Pipe and fittings shall be made of high density, high molecular weight polyethylene material meeting the requirements of Type III, Class C, Category 5, Grade P34, as defined in ASTM D1248.

2. Joint Systems shall be elastomeric seal (gasket) type. Seals shall conform to ASTM F477 requirements. Joint materials and testing shall conform to ASTM D3212 requirements. Joints shall be able to pass and ASTM D3212 Test at 10.8 psi for 10 minutes with no leakage.

2.03 RESERVED

2.04 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.

2.05 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, Class IV with joints as specified in this specification section, unless otherwise indicated and joints meeting ASTM C361. Reinforced concrete pipe storm sewers shall also be replaced with ASTM C76 Class IV

RCP with joints equal to those of the pipe removed. These shall be installed in accordance with ASTM C1479.

C. Nonreinforced concrete pipe removed or damaged in completing the Work shall be replaced using pipe meeting ASTM C76 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.

2.06 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 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 or ASTM C1479 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 pipe bells and depths of bedding material as shown on the Drawings and specified herein.

3.02 RIGID PIPE INSTALLATION

A. Pipe trenches shall be excavated to the depth indicated on details to provide adequate depth of bedding and the pipe shall be placed and supported on bedding material the full length of the barrel. Bedding material shall then be placed 4-inch maximum depth along both sides of the pipe and tamped firmly under the pipe haunches. Additional bedding material shall be placed and compacted in 6-inch layers to the height shown on the Drawings or as directed. Hand tampers shall be used for installing bedding material around pipes smaller than 36-inch diameter and mechanical hand tampers shall be used around pipes 36-inch diameter and larger unless otherwise directed by the Engineer. The remainder of the trench shall be backfilled as specified and called for on the Drawings.

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 by use of a laser beam and checked in conformance with Section 01800. Pipes installed more than 0.04 feet above or below specified elevation shall be removed and reinstalled to grade.

E. Where holes are cast in concrete pipe for handling, they shall be filled with lift hole plugs and non-shrinking mortar after the pipe is placed. A metal disc of proper size may be inserted near the bottom of the hole to retain the mortar until hardened. Mastic, wood plugs or rocks intended to plug the hole for retention of the mortar will not be permitted.

F. Install the gasket per the pipe manufacturer’s recommendations and ensure the gasket is equalized before pushing home the next pipe section.

G. The pipe shall be lubricated in accordance with the pipe manufacturer’s recommendations.

H. The pipe shall be installed with a joint gap as recommended by the pipe manufacturer.

3.03 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 Section 01800. 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.

3.04 RESERVED

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.

C. Non-shrinking Mortar Joints - Where specified or shown on the Drawings, joints of concrete pipe sewers (36-inch diameter and larger) shall be thoroughly pointed full inside circumference with a non-shrinking mortar in conformance with the material manufacturer's instructions. The mortar shall be tightly packed and the interior face of the joint shall be left smooth and continuous with the interior face of the pipe. Pointing shall not be done until the backfill over the pipe is placed and compacted.

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 boot 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 in the factory 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. The pipe manufacturer may supply the most current test record for each pipe size to be used on project. The test record shall be no more than 1-year from the date of production of the pipe for this project. If the current test record is older than one year, a new test shall be run at the discretion of the Engineer.

C. Deflection Testing of Flexible Pipe 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 required mandrel or laser profiling.

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 (9-point mandrel) 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.

D. 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 workday.

3.08 TESTS FOR INFILTRATION AND EXFILTRATION

A. Preparation:

1. Before sections of sewers may be tested for infiltration or exfiltration, all house leads from it shall be constructed to limits called for and plugged or capped and all trenches backfilled and compacted to required minimum density.
2. Sewers to be tested shall be clean and free from construction debris. Sand, dirt, concrete, or other materials shall be completely removed in a manner that will not damage the sewer pipe.
3. Pipe joints shall be watertight. The Contractor shall repair manholes and pipe joints as required to stop leaks.
4. Where sewers are above the groundwater table, the Contractor may flood the trench or air test the sewer to find and repair leaks prior to exfiltration tests.
5. The materials and methods for repairing leaks shall be submitted to Engineer: for approval before beginning Work. Chemical grouting of pipes is not acceptable.

B. Inspection:

1. After a sewer has been cleaned and all repairs made as specified, the sewer shall be inspected and approved by the Resident Project Representative before conducting infiltration or exfiltration tests. Sewers shall be approved before any connections are made to or final surface restoration can begin.
2. Sewers shall be inspected using audio-video recording in accordance with the requirements of Section 01820.
3. The Contractor shall furnish all lights, cameras, carts, television, and other equipment and labor required to audio-video record the new sewers or any repaired sewer.
4. The Resident Project Representative may require the Contractor to conduct a television inspection of smaller sewers that appear defective or do not pass infiltration tests.

C. Test Sections:

1. The maximum length of a sewer test for infiltration or exfiltration section shall be 900 lineal feet. Every manhole shall be included in one (minimum) test section.

2. The Contractor shall furnish and install bulkheads, sewer plugs, weirs, water level tubes, lighting, and other equipment required to conduct the tests in locations and as indicated by the Resident Project Representative.

3. Infiltration in accordance with ASTM C969:

   a. Where the groundwater level is above the top of the pipe, the sewer shall be tested for infiltration.

   b. The Contractor shall plug or bulkhead the sewer to isolate the test section and install a weir in the pipe at the outlet manhole. The weir shall be direct reading of an approved design calibrated to read gallons per day.

   c. Where the groundwater level is below the top of the sewer pipe and the trench can be flooded and the level maintained above the pipe (minimum 2 feet of head at the highest point in the pipe being tested) for test period, the Contractor may test the pipe for infiltration.

4. Infiltration in accordance with ASTM C1103 (Precast Concrete Pipe)

   a. Pipes 36-inches in diameter and small shall be vacuum tested at the factory. The Engineer may request to witness vacuum testing at the factory and should be notified 14 days in advance of the scheduled date for testing.

   b. For precast concrete pipe with a diameter larger than 36-inches, the joint acceptance test per ASTM C1103 may be utilized. The proper joint gaps for the installed pipe shall be achieved by the installed pipe. Any joint gaps wider than the manufacturer's recommendations shall be pointed in the field with a nonshrink grout.

      1) If the groundwater level (pressure) is above the test pressure and the joint is not leaking, then the joint is acceptable in accordance with ASTM C969.

   c. If groundwater level is below the test pressure test the joints in accordance with ASTM C 1103. Air or water are acceptable in accordance with industry practices and the ASTM C1103.

      1) The air pressure required for the test shall not exceed 5.0 psig.

      2) The joints shall be tested as the pipe is installed.

   d. Failed joints shall be repaired and retested until joint passes test.

5. Allowable Leakage:

   a. If a joint fails to achieve the required test pressure, acceptable methods may be chemical grout injection or the installation of a sectional liner.

   b. The test in each section shall be continued for at least 24 hours and, if its measured leakage during that period exceeds 100 gallons per inch of diameter per mile of pipe, the Contractor shall locate the points of

leakage and make necessary repairs, continuing the Work until leakage is reduced to the permissible maximum as specified.

c. The amount of infiltration allowed for storm sewers shall be limited to reasonable seepage, except that, if specified, the total in any section shall not exceed the amounts allowed for sanitary sewers as hereinafter specified.

d. All visible leaks shall be repaired whether they are less than the allowable leakage. Moisture or visible beads of water on a joint will not be considered a visible leak.

3.09 LOW PRESSURE AIR ACCEPTANCE TESTS

A. Where approved by the Engineer, the Contractor may perform low pressure air for pipes 24 inches in diameter or smaller. Test shall be made in accordance with ASTM F1417-Plastic Gravity Sewer Lines; ASTM C924-Concrete (Circular) Sewer Pipe with Gasket.

1. If the air pressure required for the test is greater than 5.0 psig, the low-pressure air acceptance test shall not be used.

B. The Contractor shall furnish all equipment, materials, and labor, and conduct the tests under observation of the Resident Project Representative.

C. Safety:

1. The air test may be dangerous if the line is improperly prepared. All plugs shall be installed and braced in such a manner to prevent blowouts. No one shall be allowed in manholes during testing.

2. Pressurizing equipment shall include a regulator set at the maximum pressure.

D. Line Preparation:

1. Sewers to be air tested shall be prepared and inspected as specified herein for infiltration and exfiltration tests.

2. Where porous pipe materials are used, the pipe walls may be wetted to temporarily reduce the porosity of the material.

3. All pipe outlets shall be plugged, braced, and the joints restrained adequately to prevent blowouts.

4. Testing shall be performed prior to the connection of any lateral tap to the sewer segment.

E. Test Procedure:

1. Low pressure air shall be slowly introduced into the sealed line until the internal air pressure reaches 4.0 psig greater than the average back pressure of any groundwater above the invert of the pipe.

2. When a constant pressure of 4.0 psig greater than the average pressure of any groundwater above the pipe is reached, the air supply shall be throttled to

maintain that internal pressure for at least 2 minutes to permit temperature equalization.

3. When temperatures have been equalized and the pressure stabilized at 4.0 psig greater than the average back pressure of any groundwater above the pipe, the air supply shall be shut off or disconnected.

4. Decrease the pressure in the sealed line until the continuous monitoring pressure gauge reads 3.5 psig greater than the average back pressure of any groundwater above the pipe. When this pressure is reached, timing shall commence with a stop watch.

5. Determine the time, as shown on the stopwatch, required for the pressure in the sealed line to drop 1.0 psig.

6. The time required for the pressure in the test section to drop 1.0 psig shall be measured using a stop watch. If the time is less than the time determined from ASTM F1417, the section fails. The table below has been reprinted from ASTM F1417 for Contractor's information.

Pipe Diameter, Inches	Minimum Time, Min.: Sec.	Length for Minimum Time, Feet	Time for Longer Length, Sec. (L=Ft)
6	5:40	398	0.854 L
8	7:34	298	1.520 L
10	9:26	239	2.374 L
12	11:20	199	3.418 L
15	14:10	159	5.342 L
18	17:00	133	7.692 L
21	19:50	114	10.470L
24	22:40	99	13.674L

Note: Minimum time applied to all lengths less than or equal to the length shown. For more information, see ASTM F-1417, Table 1.

F. Air Pressure Adjustment for Groundwater:

1. In areas where groundwater is known to exist, the Contractor shall install a one-half inch diameter capped pipe nipple, approximately, 10 inches long, through the manhole wall on top of one of the sewer lines entering the manhole. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the line acceptance test, the groundwater level shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground to clear it, and then connecting a clear plastic tube to the pipe nipple. The hose shall be held vertically and a measurement of the height in feet of water shall be taken after the water stops rising in this plastic tube.

2. The air pressure correction, for the groundwater pressure above the pipe, shall be calculated as follows: Subtract the average invert elevation from the measured groundwater elevation. Multiply the elevation difference by 0.433 psi/feet to compute the pressure difference. Add the pressure difference to the test pressures stated in the test procedure.

3.10 ADDITIONAL TESTING EXCEPTIONS, REQUIREMENT AND LIMITATIONS

A. Low-pressure air tests are only required for new sanitary sewers installed between two manholes.

B. Deflection and low-pressure air testing is not required for repair sections of sanitary or storm sewers.

C. All new or repaired sections of sewers will be televised for acceptance in accordance with the requirements of Section 01820.

D. The Contractor shall provide a means for directly measuring the groundwater elevation at the time of testing.

E. No portion of the specified testing shall be waived without the written permission of the Engineer.

3.11 CLOSED CIRCUIT TELEVISION INSPECTION

1. All new or repaired sewer sections shall be televised for acceptance in accordance with Specification Section 01810.

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
HDPE - High Density Polyethylene
PVC - Polyvinyl Chloride
PPVC - Perforated Polyvinyl Chloride Pipe
RCP - Reinforced Concrete Pipe

B. Sanitary Sewer Schedule

Size (in)	SDR/Thickness Class	Material	Spec Section	Remarks
8	35	PVC	02550,2.01A	
10	35	PVC	02550,2.01A	
12	26	PVC	02550,2.01A	
14	See Section	02555	4.01	
15	26	PVC	02550,2.01A	
18	26	PVC	02550,2.01A	
24	Class IV	RCP	02550,2.01B	
24	26	PVC	02550,2.01A	Permitted in Other Type B and Type C Areas. Required for New Sewer Constructed on Logan Street
24 Carrier Pipe in Bored Casing	See Section	02555	4.01	

C. Storm Sewer Schedule

Size	SDR/Thickness Class	Material	Spec Section	Remarks
4” – 36”	SDR35	PVC	2.01A	Repairs to Existing Storm Sewers & Culvert Extensions
30 – 36”	Class IV	RCP	2.01B	Culvert Repairs Under Cemetery Road)
36”	Class II	RCP	2.01B	Storm Sewers (Ditch Enclosure)
All Others	As Specified	As Specified	2.04	Repairs to Existing

END OF SECTION

SECTION 02552
PRECAST CONCRETE MANHOLES

PART 1 GENERAL

1.01 SCOPE

A. This Section includes furnishing and installing precast concrete manholes, including drops and manhole stacks of types and at locations shown on the Drawings and scheduled.

B. This Section includes removing existing structures, additional excavation to widen and deepen trenches for manhole construction, furnishing and installing concrete of classes called for, portland cement mortar, reinforcing steel, precast concrete pipe integral base sections, bottom riser sections, transition sections, and riser sections, eccentric cones, flat slab tops and grade rings, flexible manhole connections, pipe for drop connections, manhole steps, manhole frames and covers, plugging lifting holes, pointing joints, joint wrap installing, forming channels through manhole bottoms, making watertight connections to new and existing sewers, and other work incidental to manhole construction and testing.

C. 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 physical dimensions, pipe openings, precast section arrangement, adjusting rings, castings, and joint details for each size and type of manhole components furnished for the project. Shop Drawing shall incorporate the planned elevations and details.

   b. Manufacturer's certification indicating that the manhole components and joints meet specifications for each production run for each size and type furnished.

2. Information for the Record:

   a. The Engineer may request test results to verify certification. Certification documents shall be according to the Source Quality Control of this Section.

PART 2 PRODUCTS

2.01 MATERIALS

A. Type of Manhole Sections:

1. Manhole Stacks - Manhole stacks shall mean 4-feet diameter manholes used for access to reinforced concrete manhole chambers and precast manhole riser tee sections.

2. Type I Manholes - Type I manholes shall mean 4-feet diameter manholes with precast integral base sections for sanitary sewers and either precast integral base sections or precast bottoms for storm sewers. Pipe connections to manholes shall be made with flexible water tight joints. Type I manholes are intended for installation of pipes 18-inch diameter and smaller unless noted otherwise.

3. Type II Manholes - Type II manholes shall mean manholes with 5-feet diameter precast integral base sections. Pipe connections to manholes shall be made with flexible water tight joints. Type II manholes are intended for installation of 21-inch through 30-inch diameter pipes unless noted otherwise.

4. Type III Manholes - Type III manholes shall mean manholes with precast integral base sections or precast bottoms that are larger than 5-feet diameter. The diameter of the bottom riser sections shall be as shown on the Drawings. Pipe connections to manholes shall be made with flexible water tight joints. Type III manholes are intended for installation of pipes where the additional wall area is needed for installation on flexible joints and of 36-inch through 48-inch diameter pipes unless noted otherwise.

5. Type IV Manholes - Type IV manholes shall mean manholes with cut-outs in the bottom riser sections installed on cast-in-place or precast concrete bases. The diameter of the bottom riser sections shall be as shown on the Drawings. Pipe connections above bottom riser section shall be made with flexible water tight joints. Type IV manholes are intended for installation on sewers 48-inch diameter and larger and on existing pipes where identified on Drawings.

6. Type S Manholes - S following manhole type shall mean the designated type manhole constructed with a precast flat slab top in lieu of a precast cone.

B. Precast concrete pipe manhole sections, integral base sections, transition sections, eccentric cones, flat slab tops, and adjusting rings shall conform to ASTM C 478. Reinforcing in transition sections shall be equal to that specified for wall sections of the larger diameter.

C. Joints shall be tongue and groove type with a gasketed seal type conforming to ASTM C443.

D. The standard length of riser sections shall be 48-inch. Lengths of 32-inch or 16-inch shall be used to meet required dimensions and as specified.

E. Openings for connecting pipes in riser sections, bottom riser sections, and integral base sections, and for access in flat slabs shall be pre-formed or cored by the manufacturer, except "cut-out" openings may be made in bottom riser sections for Type IV manholes. Cut-out openings shall be made immediately after the pipe is removed from the casting form. All cored openings for sewer pipe connections shall have flexible joints.

F. Precast integral base sections shall be of monolithic construction. Base flat slab floors or integral floors shall have a minimum thickness of 6-inch for risers up to and including 48-inch in diameter and 8-inch for larger diameters. A layer of reinforcement shall be placed above the midpoint, and shall have a minimum area of 0.12 square inch/linear feet in both directions.

G. Manhole sections shall be constructed with no pipe connection within 6 inches of a joint in the structure.

H. Manhole sections shall be clearly marked and identified with the manhole number, section placement order, casting date, trademark, name of the manufacturer, and location of the production plant.

2.02 ACCESSORIES

A. Manhole Steps - Manhole steps shall be of polypropylene plastic reinforced with a 1/2-inch No. 60 grade reinforcing rod. Steps shall be M. A. Industries Model PS-1, or equal.

1. Specified manhole steps shall be factory installed to provide a continuous ladder of 16-inch Center-to-Center rung spacing. Steps shall be placed in the forms and cast in pipe wall or placed immediately after the pipe is removed from casting and carefully mortared in place with non-shrinking mortar to ensure a watertight joint. Manhole step installation shall be in compliance with OSHA regulations. If the outer surface of the pipe wall is pierced the patch shall be completely covered with a bituminous sealer.

B. Manhole frames and covers shall be as shown on the Drawings and in conformance with requirements of Section 05540.

1. Where pressure tight manhole frames and covers are called for, threaded inserts shall be cast in eccentric cones or flat slab tops and holes formed or cored in adjusting rings to match bolt size and spacing specified for manhole casting.

C. Mortar:

1. Mortar used for the structures herein specified shall conform to ASTM C270 Type S, containing no masonry cement. The mortar shall be composed of one-part portland cement to two parts sand by volume.

2. Non-shrinking Mortar - Materials for non-shrinking mortar shall be Sauereisen F-100, Five-Star, or equal.

D. Cast-in-Place Concrete:

1. All cast-in-place concrete used for concrete bases and for forming channels in manhole bottoms shall be Class A as specified in Section 03305.
2. All concrete used for supporting precast concrete manhole bases shall be Class B as specified in Section 03305.

E. Reinforcing Steel - Reinforcing steel used in cast-in-place concrete shall meet the requirements of Section 03200.

F. Flexible Joints - Joints for precast pipe openings shall be “A-LOK X-CEL” as manufactured by A-LOK Products, Inc., “Kor-n-seal” as manufactured by National Pollution Control Systems, Inc., or equal in accordance with ASTM C923.

G. Pipe for Manhole Drops - Pipe for manhole drops shall conform to specifications of Section 02550 for the required size and type shown on the Drawings.

H. Joint Wrap - Polyolefin backed exterior joint wrap used to cover the exterior side of joints shall be ConSeal CS212; Riser Wrap by Pipeline Seal & Insulator, Inc. or equal. Minimum width shall be 12 inches. Joint wrap shall include the use of brush or roller applied adhesive surface primer formulated for use with joint wrap. Seal shall meet the requirements of ASTM E1745, C-877, and ASTM C990.

I. Chimney seal shall be applied to the exterior of all manholes and shall cover the joint at iron casting, adjusting ring and lap over manhole riser/top section. Seal shall be HDPE heat shrink as manufactured by Pipeline Seal & Insulator, Inc. (Riser-Wrap) and CCI Pipeline System (Wrapid Seal), or equal.

J. Chimney seals which are installed on the interior of manholes will not be acceptable.

PART 3 EXECUTION

3.01 COORDINATION

A. Location and type of manholes installed shall be as shown on the Drawings or directed.

B. Construction shall be in conformance with details shown on the Drawings and as specified.

C. Excavation for manhole construction shall be prepared as directed in applicable paragraphs of Section 02200.

3.02 INSTALLATION OF INTEGRAL BASE SECTIONS

A. The manhole base may be placed on 6 inches compacted granular bedding material.

3.03 INSTALLATION OF BOTTOM RISER SECTIONS (WITHOUT INTEGRAL BASE)

A. Unless otherwise called for on the Drawings or directed, precast bottom riser sections shall be placed with cast-in-place reinforced concrete bases.

B. The base shall be of Class A concrete 12-inch thick minimum placed on undisturbed earth or a minimum 6-inch-thick aggregate stone cushion. Reinforcing shall be as shown on the Drawings.

C. The cut-out riser section shall be blocked in place above the pipe and the concrete base poured in place. Concrete shall be extended above the lower rim of the riser wall as required to provide a watertight seal around the entire circumference of the riser section. The sewer pipe shall be bedded in concrete monolithic with the base to the first joint each way from the manholes.

D. On straight runs the Contractor may carry the pipe through the manhole and break out the top half after the fill concrete has set. In all cases the pipe shall extend through the manhole wall to the inside face.

3.04 CHANNELING MANHOLE BOTTOMS

A. The bottoms of all manholes shall be channeled to conduct flow in the planned direction. The channel walls shall be formed or shaped to the full height of the crown of the outlet sewer in such a manner to not obstruct maintenance of flow in the sewers and shall match inverts of connection pipe at the manhole wall.

B. Manholes which do not have integral base or channels precast with base section, as approved by Engineer, shall have channels formed and placed in the field with Class A concrete.

3.05 PRECAST CONCRETE RISER SECTIONS

A. The shortest length of riser section to be incorporated into the manhole shall be installed immediately below the eccentric cone section or the flat slab top.

B. Riser section joints shall be pointed and lifting holes filled with non-shrinking mortar.

C. Riser section exterior joints shall be wrapped and sealed with joint wrap as specified herein. Concrete shall be primed a minimum of two times. The first coat shall be allowed to fill concrete depressions and bug holes. Contractor shall follow manufacturer recommendations.

D. Contractor shall protect joint wrap from damage during back filling and other related work.

3.06 INSTALLATION OF MANHOLE FRAMES

A. Manhole frames and covers shall be installed to grades shown on the Drawings or as directed.

B. Adjustment of manhole castings shall be made using specified precast grade rings and portland cement mortar joints or preferred bitumen seals.

C. Each manhole casting shall be anchored in place using four 5/8-inch stainless steel bolts with nuts as detailed on the Drawings or directed.

D. The maximum depth of adjustment below any manhole casting shall be 16 inches and the minimum depth of adjustment shall be 4 inches.

E. In concrete pavement, separate frame from pavement with 1/2-inch thick premolded mastic joint material extending from the base of the frame to the top of the frame.

F. Manhole castings located in pavement areas shall be installed with the top of the casting 1/4 inch below the finished grade of the adjacent pavement surface.

3.07 CHIMNEY SEAL

A. Installation of chimney seal shall be after casting has been adjusted to final grade. Chimney seal shall cover all joints at manhole top including, but not limited to, iron casting, adjusting rings and manhole riser.

B. Chimney seal shall be installed per manufacturer recommendations. Chimney seal shall provide a water tight seal.

3.08 MANHOLE TESTING

A. Each manhole shall be tested in accordance with ASTM C1244 'Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill.' in the presence of the Engineer

B. All lift holes shall be plugged with an approved non-shrink grout before testing.

C. All pipes entering the manhole shall be plugged and braced to prevent being drawn into the manhole.

D. Testing shall be by drawing a vacuum on the manhole using equipment specifically designed for such testing. A test head with necessary gauges and connections shall be placed at the inside of the top of the cone section and sealed in accordance with the manufacturer's instructions. A vacuum of 10 inches of mercury shall then be drawn and the vacuum pump shut off. With valves closed, the time shall be measured for the vacuum to drop to 9 inches. The test shall be successful if the time measured is greater than the required time based on the following chart:

	Diameter (in)				
	48	**60**	**72**	**84**	**96**
Depth (ft.)	**Time (sec.)**				
<4	10	13	16	20	23
6	15	20	25	29	34
8	20	26	33	39	45
10	25	33	41	48	56
12	30	39	49	58	67
14	35	46	57	67	78
16	40	52	67	77	89
18	45	59	73	86	100
20	50	65	81	96	111
22	55	72	89	105	122

	Diameter (in)				
	48	60	72	84	96
Depth (ft.)	Time (sec.)				
24	59	78	97	115	133
26	64	85	105	124	144
28	69	91	113	134	155
30	74	98	121	143	166

E. If the test is unsuccessful, necessary repairs shall be made and retesting shall proceed until a satisfactory test is obtained.

F. If a manhole is constructed of different diameters, the largest diameter shall be used to determine the time required for testing.

G. The Contractor may perform testing after completely backfilling the manhole, and the following modification to the testing procedure shall be followed.

1. Determine depth of water table and depth of manhole being tested.

2. Using above depths, calculate the hydrostatic head above the lowest manhole connection.

3. Adjust test pressure according to the following table:

Hydrostatic Head (ft)	≤12	13	14	15	16	17	18	19	20	21	22
Vacuum Pressure (in Hg)	10	9	8	7	6	5	4	3	2	1	0

4. If hydrostatic head above the lowest manhole connection is equal to or greater than 22 feet, vacuum testing must be completed before backfilling.

PART 4 SPECIAL PROVISIONS

4.01 XYPEX ADDITIVE

A. Contractor to provide crystalline waterproofing additive to precast concrete manholes as indicated on the drawings and as specified herein (Xypex Admix C-500 or C-1000).

B. Concrete waterproofing system shall be of the crystalline type that chemically controls and permanently fixes a non-soluble crystalline structure throughout the capillary voids of the concrete. The system shall cause the concrete to become sealed against the penetration of liquids from any direction, and shall protect the concrete from deterioration due to harsh environmental conditions.

C. The manufacture of the crystalline water proofing shall provide the type of material and the dosage rate for the application. Admix must be added to concrete mix at time of batching. The actual dosage in the mix design shall be certified at the time of application.

D. Manufacturer shall coordinate with the concrete batch facility and other admixture suppliers to ensure compatibility with the concrete mix design, other admixtures and concrete properties. The addition of the crystalline water proofing shall not reduce the

concrete strength or compromise the ASTM specifications or other quality standards governing the concrete mix.

E. Concrete containing Xypex Admix shall be moist cured in accordance with ACI Reference 308, “Standard Practice for Curing Concrete”.

END OF SECTION

SECTION 02554
CATCH BASINS AND INLETS

PART 1 GENERAL

1.01 SCOPE

A. This Section includes furnishing and installing PVC inlets and catch basins of designated types and at locations shown on the Drawings and scheduled.

B. This Section includes all necessary excavation, removing existing structures, furnishing and installing concrete of classes called for, reinforcing steel, brick, precast solid concrete block, portland cement mortar, precast concrete inlet structures, flexible joints where specified, inlet castings, making watertight connections to new and existing sewers, and other incidental 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. Manufacturer's certification indicating the manhole components and joints, for each production run for each size and type furnished meet specifications.

b. General assembly drawings, identifying catch basin and inlet components, physical dimensions and compliance with Specifications.

PART 2 PRODUCTS

2.01 TYPES OF CATCH BASINS AND INLETS

A. Types of inlets and catch basins included under this Section shall be as designed and detailed on the Drawings or as specified by reference to City, State, or County standards or modifications thereof.

B. The terms catch basins and inlets as used herein refer to nomenclature of standard drawings for specified structures and of details shown on the Drawings.

2.02 MATERIALS

A. PVC catch basins shall be Nyloplast- Light Duty.

B. The inlet grate shall be 24-inch diameter drop-in grates.

2.03 ACCESSORIES

A. Frames – Frames shall be ductile iron and conform to ASTM A536, Grade 70-50-05.

B. Joints – Joints shall be watertight, resilient, and conform to ASTM D3212. Gaskets shall conform to ASTM F477.

C. Fittings – Fittings shall consist of Inserta Tees, or approved equal for lateral connections.

PART 3 EXECUTION

3.01 COORDINATION

A. Location and type of inlets and catch basins installed shall be as shown on the Drawings, scheduled, and specified herein.

B. Detailed drawings of specified City or County catch basins and inlets will be furnished by the Owner. State Highway Standard Detail drawings must be obtained by the Contractor.

3.02 INSTALLATION

A. Installation shall be in conformance with relevant portions of the following:

1. Section 02200.
2. Section 02552.
3. Details shown on the Drawings.
4. Specified standards.

B. The construction of these structures shall be done in strict conformance with the details shown on the Drawings or the applicable State, City, or County Detail Drawing, as specified.

PART 4 SPECIAL PROVISIONS

Not Used.

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:

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.

2.02 RESERVED

2.03 RESERVED

2.04 RESERVED

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 RESERVED

3.02 RESERVED

3.03 RESERVED

3.04 PIPE PROTECTION

A. Detectable marking tape shall be installed in the trench of each non-metallic pipe. The tape shall be installed directly above the force main at the depth recommended by the manufacturer. The tape shall extend the full length of the force main, and shall be imprinted with a continuous warning message repeated at least every 36 inches. The warning message shall state that a sewer line is buried below. The tape shall consist of one layer of aluminum foil laminated between two layers of inert plastic film. The lamination bond shall be strong enough that the layers cannot be separated by hand. The tape shall be inductively located and conductively traceable using a standard pipe and cable locating device.

B. Utility markers and locator stations shall be installed with 42 inches to 48 inches above ground.

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 RESERVED

3.07 RESERVED

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:

Size (in)	Thickness Class	Material	Spec Section	Remarks
14	350	DIP	02555, 2.01 A	Gravity Sewer
24	350	DIP	02555, 2.01 A	Carrier Pipe in 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 PROTECTIVE COATINGS FOR SANITARY SEWERS

A. Ductile Iron Pipe used for sanitary sewers shall be lined on the interior of the pipe with Protecto 401 or approved equal.

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:
2. Drawings for Review:
   a. Manufacturer's assembly drawings and parts list including model number and materials of construction.
3. Information for the Record:
   a. A certificate of compliance with AWWA C509, or AWWA C504 shall be submitted, if required by the Engineer.
   b. Certification of NSF approval.

PART 2 PRODUCTS

2.01 RESERVED

2.02 RESERVED

2.03 RESERVED

2.04 RESERVED

2.05 INSERTING VALVE AND VALVE BOX

A. Inserting valves shall be full-body ductile iron castings. Inserting valves shall be RW Gates as manufactured by TEAM. All nuts, bolts and other metal hardware used on inserting valves shall be 316 stainless steel. Valves shall open in the counterclockwise direction.

B. Inserting valves shall operate to fully shut off the flow in existing sanitary sewer mains.

2.06 TAPPING SLEEVE, VALVE AND VALVE BOX

A. Tapping valves shall be Mueller T-2360 Resilient Wedge Gate Valves. Tapping gate valves shall be designed for mechanical joint connections. All nuts, bolts and other metal hardware used on tapping sleeves and valves shall be 316 stainless steel.

B. Tapping sleeves shall be Mueller H-304SS stainless steel tapping sleeves with a 3/4-inch NPT test plug.

2.07 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 3 feet or more 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 2-inch square wrench nut. Extension stems shall meet the requirements of this Section.

B. Floor Boxes:

1. Wherever a valve is located directly below a concrete slab or where shown on the Drawings, the valve shall be equipped with a floor box or floor stand with an extension stem.

2. Floor boxes for access to operating nuts of valves shall be cast iron cover and body with bronze bushing, and shall be of length equal to the thickness of the concrete slab in which they are installed.

3. Floor stands shall be made of cast iron and shall extend to a level where hand wheel or other operator is easily operated. Floor stands shall be shop primed and field painted according to the Painting Specifications. Stands shall be anchored to the concrete slab with stainless steel bolts. Floor stands shall have bronze bushings for maintaining proper extension stem alignment.

4. Extension stems meeting the requirements of this Section shall be furnished and installed for use with all floor boxes and floor stands. The extension stems shall be of sufficient length to extend from the valve to the floor box or floor stand.

C. Extension Stems and Stem Guides:

1. Unless otherwise specified, each extension stem shall be made of cold-rolled steel material and the same size as the valve stem of the valve it operates. Stem guides shall be made of cast iron and fully adjustable. The guide block shall be bronze brushed where it contacts the extension stem. Stem guides shall be as manufactured by the Eddy Valve Co., Rodney Hunt, or equal.

2. All valves which are to be operated by tee-wrench shall have 2-inch square operating nut at the top of the extension stem.

3. Stems for operation of plug valves shall not be less than 1-1/4-inch diameter Schedule 80 galvanized steel pipe with intermediate steady guides. Weld socket for 2-inch valve nuts to bottom of extension stems and pin sockets to nuts with stainless steel plated 3/8-inch bolts. Provide a permanent lever or a 2-inch square operating nut at top of stems, in accordance with requirements of Drawings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Tapping Sleeve Valve and Valve Box

1. The Contractor shall locate the existing water main to be tapped prior to installing pipe directly connecting to the tapping valve to verify the outside diameter of the existing sanitary sewer main pipe.

2. The Contractor shall perform a hydrostatic test of the tapping sleeve and valve prior to installing the tap connection to the existing force main. The sleeve shall be hydrostatically tested for 15 minutes using test pressures in accordance with tapping sleeve manufacturer’s recommendations. Compressed air testing shall not be permitted.

B. Accessories:

1. Valve Boxes shall be installed in a plumb position and in alignment with the operating nut.

2. Extensions stems and stem guides shall be in alignment with operating nut and prevent binding and stresses on connecting pins.

3. When there is a change to the grade elevation, valve boxes new and existing shall be adjusted to the new grade elevation.

3.02 INSERTING VALVES

A. The Contractor shall field verify the location and diameter of all existing force mains scheduled to receive an inserting valve.

PART 4 SPECIAL PROVISIONS

Not Used.

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 702.02.

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 RESERVED

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-feet intervals.

C. Contraction joints shall be placed at approximately 10-feet 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-feet 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 RESERVED

3.07 RESERVED

3.08 RESERVED

3.09 RESERVED

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

Not Used.

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.

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

4.01 AREAS TO BE SEEDED

A. Areas noted as “grass” or “grass area” or areas cleared or grubbed shall be seeded in accordance with the requirements of this Section.

B. Areas noted as “cultivated areas” shall be rough graded to final grades. No seeding is required to be placed in areas designated as “cultivated areas”.

C. The Ditch Enclosure area shall be seeded as a “grass area.”

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 RESERVED

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, 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.

B. A grouting pipe shall be installed at the lower end and an air vent at the highest point in the upper end of the encasement pipe, and both ends sealed around the carrier pipe with masonry.

C. Grout shall be poured in through the grouting pipe until the annular space between the sewer and encasement is completely filled and grout rises in the air vent. The grouting pipe and vent pipe shall be cut off below grade and sealed.

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

Not used.

END OF SECTION

SECTION 03305
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SCOPE

A. This Section includes cast-in-place concrete along with formwork, , joint systems, , reinforcing, mix design, shotcrete, placement procedures, and finishes as indicated on the Drawings and as specified herein.

1.02 SUBMITTALS

A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:

1. Shop Drawings for Review:
   - a. Concrete mix designs including substantiating data and test records.
   - b. Product literature for admixtures, curing compounds, and miscellaneous materials.
   - c. Locations of construction not shown on Drawings, and proposed changes in locations.
   - d. Material certifications.
   - e. Aggregate gradation and percentages of deleterious substances.
   - f. Batch plant certification.
   - g. Placing drawings shall indicate:
     - 1) Construction joints, splice locations, and splice lengths.
     - 2) Bending schedules.
     - 3) Accessories.
2. Information for the Record:
   - a. Manufacturer's application instructions for miscellaneous materials.
   - b. Quality control test reports.
   - c. Shotcrete personnel qualifications
   - d. Description of application method and equipment used to place and finish shotcrete. Including air quality control and venting procedures.

B. Copy of concrete delivery ticket shall be presented to Resident Project Representative for each batch. Delivery ticket shall indicate:

1. Name of ready-mixed company and plant designation.

2. Truck number.
3. Concrete class.
4. Quantity of concrete.
5. Date.
6. Time when batch was loaded.
7. Type and name of admixtures.
8. Actual batch weights of cement, fly ash, aggregates, and water.
9. Location of pour and time of unloading shall be added to the ticket at Site.

1.03 QUALITY ASSURANCE

A. Concrete work shall comply with provisions of the current editions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified.

1. ACI American Concrete Institute.
2. CRSI “Manual of Standard Practice”.
3. AWS “Code for Welding in Building Construction”.

B. Concrete Manufacturer Qualifications - Manufacturer of ready-mixed concrete products complying with ASTM C94 requirements for production facilities and equipment.

C. Concrete Testing Service - A qualified independent testing agency shall perform material evaluation tests and shall design concrete mixes.

D. Maintain adequate supervision and control of dewatering operation to ensure that stability of excavated and constructed slopes are not adversely affected by water, erosion is controlled, and flooding of excavation or damage to structures does not occur.

E. Batch Plant:

1. Batch Plant shall be central batch plant with automatic or semi-automatic control. Concrete may be mixed using either central-mixed, shrink-mixed, or truck-mixed methods. If concrete is shrink-mixed or truck-mixed, the truck and concrete producer shall conform to ASTM C94.
2. Batch plant shall be certified by the Department of Transportation, National Ready Mixed Concrete Association (NRMCA) or an independent certification using NRMCA “Check list for Certification of Ready Mixed Concrete Production Facilities” executed and certified by independent Professional Engineer registered in state of Site. Evidence of current certification shall be submitted.

F. Pre-Installation Conferences:

1. Before beginning concrete work, Contractor shall hold a meeting to review detailed requirements for preparing concrete mix designs and to determine proper procedures for concrete construction.
2. A representative of Contractor, testing laboratory, concrete producer, and Engineer shall be in attendance.

1.04 DELIVERY AND HANDLING

A. Concrete shall be delivered in accordance with ASTM C94, except concrete shall be completely discharged within one hour after introduction of mixing water to cement.

B. Concrete shall be delivered in agitating trucks or in mixing trucks operating at agitating speed.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials used in concrete construction shall meet all the requirements of applicable ASTM and other industry standards.

B. Portland cement - ASTM C150, Type I or II unless indicated otherwise.

C. Air-entraining Agent - ASTM C260, chloride ion free.

D. Chemical Admixtures (Water Reducing Agents, Superplasticizers, Accelerator) - ASTM C494 and ASTM C1141 for shotcrete. All admixtures shall be chloride ion free.

E. Fly Ash - ASTM C618, Class C or Class F, including supplementary chemical requirements and supplementary physical requirements, except loss-on-ignition shall be less than 5%. The use of fly ash shall be in accordance with “Use of Fly Ash in Cement (ACI-232.2R).

F. Silica Fume - ASTM C1240.

G. Coarse Aggregate - Aggregates for normal weight concrete shall be crushed limestone conforming to ASTM C33, Class 4S. Aggregates used shall not react with alkalies in the cement to an extent that results in excessive expansion of the shotcrete.

H. Fine Aggregate - ASTM C33. Aggregates used shall not react with alkalies in the cement to an extent that results in excessive expansion of the shotcrete.

I. Reinforcing Steel - ASTM A615, Grade 60, deformed.

J. Welded Wire Fabric; Plain - ASTM A185, (undeformed wires) with weld intersections not exceeding 12 inches.

K. Water - ASTM C94, clean and potable.

L. Membrane Curing Compound - ASTM C309, minimum 30% solids content, non-yellowing, moisture loss not to exceed .039 grams per square cm in 72 hours when applied at a coverage rate of 250 square feet per gallon, VOC compliant, water-based acrylic polymer resin. “Safe Cure & Seal – 30% by Dayton Superior or equal.

M. Sheet Curing Compound - ASTM C171.

N. Formwork - ACI 301 and ACI 347R.

O. Form Coating - Non-staining.

P. Miscellaneous Metals - ASTM A36.

Q. Anchor Bolts - ASTM A307.

R. Bonding Agent for New to Existing Concrete - "Sika Armatec 110 Epocem" by Sika or equal. (Epoxy modified cementitious product.)

S. Galvanizing - ASTM A123 or A153.

T. Epoxy Adhesive for Embedding Dowels into Existing Structures – 100% solids, 100% reactive epoxy conforming to ASTM C881, Type IV, Grade 3, Class B and C. The minimum bond strength per ASTM C882 shall be 1800 psi at 7 days. The adhesive shall be formulated to withstand the maximum allowable published loads permanently without creep or failure. The adhesive shall be Hilti "HIT-RE 500 V3" or equal. Power/Rawl "Power-Fast" epoxy with "Fast Set" formulation shall not be used.

U. Include spacers, chairs, bolsters, ties, and other devices that conform to CRSI specifications necessary for properly placing, supporting and fastening reinforcement in place. Metal accessories shall be plastic coated, galvanized or stainless steel where legs will be exposed in finished concrete surfaces. For slabs-on-grade, use supports with sand plates or horizontal runners for any areas where the base material will not support chair legs. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are protected by plastic (CRSI, Class 1) or stainless steel (CRSI, Class 2).

V. Use one brand of cement throughout the entire project, unless otherwise approved by the Engineer.

2.02 CONCRETE MIX DESIGN

A. Mixture proportioning for concrete structures shall be in accordance with ACI 301, 318, and 211.1 but subject to the following requirements.

B. Two normal weight concrete mixes are generally required; Class A and Class B. Concrete mixes shall be as follows. Batch in accordance with ASTM C94 and the following:

	Class A	**Class B**
Type of Portland Cement:	I	II
28 Day Compressive Strength (psi):	4500	4500
Slump (inches) +/- 1 inch:	3	2.5
Air Content (%) +/- 1%:	6.0	4.0
Maximum Aggregate Size (inches):	1 (size #57)	3/8
Water Reducing Agent:	Yes	-
Minimum Cementitious Content (lbs) (Cement and Fly Ash):	550	-

	Class A	Class B
Minimum Portland Cement Content	80% by weight of total Cementitious material.	
Maximum Fly Ash Content:	20% by weight of total cementitious material	
Maximum GGBF Slag Content	20% by weight of local cementitious material.	
Maximum Water/Cementitious Ratio:	0.45	0.45

C. Contractor shall design and be responsible for the performance of all concrete and shotcrete mixes of specified quality, consistency, and workability to permit concrete to be worked readily into forms and around reinforcement or shot in place without segregation or excessive bleeding. Hardened concrete shall develop all characteristics required by contract documents.

D. Concrete mixes shall be proportioned to maximize durability and water tightness and to minimize shrinkage. To this end, total water content shall be kept to the lowest possible amount consistent with placing and consolidation methods. Water reducing and high range water reducing admixtures shall be used as required to maintain workability. Specified water/cementitious ratio shall not be exceeded.

E. Concrete proportions shall be established on the basis of previous field experience, or laboratory trial batches in accordance with ACI 301, ACI 211.1 and ACI 318. Proposed mix design shall be accompanied by complete standard deviation analysis or trial mixture test data.

F. Concrete proportions shall be subject to Engineer's approval. Substantiating data and test records shall be submitted.

PART 3 EXECUTION

3.01 COORDINATION

A. Reinforcement, sleeves, inserts, anchors, waterstops, and other embedded items shall be accurately placed, supported, and tied prior to concrete placement. Other trades and contractors required to furnish embedded items shall be given ample notice of concrete placement. Reinforcement and embedded items shall be subject to review of Resident Project Representative prior to placing concrete.

B. Contractor shall notify Resident Project Representative a minimum of 48 hours before placing concrete, excluding nonworking days.

C. Concrete shall be placed only between hours of 8:00 a.m. and 6:00 p.m., unless otherwise permitted. Concreting shall not be placed after 12:00 noon on the last working day of the week.

3.02 PREPARATION

A. Unless adequate protection is provided, concrete shall not be placed during rain, sleet, or snow, or when inclement weather is imminent.

B. Cold Weather - When the average temperature of surrounding air is expected to be below 40 degrees F during placing or within 24 hours thereafter, cold weather concreting in accordance with ACI 306R "Standard Specification for Cold Weather Concreting" shall apply.

C. Concrete shall be protected from extremes in temperature as specified. During periods not defined as cold weather, but when freezing outdoor temperatures are foreseen or occur, concrete surfaces shall be protected against freezing for the first 24 hours, minimum, after placement.

D. Hot Weather- When the ambient temperature is 90 degrees F. or above, or when conditions of concrete temperature, air temperature, wind velocity, and relative humidity combine to cause flash set, excessively low slump, cold joints, plastic shrinkage cracking, or otherwise impair the quality of concrete, hot weather concreting procedures in accordance with "Hot Weather Concreting - ACI 305R," shall apply.

E. When the evaporation rates of bleed water exceed 0.1 pounds per square feet per hour, steps shall be taken to prevent plastic shrinkage cracking. Evaporation rate shall be determined by method shown in "Hot Weather Concreting - ACI 305R."

3.03 INSPECTION, STARTUP, AND TESTING

A. Notify Engineer 48 hours prior to placement of concrete.

B. Engineer's approval is required for subgrade, formwork, and reinforcing prior to starting each placement.

C. Submit proposed concrete mix design to Engineer for review prior to commencement of any Work. Do not begin concrete production until the proposed mix design has been approved by the Engineer.

D. 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 7 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 test, and whenever consistency of concrete appears to vary. Shotcrete slump shall be measured at discharge into pump.

3. Air Entrainment - ASTM C173 or C231. Perform one test for every second ready-mix truck load. Shotcrete percent air requirement is for concrete as it is being shot into place. To achieve the required percent air, the percent air into the shotcrete pump will need to be higher.

4. Temperature ASTM C1064. Perform with each slump test.

E. If the measured slump or air content fall outside the specified limits, make an additional test immediately and on each successive batch until the specified requirements are met by two consecutive batches.

F. Materials and installed Work may require testing and retesting at any time during progress of Work. Tests, including retesting of rejected materials for installed work shall be done at Contractor's expense.

G. Test Reports:

1. The testing laboratory shall submit test reports directly to the Contractor, the concrete supplier, and Engineer. Reports shall be identified by the project name and number, and the portion of the structure represented. Reports shall include the dates of casting and testing, air and concrete temperatures, specified strength and mix design, actual strength and mix design, slump, air content, and the name of individual making the test.

2. The testing laboratory shall notify the Engineer immediately by telephone when a low strength break occurs or specifications are not met.

3.04 FORMWORK

A. Formwork shall conform to ACI 347R.

B. Formwork shall be designed to safely support vertical and lateral loads, until such loads can be safely supported by concrete structure. Loads shall be carried to ground by formwork and in-place construction of adequate strength.

C. Formwork shall be designed for dead and live loads, weight of concrete, wind, construction loads including impact, and other loads which act or might act on formwork.

D. Formwork shall be designed for pressure of concrete giving due consideration to rate of concrete placement, methods of placement, method of consolidation, concrete mix design, temperature, and other factors pertinent to formwork design.

E. Forms shall have sufficient strength and rigidity to maintain specified tolerances.

F. Formwork shall be securely braced and anchored against deflection and displacement.

G. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood insets shall be used for forming keyways, reglets, recesses, and the like for easy removal.

H. Form ties shall be adjustable in length to permit tightening of the forms and so made that no metal remains nearer than 1-1/2 inch to the concrete surface after the ends are removed. Spreader devices shall leave holes no greater than 7/8 inch in diameter. Washers or buttons leaving shallow depressions in the surface will not be permitted. Twist type ties may be used only for unexposed concrete.

I. Provide holes in the form for insertion of vibrators to properly consolidate concrete.

J. Provide temporary openings for clean-outs and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.

K. Chamfer exposed corners and edges using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

L. The maximum allowable tolerance in either the horizontal or vertical planes shall be 1/4 inch in 10 feet.

M. Provisions for Other Trades - Provide openings in concrete formwork to accommodate Work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

N. Oil temporary forms with non-staining form oil.

O. Cleaning and Tightening - Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.05 DOWELING TO EXISTING STRUCTURE

A. Dowels shall be embedded into existing concrete where shown on Drawings. Unsound concrete shall be reported to Engineer.

B. Adhesive dowels shall be placed in holes larger than the reinforcement diameter using a rotary percussion hammer and carbide bit. Hole diameters shall be as recommended by manufacturer for each specific reinforcing diameter.

1. Unless indicated otherwise, adhesive dowels shall be embedded as follows:

Stud Diameter	Minimum Embedment
#3	3-1/4 inches
#4	4-3/8 inches
#5	5-3/4 inches
#6	6 inches
#7	7-1/4 inches
#8	8-7/8 inches

C. Hole shall be cleaned of dust and residue by blowing the hole with dry and oil-free compressed air. Air nozzle shall be inserted to bottom of hole. The holes should also be brushed using a nylon brush to remove dust and other debris which may have been pressed into the walls of the hole.

D. Standing water and frost shall be removed immediately prior to injecting adhesive.

E. Adhesive shall be injected from bulk-loading caulking gun, disposable caulking tubes, or pneumatic dispenser. Adhesive shall be injected using extension on nozzle to reach bottom of hole. Adhesive shall be injected to pre-determined depth which will cause hole to be completely filled after bar is inserted.

F. Bar shall be inserted and slightly rotated to ensure adhesive completely surrounds bar.

G. Adhesive displaced from hole shall be removed immediately.

H. The manufacturer's installation guidelines for the specific adhesive chosen shall be strictly followed.

3.06 REINFORCEMENT

A. Place reinforcing to ACI recommended tolerances.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved by the Engineer.

D. Unless shown otherwise in drawings, place reinforcement to maintain minimum coverages conforming to ACI standard practice for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

E. Welding of reinforcement shall conform to AWS D1.4.

F. Unless otherwise specified on Drawings, reinforcing steel splices shall be lapped conforming to ACI 318, Class B splices.

G. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh plus 2 inches and lace splices with 16-gauge wire. Do not make end laps between supporting beams. Offset end laps in adjacent widths to prevent continuous laps in either direction.

3.07 INSERTS

A. Metal inserts such as anchor bolts, sleeves, embedded metals, etc. shall be free of scale, loose rust, oil, grease and other coatings. Remove protective film from cast iron with flame.

B. Ensure that items are accurately positioned and rigidly supported against displacement before placing concrete.

C. The location of anchor and foundation bolts must not vary from the dimensions shown on the Contract Drawings by more than the following:

1. 1/8-inch center to center of any two bolts within an anchor bolt group, where such group is defined as the set of anchor bolts which receives a single fabricated steel shipping piece.
2. 1/4-inch center to center of adjacent bolt groups.

D. Split rib types of waterstops are acceptable at construction joints and isolation (expansion) joints.

E. Secure waterstops in place by wire ties to hog rings. Hog rings to be installed between last rib and edge and spaced at 12 inches on center.

F. Field weld joints in waterstops using indirect heating element.

3.08 JOINTS

A. Joints not shown on Drawings shall be made at locations that will least impair strength of structure, and shall be approved by the Engineer prior to construction.

B. Construction Joints:

1. Keyways at least 1-1/2-inch-deep by width, which is equal to 1/3-member thickness, shall be provided in all construction joints in walls, supported slabs, and between walls and foundation systems.
2. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints. Do not continue reinforcement through sides of strip placements.
3. Concrete slabs on grade shall be poured in strip pattern shown on the Drawings.
4. Roughen surfaces of set concrete at all joints. Clean surfaces of laitance, coatings, loose particles, and foreign matter. Roughen surfaces in a manner to expose bonded aggregate uniformly. Apply approved bonding adhesive or cement grout. Bonding cement grout shall be evenly spread and shall consist of 1-part cement and two parts fine aggregate. Fresh concrete shall be placed before grout or bonding adhesive has obtained initial set. Grout shall be approximately 2-inch-thick in walls.

C. Unless otherwise shown, provide isolation joints in slabs on grade at all points of contact between slabs on ground and vertical surfaces, such as column pedestals, foundation walls, grade beams, equipment bases and elsewhere as indicated.

D. Clean joints thoroughly with compressed air, wire brushing, or sandblasting.

E. Fill joints with specified joint filler.

3.09 CONCRETE SCHEDULES

A. Unless indicated otherwise, concrete shall be furnished as follows:

Class A: Reinforced concrete structures and fill in manholes and chambers.

3.10 PLACING CONCRETE

A. General - Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.

B. Do not place concrete on frozen ground, mud, or debris. Dampen subgrade prior to placing concrete slabs on grade where vapor barrier is not required.

C. Inspection - Before placing concrete, inspect, and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Where necessary, notify other trades to permit installation of their work.

D. Convey concrete from the mixer to the place of final deposit by methods which will prevent the loss or separation of the materials:

1. When concrete placing is interrupted for more than 1/2 hour, place a construction joint.

E. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Avoid unplanned cold joints. Alternate equipment shall be immediately available for use in the event that primary placing equipment or system breaks down.

F. Use internal vibration to consolidate. Size at least one vibrator to work around closely spaced reinforcing. Provide a standby vibrator whenever working less than three vibrators in the pour. All equipment and procedures used to consolidate concrete shall comply with ACI 309R.

G. Concrete shall be thoroughly consolidated by vibrating, spading, rodding, or forking so that concrete is thoroughly worked around reinforcement and embedded items, and into corners, angles of forms, eliminating air and stone pockets.

H. Hot Weather Concreting – Follow recommendations of ACI 305R for preparation, placing, protection and curing during hot weather.

I. Cold Weather Concreting – Follow recommendations of ACI 306R for preparation, placing, protection and curing during cold weather.

J. Contractor shall keep good thermometer at Site for monitoring air or concrete surface temperature.

K. Where saw cutting and removal of existing concrete walls, slabs, etc. exposes the ends of reinforcing steel bars, the Contractor shall coat the exposed concrete surface with the specified epoxy coating.

1. Prior to application of the epoxy coating, the concrete surface to be coated shall be roughened and cleaned of all loose materials and dust.

2. Epoxy coating shall be water based rebar coating agent, moisture insensitive, 3-component, epoxy-modified cementitious product.

3. Application methods and thickness of coating shall be as recommended by the manufacturer.

3.11 DEFECTIVE CONCRETE

A. Defective concrete is defined as concrete in place which does not conform to specified design strength, required percent air, shapes, alignments and elevations, as shown on the Drawings and/or which presents faulty surface areas. Evaluation and acceptance of concrete shall conform to ACI 318, ACI 301, and ACI 350 as applicable.

B. All defective concrete shall be removed and replaced in a manner meeting with the Engineer's approval, or should surface imperfections only occur, may be patched at the discretion of, and in a manner satisfactory to the Engineer; however, permission to patch the Work shall not be considered as a waiver of the Engineer's right to require complete removal and replacement of such defective Work should the patching fail to satisfactorily restore the required quality and appearance of the Work. All such Work shall be performed at the Contractor's expense, without extension of time.

C. If for any reason, in the opinion of the Engineer, the testing of any section of the completed structure is necessary, a superimposed load shall be applied by the Contractor and the test conducted in accordance with the current Building Code at the Contractor's expense irrespective of the results of the tests. In cases where failure is declared, the Engineer shall have the authority to order the defective construction removed. All expense of removing such defective construction and substituting new construction, including expense of removing and replacing the Work of others, or protecting and repairing the Work of others, shall be borne by the Contractor.

3.12 CURING

A. General - Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations.

B. Begin curing after finishing concrete but not before free water has disappeared from concrete surface in accordance with ACI 308 "Standard Practice for Curing Concrete" subject to the requirements specified herein.

C. Cure concrete at least five days at concrete temperatures above 70 degrees F or at least seven days at concrete temperatures between 50 degrees F and 70 degrees F. Maintain concrete temperature above 50 degrees F during the curing period. Tanks and other liquid retaining structures shall be cured for a minimum of 10 days.

D. For exposed surfaces, utilize one of the following methods:

1. Membrane Curing Compound - Apply in two coats at right angles to each other upon completion of the Work - each one in accordance with the manufacturer's instructions. Compounds must not be used on surfaces when surface treatments, such as tile, additional concrete, paint, liquid hardeners, and adhesive coatings are specified unless the compound is known not to interfere with adhesion.

2. Sheet Curing Materials - Place materials upon completion of the finishing work. Lap edges 6 inches and seal to create a moisture barrier that must remain intact for the duration of the curing period.

3. Sprinkling, Soaking, or Ponding - Maintain surfaces continuously wet for the duration of the curing period as described above.

E. If formed surface is exposed during the curing period, treat the surface as an exposed surface for the remaining duration of the curing period.

3.13 FINISHING SURFACES

A. Formed Surfaces - Finishing of formed surfaces shall be in accordance with the requirements of Section 5, ACI 301 subject to the following provisions specified herein:

1. Do not remove forms and shoring until the concrete has cured sufficiently to carry its own weight and remain in place without deformation. Remove forms with care to prevent spalling. Reshore concrete carrying superimposed load until the concrete has attained design strength.

2. Inspect honeycombed areas. Replace areas as directed by the Engineer.

3. On exposed vertical unpainted surfaces, building interior, and to 6 inches below grade on building exterior, remove fins and projections, fill holes, and produce smooth-rubbed finish per ACI 301 by wetting and rubbing surfaces with carborundum brick or other abrasive until uniform color and texture are produced.

4. Horizontal surfaces, such as at tops of walls, pedestals, horizontal offsets and similar unformed surfaces occurring adjacent to formed surfaces, shall be struck off smooth and finished with a texture matching the adjacent formed surfaces.

B. Slabs and Horizontal Surfaces - Finishing of unformed surfaces shall be done in accordance with the requirements of Section 5 of ACI 301 and Chapter 8 of ACI 302:

1. All slabs, whether receiving additional finishes or not, shall receive a float finish when concrete has stiffened sufficiently to permit the operation of a power drive float and all surface water has disappeared. Check and level slab surface to obtain a Class A finishing tolerance per ACI 117.

2. Interior slabs not receiving tile shall be given a hard trowel finish as follows:

a. Follow initial finishing with a steel trowel worked flat to produce a fine, non-slip, sandy texture.

b. Follow the first steel troweling with a second steel troweling to produce a dense, smooth surface after the surface has become hard enough to give a ringing sound from the trowel.

c. Retool joints and edges as required.

3. Exterior slabs and concrete stair treads shall be given a non-slip broom finish with scored texture perpendicular to main traffic route. Retool joints and edges.

C. Tanks and Other Liquid Retaining Structures: Finishing for exposed surface shall be in accordance with the requirements of ACI 350, ACI 301 and ACI 302 subject to the following requirements:

1. Slabs - Floated finish.
2. Interior Formed Surfaces - Grout-cleaned finish.
3. Exterior Formed Surfaces - Grout-cleaned finish to 6 inches below grade.
4. Other Formed Surfaces - As-cast finish.

3.14 REMOVING FORMS

A. General - Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the Work, may be removed after curing at not less than 50 degrees F for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 80% of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimen's representative of concrete location or members. Construction loads shall not exceed 80% of design live load until 28 days after concrete placement.

C. Form-facing material may be removed four days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.15 REUSING FORMS

A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces except as acceptable to the Engineer.

3.16 CONCRETE REPAIRS AND REPLACEMENT

A. Remove and replace, at Contractor's expense, any concrete that was part of the Work and that is broken, damaged, or defective, or does not meet the requirements of this Section.

B. Protect concrete from damage. Exclude traffic from slabs-on-grade and roadway/walkway paving for at least 14 days after placement. When construction traffic

is permitted, maintain slabs and paving as clean as possible by removing surface stains and spillage of materials as they occur.

C. Patching Defective Areas - Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable to the Engineer.

D. Mix dry-pack mortar, consisting of one-part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing.

1. Cut out honeycombs, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.

2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

E. Repaired Formed Surfaces - Remove and replace concrete having defective surfaces if defects cannot be repaired to the satisfaction of the Engineer. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar or precast cement cone plugs secured in place with bonding agent.

1. Repair concealed formed surfaces containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.

F. Repairing Unformed Surfaces - The Contractor shall test unformed surfaces such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.

1. Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of 0.01-inch-wide or that penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.

2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.

3. Correct low areas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Repair defective areas, except random cracks and single holes not exceeding 1 inch in diameter by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

G. Repair isolated random cracks and single holes 1 inch or less in diameter by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Place dry-pack before bonding agent has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

PART 4 SPECIAL PROVISIONS

4.01 SHOTCRETE

A. Qualifications; The shotcrete Contractor's crew foreman and nozzlemen shall meet the following requirements:

1. Furnish proof that the Contractor and shotcrete crew foreman have at least 5 years of experience in reinforced shotcrete construction work on projects of similar size and character along with three references from persons who were responsible for supervision of these projects. Include name, address, and telephone number of references who will testify to a successful completion of these projects by the Contractor and shotcrete crew foreman.

2. Furnish proof that the nozzlemen are certified by the American Concrete Institute (ACI) for application of shotcrete to vertical and overhead surfaces, using the wet-mix shotcrete process, as prescribed in ACI publication CP-60 (02).

3. Furnish proof that the nozzlemen have successfully completed three projects of similar size and character. The nozzlemen shall also pass a preconstruction mock-up test, described in the following section, demonstrating their ability to satisfactorily construct the reinforced shotcrete structural elements required for this project. (Note: the requirement for construction of a mock-up, at the discretion of the Engineer, may be waived if the nozzleman can provide evidence of having previously successfully shot structurally reinforced walls and ceiling of similar configuration with the same equipment and shotcrete mixture.)

B. Requirements:

1. Provide a preconstruction mock-up 4 feet wide by 8 feet long of wall and 8 feet long of ceiling of the reinforced shotcrete to demonstrate that the shotcrete materials, mixture, equipment, crew, and construction sequence and methods used are capable of producing a finished product conforming to these

specifications and acceptable to the Engineer. Construct a safe self-standing mock-up from wood or steel and concrete. Provide a minimum 3-inch thick concrete wall and ceiling base that mimics the existing conditions. Once the base is cured, apply the shotcrete to the base mock-up form using the materials and methods to be used for the Work. If finished mock-up does not satisfy the specified requirements, then another mock-up test shall be performed at contractor's expense, until mock-ups meet the specified requirements. Once project is finished mock-up(s) shall be lawfully disposed of by contractor.

2. Provide suitable ventilation, lighting, fans, curtains, or other devices necessary to provide the shotcrete nozzlemen and crew with good visibility and control of shotcrete mist, dust, overspray, and rebound.

C. Shotcrete Placing Equipment:

1. The shotcrete delivery equipment shall be capable of delivering a steady stream of uniformly mixed material to the discharge nozzle at the proper velocity and rate of discharge.

2. The use of positive displacement pumps equipped with hydraulic or mechanically powered pistons (for example, similar to conventional concrete piston pumps), with compressed air added at the discharge nozzle, is the preferred type of wet-mix shotcrete delivery system. Pneumatic feed guns, rotary type feed guns (similar to dry-mix guns) and peristaltic squeeze-type pumps shall only be used if the Contractor can demonstrate that they produce shotcrete meeting all the specified performance requirements.

3. The air ring at the nozzle shall be carefully monitored for any signs of blockage of individual air holes. If nonuniform discharge of shotcrete becomes apparent, shooting shall be stopped and the air ring cleaned or other appropriate corrective actions taken.

4. The delivery of equipment shall be thoroughly cleaned at the end of each shift. Any build-up of coatings in the delivery hose and nozzle shall be removed. The air ring and nozzle shall be regularly inspected and cleaned, and replaced if required.

5. Supply clean, dry, compressed air, capable of maintaining sufficient nozzle velocity for all parts of the work and simultaneous operation of a blowpipe.

6. The air supply system shall contain a moisture and oil trap to prevent contamination of the shotcrete.

D. Alignment Control and Cover:

1. Implement alignment control to establish control over line and grade and ensure that the minimum specified shotcrete thickness and cover to reinforcing steel are maintained. Verify that reinforcing bars are fixed to provide specified cover before application of any shotcrete.

2. Provide alignment control by means of devices such as shooting wires, guide strips, depth gauges, or forms. The proposed means of alignment control shall be submitted to the Engineer for review and approval before any shotcrete application.

3. When ground wires (also called guide wires or shooting wires) are used, they shall consist of a high-strength steel wire kept taut during shotcreting. Remove ground wires after completion of shotcreting and screeding operations.

4. Guide strips and forms shall be of such dimensions and installation configuration that they do not impede the ability of the nozzlemen to produce uniform, dense, properly consolidated shotcrete. In particular, installations that are conducive to the entrapment of rebound or formation of shadows and voids shall not be used.

E. Shotcrete Acceptance:

1. The engineer has the authority to accept or reject the shotcrete work. Shotcrete that does not conform to the project specification maybe rejected either during the shotcrete application process, or on the basis of test on cores from test panels or completed work.

2. Deficiencies observed during the shotcrete application process, such as, but not limited to the following, constitute a cause for shotcrete rejection:

   a. Failure to properly control and remove build-up of overspray and rebound.

   b. Incomplete consolidation of shotcrete around reinforcing steel and embedment's.

   c. Excessive voids, delamination's, sags or sloughing.

   d. Failure to apply shotcrete to the required line and tolerances

3. Whenever possible, perform remedial work to correct deficiencies while shotcrete is still plastic.

4. The hardened shotcrete will be examined by the Engineer for any evidence of excessive plastic or drying shrinkage cracking, tears, sloughs, or other deficiencies. Sounding or other method of testing may be used to check for voids and delamination's. If the shotcrete does not meet the specific criteria, the work will be rejected and the contractor shall implement a remediation program to correct the deficiencies.

5. Shotcrete that does not conform to the contract documents shall be removed and replaced, or repaired at Engineers discretion by the contractor at no cost to the Owner.

END OF SECTION

SECTION 05500
METAL FABRICATIONS

PART 1 GENERAL

1.01 SCOPE

A. This Section includes furnishing, shop detailing, shop coating, fabricating, delivering, and installing all miscellaneous metals and accessories needed to complete installations as shown on the Drawings, whether or not specifically listed herein, except those items specified in other sections. This section includes design engineering where specifically called for by 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. Shop Drawings shall indicate:

      1) Types of materials with ASTM designations.

      2) Plan layouts, elevations and sections.

      3) Connection details.

      4) AWS weld designations and welding procedure.

      5) Surface preparation and shop coatings.

      6) Accessory materials.

   b. Product literature for all materials and accessories required to complete the installation of the items covered in this Section.

   c. Samples representative of materials and finished products.

2. Information for the Record:

   a. Welder qualification certificates.

   b. Inspection Reports and test certificates.

   c. Required field measurements.

   d. Manufacturer’s installation instructions.

1.03 QUALITY ASSURANCE

A. Standards - Metal fabrications shall be designed, fabricated, and installed in accordance with following standards.

1. "Structural Welding Codes", American Welding Society.
2. "Specifications for Structural Steel Buildings" as approved by American Institute of Steel Construction.
3. "Specifications for the Design of Cold-Formed Steel Structural Members", American Iron and Steel Institute.
4. "Specification for the Design of Cold-Formed Stainless Steel Structural Members", ASCE 8.
5. "Code of Standard Practice for Steel Buildings and Bridges", as approved by American Institute of Steel Construction.
6. "Specification for Aluminum Structures", Aluminum Association.
7. "Specification for Structural Joints Using High Strength Bolts" as approved by the Research Council on Structural Connections of the Engineering Foundation.
8. "Surface Preparation Specification," Steel Structures Painting Council (SSPC).

B. Welders, welding operators, and tack welders shall be qualified by tests as prescribed in AWS Structural Welding Code.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Contractor shall exercise particular care in handling materials to prevent damage to shop applied finishes and coatings.

B. Material shall be stored in a manner to prevent bending or warping. Material shall be stored away from uncured concrete and masonry.

C. Materials to be embedded in concrete or masonry shall be delivered in sufficient time to permit proper placement.

D. Fastening materials shall be delivered and stored in unopened boxes with labels clearly identifying fastener material, grade, and manufacturer. Only those fasteners which can be installed in same day shall be removed from storage.

1.05 PROJECT CONDITIONS

A. Prior to fabrication, Contractor shall field measure new and existing structures when required for proper fit.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel (Carbon Steel):

1. Wide Flange Shapes (W) - ASTM A992.

2. Other Rolled Shapes, Plate, and Bar - ASTM A36 or ASTM A572, Grade 50 as indicated on the Drawings. Where no indication is given, use ASTM A36.
3. Sheets - ASTM A570, Grade 36.
4. Hollow Structural Sections (HHS), tube and pipe - ASTM A500, Grade B.
5. Pipe - ASTM A53, type E or S, Grade B.
6. Floor and Tread Plate - ASTM A786 using ASTM A36 steel.

B. Stainless Steel:

1. Unless indicated otherwise stainless steel shall be AISI Type 316, except AISI Type 316L shall be used for welded construction. The minimum yield strength shall be 30,000 ksi.
2. Sheet, Strip, Plate, and Flat Bar - ASTM A666, annealed.
3. Round Bar and Structural Shape - ASTM A276, condition A.
4. Pipe and Tube - ASTM A312 or ASTM A554, annealed.
5. Floor and Tread Plate - ASTM A793.

C. Aluminum:

1. Unless specified otherwise aluminum shall be alloy 6061-T6.
2. Sheet and Plate - ASTM B209.
3. Rod and Bar - ASTM B211 or B221.
4. Pipe and Tube - ASTM B210 or ASTM B429.
5. Floor and Tread Plate - ASTM B632.

2.02 ASSEMBLY AND ERECTION FASTENERS

A. Bolts and Nuts:

1. High strength bolts - ASTM A325, Type 1 or ASTM A490, Type 1. When no indication is given, ASTM A325 shall be used.
2. Stainless Steel - ASTM F593, AISI Type 316.
3. High strength and stainless-steel bolts shall bear a distinctive head marking identifying bolt grade or material.
4. Nuts - Heavy hex style, ASTM A563, Grade C, for plain A325 high-strength fasteners and DH for galvanized bolts. For A490 bolts, heavy hex nuts conforming to ASTM A194 for Grade 2H, or ASTM A563 Grades DH or DH3.

B. Lock Nut - Prevailing torque type, IFI 100, Grade A.

C. Carbon Steel Washers - ASTM F436 plain with plain bolts and galvanized with galvanized bolts.

D. Lock Washer - Spring type of same material and coating as bolt.

E. Headed Studs - ASTM A108, Grade 1010 through 1020, and AWS D1.1, Section IV.

F. Screws:

1. Carbon Steel - SAE Grade 2, zinc plated.

2. Stainless Steel - IFI 104, Grade 304.

G. Nuts and washers of same finish and material as bolts shall be furnished

2.03 ANCHOR BOLTS

A. General Requirements:

1. Bolt and Stud Material:

2. Carbon Steel - ASTM F1554 Grade 36, unless noted otherwise.

3. Stainless Steel - ASTM F593, AISI Type 304.

4. Heavy hex nuts and washers of same material and coating as anchor shall be furnished. Where lock nut is indicated, prevailing torque type lock nut shall be furnished in addition to standard nut.

5. Anchor Bolt Sleeves:

6. Steel Pipe - ASTM A501, ASTM A120, or ASTM A53.

7. Plastic - Wilson “Ankor Shield” or equal.

B. Cast-In Anchor Bolt (Type A):

1. Sufficient thread length shall be provided to permit installation of nuts on both sides of concrete form or template.

2. Anchor embedment, and hook dimension shall be as shown on Drawings.

3. Where sleeve is shown, sleeve shall be fabricated from material indicated above.

C. Adhesive Anchor (Type B):

1. Adhesive – 100% solids, 100% reactive epoxy (ester-based resins are not permitted) in conformance with ASTM C881, Type IV, Grade 3, Class B and C. Minimum bond strength to concrete, per ASTM C882, shall be 1800 psi at 7 days. Adhesive shall be mixed in accordance with manufacturer’s recommendations. The adhesive shall be formulated to withstand the maximum allowable published load permanently without creep or failure.

2. Where adhesive anchor is installed in hollow masonry, stainless steel screen tubes shall be furnished to contain adhesive until stud is inserted.

3. The anchor rods shall be threaded for entire length. Carbon steel rods shall conform to ASTM A193 B7 (high strength) and stainless-steel rods shall conform to AISI 316.

4. Stud shall be threaded full length.

5. Adhesive anchors shall be type “HIT-RE-500-V3” manufactured by Hilti, or equal. All formulations of the “Power-Fast Epoxy” as manufactured by Powers/Rawl shall not be used.

D. Expansion Anchor (Type C):

1. Wedge Type Anchors - FS A-A 1923A, Type 4.

2. All components shall be of same material.

3. Expansion anchors shall be type “Kwik Bolt TZ” manufactured by Hilti, or equal.

E. Sleeve Masonry Anchor (Type D):

1. Sleeve Type Anchors - FS FF-S-325, Group II, Type 3, zinc plated carbon steel.

F.

2.04 WELDING

A. Carbon Steel:

1. Welders, welding operators, and tack welders shall be qualified by tests as prescribed in AWS Structural Welding Code.

2. Welding shall be performed using only prequalified joint details in accordance with AWS Structural Welding Code.

3. Welding electrode shall conform to the requirements of AWS D1.1 and table 3.1 therein.

4. Welded fabrications which will be exposed to weather, submerged, or subject to sewage spray shall be continuously welded.

5. All welding processes and procedures and joint details shall be in accordance with the requirements of AWS D1.1. Weld quality shall conform to Section 8 of AWS D1.1.

B. Stainless Steel:

1. Stainless steel shall be welded with inert gas shielded process (GTAW, GMAW, or PAW). Inert gas protection shall be provided to top and under or backside of weld to ensure protection from atmospheric contamination.

2. Filler metal shall be extra low carbon (ELC) of appropriate type for base material being welded.

3. Residue, oxide, and heat stain in heat affected zone shall be removed.

C. Aluminum:

1. Aluminum shall be welded by process which does not require the use of welding flux.

2. Filler metal shall be as recommended by AA and AWS for base material and welding process used. Filler metal shall be selected to minimize crack sensitivity of weldment and to minimize discoloration of weldment on items to be anodized.

D. Welding shall be performed in such a manner to prevent warping and distortion.

E. Butt joints shall be made with full penetration welds. Weld reinforcement on back side shall be smooth, uniform, and no more than 1/16 inch in height.

F. Rough welds shall be ground to remove sharp edges, undercuts, pinholes and other irregularities. Chipping is permitted to remove sharp edges if followed by welding. Overgrinding, which would result in decreasing metal thickness or integrity of weld beyond limits of good welding practice shall be avoided.

G. Weld spatter shall be removed by chipping and grinding as required. Use of an anti-spatter coating applied adjacent to weld area prior to welding is permitted.

2.05 FABRICATION

A. Work shall be fabricated straight and true, free from warpage or other defects and assembled in a first-class workmanlike manner. Joints, copes, miters, and corners shall be accurately cut, machined, filed, and fitted with best methods as required for fabrication.

B. Work shall be fabricated as shown on approved Shop Drawings. Removable parts or members shall be carefully fitted and secured by screw fastenings or other methods as may be required.

C. Work shall be fabricated in as large as sections as practicable to minimize field connections. Field connections shall be designed and constructed in most practical locations for strength, appearance, and ease of installation. Field connections shall be mechanically fastened unless field welding is shown, specified, or permitted by Engineer.

D. Holes and other provisions for field connections shall be accurately located. Connections shall be shop checked for proper fit. Connection materials shall be match-marked when required for proper installation.

E. Holes produced by flame cutting shall be ground smooth.

F. Sharp edges of flame cut or sheared carbon steel fabrications shall be removed by power grinding.

G. Carbon steel surfaces to be coated or galvanized shall have gouges, handling marks, deep scratches, metal stamp marks, slivered steel and other surface flaws repaired. Surface flaws shall be repaired by welding and grinding as required.

2.06 SHOP COATING

A. Aluminum:

1. Anodizing - Where specified, provide Architectural Class I anodic coating, applied after fabrication.

2. Surfaces which will be in contact with concrete, masonry, or dissimilar metals shall receive a heavy coat of coal tar paint, Bitumastic Super Service Black, or equal.

B. Carbon Steel:

1. Steel fabrications wholly embedded in concrete or masonry and with a minimum of 2 inches of concrete cover shall be abrasive blasted in accordance with SSPC SP-6 but shall not be coated. Exposed portions of partially embedded steel shall be shop coated to a point 4 inches below the concrete surface.

2. Galvanizing - Component shall be hot dip galvanized after fabrication in conformance with ASTM A123. Threaded parts and hardware shall be galvanized in conformance with ASTM A153 or zinc-plated in conformance with ASTM B695.

3. Painting - Unless specified otherwise, non-galvanized fabrications shall be shop primed per Section 09900.

a. Surfaces which will be inaccessible for field painting after installation shall receive two coats of primer.

b. Contractor shall ensure primer is compatible with specified field coatings.

PART 3 EXECUTION

3.01 ERECTION

A. Metal fabrications shall be installed in accordance with manufacturer’s instructions and as shown on Drawings.

B. Fabrications shall be installed level and plumb or as otherwise shown on Drawings. Shims shall be furnished when required.

C. Components shall be assembled as indicated on Drawings. Light drifting is permitted to draw parts together but drifting to match unfair holes is not permitted. Where holes do not match, holes may be reamed slightly using a tapered reamer. Enlarging holes by burning is prohibited.

D. Contact surfaces between members and areas adjacent to bolt holes shall be free of dirt, oil, loose scale, burrs, pits, and other defects that would prevent proper seating and connection of the members.

E. Galvanized or anodized material shall not be field bent, cut, welded, or otherwise altered. Material so altered will be considered defective.

3.02 ASSEMBLY AND ERECTION FASTENER INSTALLATION

A. Washers shall be installed under turned element of bolts. Hardened washers shall be used for high strength and alloy bolts. Beveled washers shall be installed when bearing surface of the bolted parts have a slope of 1:20 or greater with respect to the bolt axis.

B. Fastener threads which have been contaminated with dirt shall be cleaned and lubricated.

C. Stainless Steel - Anti-seizing lubricant shall be applied to threads prior to installation.

D. Bolts shall be tightened progressing systematically from stiffest part of connection toward free edges.

E. Bolted connections shall be snug-tightened-joints, unless noted otherwise. All connected steel plies shall be free of dirt, oil, lacquer and burrs, and shall be in firm contact prior to bolting.

F. High strength and alloy bolts shall not be reused once tightened beyond snug-tight.

G. For bolted connections, at least one full thread shall project beyond the nut when tightened.

3.03 ANCHOR BOLT INSTALLATION

A. Non-cast-in type anchors shall be installed in predrilled holes of size specified or as recommended by manufacturer. Anchors shall be embedded to depth indicated below unless shown otherwise on the Drawings.

B. Anchor bolted connections shall be snug-tightened- in accordance with “Specification for Structural Joints Using ASTM A325 or A490 Bolts” as approved by the Research Council on Structural Connections of the Engineering Foundation or as otherwise specified by anchor manufacturer.

C. Expansion Anchor:

1. Unless indicated otherwise, expansion anchors shall have an effective embedment as follows:

Stud Diameter	Minimum Embedment
1/4 inch	2 inches
3/8 inch	2 inches
1/2 inch	3-1/4 inches
5/8 inch	4 inches

3/4 inch	4-3/4 inches
1 inch	6 inches

2. Unless indicated otherwise, expansion anchors shall be spaced as follows:

   Minimum center to center spacing: 2 times embedment.

   Minimum edge distance: 3 times embedment.

3. Unsound concrete shall be reported to Engineer.

D. Adhesive Anchor:

1. Adhesive anchors shall be placed in holes larger than stud diameter using a rotary percussion hammer and carbide bit. Hole diameters shall be as recommended by manufacturer for each specific anchor diameter.

2. Unless indicated otherwise, Adhesive anchors shall have an effective embedment as follows:

Stud Diameter	Minimum Embedment
3/8 inch	3-3/8 inches
1/2 inch	4-1/2 inches
5/8 inch	5 5/8 inches
3/4 inch	6-3/4 inches
7/8 inch	7-7/8 inches
1 inch	9 inches

3. Preparation Procedure:

   a. Hole shall be cleaned of dust and residue by blasting with dry and oil-free compressed air. Air nozzle shall be inserted to bottom of hole.

   b. Sides of hole shall be cleaned with a nylon bristle brush.

   c. Compressed air blast shall be repeated.

4. Standing water and frost shall be removed immediately prior to injecting adhesive.

5. Adhesive shall be injected from bulk-loading caulking gun, disposable caulking tubes, or pneumatic dispenser. Adhesive shall be injected using extension on nozzle to reach bottom of drilled hole.

   a. Anchoring to Concrete - Nozzle shall be inserted to back of hole and adhesive dispensed while slowly withdrawing nozzle. Hole shall be filled to pre-determined depth which will cause hole to be completely filled after stud is inserted.

   b. Anchoring to Masonry - Screen tube shall be filled with adhesive while slowly withdrawing nozzle. Screen tube shall be carefully inserted into drilled hole.

6. Stud shall be pushed into adhesive with gentle, uniform pressure while slightly rotated to ensure adhesive completely surrounds stud. Stud shall be inserted to full depth of hole.

7. Adhesive displaced from hole shall be removed immediately. Adhesive which has hardened on projecting portion of stud or on concrete surfaces shall be removed.

8. Nut shall not be tightened, nor load applied until adhesive has fully cured as recommended by manufacturer.

9. Threaded anchors shall have at least one full thread projecting beyond the nut when tightened.

3.04 FASTENER AND ANCHOR SCHEDULE

A. Unless shown or specified otherwise, fasteners and anchors shall be as follows:

Base Metal	Fastener Metal and Coating
Stainless steel	Stainless Steel
Aluminum	Stainless Steel
Galvanized steel	Galvanized or zinc plated carbon steel
Field painted or uncoated carbon steel	Unfinished or zinc plated carbon steel

B. Where a connection involves dissimilar base metals, fastener shall be as required for most corrosion resistant base metal in connection, or dielectric material shall be installed.

C. Anchors bolts and fasteners in submerged applications shall be stainless steel.

D. Where anchor type is not shown or specified, anchor furnished shall be suitable for substrate material and specific application. Adhesive anchors are not permitted for anchoring to vertical or overhead surfaces inside of buildings or other fire rated locations.

Substrate Material	Suitable Anchor Type
Concrete	A, B, C
Solid or Grouted Masonry	A, B, D
Hollow Masonry	B, D

3.05 FIELD WELDING

A. Field welding when shown, specified, or otherwise permitted by Engineer shall be performed in accordance with the requirements specified for shop welding.

B. Areas adjacent to field welds shall not be shop primed. Primer shall be applied after welding.

3.06 COATING REPAIR

A. Welds, bolts, and damage to shop applied coatings shall be touched-up with same or equivalent materials used in original coating.

B. Minor scratches or defects in galvanized coating may be repaired with zinc-rich paint in accordance with ASTM A780 at Engineer's discretion.

C. Repair of anodized coatings in field is not permitted. Damaged materials shall be removed and re-anodized.

3.07 CLEANING

A. Metal fabrications shall be cleaned with mild detergents prior to final acceptance. Steel wool, harsh abrasives, or alkaline or acid cleaners are not permitted.

3.08 QUALITY CONTROL INSPECTION AND TESTING

A. The Contractor shall employ a laboratory to perform the following inspections and testing verifications:

1. At the start of Work, the inspector at the Site of the project shall:

   a. Verify that the material identification markings for structural members, high strength bolts, nuts and washers correspond to the appropriate ASTM designations.

   b. Verify that on-site welders designated by the Contractor are certified to perform welding

   c. Verify that the proper welding electrodes, equipment and procedures are being utilized

2. If inspections determine that a specific item does not comply with the Contract Documents the contractor shall make corrections until the item passes the inspection. The cost of corrections and additional inspections shall be paid for by the Contractor.

PART 4 SPECIAL PROVISIONS

4.01 DISSIMILAR MATERIALS

A. Where dissimilar materials come into contact, use neoprene washers, spacers, gaskets or other Engineer approved materials between them to provide insulation against electrolytic action.

4.02 CRITERIA FOR BASE METAL REPAIR OF STRUCTURAL STEEL

A. This criteria shall cover damage induced to existing structural steel during or subsequent to installation of steel. Injurious imperfections, such as voids and gouges, shall herein be

defined as a base metal discontinuity which results in a reduction of the cross-sectional area of a member, and which exceeds the limiting depths specified below for various thicknesses of material. Except for discontinuities of 1/32-inch and less in depth which are acceptable without any repair, base metal shall be conditioned for the removal of discontinuities by chipping or grinding. Weld repair is not required, provided the excavated area is well faired without abrupt changes in contour and the depression does not extend below the rolled surface by more than:

1. 1/32 inch for material less than 3/8 inch thick.
2. 1/16 inch for material 3/8 inch to 2 inches (inclusive) thick.
3. 1/8 inch for material over 2 inches thick.

B. Voids and gouges greater in depth than the limits given above and all cracks and tears are considered injurious and shall be weld repaired using the methods given below; however, in no case shall the depth of excavations exceed 30% of the base metal thickness without written approval of the Engineers. Prior to welding, the excavations shall be visually (and for cracks and tears, magnetic particle or liquid penetrant) examined to insure complete removal of defects. Excavations shall have a minimum root radius of 1/8 inch, a minimum included angle of 45 degrees F on the cross section, and shall be gradually tapered up to the base metal surface at the ends. Repair welding shall be performed in accordance with the parameters of an AWS D1.1 qualified backing bar weld procedure. Completed surfaces of all repair welds shall be visually examined to the acceptance criteria of AWS D1.1 Section 8.15.

4.03 CRITERIA FOR REPAIR OF WELD DEFECTS AND DAMAGED WELDS

A. Repair of damage or discontinuities in previously completed welds shall be in accordance with the criteria outlined below. In conjunction with the requirements outlined in weld procedure W200A, defects in welds shall be removed by chipping, arc-gouging, or grinding until sound metal is reached. Removal of indications such as cracks or tears, shall be verified by magnetic particle or liquid penetrant examination. Removal of other indications or damaged areas such as nicks, gouges or undercuts, shall be verified by visual examination. Oxygen gouging, where required, is acceptable providing welding preheat is applied. Rewelding shall be performed in accordance with the procedure originally used to make the weld, or an alternate procedure approved in writing by the Engineer. Removal of attachment welds, when required, shall avoid removal of base material. Any remaining rough edges shall be ground flush with the surrounding surface and visually inspected to assure soundness.

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.

B. Unless indicated otherwise, sewer manhole shall have a minimum access opening of 24 inches.

C. Unless indicated otherwise, heavy duty manhole cover and frame shall be Neenah Foundry Company R-1785, Type C cover.

2.03 INLET GRATE AND FRAME

A. Castings shall be suitable for heavy duty service.

B. Unless indicated otherwise, inlet grate and frame shall be Neenah Foundry Company R-1785.

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 "SANITARY SEWER".

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 CONCRETE COLLARS

A. Concrete collars shall be provided for all manholes and valve boxes located in paved areas.

END OF SECTION