

Project Manual
For:



Phase I: Raw Sewage Forcemain

Owner:

BOARD OF COUNTY ROAD COMMISSIONERS, COUNTY OF BAY,
on behalf of and for the benefit of the
BAY COUNTY DEPARTMENT OF WATER AND SEWER
3933 Patterson Road
Bay City, MI 48706

Contact:

West Bay County Wastewater Treatment Plant

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Prepared By:

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Prepared For:

Bay County Department of Water and Sewer
September 2019

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ADVERTISEMENT FOR BIDS

BAY COUNTY DEPARTMENT OF WATER AND SEWER

Sealed Bids will be received by the BOARD OF COUNTY ROAD COMMISSIONERS OF THE COUNTY OF BAY, as a designated county agency under Michigan Public Act 342 of 1939, as amended, for, and also for the benefit of, the BAY COUNTY DEPARTMENT OF WATER AND SEWER (DWS), for the following:

Phase I: Raw Sewage Forcemain

Project includes a new forcemain from the Raw Sewage Pump Building to the earthen Equalization Basin at the West Bay County Regional Wastewater Treatment Plant.

Bids will be received until **10:15 a.m., local time on October 23, 2019 at the Bay County Road Commission, 2600 E. Beaver Rd., Kawkawlin, Michigan 48631**, at which time and place said bids will be opened and publicly read aloud.

Bidding Documents may be obtained at the following location on or after September 25, 2019 during normal working hours:

Bay County Department of Water and Sewer, WWTP Control Building #600,
3933 Patterson Rd., Bay City, MI 48706-1993.

The date that the Bidding Documents are transmitted by the Issuing Office will be considered the prospective Bidder's date of receipt of the Bidding Documents. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office.

Each Bid shall be accompanied by a certified check, cashier's check, money order, or bid bond, in the amount of at least five (5) percent of the amount bid, drawn payable to BOARD OF COUNTY ROAD COMMISSIONERS OF THE COUNTY OF BAY, as security for the proper execution of the Contract.

All bids to remain firm for 30 days from the date of Bid Opening.

Complete instructions for filing Bids are included in the Instructions to Bidders, Section 00 21 13.

All Bids are subject to the provisions of the Bay County Department of Water and Sewer Purchasing Policy which may be examined at the address above.

The Board of County Road Commissioners of the County of Bay reserves the right to reject any or all Bids, waive any defects or irregularities, and to accept the Bid which, in its opinion, is most advantageous to the Board of County Road Commissioners of the County of Bay and its Department of Water and Sewer.

The Bay County Road Commission and its Department of Water and Sewer are committed to ensuring that the fundamental principles of equal opportunity are upheld in all decisions involving our employees and contractors/consultants, and to ensuring that the residents of our county are afforded access to our programs and services.

The Bay County Road Commission will provide necessary and reasonable auxiliary aids and services for disabled vendors upon request. Voice 989-686-4610, TDD 1-800-649-3777.

BOARD OF COUNTY ROAD COMMISSIONERS,
COUNTY OF BAY,
DEPARTMENT OF WATER AND SEWER

Edward L. Rivet, Chairman
Michael G. Rivard, Vice Chairman
William E. Schumacher, Commissioner

END OF SECTION

SECTION 00 21 13

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. *Issuing Office* -- The office from which the Bidding Documents are to be issued.
 - B. *Plan Holders of Record* – Entities that purchase Bidding Documents from the Issuing Office.

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents in the number and format, and for the payment, if any, stated in the advertisement or invitation to bid may be obtained only from the Issuing Office. The payment will not be refunded, unless otherwise indicated. Bids will be accepted only from Plan Holders of Record.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither OWNER nor ENGINEER assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 OWNER and ENGINEER, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within five (5) days of OWNER's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, present commitments, and (b) other data as may be requested.
- 3.02 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; 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.

4.02 *Existing Site Conditions*

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions may 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. Copies of reports and drawings referenced above will be made 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.
- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground facilities at or contiguous 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 may 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, or 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 may be identified in the Supplemental 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 may be 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 that may be 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(s) 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 - PRE-BID CONFERENCE

- 6.01 A pre-Bid conference will not be held.

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 by ENGINEER as having received the Bidding Documents. Questions received less than seven (7) days prior to the date for opening Bids 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 5% of Bidder's maximum Bid price 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 (7) days after the Effective Date of the Contract or 31 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 (7) days after the Bid opening.

ARTICLE 9 - CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, Milestones are to be achieved and the Work is to be substantially 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 will 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 (most commonly in the Specifications) 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 (5) days after Bid opening, submit to OWNER a list of the Subcontractors or Suppliers proposed for those portions of the Work for which such identification is required. 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 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 and the Bid Form signed in ink. 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.
- 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 official address of the partnership 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 official address of the firm shall be shown.
- 13.05 A Bid by an individual shall show the Bidder's name and official address.
- 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 official address of the joint venture 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 Lump Sum

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

ARTICLE 15 - SUBMITTAL OF BID

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form. The unbound copy of the Bid form is to be completed and submitted with the Bid security and 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".
- 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 wished 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, non-conforming, 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 will 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. In the comparison of Bids, alternates will be evaluated equally until doing so would cause the budget to be exceeded. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which OWNER determines funds will be available at the time of award.
- 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 ENGINEER, on behalf of the OWNER, issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with

the other Contract Documents as identified in the Agreement. Within 15 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 (10) 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.

END OF SECTION

SECTION 00 41 00

BID FORM

PROJECT IDENTIFICATION:

**West Bay County Regional Wastewater Treatment Plant
Phase I Raw Sewage Forcemain**

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

**Board of County Road Commissioners of the County of Bay
Bay County Department of Water and Sewer
3933 Patterson Road
Bay City, MI 48706**

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 **30** days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of OWNER.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

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

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

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that may be 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 may be 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(s) bid, 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 any thing of value likely to influence the action of a public official in the bidding process;
2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

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

CONTRACT LUMP SUM BID AMOUNT:

_____ (\$ _____)
 (use words) (use figures)

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.

6.03 TIME ALTERNATE:

If Bidder takes exception to the Contract Time(s) stipulated in the Agreement, Bidder is requested to stipulate below his proposed alternate time(s) and completion dates for performance of the Work.

6.04 SUBCONTRACTOR LISTING:

Bid is submitted on the basis of the use of the following Subcontractors:

<u>WORK ITEM</u>	<u>FIRM</u>	<u>CITY</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please note for each work item, if work is to be performed by Bidder or Subcontractor. If by Subcontractor, provide name and City for each Subcontractor. Failure to list Subcontractors with the Bid waives Bidder's rights to a change in Contract Time or Price or withdrawal of Bid and Bid Security, in the event OWNER has reasonable objections to any Subcontractor.

If Subcontractors are not identified above, OWNER shall have the right to reject any Subcontractor for reasonable cause. In this case, the apparent low Bidder shall engage a Subcontractor acceptable to OWNER and waives the right to withdraw Bid and Bid Security, and further, waives right to a change in Contract Time or Price due to failure to list.

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. List of Proposed Subcontractors;

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

9.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability):

By: _____
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in _____ [State where Project is
located] is ____/____/_____.

A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of second joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

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

Bidder's Business Address _____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20____.

State Contractor License No. _____ (where applicable).

END OF SECTION

SECTION 00 43 13

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

**Board of County Road Commissioners of the County of Bay
Bay County Department of Water and Sewer
3933 Patterson Road
Bay City, MI 48706**

BID

Bid Due Date:

Description (*Project Name— Include Location*):

BOND

Bond Number:

Date:

Penal sum

\$

(Words)

(Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

(Seal)

(Seal)

Bidder's Name and Corporate Seal

Surety's Name and Corporate Seal

By:

Signature

By:

Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest:

Signature

Attest:

Signature

Title

Title

Note: Addresses are to be used for giving any required notice.

Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00 51 00

NOTICE OF AWARD
(on ENGINEER's Letterhead)

Dated _____

TO: _____
(BIDDER)

ADDRESS: _____

Owner: _____

Contract: _____
(Insert name of Contract as it appears in the Bidding Documents)

Project: _____

OWNER's Contract No. _____ ENGINEER's Project No. _____

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: _____ Dollars (\$ _____).

Five unexecuted counterparts of the Agreement accompany this 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 receipt of this Notice of Award.

1. Deliver to ENGINEER five counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security (Bonds) and insurance certificates as specified in the Instructions to Bidders, General Conditions, and Supplementary Conditions.

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.

The information provided will be reviewed, bound into the Contract Documents, submitted to the OWNER for signature, and distributed to the appropriate parties. Two fully executed counterparts of the Contract Documents will be returned to you.

Sincerely,

FLEIS & VANDENBRINK ENGINEERING, INC.

By: _____
Signature

Title

cc: **BAY COUNTY DEPARTMENT OF WATER AND SEWER**

enclosure

END OF SECTION

SECTION 00 52 00

AGREEMENT

THIS AGREEMENT is by and between the **Board of County Road Commissioners of the County of Bay**, a body corporate, as a designated county agency under Michigan Public Act 342 of 1939, as amended, for, and also for the benefit of, the **Bay County Department of Water and Sewer**, of 3933 Patterson Road, Bay City, MI 48706 (hereinafter called 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:

Phase I: Raw Sewage Forcemain

ARTICLE 2 - THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows:

**Department of Water and Sewer
Bay County, Michigan
West Bay County Regional Wastewater Treatment Plant
Phase I: Raw Sewage Forcemain**

ARTICLE 3 - ENGINEER

3.01 The Project has been designed by Fleis & VandenBrink Engineering, Inc. Throughout these Contract Documents, the term Engineer is used. Engineer is to act as OWNER's representative, assume all duties and responsibilities, and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents. Owner has selected Tim Fitzgerald of the Bay County Department of Water and Sewer to serve as Engineer throughout this project.

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: Dates*

- A. The Work will be substantially completed on or before **May 15, 2020**, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before **June 15, 2020**.
- B. Parts of the Work shall be substantially completed on or before the following Milestone(s):
 - 1. Milestone 1: Air Release Chamber to the EQ Basin shall be substantially complete by **January 15, 2020**.

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 **\$750** 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 Time 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. Milestones: CONTRACTOR shall pay OWNER **\$250** for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 1, until Milestone 1 is achieved.

ARTICLE 5 - CONTRACT PRICE

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

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

TOTAL OF ALL LUMP SUM BID ITEMS

_____ \$ _____
 (use words) (figures)

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 each month during performance of the Work as provided in Paragraphs 6.02.A.1 below. 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 ENGINEER may determine or OWNER may withhold, including but not limited to liquidated damages, in accordance with the Contract.
 - a. 90% of Work completed (with the balance being retainage). If the Work has been 50% 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. 50% of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, OWNER shall pay an amount sufficient to increase total payments to CONTRACTOR to 100% of the Work completed, less such amounts set off by OWNER pursuant to Paragraph 15.01.E of the General Conditions, and less 200% 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 moneys not paid when due shall bear interest at the rate of 0 percent per annum.

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 may be 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 may be identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. CONTRACTOR has considered the information known to CONTRACTOR itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR; and (3) CONTRACTOR's safety precautions and programs.
- F. Based on the information and observations referred to in the preceding paragraph, CONTRACTOR agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
- G. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that CONTRACTOR has discovered in the Contract Documents, and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. CONTRACTOR'S entry into this Contract constitutes an incontrovertible representation by CONTRACTOR that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 - CONTRACT DOCUMENTS

9.01 Contents

- A. The Contract Documents consist of the following:
 - 1. This Agreement (pages 1 to 7, inclusive).
 - 2. Performance bond (pages 1 to 3, inclusive).
 - 3. Payment bond (pages 1 to 3, inclusive).
 - 4. General Conditions (2 title pages, table of contents pages i to v, and pages 1 to 65, inclusive).
 - 5. Supplementary Conditions (pages 1 to 6, inclusive).
 - 6. Specifications as listed in the table of contents of the Project Manual.

7. Drawings (not attached but incorporated by reference) with each sheet bearing the following general title: Department of Water and Sewer, Bay County, Michigan, West Bay County Regional Wastewater Treatment Plant, Phase I Raw Sewage Forcemain.
 9. Addenda (numbers _____ to _____, inclusive).
 10. Exhibits to this Agreement (enumerated as follows):
 - a. CONTRACTOR's Bid (pages _____ to _____, inclusive).
 - b. Documentation submitted by CONTRACTOR prior to Notice of Award (pages _____ to _____, inclusive).
 11. 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 and Supplementary Conditions.

ARTICLE 10 - MISCELLANEOUS

10.01 *Terms*

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

10.02 *Assignment of Contract*

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and 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 or Assigns*

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

10.04 *Severability*

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

10.05 *Contractor's Certifications*

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

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement.

This Agreement will be effective on _____, 20____ (which is the Effective Date of the Contract).

OWNER:

CONTRACTOR:

Board of County Road Commissioners of the County of Bay, as a designated County Agency Under 1939 PA 342, as amended, for the Bay County Department of Water and Sewer

By: _____

By: _____

Printed Name: _____

Printed Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

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

Attest _____

Attest _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

END OF SECTION

SECTION 00 55 00

NOTICE TO PROCEED
(on ENGINEER's letterhead)

Dated _____

TO: _____
(CONTRACTOR]

ADDRESS: _____

Contract: _____
(Insert name of Contract as it appears in the Bidding Documents)

Project: _____

OWNER's Contract No. _____ ENGINEER's Project No. _____

On behalf of the **Bay County Department of Water and Sewer**, you are hereby notified that the Contract Times under the above Contract will commence to run on _____. On that date, you shall start performing your obligations under the Contract Documents. No Work shall be done at the Site prior to such date unless otherwise approved by OWNER. In accordance with the Agreement, the date of Substantial Completion is _____, and the date of readiness for final payment is _____.

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

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

Sincerely,

FLEIS & VANDENBRINK ENGINEERING, INC.

By: _____
Signature

Title

cc: **BAY COUNTY DEPARTMENT OF WATER AND SEWER**

END OF SECTION

SECTION 00 61 13
PERFORMANCE BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: None See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal *(seal)*

Surety's Name and Corporate Seal *(seal)*

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence,

to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims

for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

SECTION 00 61 14

PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: None See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

_____ *(seal)*

Contractor's Name and Corporate Seal

_____ *(seal)*

Surety's Name and Corporate Seal

By: _____
 Signature

By: _____
 Signature *(attach power of attorney)*

 Print Name

 Print Name

 Title

 Title

Attest: _____
 Signature

Attest: _____
 Signature

 Title

 Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
 - 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2 Pay or arrange for payment of any undisputed amounts.
 - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. **Definitions**
 - 16.1 **Claim:** A written statement by the Claimant including at a minimum:
 1. The name of the Claimant;
 2. The name of the person for whom the labor was done, or materials or equipment furnished;
 3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 4. A brief description of the labor, materials, or equipment furnished;
 5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 7. The total amount of previous payments received by the Claimant; and
 - 16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
 - 16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
 - 16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
18. Modifications to this Bond are as follows:

SECTION 00 72 00
GENERAL CONDITIONS

EJCDC NO. C-700 (2013 EDITION)
2 TITLE PAGES, TABLE OF CONTENTS PAGES I TO V, AND PAGES 1 THROUGH 65

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



These General Conditions have been prepared for use with the Agreement Between Owner and Contractor for Construction Contract (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other.

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

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

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

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

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

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

2.05 *Initial Acceptance of Schedules*

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

2.06 *Electronic Transmittals*

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

computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

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

3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*
 - 1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict,

error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

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

B. *Resolving Discrepancies:*

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

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

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

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

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

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 2. abnormal weather conditions;
 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

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

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

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

- 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
- 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part

by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
 - 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

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

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

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

- c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after

becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
 - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - d. Contractor gave the notice required in Paragraph 5.05.B.
 - 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
 - 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings*: The Supplementary Conditions identify:
1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is

maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
 - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 2. claims for damages insured by reasonably available personal injury liability coverage.
 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
 - a. Such insurance shall be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Broad form property damage coverage.
 4. Severability of interest.
 5. Underground, explosion, and collapse coverage.
 6. Personal injury coverage.
 7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
 8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
 - 1. include at least the specific coverages provided in this Article.
 - 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
 - 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
 - 4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
 - 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
 - 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
 - 3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
 - 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
 6. extend to cover damage or loss to insured property while in transit.
 7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
 8. allow for the waiver of the insurer's subrogation rights, as set forth below.
 9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
 10. not include a co-insurance clause.
 11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
 12. include performance/hot testing and start-up.
 13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance:* If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the

policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and

guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 "Or Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and

- 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
 - C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
 - D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
 - E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
 - F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

- O. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

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

7.09 *Taxes*

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

7.10 *Laws and Regulations*

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

7.11 *Record Documents*

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

7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
 - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
 - D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
 - E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
 - F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
 - G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

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

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or

exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

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

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

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

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

1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to

provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples:*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
 1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
 5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
 6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
 7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal;
 6. the issuance of a notice of acceptability by Engineer;
 7. any inspection, test, or approval by others; or
 8. any correction of defective Work by Owner.

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

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop

Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

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

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

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

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

9.06 *Insurance*

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

9.07 *Change Orders*

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

9.08 *Inspections, Tests, and Approvals*

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

9.09 *Limitations on Owner's Responsibilities*

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

9.10 *Undisclosed Hazardous Environmental Condition*

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

9.11 *Evidence of Financial Arrangements*

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

9.12 *Safety Programs*

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

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

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

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

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

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

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

10.08 *Limitations on Engineer's Authority and Responsibilities*

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

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

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

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

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
 - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an

adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

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

11.02 *Owner-Authorized Changes in the Work*

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

11.03 *Unauthorized Changes in the Work*

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

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
 1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on

the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
 4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

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

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
 - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim

submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable

thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

- B. *Cash Allowances*: Contractor agrees that:
 - 1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

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

14.01 Access to Work

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

14.02 Tests, Inspections, and Approvals

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - 3. by manufacturers of equipment furnished under the Contract Documents;
 - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to

cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

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

14.06 *Owner May Stop the Work*

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

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will

include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

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

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

- a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
- a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
- a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

- e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

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

E. *Reductions in Payment by Owner:*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. the Contract Price has been reduced by Change Orders;
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - 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 consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
 - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

- A. *Application for Payment:*
 - 1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of

inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all disputes that Contractor believes are unsettled; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation,

including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such other adjacent areas;
 - 2. correct such defective Work;
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

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

16.02 *Owner May Terminate for Cause*

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

and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

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

16.04 *Contractor May Stop Work or Terminate*

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

expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

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

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Headings*

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

SECTION 00 73 00

SUPPLEMENTARY CONDITIONS

Caption and Introductory Statements

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC C-700 (2013 Edition). All provisions which 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.

SC-1.01 *Defined Terms*

SC-1.01 Add the following Defined Terms:

Bulletin - A document outlining possible changes to the Contract Documents which is issued by ENGINEER on behalf of OWNER requesting add or deduct costs from CONTRACTOR.

SC-2.02 *Copies of Documents*

SC-2.02 Delete Paragraph 2.02.A. in its entirety and insert the following new paragraph in its place:

A. Owner shall furnish to Contractor two copies of the Contract Documents including a fully executed counterpart of the Agreement. Additional printed copies will be furnished upon request at the cost of reproduction.

SC-4.01 *Commencement of Contract Times; Notice to Proceed*

SC-4.01 Delete Paragraph 4.01.A in its entirety and insert the following:

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

SC-5.03 *Subsurface and Physical Conditions*

SC-5.03 Delete Paragraphs 5.03.A and 5.03.B in their entirety and insert the following:

A. 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-5.06 *Hazardous Environmental Conditions*

- SC-5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:
- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
 - B. Not Used.

SC-6.03 *Contractor's Liability Insurance*

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:

- a. State: Statutory
- b. Applicable Federal (e.g., Longshoreman's): Statutory
- c. Employer's Liability:
Bodily Injury, each accident \$500,000

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor. Additional Insured: Fleis & VandenBrink Engineering, Inc. coverage for the additional insured should be on a primary and non-contributory basis. Waiver of subrogation should apply to the additional insured.

- a. General Aggregate \$2,000,000
- b. Products – Completed Operations Aggregate \$2,000,000
- c. Personal and Advertising Injury \$1,000,000
- d. Each Occurrence (Bodily Injury and Property Damage) \$1,000,000
- e. Property Damage liability insurance will provide Explosion, Collapse, and Under-ground coverages, (XCU) where applicable.

- f. Excess or Umbrella Liability
 - 1) General Aggregate \$1,000,000
 - 2) Each Occurrence \$1,000,000
- 3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:
 - a. Combined Single Limit of \$1,000,000
- 4. Additional Insureds: Owner and Engineer.

SC-6.03 Add the following new paragraph immediately after Paragraph 6.03.K:

- L. Subcontractor & Supplier Insurance Obligations: Contractor shall cause all Subcontractors and Suppliers to comply with all insurance requirements applicable to Contractor. Subcontractors and Suppliers shall not deviate from insurance requirements without Owner's prior written agreement.
- M. All Work performed for Contractor by 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. Contractor shall cause all Subcontractors and Suppliers to comply with all insurance and indemnity requirements applicable to Contractor. Subcontractors and Suppliers shall not deviate from insurance and indemnity requirements, without Owner's express prior written agreement.

SC-6.04 *Owner's Protective Liability Insurance*

Delete Paragraph 6.04.A in its entirety and insert the following in its place:

- A. In addition to the insurance required to be provided by CONTRACTOR under Paragraph 6.03 of the General Conditions, CONTRACTOR shall purchase OWNER's Protective Liability Insurance written in the name of the OWNER in the amount of One Million Dollars (\$1,000,000), Each Occurrence Limit and \$2,000,000 Aggregate Limit. The ENGINEER shall be named as additional insureds.

SC-7.02 *Labor; Working Hours*

SC-7.02.B. Add the following new subparagraphs immediately after Paragraph 7.02.B:

- 1. Regular working hours will be 7 am to 5 pm.

2. Owner's legal holidays are President's Day, Good Friday, Memorial Day, 4th of July, Labor Day, Thanksgiving Day and Day after Thanksgiving, Christmas Eve and Christmas, New Year's Eve and New Year's Day.
3. Work on weekends: no work will be allowed on weekends without written approval from the Owner.

SC-7.02.C. Add the following new paragraph immediately after Paragraph 7.02.B:

- B. Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if 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.

SC-7.06 *Concerning Subcontractors, Suppliers, and Others*

SC-7.06 (O) (3). Add the following new paragraph immediately after Paragraph 7.06.O.2:

3. Notwithstanding the forgoing, Owner and Engineer are intended third party beneficiaries of all contracts, subcontracts and purchase orders or other agreements between Contractor and third parties relating to Contractor's work.

SC-7.12 *Safety and Protection*

SC-7.12 (C) (1). Add the following new paragraph immediately after Paragraph 7.12.C:

1. Contractor shall comply with the Owner's site-specific safety plan and attend a safety orientation meeting with the Owner as directed during or after the preconstruction meeting. Contractor and applicable subcontractors will be required to comply with the Owner's Process Safety Management (PSM) for Chlorine and other pertinent wastewater treatment chemicals.

SC-7.12 (H) Add the following new paragraph immediately after Paragraph 7.12.G:

- H. Contractor shall indemnify, defend and hold harmless Owner and Engineer from any liability, loss, cost, penalty, damage or expense, including attorney's fees, arising from any claim, damage, proceeding, citation, or work stoppage in any way connected with Contractor's performance of the Work and violation of any requirement of public authority or applicable Laws and Regulations, including OSHA and MIOSHA.

SC-8.02 *Coordination*

SC-8.02 Delete Paragraph 8.02.A in its entirety and replace with the following:

- A. Owner intends to contract with others for the performance of other work at or adjacent to the Site.
 - 1. OWNER shall have authority and responsibility for coordination of the various contractors and work forces at the Site;
 - 2. Other work being performed adjacent to the site includes: Phase II: Raw Sewage Pump Replacement.

SC-10.01 *Owner's Representative*

SC-10.01 Delete Paragraph 10.01.A in its entirety and replace with the following:

- A. Tim Fitzgerald of the Bay County Department of Water and Sewer will act as the Owner's representative during the construction period and perform the role of Engineer. The duties and responsibilities of Engineer as the Owner's representative during construction are set forth in the Contract.

SC-10.03 *Project Representative*

SC-10.03 Add the following new paragraph immediately after Paragraph 10.03.A:

- B. On this Project, a Resident Project Representative will not be furnished.

SC-15.01 *Progress Payments*

D.1. This paragraph shall be modified so that 30 days is substituted for ten days.

SC-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.

Add the following Paragraphs 15.03.G and H:

- G. The following work items must be fully completed and ready for continuous use by the OWNER for the project to be considered Substantially Complete:
1. Forcemain, and air release manhole fully installed, loading dock reconstructed, backfilling, and site restoration.
- H. The following work items need not be fully completed at the time of Substantial Completion:
1. Touch up painting.
 2. Final cleaning.
 3. Final grass seeding.

END OF SECTION

SECTION 00 91 13

ADDENDUM

Addendum No. _____

Owner: _____
 Contract: _____
 Project: _____ Date: _____
 Owner's Contract _____ Engineer's Project No.: _____
 No.: _____
 ENGINEER: _____

NOTICE TO ALL PROSPECTIVE BIDDERS

BIDS DUE: _____ -- ISSUED TO ALL PLANHOLDERS OF RECORD

=====

This Addendum is a part of the Contract Documents and modifies the previously issued Bidding Documents. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may result in rejection of the Bid.

SPECIFICATION CHANGES

ITEM NO. 1:

Section _____ [Title] _____
 [Paragraph] _____

 [Paragraph] _____

ITEM NO. 2:

Section _____ [Title] _____
 [Paragraph] _____

DRAWING CHANGES

ITEM NO. 3:

Sheet(s) _____:

ITEM NO. 4:

Sheet(s) _____:

ATTACHMENTS:

END OF SECTION

SECTION 01 00 05

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 PERMITS & CODES

- A. CONTRACTOR is responsible for obtaining all necessary licenses and permits and to pay all fees, taxes and royalties, unless otherwise indicated, and comply with local and municipal ordinances and applicable state and national codes. A copy of all permits and licenses shall be provided to OWNER.
- B. CONTRACTOR shall notify OWNER five (5) working days prior to beginning each major phase of the Work.

1.02 NIGHT, WEEKEND, OR HOLIDAY WORK

- A. CONTRACTOR shall give written notice to OWNER, whenever it is desired to perform work at night, or on a Saturday, Sunday or holiday, or to vary period of hours during which work is carried on each day. If approved by OWNER, such work shall be subject to requirements furnished in writing by OWNER, and no extra compensation will be allowed.

1.03 SUBMITTALS

- A. CONTRACTOR shall submit items for review as listed below and as indicated in individual specification sections. Refer also to General Conditions for submittal requirements.
- B. Submit preliminary construction schedule prior to preconstruction conference.
- C. Submittals shall not be used in the work unless they have been reviewed and bear the signature of ENGINEER. Submittals will only be reviewed for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. CONTRACTOR shall be responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his or her work with that of all other trades, and performing all work in a safe and satisfactory manner. Corrections or comments made on submittals shall not relieve CONTRACTOR from compliance with requirements of Drawings and Specifications and shall not be considered an order for extra work.

1.04 QUALITY CONTROL TESTING

- A. The ENGINEER will provide construction observation. The CONTRACTOR shall pay for and provide testing as required by the OWNER and ENGINEER as indicated in the individual specification sections.

1.05 SANITATION

- A. CONTRACTOR shall furnish and maintain approved sanitary conveniences for use by

workers. Sanitary facilities shall be properly secluded from public observations and their use shall be strictly enforced.

1.06 PROTECTION

- A. CONTRACTOR shall furnish and maintain proper barricades, fences, signal lights, warning signs, and watchmen as required to properly protect and safeguard the work, persons, animals, and property against injury.

1.07 SOIL EROSION AND ENVIRONMENTAL CONTROLS

- A. CONTRACTOR shall maintain erosion control measures to protect storm drain inlets by using filter fabric barriers, straw bale barriers, or equivalent measures that protect the project site and prevent sediment pollution of adjacent water courses and properties.
- B. CONTRACTOR shall minimize dispersion of dust from construction operations by application of water or other dust control materials. Controls shall confine dust and dirt within the immediate area of project. .

1.08 CONSTRUCTION CLEANING

- A. CONTRACTOR shall keep work area free of accumulations of surplus materials, rubbish, and debris.

1.09 SALVAGED PROPERTY

- A. Material or equipment removed from existing construction shall become property of CONTRACTOR, unless otherwise designated. Disposition shall be as directed by OWNER.

1.10 MATERIAL & EQUIPMENT

- A. CONTRACTOR shall provide new products, conditioned for the particular application as recommended by manufacturer, unless otherwise noted.

1.11 PUNCH LIST

- A. A "punch list" will be prepared and distributed to CONTRACTOR, prepared by the ENGINEER and OWNER, at Substantial Completion. Items on punch list shall be completed within the contract time for final completion, or within thirty (30) days, whichever is less. Required submittals (see below) shall be completed prior to or when requesting final payment.

1.12 CLOSEOUT SUBMITTALS

- A. CONTRACTOR shall submit the following items to the OWNER prior to final Application for Payment:
 - 1. Project record documents (as-builts) marked to show all changes made during construction, to include fabrication dimensions, location of all concrete reinforcement, all appurtenances, dimensions of underground and concealed work and utilities from permanent reference points; record vertical distances.

2. Evidence of continuing insurance coverage complying with insurance requirements (see Conditions of the Contract).
 3. CONTRACTOR'S Affidavit, along with final releases and waivers of liens as required by OWNER, indicating that all debts and claims against project (less amounts withheld by OWNER) have been paid in full or otherwise satisfied.
 4. Consent of Surety Company to final payment.
 5. All test data and product certifications.
- B. See additional closeout requirements in 01 78 00 Contract Closeout Requirements.

END OF SECTION

SECTION 01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

1.01 LAWS AND REGULATIONS:

- A. CONTRACTOR shall comply with all laws, ordinances, rules and regulations which are applicable to the Work.
- B. When the specifications or drawings are in variance to the laws and regulations, the CONTRACTOR shall promptly serve written notice to the ENGINEER. All alterations will be made by Change Order.
- C. When work is performed contrary to laws and regulations, without notice to the ENGINEER, all costs will be borne by the CONTRACTOR.

1.02 PERMITS:

- A. CONTRACTOR shall obtain all permits and licenses unless specified otherwise.

1.03 TAXES:

- A. Sales, consumer, use and other similar taxes required for the work shall be paid by the CONTRACTOR.

1.04 USE OF PREMISES:

- A. Confine work operations to the construction site and the designated areas. All areas shall be restored to equal to or better than original condition.

1.05 LABOR, MATERIALS AND EQUIPMENT:

- A. CONTRACTOR shall provide competent, suitably qualified personnel to lay out the work and perform construction as required by the Contract Documents. He shall at all times maintain good discipline and order at the site. ENGINEER may judge the competency and qualifications of personnel and, upon his written request to the CONTRACTOR, cause the immediate removal from the Work of any incompetent and unqualified personnel.
- B. CONTRACTOR shall guarantee that he has available the quantities and quality of labor and supervision necessary to fulfill the contractual obligations beyond any manpower pool.
- C. CONTRACTOR shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, and all other facilities and incidentals necessary for the execution, testing initial operation, and completion of the Work.

1.06 COORDINATION:

- A. Utilities: Notify "Miss Dig" (800-482-7171) a minimum of 72 hours prior to start of work to allow all utilities to locate their facilities. CONTRACTOR is responsible to notify utilities that are not members of "Miss Dig".
- B. Restricted Work Times: Shall be as follows, except in emergency:
 - 1. Sunday work will not be permitted.
 - 2. Night work will not be permitted.
- C. Testing:
 - 1. When testing readiness is declared by the CONTRACTOR and the test proves unsuccessful, all costs for the inspection shall be borne by the CONTRACTOR.

1.07 SUMMARY OF WORK:

- A. The Work consists of improvements to the West Bay County Regional Wastewater Treatment Plant in accordance with the project Specifications and Drawings.
- B. Major work items include, but are not limited to, the following:
 - 1. Installation of a new force main from Pump 7 discharge in the Raw Sewage Pump Station to Equalization Basin 2.
 - 2. Surface restoration, including concrete and bituminous pavements.
 - 3. Demolition and reconstruction of a loading dock at the Raw Sewage Pump Station.
 - 4. Installation of an air release manhole and an Owner-procured air release valve.

1.08 SEQUENCE OF CONSTRUCTION AND LIMITATIONS:

- A. The principal objective of the OWNER is to process wastewater at the WWTP and maintain compliance with their NPDES permit. CONTRACTOR shall take note that the existing treatment systems shall remain in service through the duration of the project. CONTRACTOR shall also take note that OWNER's staff will be working in and around existing facilities during construction.
- B. OWNER may have other Contractors working on site in adjacent work areas. The OWNER intends to award Contracts for the Phase I – Raw Sewage Forcemain and Phase II – Raw Sewage Pump Replacement projects simultaneously. OWNER will self-perform electrical and instrumentation work associated with the raw sewage pump replacement. CONTRACTOR shall coordinate their respective Work schedules to the degree practicable.
- C. CONTRACTOR is responsible for the means, methods and sequence of construction for the Work. The CONTRACTOR shall include a detailed sequence of construction prior to initiating work as a part of the construction schedule submittal required in Section 01 33 00 – Submittals.
- D. The Equalization basin must remain in service and in readiness-to-serve condition for the OWNER to equalize peak wastewater flow conditions during wet weather. CONTRACTOR shall consult with the OWNER each day prior to Work within the EQ

Basin to review influent flow and weather conditions. No equipment or uninstalled materials shall remain in the EQ basin overnight. CONTRACTOR shall be responsible for securing their Work areas to prevent possible damage to materials or equipment if the EQ basin is needed to equalize wastewater flows. Any pipe penetrations through the EQ basin berm shall be temporarily plugged to prevent wastewater from flowing into the force main.

- E. Throughout construction and upon completion of the Work, the CONTRACTOR shall install a temporary plug in the force main at the EQ Basin to prevent wastewater from flowing into the force main prior to completion of the Phase II Work. The temporary plug shall be removed at a later date by OWNER prior to pump startup after completion of the Phase II Work.

1.09 OWNER OCCUPANCY:

- A. The OWNER will occupy premises during the entire construction period. CONTRACTOR shall cooperate with the OWNER in scheduling operations to minimize conflict and to facilitate usage of the treatment facility.

PART 2 – PRODUCTS - Not used.

PART 3 – EXECUTION - Not used.

END OF SECTION

SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes, but is not necessarily limited to, descriptions of the method of measurement and basis of payment criteria applicable to the Work. It also includes the form of Application for Payment to be used by CONTRACTOR in requesting payment for Work performed under the Contract.

1.02 SUBMITTALS:

- A. Application for Payment: Submit three (3) copies to ENGINEER on the attached form or related format with supporting documentation as required by the Contract Documents.

1.03 MEASUREMENT AND PAYMENT SCHEDULE:

- A. The following schedule outlines the method of measurement and basis of payment to be used on the project. Requirements for materials and methods described under each item are included in the related specification SECTION.
 - 1. Inspection and testing fees: Payment by OWNER, unless specifically noted otherwise.
 - 2. General Conditions, Bonds, Insurance and Mobilization: Shall be paid for on a lump sum basis for the CONTRACTOR's costs to provide required bonds and insurances, mobilization and miscellaneous requirements stipulated in Section 00 72 00 – GENERAL CONDITIONS. This quantity shall not exceed 5% of the total contract amount. Fifty percent (50%) will be paid on the first Application for Payment and twenty five percent (25%) will be paid on the second and third Applications for Payment. This item shall be included in each respective line item to cover the Contractor's general conditions for each separately identified item.
 - 3. Raw Sewage Forcemain: Paid for as a lump sum item. Includes demolition and replacement of the concrete loading dock, the proposed forcemain and related fittings and piping, the air release structure, piping into the raw sewage pump building and equalization basin inlet structure, paving removal and repaving of the affected Work areas, and all related Work.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 FORMS:

- A. Attached are the following forms:
1. Application for Payment.
 2. Schedule of Values.

END OF SECTION

APPLICATION FOR PAYMENT NO. ____

To: _____ (OWNER)

From: _____ (CONTRACTOR)

Contract: _____

Project: _____

OWNER's Contract No. _____ ENGINEER's Project No. _____

For Work accomplished through the date of: _____

- 1. ORIGINAL CONTRACT PRICE: \$ _____
- 2. Net change by Change Orders: \$ _____
- 3. Current Contract Price (1 plus 2): \$ _____
- 4. TOTAL COMPLETED AND STORED TO DATE: \$ _____
- 5. RETAINAGE:
 - _____ % of completed Work: \$ _____
 - _____ % of Contract Price: \$ _____
 - _____ % of stored material: \$ _____
 - Total Retainage: \$ _____
- 6. Total completed and stored to date less retainage (4 minus 5): \$ _____
- 7. LESS PREVIOUS PAYMENTS: \$ _____
- 8. AMOUNT DUE THIS APPLICATION (6 MINUS 7): \$ _____**

Accompanying Documentation:

CONTRACTOR'S Certification:

The undersigned CONTRACTOR certifies, to the best of its knowledge, the following: (1) All previous progress payments received from OWNER on account of Work done under the Contract have been applied on account to discharge CONTRACTOR's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment; (2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to OWNER at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to OWNER indemnifying OWNER against any such Lien, security interest, or encumbrances); and (3) All Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Dated: _____ CONTRACTOR

By: _____
Authorized Signature

Printed or Typed Name

ENGINEER's Recommendation:

Payment of the above AMOUNT DUE THIS APPLICATION is recommended.

Dated _____ ENGINEER

By: _____
Authorized Signature

Printed or Typed Name

Application No. _____

Date: _____

ITEM	UNIT PRICE	ESTIMATED QUANTITY	SCHEDULE OF VALUES AMOUNT	QUANTITY COMPLETED	AMOUNT	%	MATERIAL STORED	AMOUNT COMPLETED AND STORED
1.	\$		\$		\$		\$	\$
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
18.								
19.								
20.								
21.								
22.								
23.								
24.								
25.								
26.								
27.								
28.								
TOTAL			\$		\$	\$	\$	\$

Note: Total Schedule of Values Amount should equal the current Contract Price.

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes, but is not necessarily limited to, the forms and procedures for modifying the Contract Documents.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 SCHEDULES:

- A. Attached are the following forms:
 - 1. Bulletin.
 - 2. Work Change Directive.
 - 3. Change Order.

END OF SECTION

BULLETIN
Page 1 of 2

CONTRACT FOR:

BULLETIN NO. _____

OWNER:

DATE: _____

DUE DATE: _____

CONTRACTOR:

ENGINEER:

DRAWING REVISION NO.: _____

DRAWING SHEETS ISSUED HEREWITH: _____

DISTRIBUTION: _____

=====

The items below are being considered as possible changes to the Contract Documents for this Project. CONTRACTOR is requested to submit changes in cost, if any, for each item and indicate whether it is an addition to or deduction from the Contract Price. Include all labor, materials, overhead and profit. After reviewing the effects of those changes in the Work, OWNER may issue a Change Order specifying which changes are to be incorporated in the Work, if any.

This Bulletin is not a Change Order and is not to be deemed authorization to proceed with the changes listed.

Additional work or materials, where proposed, shall meet the requirements of the Contract Documents, except where noted.

CONTRACTOR will be responsible for notifying ENGINEER, in writing, concerning any revision or clarification which causes a change in the Contract Documents, but are not specifically mentioned as a cost item in this Bulletin.

CONTRACTOR shall return three (3) completed and signed copies of the Bulletin to ENGINEER on or before the due date noted above.

Each proposed change has been described briefly with additional information provided concerning detailed changes required for the major trades concerned. Only one total cost figure has been requested for each item on the Bulletin; however, a complete breakdown is required for each item as supporting documentation. This will allow OWNER to more easily evaluate the proposed cost changes. Each Bulletin item is an all-inclusive item and may concern work from several trades or Subcontractors. It is CONTRACTOR's responsibility to ensure that all work for each item has been included in the total cost figure provided to OWNER.

BULLETIN
Page 2 of 2

BULLETIN NO. _____

DATE: _____

SPECIFICATION CHANGES

Item No. 1:

Section _____ - _____

[Paragraph] _____
_____ Add/Deduct \$ _____

Item No. 2:

Section _____ - _____

[Paragraph] _____
_____ Add/Deduct \$ _____

DRAWING CHANGES

Item No. 3:

Sheet(s) _____:

_____ Add/Deduct \$ _____

Item No. 4:

Sheet(s) _____:

_____ Add/Deduct \$ _____

CONTRACTOR:

Signature

Name and Title of Signatory

Date

WORK CHANGE DIRECTIVE

Page 1 of 2

No. _____

OWNER _____

CONTRACTOR _____

Contract: _____

Project: _____

OWNER's Contract No. _____ ENGINEER's Project No. _____

ENGINEER _____

You are directed to proceed promptly with the following change(s) in the Contract Documents:
Description:

Purpose of Work Change Directive:

Attachments: (List documents supporting change)

If OWNER or CONTRACTOR believe that the above change has affected Contract Price any Claim for a Change Order based thereon will involve one or more of the following methods as defined in the Contract Documents.

Method of determining change in Contract Price:

- Unit Prices
- Lump Sum
- Cost of the Work _____

Estimated increase (decrease) in Contract Price:
\$ _____
If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Estimated increase (decrease) in Contract Times:
Substantial Completion: _____ days;
Ready for final payment: _____ days.
If the change involves an increase, the estimated times are not to be exceeded without further authorization.

RECOMMENDED:

ENGINEER

AUTHORIZED:

OWNER

By: _____

By: _____

Date: _____

Date: _____

WORK CHANGE DIRECTIVE

Page 2 of 2

INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed for use in situations involving changes in the Work which, if not processed expeditiously, might delay the Project. These changes are often initiated in the field and may affect the Contract Price or the Contract Time. This is not a Change Order, but only a directive to proceed with Work that may be included in a subsequent Change Order.

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

B. COMPLETING THE WORK CHANGE DIRECTIVE FORM

ENGINEER initiates the form, including a description of the items involved and attachments.

Based on conversations between ENGINEER and CONTRACTOR, ENGINEER completes the following:

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT PRICE: Mark the method to use in determining the final cost of Work involved and the net effect on the Contract Price. If the change involves an increase in the Contract Price and the estimated amount is approached before the additional or changed Work is completed, another Work Change Directive must be issued to change the price or CONTRACTOR may stop the changed Work when the estimated price is reached. If the Work Change Directive is not likely to change the Contract Price, the space for estimated increase (decrease) should be marked "N/A" (Not Applicable).

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT TIME: Mark the method to be used in determining the change in Contract Time and the estimated increase or decrease in Contract Time. If the change involves an increase in the Contract Time and the estimated time is approached before the additional or changed Work is completed, another Work Change Directive must be issued to change the time or CONTRACTOR may stop the changed Work when the estimated time is reached. If the Work Change Directive is not likely to change the Contract Time, the space for estimated increase (decrease) should be marked "N/A" (Not Applicable).

Once ENGINEER has completed and signed the form, all copies should be sent to OWNER for authorization because ENGINEER alone does not have authority to authorize changes in Price or Time. Once authorized by OWNER, a copy should be sent by ENGINEER to CONTRACTOR.

Once the Work covered by this directive is completed or final cost and time determined, CONTRACTOR should submit documentation for inclusion in a Change Order.

This is a directive to proceed with a change that may affect the Contract Price or Contract Time. A Change Order, if any, should be considered promptly.

END OF WORK CHANGE DIRECTIVE

CHANGE ORDER

No. _____

OWNER _____
 CONTRACTOR _____
 Contract: _____
 Project: _____
 OWNER's Contract No. _____ ENGINEER's Project No. _____
 ENGINEER _____

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

Description:

Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE
Original Contract Price \$ _____
Increase (Decrease) from previously approved Change Orders No. ____ to ____: \$ _____
Contract Price prior to this Change Order: \$ _____
Increase (Decrease) of this Change Order: \$ _____
Contract Price incorporating this Change Order: \$ _____

CHANGE IN CONTRACT TIMES
Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ (days or dates)
Increase (Decrease) from previously approved Change Orders No. ____ to ____: Substantial Completion: _____ Ready for Final Payment: _____ (days)
Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ (days or dates)
Increase (Decrease) of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ (days)
Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ (days or dates)

RECOMMENDED:

APPROVED:

ACCEPTED:

By: _____
 ENGINEER (Authorized Signature)
 Title: _____
 Date: _____

By: _____
 OWNER (Authorized Signature)
 Title: _____
 Date: _____

By: _____
 CONTRACTOR (Authorized Signature)
 Title: _____
 Date: _____

Approved by Funding Agency (if applicable):

By: _____ Date: _____
 Title: _____

SECTION 01 29 73
SCHEDULE OF VALUES

PART I - GENERAL

1.01 SUMMARY:

A. Section includes:

1. This Section includes preparation and submittal of a schedule of values as specified herein and as necessary for the proper and complete performance of the Work.

1.02 GENERAL:

- A. Timing of submittal: Submit to ENGINEER a schedule of values allocated to the various portions of the Work within ten (10) days after the Effective Date of the agreement.
- B. Supporting data: Upon request of ENGINEER, support the values with data that will substantiate their correctness.
- C. Use of schedule: The schedule of values, unless objected to by ENGINEER, shall be used only as the basis for the CONTRACTOR's Applications for Payment.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES:

A. Form and Identification:

1. Type schedule on 8 1/2-inch by 11-inch white paper.
2. CONTRACTOR's standard forms and automated printout may be used.
3. Identify schedule with:
 - a. Title of Project and location.
 - b. ENGINEER.
 - c. Project number.
 - d. Name and address of CONTRACTOR.
 - e. Contract designation.
 - f. Date of submission

B. Detail:

1. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction.

C. Subvalues: For each major line item list subvalues of major products or operations under the item.

D. Allowances: Not Used.

E. Change Orders: For each Application for Payment, revise schedule to list Change Orders.

F. For the various portions of the Work:

- 1 Each item shall include a directly proportional amount of CONTRACTOR's overhead and profit.
- 2 For items on which progress payments will be requested for stored materials, breakdown the value into:
 - a. The cost of the materials delivered and unloaded, with taxes paid.
 - b. The total installed value.

G. The sum of all values listed in the schedule shall equal the total Contract Price.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED:

- A. The ENGINEER will schedule and administer the pre-construction meeting, periodic progress meetings, and specially called meetings throughout the progress of the work.
 - 1. Prepare the agenda for the meetings.
 - 2. Distribute written notice of each meeting four (4) days in advance of meeting date.
 - 3. Make physical arrangements for meetings.
 - 4. Preside at meetings.
 - 5. Record the minutes; include significant proceedings and decisions.
 - 6. Reproduce and distribute copies within seven (7) days after each meeting.
- B. Representatives of contractors, subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 PRE-CONSTRUCTION MEETINGS:

- A. Schedule:
 - 1. Meeting shall be prior to the start of work at a time and place designated by the ENGINEER.
- B. Attendance by Contractor's project Superintendent is required.
- C. General items to be provided by CONTRACTOR and discussed:
 - 1. Construction permits.
 - 2. Work schedules.
 - 3. Schedule of values for Lump Sum Work Items, if any.
 - 4. Safety plan.
 - 5. Payments and estimates.

1.03 PROGRESS MEETINGS:

- A. Schedule:
 - 1. Meetings will be scheduled as determined by the ENGINEER or OWNER. CONTRACTOR'S Project Superintendent is required to attend.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 CONSTRUCTION SCHEDULES:

- A. General:
 - 1. Coordinate with work by others as explained in SECTION 00 72 00 GENERAL CONDITIONS.
 - 2. CONTRACTOR shall notify ENGINEER 72 hours prior to start of the work or prior to a major increase in the work force if these vary from schedule as submitted.
- B. Form of Schedules:
 - 1. Prepare schedules in the form of a horizontal bar chart.
 - 2. Provide a separate horizontal bar for each trade or operation.
 - 3. Provide a horizontal time scale identifying the first workday of each week.
 - 4. The order shall be the chronological beginning of each work item.
 - 5. The row identification shall be each major specification section or subdivision of work with distinct graphic delineation.
- C. Content of Schedules:
 - 1. The construction project schedule shall include as a minimum:
 - a. Project start date.
 - b. Start dates and durations for each major trade group, work tasks or other subdivisions of the work.
 - c. Shop drawings, product data, and sample submittal dates and dates when reviewed copies will be required.
 - d. Equipment and/or material delivery dates, if approved.
 - e. Total project duration and end dates.
- D. Updating:
 - 1. Show all occurring changes of previous submission.
 - 2. Show progress completion dates of each activity.
 - 3. Submit a narrative report, if required by OWNER defining:
 - a. Problem areas: Impact of current and anticipated delay factors.
 - b. Schedule changes: Effect on other contractors or OWNER.
 - c. Revision description: Effect of change of scope and duration of activities.
- E. Submittal of Schedules:
 - 1. The CONTRACTOR shall submit the initial detailed construction schedule within seven (7) days after notice of award. ENGINEER will return copy within ten (10) days.
 - 2. An updated schedule shall be submitted on the first workday of each month.
- F. Distribution:
 - 1. The reviewed schedule shall be distributed by ENGINEER to:
 - a. The job site file.
 - b. OWNER.

1.02 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES:

A. General:

1. Where required by specifications, the CONTRACTOR shall submit descriptive information which will enable the ENGINEER to advise the OWNER whether the CONTRACTOR's proposed materials, equipment, or methods of work are in general conformance to the design concept and in compliance with the drawings and specifications. The information to be submitted shall consist of drawings, specifications, descriptive data, certificates, samples, test results and such other information, all as specifically required in the specifications.

B. CONTRACTOR Responsibility:

1. CONTRACTOR shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. The CONTRACTOR shall verify that the material and equipment described in each submittal conform to the requirements of the specifications and drawings. If the information shows deviations from the specifications or drawings, the CONTRACTOR shall insure that there is no conflict with other submittals and notify the ENGINEER in each case where his submittal may affect the work of another CONTRACTOR or the OWNER. The CONTRACTOR shall insure coordination of submittals among the related crafts and subcontractors.
2. The CONTRACTOR shall be responsible to check and verify all field measurements, all dimensions on shop and setting drawings and all schedules required for the work of all the various trades.
3. Where content of submitted literature includes data not pertinent to the submittal, CONTRACTOR shall clearly indicate which portion of the contents is being submitted for ENGINEER's review.
4. The CONTRACTOR shall stamp each submittal with stamp, initialed and signed, certifying to review of the submittal by the CONTRACTOR, verification of field measurements and compliance with Contract Documents.

C. Transmittal Procedure:

1. General:

- a. Submittals shall be submitted promptly in accordance with dates in proposals, approved schedules and in such sequence that there is no delay in the Work or the work of any other CONTRACTOR.
- b. A unique number, sequentially arranged, shall be noted on the transmittal form accompanying each item's submittal. Original submittal numbers shall have the following format "XXX-Y": where "XXX" is the originally assigned submittal number, and "Y" is a sequential letter assigned for resubmittals, i.e., A, B, or C being the 1st, 2nd and 3rd resubmittals, respectively. Submittal 25-B, for example, is the second resubmittal of submittal 25.

2. Deviation from Contract:

- a. If the CONTRACTOR proposed to provide material or equipment which does not conform to the specifications and drawings, he shall indicate so under "deviations" on the transmittal form accompanying the submittal copies. He shall prepare his reason for a change, including cost differential, and request a change order to cover the deviations.

3. Submittal Completeness:

- a. Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

D. Review Procedure:

1. Submit the shop drawings electronically to the ENGINEER. For samples, submit the number stated in each specifications section.
2. Unless otherwise specified, within fourteen (14) calendar days after receipt of the submittal, the ENGINEER shall review and return the submittal to the CONTRACTOR. The returned submittal shall indicate one of the following actions:
 - a. If the review indicates that the material, equipment or work method is in general conformance with the design concept, drawings and specifications, submittal copies will be marked "REVIEWED, NO EXCEPTIONS TAKEN". In this event the CONTRACTOR may begin to implement the work method or incorporate the material or equipment covered by the submittal.
 - b. If the review indicates limited corrections are required, submitted copies will be marked "REVIEWED, W/CORRECTIONS NOTED". The CONTRACTOR may begin implementing the work method by the submittal in accordance with the noted corrections. Where submittal information will be incorporated in O&M data, a corrected copy shall be provided.
 - c. If the review reveals that the submittal is insufficient or contains incorrect data, submitted copies will be marked "REJECTED, RESUBMIT". Except at his own risk, the CONTRACTOR shall not undertake work covered by this submittal until it has been revised, resubmitted and returned marked either "REVIEWED, NO EXCEPTIONS TAKEN" or "REVIEWED, W/CORRECTIONS NOTED".
 - d. If the review indicates that the material, equipment or work method is not in general conformance with the drawings and specifications, copies of the submittal will be marked "REJECTED, RESUBMIT". Submittals with deviations which have not been identified clearly may be rejected. Except at his own risk, the CONTRACTOR shall not undertake the work covered by such submittals until it has been revised, resubmitted and returned marked either "REVIEWED, NO EXCEPTIONS TAKEN" or "REVIEWED, W/CORRECTIONS NOTED".
 - e. If the review indicates that the material or equipment is not from an acceptable manufacturer, as indicated in the specifications, copies of the submittal will be marked "SUBMIT SPECIFIC ITEM". Except at his own risk, the CONTRACTOR shall not undertake the work covered by such submittals until it has been revised, resubmitted and returned mark either "REVIEWED, NO EXCEPTIONS TAKEN" or "REVIEWED, W/CORRECTIONS NOTED".

E. Effect of Review of CONTRACTOR's Submittal:

1. Review of drawings, methods of work or information regarding materials or equipment the CONTRACTOR proposes to provide shall not relieve the CONTRACTOR of his responsibility for errors therein and shall not be regarded as an assumption of risks or liabilities by the ENGINEER or the OWNER, or by an officer or employee thereof, and the CONTRACTOR shall have no claim under the Contract on account of the failure, or partial failure, of the method of work, material or equipment so reviewed. A mark of "REVIEWED, NO EXCEPTIONS TAKEN" or "REVIEWED, W/CORRECTIONS NOTED" shall mean that the OWNER has no objection to the CONTRACTOR, upon his own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

F. Resubmission Requirements

1. Revise initial drawings or submit new data as required and resubmit as specified for initial submittal.
2. Indicate any changes which have been made other than those requested by the ENGINEER.

G. Re-review Costs:

1. Should ENGINEER be required to review a submittal more than twice because of failure of the submittal to meet the requirements of the Contract Documents, ENGINEER will record ENGINEER's time and expenses for performing all additional reviews. The OWNER will compensate ENGINEER for these additional services and deduct the amount from payments to the CONTRACTOR.

1.03 OPERATION AND MAINTENANCE DATA:

A. Requirements:

1. Compile product data on related information appropriate for OWNER's operation and maintenance of products furnished.
2. Prepare data in the form of an instructional manual for use by OWNER's personnel. Prepare five (5) printed copies of complete sets compiled, bound and indexed. Also provide electronic copy on CD, if available.
3. Submittal of operation and maintenance manuals shall be prior to final payment request.

B. Required Submittals:

1. Refer to technical specification sections for required submittals.

1.04 RECORD DOCUMENTS:

A. Requirements:

1. The CONTRACTOR shall maintain on the construction site a minimum of one (1) complete set of Contract Documents amended by "RED LINE" or highlight inclusion to reflect the most immediate status methods, materials and locations and routings of construction. Supplementary sketches shall be included, if necessary, to clearly indicate all work as constructed.
2. At conclusion of work, the CONTRACTOR shall submit to the ENGINEER one (1) complete amended record set of these site documents.
3. Submittal shall be prior to final payment.
4. Failure of the CONTRACTOR to maintain an up-to-date set of modified drawings on the project site shall be reason to withhold payments.

END OF SECTION

SECTION 01 42 13

ABBREVIATIONS

PART 1 - GENERAL

1.01 ABBREVIATIONS:

A. Standards:

A.A.S.H.T.O.:	American Association of State Highway Transportation Officials
A.C.I.:	American Concrete Institute
A.N.S.I.:	American National Standard Institute
A.S.A.:	American Standard Association
A.S.T.M.:	American Society for Testing and Materials
A.W.S.:	American Welding Society
A.W.W.A.:	American Water Works Association
C.R.S.I.:	Concrete Reinforcing Steel Institute
C.S.I.:	Construction Specifications Institute
M.D.P.H.:	Michigan Department of Public Health
M.D.N.R.:	Michigan Department of Natural Resources
M.D.E.Q.:	Michigan Department of Environmental Quality
M.D.O.T.:	Michigan Department of Transportation
N.E.C.:	National Electrical Code
N.C.P.I.:	National Clay Pipe Institute
U.L.	Underwriters Laboratories Inc.
A.I.S.C.	American Institute of Steel Construction
N.E.M.A.	National Electrical Manufacturers Association
N.F.P.A.	National Fire Protection Association

B. Units in Bid Form:

LFt.:	Linear Foot
Ea.:	Each
VFt.:	Vertical Foot
LSum:	Lump Sum
SYd.:	Square Yard
Sta.:	Station (100 foot)
CYd.:	Cubic Yard
SFt.:	Square Foot
LB.	Pound
GAL.	Gallon

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required for all quality control.

1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, "2012 Standard Specifications for Construction".
- B. ASTM - American Society of Testing Materials, latest edition.
- C. AASHTO – American Association of State Highway Transportation Officials, latest edition.
- D. AWS – American Welding Society, latest edition.

1.03 QUALITY ASSURANCE:

- A. General:
 - 1. Selection of test specimens will be made by the ENGINEER.
 - 2. Testing procedure will be in accordance with the current standard specified.
 - 3. Refer to the SECTION requirements for field quality control.

1.04 SUBMITTALS:

- A. Test Specimens: Deliver to the place of inspection and testing.
- B. Certification of Quality by Producer: Deliver to the ENGINEER.
- C. Certification of Welders: Deliver to the ENGINEER.

1.05 DELIVERY:

- A. Collect and deliver materials and concrete cylinders to the designated testing laboratory.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Inspection and Testing Agencies:
 - 1. In accordance with the requirements of ASTM E329.
 - 2. Reporting shall be to the ENGINEER.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. Acceptance Tests and Inspection:
1. Aggregates: Certification of quality by producer.
 2. Soil density:
 - a. Moisture-density relationships:
 - 1) Cohesive (Clays) or Granular (Sands) Soils: ASTM D1557 (Modified Proctor).
 - 2) Granular (Sands) Soils: Michigan Cone Test.
 - b. Field density determination according to ASTM standards.
 - c. CONTRACTOR shall provide access to test location and depth.
 3. Asphalt cement: Certification of quality producer.
 4. Bituminous mix composition:
 - a. Sample: ASTM D979.B.
 - b. Extraction test: AASHTO T30, AASHTO T168 AND ASTM D2172.
 - c. Frequency: One test within each 500-ton placed.
 5. Bituminous pavement density:
 - a. Sample: ASTM D979
 - b. Comparative density tests of in-place material against laboratory specimens of the same material: ASTM D1559 and ASTM D2726.
 - c. Frequency: One test within each 2,500 square yards placed.
 6. Cement: Certification of quality by producer.
 7. Concrete:
 - a. Sample: ASTM C172
 - b. Frequency: Once for each 50 cubic yards of each class of concrete placed.
 - c. Perform following from sample:
 - (1) Mold three 6-inch cylinder compressive strength specimens: ASTM: C31
 - (2) Slump test: ASTM C143
 - (3) Air test: ASTM C231
 - (4) Yield test: ASTM C138
 - (5) Strength test: ASTM C139
 8. Precast Manholes: Certification of quality by producer.
 9. Painting:
 - a. Workmanship: Visual inspection on site.
 - b. Film thickness test: Gauge or yield.
 - c. Frequency: One test within each 100 square feet applied.
 10. Pipe:
 - a. Gravity: Laboratory test one-half percent ($\frac{1}{2}\%$) of total item with minimum one piece each size, material and class. Certification of quality by producer acceptable for corrugated metal pipe.
 - b. Pressure: Certification of quality by producer.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01. SUMMARY:

A. Section includes:

1. This Section includes, but is not necessarily limited to, the furnishing, fabrication and installation of the major items listed below as specified herein and as necessary for the proper and complete performance of the Work.

B. Temporary Utilities:

1. Sanitary facilities.

C. Temporary Construction Facilities:

1. Field offices and sheds.
2. Project cleaning and waste removal.

D. Temporary Controls:

1. Barriers.
2. Dust control.
3. Noise control.

E. Removal of Temporary Utilities, Facilities and Controls.

1.02 TEMPORARY ELECTRICITY:

- A. CONTRACTOR responsible for making necessary connection and temporary installation as approved by ENGINEER. OWNER will pay cost of energy used. Exercise measures to conserve energy. Utilize OWNER's existing power service.

1.03 TEMPORARY HEATING:

- A. CONTRACTOR is responsible for providing their own heating requirements.

1.04 TEMPORARY VENTILATION:

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity and to prevent accumulation of dust, fumes, vapors or gases.

1.05 TEMPORARY TELEPHONE SERVICE:

- A. No telephone service will be required.

1.06 TEMPORARY WATER SERVICE:

- A. CONTRACTOR responsible for making necessary connections and temporary installation as approved by ENGINEER. OWNER will pay cost of temporary water. Exercise measures to conserve energy. Utilize OWNER's existing water system, extend and supplement with temporary devices as needed to maintain specified conditions for construction operations.
- B. Extend branch piping with outlets located so water is available by hoses with threaded connections.

1.07 TEMPORARY SANITARY FACILITIES:

- A. Provide service, clean and maintain required facilities and enclosures in compliance with laws and regulations. Existing facility use is not permitted. Provide facilities at time of project mobilization.

1.08 TEMPORARY FIELD OFFICES AND SHEDS:

- A. Do not use existing facilities for field offices or for storage.
- B. Provide field offices and sheds as required by CONTRACTOR(S); place at location acceptable to OWNER.

1.09 PARKING:

- A. Locate as approved by OWNER.
- B. When site space is not adequate, provide additional off-site parking.
- C. Use of designated areas of existing parking facilities by construction personnel shall be approved by OWNER.
- D. Do not allow heavy vehicles or construction equipment in parking areas.

1.10 PROGRESS CLEANING AND WASTE REMOVAL:

- A. Maintain areas free of waste materials, debris and rubbish. Maintain site in clean and orderly condition.
- B. Collect and remove waste materials, debris and rubbish from site periodically and dispose off site.
- C. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.11 FIRE PREVENTION FACILITIES:

- A. Prohibit smoking within buildings under construction. Designate area on site where smoking is permitted, subject to OWNER approval.

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

1.12 BARRIERS:

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for OWNER's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

1.13 SECURITY:

A. Security Program:

1. Protect Work from theft, vandalism and unauthorized entry.
2. Initiate program in coordination with OWNER's existing security system at project mobilization.
3. Maintain program throughout construction period until OWNER acceptance precludes need for Contractor security.

B. Entry Control:

1. Restrict entrance of persons and vehicles into Project site and existing facilities.
2. Allow entrance only to authorized persons with proper identification.
3. OWNER will control entrance of persons and vehicles related to OWNER's operations.

1.14 NOISE CONTROL:

- A. Provide methods, means and facilities to minimize noise produced by construction operations.

1.15 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS:

- A. Remove any temporary utilities, equipment, facilities and materials prior to Final Application for Payment inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing and facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required to provide and maintain temporary soil erosion and sedimentation control.

1.02 JOB CONDITIONS:

- A. Requirements: Comply with Drawings and permit requirements.
- B. Permit: Obtain permit from local enforcing agency, if not already obtained.
- C. Time Limitations: MDOT 208.03B.

PART 2 - PRODUCTS

- 2.01 MATERIALS: MDOT 208.02 and as approved by the regulating agency.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. General: Abide with all applicable rules and regulations as established by the State of Michigan and the local regulating agency in conjunction with Act 451 of 1994, Natural Resources and Environmental Protection Act, Part 91 as amended, Michigan Soil Erosion and Sedimentation Control (formerly PA 347 of 1972, as amended).
- B. Sediment Removal:
 - 1. Take such steps as are necessary to assure the retention and removal of any sediment which enters a drainage system along the construction route before said system discharges into a stream, pond or lake.
 - 2. If eroded material is allowed to enter a storm sewer system, all catch basins, manholes, pipe and culverts shall be cleaned following construction prior to receipt of final payment. Unless CONTRACTOR can document positively to what extent an existing storm sewer system along the construction area was silted in prior to construction, no credit will be given for cleaning the system.
 - 3. Maintain roadways in a passable condition until paving is completed, including any maintenance and dust control.

- C. Construction of Soil Erosion and Sedimentation Control Measures: MDOT 208.03C.
 - 1. Provide and maintain the following temporary soil erosion and sedimentation control measures unless otherwise shown on the Drawings or in the permit:
 - a. Excavated or borrow material stock-pile:
 - (1) Place silt fence around stockpile in a manner to prevent soil erosion from entering the drainage system or leaving the site.
 - b. Trench backfill in place.
 - (1) Place silt fence across trenches, ditches and around inlets to prevent soil erosion from leaving the site or entering the drainage system until:
 - (a) Seed and mulch have been placed in non-paved areas.
 - (b) Aggregate has been placed in bituminous and gravel areas.
 - c. Dewatering discharge.
 - (1) Place bales of hay, straw and/or siltation fencing staked in place at point of discharge, adequately anchored.
 - d. Grading limits.
 - (1) Place silt fence along down gradient side of all areas disturbed by grading operations.
 - e. Catch basins.
 - (1) Provide inlet protection around catch basin and below grates. Remove after turf is established
 - f. Culvert inlets.
 - (1) Place stone check dam and silt fence upstream of all culvert inlets.
 - g. Drain cleanout.
 - (1) Excavate sediment basin and place stone check dam at downstream end prior to cleanout operation.

D. Maintenance of Soil Erosion and Sedimentation Control Measures: MDOT 208.03C.

E. Removal of Soil Erosion and Sedimentation Control Measures: MDOT 208.03D.

3.02 SCHEDULES (See details on Drawings):

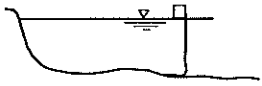
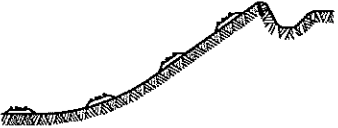

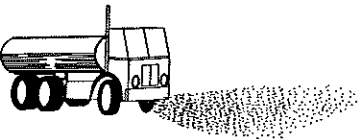

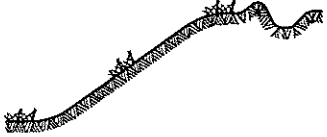
A. MDOT Standard Plan R-96-E (6 sheets).


END OF SECTION


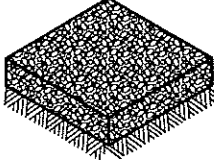


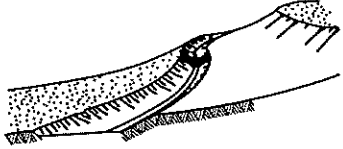



APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

(COMPREHENSIVE DETAILS ARE LOCATED IN SECTION 6 OF THE SOIL EROSION & SEDIMENTATION CONTROL MANUAL)

- A = SLOPES
- B = STREAMS AND WATERWAYS
- C = SURFACE DRAINAGEWAYS
- D = ENCLOSED DRAINAGE (INLET & OUTFALL CONTROL)
- E = LARGE FLAT SURFACE AREAS
- F = BORROW AND STOCKPILE AREAS
- G = DNRE PERMIT MAY BE REQUIRED

KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
1	 <p>TURBIDITY CURTAIN</p>	A Turbidity Curtain is used when slack water area is necessary to isolate construction activities from the watercourse. The still water area contains the sediments within the construction limits.		•					
2	 <p>GRUBBING OMITTED</p>	Retains existing root mat which assists in stabilizing slopes. Assists in the revegetation process by providing sprout growth. Reduces sheet flow velocities preventing rilling and gulying. Discourages off-road vehicle use.		•			•		
3	 <p>PERMANENT/TEMPORARY SEEDING</p>	Inexpensive but effective erosion control measure to stabilize flat areas and mild slopes. Permits runoff to infiltrate soil, reducing runoff volumes. Proper preparation of the seed bed, fertilizing, mulching and watering is critical to its success.		•	•		•	•	
4	 <p>DUST CONTROL</p>	Dust control can be accomplished by watering, and/or applying calcium chloride. The disturbed areas should be kept to a minimum. PERMANENT/TEMPORARY SEEDING (KEY 3) should be applied as soon as possible.		•			•	•	
5	 <p>SODDING</p>	Provides immediate vegetative cover such as at spillways and ditch bottoms. Proper preparation of the topsoil, placement of the sod, and watering is critical to its success.		•			•	•	
6	 <p>VEGETATED BUFFER STRIPS</p>	Reduces sheet flow velocities preventing rilling and gulying. Assists in the collection of sediments by filtering runoff. Assists in the establishment of a permanent vegetative cover.		•			•		

 <p>PREPARED BY DESIGN DIVISION</p>	<p>DEPARTMENT DIRECTOR Kirk T. Stuedli</p> <p>APPROVED BY: <i>John C. Friend</i> ENGINEER OF DELIVERY</p>	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR</p>	
	<p>APPROVED BY: <i>Mark A. Van Pelt</i> ENGINEER OF DEVELOPMENT</p>	<p>SOIL EROSION & SEDIMENTATION CONTROL MEASURES</p>	
<p>DRAWN BY: <u>B.L.T.</u></p> <p>CHECKED BY: <u>M.K.P.</u></p>	<p>9-10-2010 F.H.W.A. APPROVAL</p>	<p>6-3-2010 PLAN DATE</p>	<p>R-96-E</p>
			<p>SHEET 1 OF 6</p>

KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
7	 <p>RIPRAP</p>	Used where vegetation cannot be established. Very effective in protecting against high velocity flows. Should be placed over a geotextile liner.	•	•	•	•			•
8	 <p>AGGREGATE COVER</p>	Can be used in any area where a stable condition is needed for construction operations, equipment storage or in heavy traffic areas. Reduces potential soil erosion and fugitive dust by stabilizing raw areas.	•				•	•	
9	 <p>BENCHES</p>	Reduces sheet flow velocities preventing rilling and gulying. Assists in the collection and filtering of sediments. Provides access for stabilizing slopes.	•					•	
10	 <p>DIVERSION DIKE</p>	Assists in the diversion of runoff to a stable outlet or sediment control device. Reduces sheet flow velocities preventing rilling and gulying. Collects and diverts runoff to properly stabilized drainage ways. Works well with INTERCEPTING DITCH (KEY 11)	•				•	•	
11	 <p>INTERCEPTING DITCH</p>	Assists in the diversion of runoff to a stable outlet or sediment control device. Reduces sheet flow velocities preventing rilling and gulying. Works well with DIVERSION DIKE (KEY 10)	•				•	•	
12	 <p>INTERCEPTING DITCH AND DIVERSION DIKE</p>	Assists in the diversion of runoff to a stable outlet or sediment control device. Reduces sheet flow velocities preventing rilling and gulying.	•				•	•	
13	 <p>GRAVEL FILTER BERM</p>	Useful in filtering flow prior to its reentry into a lake, stream or wetland. Works well with SEDIMENT TRAP (KEY 20) and TEMPORARY BYPASS CHANNEL (KEY 35). Not to be used in lieu of a CHECK DAM (KEY 37) in a ditch.	•		•			•	
14	 <p>GRAVEL ACCESS APPROACH</p>	Provides a stable access to roadways minimizing fugitive dust and tracking of materials onto public streets and highways.						•	•

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

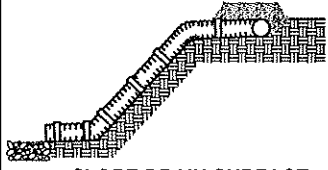

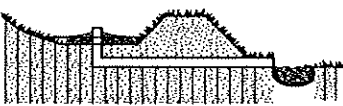
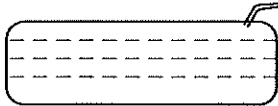

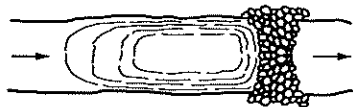
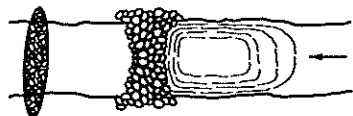

**SOIL EROSION & SEDIMENTATION
CONTROL MEASURES**

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KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
15	 <p>SLOPE DRAIN SURFACE</p>	<p>Excellent device for carrying water down slopes without creating an erosive condition.</p> <p>Generally used in conjunction with DIVERSION DIKE (KEY 10), INTERCEPTING DITCH (KEY 11) and INTERCEPTING DITCH AND DIVERSION DIKE (KEY 12) to direct flow to a stable discharge area or SEDIMENT TRAP (KEY 20).</p>		•					
16	 <p>TREES, SHRUBS AND PERENNIALS</p>	<p>Trees, shrubs and perennials can provide low maintenance long term erosion protection. These plants may be particularly useful where site aesthetics are important along the roadside slopes.</p>		•			•		
17	 <p>PIPE DROP</p>	<p>Effective way to allow water to drop in elevation very rapidly without causing an erosive condition.</p> <p>Also works as a sediment collector device.</p> <p>May be left in place as a permanent erosion control device.</p>		•					
18	 <p>DEWATERING WITH FILTER BAG</p>	<p>It may be necessary to dewater from behind a cofferdam or construction dam to create a dry work site.</p> <p>Discharged water must be pumped to a filter bag.</p> <p>A GRAVEL FILTER BERM (KEY 13) may be placed downslope of the filter bag to provide additional filtration prior to entering any stream or wetland.</p>			•				•
19	 <p>ENERGY DISSIPATORS</p>	<p>A device to prevent the erosive force of water from eroding soils.</p> <p>Used at outlets of culverts, drainage pipes or other conduits to reduce the velocity of the water.</p> <p>Prevents structure scouring and undermining.</p>		•	•	•	•		
20	 <p>SEDIMENT TRAP</p>	<p>Used to intercept concentrated flows and prevent sediments from being transported off site or into a watercourse or wetland.</p> <p>The size of a Sediment Trap is 5 cubic yards or less.</p> <p>Works well when used with CHECK DAM (KEY 37).</p>		•		•	•		
21	 <p>SEDIMENT BASIN</p>	<p>A Sediment Basin is used to trap sediments from an upstream construction site.</p> <p>Requires periodic inspections, repairs, and maintenance.</p> <p>Where practical, sediments should be contained on site.</p> <p>A Sediment Basin should be the last choice of sediment control.</p> <p>The size of a Sediment Basin is greater than 5 cubic yards.</p>			•				•
22	 <p>VEGETATIVE BUFFER AT WATERCOURSE</p>	<p>This practice is used to maintain a vegetative buffer adjacent to a watercourse.</p> <p>When utilized with SILT FENCE (KEY 26) it will, under normal circumstances, prevent sediment from leaving the construction site.</p>		•	•	•		•	•

MICHIGAN DEPARTMENT OF TRANSPORTATION
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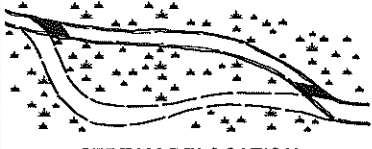
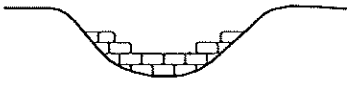
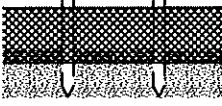


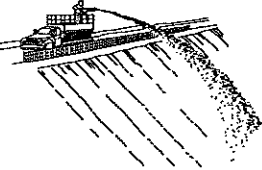
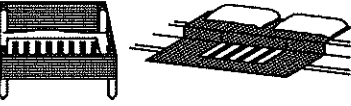
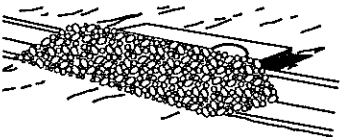
**SOIL EROSION & SEDIMENTATION
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KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
23	 <p>STREAM RELOCATION</p>	A detail depicting the proper procedures for stream relocation. Maintains same width, depth, and flow velocity as the natural stream. Revegetate banks with PERMANENT/TEMPORARY SEEDING (KEY 3), MULCHING AND MULCH ANCHORING (KEY 28), MULCH BLANKETS AND HIGH VELOCITY MULCH BLANKETS (KEY 33) and woody plants to shade the stream.		•					•
24	 <p>SAND AND STONE BAGS</p>	Sand and stone bags are a useful tool in the prevention of erosion. Can be used to divert water around a construction site by creating a DIVERSION DIKE (KEY 10). Works well for creating a CONSTRUCTION DAM (KEY 36) and temporary culvert end fill.	•	•	•	•	•	•	•
25	 <p>SAND FENCE AND DUNE STABILIZATION</p>	A Sand Fence traps blowing sand by reducing wind velocities. Can be used to prevent sand from blowing onto roads. Must be maintained until sand source is stabilized.	•				•	•	
26	 <p>SILT FENCE</p>	A permeable barrier erected below disturbed areas to capture sediments from sheet flow. Can be used to divert small volumes of water to stable outlets. Ineffective as a filter and should never be placed across streams or ditches where flow is concentrated.	•				•	•	
27	 <p>PLASTIC SHEETS OR GEOTEXTILE COVER</p>	Plastic Sheets can be used to create a liner in temporary channels. Can also be used to create a temporary cover to prevent erosion of stockpiled materials.	•	•	•			•	
28	 <p>MULCHING AND MULCH ANCHORING</p>	Anchored mulch provides erosion protection against rain and wind. Mulch must be used on seeded areas to promote water retention and growth. Should be inspected after every rainstorm and repaired as necessary until vegetation is well established.	•		•		•	•	
29	 <p>INLET PROTECTION FABRIC DROP</p>	Provides settling and filtering of silt laden water prior to its entry into the drainage system. Can be used in median and side ditches where vegetation will be disturbed. Allows for early use of drainage systems prior to project completion.			•		•		
30	 <p>INLET PROTECTION GEOTEXTILE AND STONE</p>	Provides settling and filtering of silt laden water prior to its entry into the drainage system. Should be used in paved areas where drainage structures are existing or proposed. Allows for early use of drainage systems prior to project completion.			•		•		

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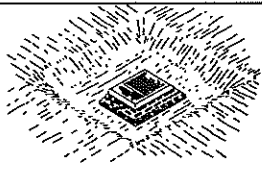
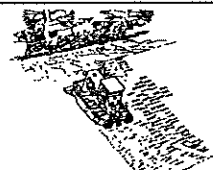
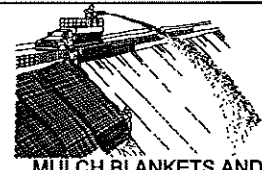
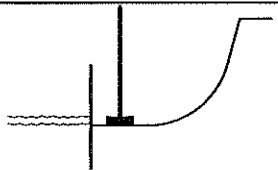

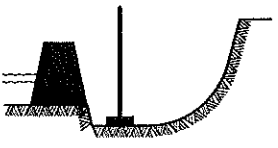

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KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
31	 <p>INLET PROTECTION SEDIMENT TRAP</p>	<p>An Inlet Protection Sediment Trap is a temporary device that can be used in areas where medium flows are anticipated. Effective in trapping small quantities of sediments prior to water entering the drainage system. Can be used in areas such as median and side ditches.</p>			•		•		
32	 <p>SLOPE ROUGHENING AND SCARIFICATION</p>	<p>A simple and economical way to reduce soil erosion by wind and water. Can be accomplished by harrowing with a disk, back blading, or tracking with a dozer perpendicular to the slope.</p>	•				•	•	
33	 <p>MULCH BLANKETS AND HIGH VELOCITY MULCH BLANKETS</p>	<p>Mulch blankets provide an immediate and effective cover over raw erodible slopes affording excellent protection against rain and wind erosion. High velocity mulch blankets work well for stabilizing the bottom of ditches in waterways.</p>	•		•		•	•	
34	 <p>COFFERDAM</p>	<p>Used to create a dry construction area and protect the stream from raw erodible areas. Must be pumped dry or dewatered according to DEWATERING WITH FILTER BAG (KEY 18).</p>		•					•
35	 <p>TEMPORARY BYPASS CHANNEL</p>	<p>Utilized when a dry construction area is needed. Isolates stream flows from raw erodible areas minimizing erosion and subsequent siltation. Can incorporate SEDIMENT BASIN (KEY 21), CHECK DAM (KEY 37), and GRAVEL FILTER BERM (KEY 13) to remove sediments from water. Construction sequence of events may be necessary.</p>			•				•
36	 <p>CONSTRUCTION DAM</p>	<p>Used to create a dry or slack water area for construction. Isolates the stream from raw erodible areas. Can be created out of any non-erodible materials such as SAND AND STONE BAGS (KEY 24), a gravel dike with clay core or plastic liner, steel plates or plywood.</p>		•					•
37	 <p>CHECK DAM</p>	<p>Can be constructed across ditches or any area of concentrated flow. Protects vegetation in early stages of growth. A Check Dam is intended to reduce water velocities and capture sediment. A Check Dam is not a filtering device.</p>	•		•			•	

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NOTES:

THIS STANDARD PLAN WILL SERVE AS A KEY IN THE SELECTION OF THE APPROPRIATE SOIL EROSION AND SEDIMENTATION CONTROL DETAILS. THIS PLAN ALSO PROVIDES THE KEY TO THE NUMBERED EROSION CONTROL ITEMS SPECIFIED ON THE CONSTRUCTION PLANS. REFER TO THE MDT SOIL EROSION & SEDIMENTATION CONTROL MANUAL, SECTION 6 FOR SPECIFIC DETAILS, CONTRACT ITEMS (PAY ITEMS), AND PAY UNITS.

COLLECTED SILT AND SEDIMENT SHALL BE REMOVED PERIODICALLY TO MAINTAIN THE EFFECTIVENESS OF THE SEDIMENT TRAP, SEDIMENT BASIN, AND SILT FENCE. AGGREGATES PLACED IN STREAMS SHOULD CONTAIN A MINIMUM OF FINES.

TEMPORARY EROSION AND SEDIMENTATION CONTROL PROVISIONS SHALL BE COORDINATED WITH THE PERMANENT CONTROL MEASURES TO ASSURE EFFECTIVE CONTROL OF SEDIMENTS DURING CONSTRUCTION OF THE PROJECT.

ALL TEMPORARY EROSION CONTROL DEVICES SHALL BE REMOVED AFTER VEGETATION ESTABLISHMENT OR AT THE DISCRETION OF THE ENGINEER. CARE SHALL BE TAKEN DURING REMOVAL TO MINIMIZE SILTATION IN NEARBY DRAINAGE COURSES.

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SECTION 01 71 23
CONSTRUCTION STAKING

PART 1 - GENERAL

1.01 STAKING:

- A. Construction staking will be furnished by the OWNER through the ENGINEER on the following basis:
 - 1. Pressure sewer or force main: One staking with line and grade points at each structure or appurtenance and at 100-foot station intervals, where appropriate.
- B. CONTRACTOR shall request the staking using the attached request form at least two (2) working days in advance of the need for said staking.

1.02 RESTAKING OR ADDITIONAL STAKING:

- A. If restaking is required or additional staking is requested, it shall be performed by the ENGINEER at the CONTRACTOR's expense.
- B. The cost of restaking or additional staking will be paid to the ENGINEER by the OWNER and deducted from the CONTRACTOR's payment.

1.03 SCHEDULES:

- A. REQUEST FOR CONSTRUCTION STAKING (Form).

END OF SECTION

REQUEST FOR CONSTRUCTION STAKING



DATE REQUESTED TO BE ON SITE: _____ **DATE RECEIVED:** _____

CLIENT NAME: _____ **PROJECT NO.:** _____

PROJECT LOCATION: _____ **PM / ENGINEER:** _____

INSPECTOR: _____ **PHONE NUMBER:** _____

CONTRACTOR / FIELD CONTACT _____ **PHONE NUMBER:** _____

PLAN # / REV DATE: _____ **EMAIL:** _____

SANITARY SEWER

STORM SEWER

WATERMAIN

ROAD

CURB & GUTTER

BUILDINGS/FOOTINGS

PARKING/GRADING

SIDEWALKS



REMARKS:

CONTRACTOR SIGNATURE: _____ DATE: _____

TO BE COMPLETED BY ENGINEER / PM

REQUEST RECEIVED BY: _____ DATE: _____

START DATE: _____ ESTIMATED FIELD TIME: _____ MET W/ PM (DATE): _____

- WITHIN SCOPE
- EXTRA WORK BEYOND SCOPE



SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes, but is not necessarily limited to, maintaining all structures and the Site in a standard of cleanliness as indicated on the Drawings, as specified herein and as necessary for the proper and complete performance of the Work.
- B. Related Sections:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to:
 - a. General Conditions, Supplementary Conditions and Sections in DIVISION 01 of these Specifications.
 - b. In addition to standards described in this Section, comply with all requirements for cleaning up as described in various other Sections of these Specifications.

1.02 QUALITY ASSURANCE:

- A. Inspection:
 - 1. Daily and more often if necessary.
 - 2. Conduct inspections to verify that requirements of cleanliness are being met.

1.03 DELIVERY, STORAGE AND HANDLING:

- A. Hazards control:
 - 1. Volatile wastes:
 - a. Store in covered metal containers.
 - b. Remove from premises daily.
 - 2. Prevent accumulation of wastes which create hazardous conditions.
 - 3. Provide adequate ventilation during use of volatile or noxious substances.

1.04 PROJECT CONDITIONS:

- A. Cleaning and disposal:
 - 1. Conduct operations to comply with local ordinances and anti-pollution laws.
 - 2. Not allowed:
 - a. Burning or burying of rubbish or waste materials onsite.
 - b. Disposal of volatile wastes in storm or sanitary sewers: Volatile wastes include, but are not limited to, mineral spirits, oil or paint thinner.
 - c. Disposal of wastes into streams or waterways.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

A. Compatibility:

1. Compatible with the surface being cleaned.
2. Recommended by the Manufacturer of the material being cleaned.
3. As reviewed by ENGINEER.

PART 3 - EXECUTION

3.01 PROGRESS CLEANING:

A. General:

1. Provide all required personnel, equipment and materials needed to maintain the specified standard of cleanliness.
2. Store materials:
 - a. In an orderly arrangement allowing maximum access.
 - b. To allow unimpeded drainage and traffic.
 - c. Provide for the required protection of materials.
3. Scrap, debris, waste materials and other items not required for construction of the Work.
 - a. Do not allow accumulation.
 - b. Remove from Site at least each week and more often if necessary.
 - c. Provide adequate storage for all materials awaiting removal.
4. Observe all requirements for fire protection and protection of the environment.

B. Site:

1. Daily, and more often if necessary:
 - a. Inspect the Site.
 - b. Pick up all scrap, debris and waste material: remove all such items to the place designated for their storage.
2. Weekly, and more often if necessary:
 - a. Inspect all arrangements of materials stored onsite.
 - b. Re-stack or otherwise service all arrangements to meet the requirements of paragraph 3.01-A-1 above.
3. At all times maintain the Site in a neat and orderly condition which meets the approval of ENGINEER.
4. Paved surfaces: Keep clean.
5. Dust control:
 - a. Control dust on or near the Work by the application of water, or other approved means.
 - b. If CONTRACTOR fails to correct unsatisfactory conditions with 24 hours after due notification:
 - (1) OWNER may arrange for such work to be performed by other means.
 - (2) Pay costs.

C. Structures:

1. Weekly, and more often if necessary:
 - a. Inspect the structures.
 - b. Pick up all scrap, debris and waste material: remove all such items to the place designated for their storage.
 - c. Sweep all interior spaces clean:
 - (1) Clean: Free from dust and other material capable of being removed by reasonable diligence using a hand-held broom.
2. Preparation for installation of succeeding material:
 - a. Clean the structures or pertinent portions thereof:
 - (1) To the degree of cleanliness recommended by the Manufacturer of the succeeding material.
 - (2) Using all equipment and materials required to achieve the required cleanliness.
3. After installation of finish floor material:
 - a. Clean the finish floor daily at all times while work is being performed in the space in which finish materials have been installed.
 - (1) Clean: Free from all foreign material which, in the opinion of ENGINEER, may be injurious to the finish floor material.
4. Schedule cleaning operations so that dust and other contaminants resulting from cleaning operations will not fall on wet, recently painted surfaces.

3.02 FINAL CLEANING:

A. Definitions:

1. Clean: The level of cleanliness generally provided by commercial building maintenance subcontractors using commercial quality building maintenance equipment and materials.

B. Prior to completion of the Work:

1. Remove from the Site all tools, surplus materials, equipment, scrap, debris and waste.
2. Conduct final progress cleaning as described in Article 3.01 above.

C. Site:

1. Unless otherwise specifically directed by ENGINEER:
 - a. Hose down all paved areas onsite and all public sidewalks directly adjacent to the Site.
 - b. Rake clean other surfaces of the grounds.
2. Remove all resultant debris.

D. Structures:

1. Exterior:
 - a. Visually inspect all exterior surfaces.
 - b. Remove all traces of soil, waste material, smudges and other foreign matter.
 - c. Remove all traces of splashed materials from adjacent surfaces.
 - d. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure.

- e. In the event of stubborn stains not removable with water, ENGINEER may require light sandblasting or other cleaning at no additional cost.
 - 2. Interior:
 - a. Visually inspect all interior surfaces.
 - b. Remove all traces of soil, waste material, smudges and other foreign matter.
 - c. Remove all traces of splashed materials from adjacent surfaces.
 - d. Remove all paint droppings, spots, stains and dirt from finished surfaces using only the specified cleaning materials and equipment.
 - 3. Glass: Clean all glass inside and outside.
 - 4. Polished surfaces: To all surfaces requiring the routine application of buffed polish, apply the specified polish as recommended by the Manufacturer of the material being polished.
- E. Timing: Schedule final cleaning as approved by ENGINEER to enable OWNER to accept a completely clean Project.

END OF SECTION

SECTION 01 78 00
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes, but is not necessarily limited to, the procedures, submittals, responsibilities and requirements for Contract closeout.

1.02 CLEANING:

A. General:

- 1. Manufactured products: Manufacturer's instructions.
- 2. Clean-up during construction: Maintain premises and public properties free from accumulations of waste, debris and rubbish caused by operations.
- 3. Final clean-up: Remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all surfaces; leave the Work clean and ready for occupancy.

B. Delinquency:

- 1. Remedies: Failure to clean-up promptly is considered to be defective Work:

1.03 WORK RECORD DOCUMENTS:

A. Maintenance of Documents:

- 1. Maintain one (1) copy at job-site in good order of:
 - a. Contract Drawings.
 - b. Specifications.
 - c. Addenda.
 - d. Reviewed shop drawings.
 - e. Change Orders.
 - f. Other Contract modifications.
- 2. Filing: Work specification format.
- 3. Accessibility: To OWNER and ENGINEER.

B. Recording:

- 1. Keep record documents current.
- 2. Contract Drawings: Legibly mark to record actual construction:
 - a. Field changes of dimension and detail.
 - b. Changes made by Change Orders and Bulletins.
 - c. Details not on original Contract Drawings.
- 3. Specifications and Addenda: Legibly mark up each SECTION to record:
 - a. Manufacturer, trade name, catalog number and supplier of products actually installed.
 - b. Changes made by Change Orders and Bulletins.
 - c. Other matters not originally specified.

C. Submittal:

1. Delivery: To ENGINEER prior to final payment.
2. Transmittal letter: Contain:
 - a. Date.
 - b. Project title and number.
 - c. CONTRACTOR's name and address.
 - d. Title and number of each record document.
 - e. Certification that each document, as submitted, is complete and accurate.

1.04 LUBRICATION AND START-UP:

A. General:

1. Manufactured Products: Manufacturer's instructions.
2. Lubricants: One-year supply manufacturer's recommended.

1.05 TOUCH UP AND REPAIR:

A. General:

1. Manufactured Products: Manufacturer's instructions.
2. Field fabricated products: Appropriate SECTIONS.

1.06 OPERATION AND MAINTENANCE MANUALS:

- A. Submit as required by Contract Documents prior to final payment.

1.07 SUBSTANTIAL COMPLETION:

- A. Procedures and Requirements: Paragraph 15.03 of the General Conditions.

1.08 FINAL PAYMENT:

- A. Procedures and Requirements: See Agreement.
- B. Submit Affidavit and Consent of Surety prior to final payment.
- C. Submit Work record documents, O & M manuals, remove temporary soil erosion control measures or provide Letter of Credit of approved amount to guarantee removal by a later date, and complete all punch list items prior to final payment.

PART 2 – PRODUCTS – Not Used

PART 3 - EXECUTION

3.01 SCHEDULES:

A. Attached are the following forms:

1. Certificate of Substantial Completion.
2. Affidavit and Consent of Surety.
3. Letter of Credit Form

END OF SECTION

CERTIFICATE OF SUBSTANTIAL COMPLETION
(on ENGINEER's Letterhead)

OWNER _____

CONTRACTOR _____

Contract: _____

Project: _____

OWNER'S Contract No. _____ ENGINEER's Project No. _____

This [preliminary] [final] Certificate of Substantial Completion applies to:

- All Work The following specified portions of the Work:
-

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the CONTRACTOR to complete all Work in accordance with the Contract.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon OWNER's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of OWNER and CONTRACTOR; see Paragraph 15.03.D of the General Conditions.]*

Amendments to OWNER's responsibilities:

- None
 As follows:

Amendments to CONTRACTOR's responsibilities:

- None
 As follows:
-

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

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

EXECUTED BY ENGINEER:

RECEIVED:

RECEIVED:

By: _____
(Authorized Signature)

By: _____
OWNER (Authorized Signature)

By: _____
CONTRACTOR (Authorized Signature)

Title: _____

Title: _____

Title: _____

Date: _____

Date: _____

Date: _____

STATE OF MICHIGAN)
)
) ss
COUNTY OF _____)

AFFIDAVIT

Notice to Contractor: This is a sample copy. Three completed copies of this form or similar form must be submitted to the ENGINEER before final payment will be recommended.

_____, CONTRACTOR

being duly sworn, deposes and says that he entered into an Agreement (Contract) with the _____ of _____ (OWNER) on the ____ day of _____ 20__ for the performance of certain Work generally described as follows: _____

CONTRACTOR further says that the Work under the terms of the Contract has been completed and all sums due to Contractors, Subcontractors, suppliers and laborers with whom CONTRACTOR has contracted for performance under the Contract have been paid in full.

Furthermore, in consideration of final payment under the Contract, CONTRACTOR hereby waives and releases any and all claims or rights which CONTRACTOR may have in connection with the Contract against OWNER or the premises upon which the Contract Work was performed, and agrees to indemnify OWNER against any and all such claims or rights which may be asserted by Contractors, Subcontractors, Suppliers or laborers with whom CONTRACTOR has contracted for performance under the Contract.

WITNESSES:

CONTRACTOR: _____

Signature

Name and Title (Typed or printed in ink)

Subscribed and sworn to before me this ____ day of _____, 20__

Notary Public, _____ County _____

My commission expires: _____

CONSENT OF SURETY

The undersigned, as Surety on the above described Contract, hereby consents to the making of final payment to the CONTRACTOR under the Contract.

DATE: _____ SURETY COMPANY: _____

Signature (Attorney-in-fact)

Name and Title (Typed or printed in ink)

(Attach copy of power of attorney certified to date of consent)

LETTER OF CREDIT FORM

Bank:

[Bank's Name and Address]

Irrevocable Standby Letter of Credit
Bank Reference No. _____
Issued: _____

Beneficiary:

[Owner's Name and Address]

Applicant:

[Contractor's Name and Address]

Project:

[Description of Project and remaining Work to be completed]

Date: _____
Expiration Date: _____ ***[as approved by Owner and Engineer]***
Amount: USD _____ ***[as approved by Owner and Engineer]***
Bank Reference No.: _____

Gentlemen:

We hereby establish our Irrevocable Standby Letter of Credit No. _____ in your favor for the account of **Applicant** up to an aggregate amount of USD _____ available by your draft(s) at sight drawn on **Bank**.

Drafts to be accompanied by the following document(s):

1. Beneficiary's written statement, stating: "**Applicant** has failed to satisfactorily install the **Project**."
2. Copy of Letter of Credit and any amendments.

Partial drawings are permitted.

Draft(s) must be marked "Drawn under **Bank** Irrevocable Standby Letter of Credit No. _____ dated _____."

We hereby agree with you that drafts drawn under and in strict compliance with the terms of this credit will be duly honored by us upon presentation at this office on or before our close of business on **Expiration Date**.

Except as otherwise expressly stated herein, this Letter of Credit is issued subject to the International Standby Practices of the International Chamber of Commerce ("ISP98"). This Letter of Credit shall be deemed to be a contract made under the laws of the State of Michigan and shall, as to matters not governed by ISP98, be governed by and construed in accordance with the laws of the State of Michigan, other than its conflict of laws rules, which would result in the application of the law of any jurisdiction other than the laws of the State of Michigan.

Sincerely,

Bank

Authorized Signature

Printed Name and title

SECTION 02 41 00

DEMOLITION

PART 1 – GENERAL

1.01 SUMMARY OF WORK:

- A. Section includes, but is not necessarily limited to, the demolition of existing pipes, equipment, and concrete structures as indicated on the Drawings, as specified herein and as necessary for the proper and complete performance of the Work.
- B. Regulatory Requirements:
 - 1. Conform to applicable code for demolition work, safety of structure and dust control.
 - 2. Obtain required permits from authorities.
 - 3. Notify affected utility companies before starting work and comply with their requirements.
 - 4. Do not close or obstruct egress width to exits.
 - 5. Do not disable or disrupt building fire, life safety, or municipal fire systems without 7-day prior written notice to the Owner.
 - 6. Comply with requirements of NFPA 241, "Safeguarding Construction, Alteration, and Demolition Operations".
 - 7. Conform to procedures applicable when discovering hazardous or contaminated materials.
- C. CONTRACTOR shall remove and dispose of materials in accordance with all Federal, State and local regulations.

1.02 DEFINITIONS:

- A. Terms:
 - 1. Abandon: Remove an item to the extent that it is not visible and does not interfere with new construction. Portions of the abandoned item may be left in place. No abandoned items shall be left below new footings.
 - 2. Fill and Abandon: Fill existing underground piping with flowable fill, cap pipe ends, and abandon in place.
 - 3. Abandon or Plug (Piping): Cap pipe ends and abandon in place.
 - 4. Demolish: Remove existing items from their present location in the Project area and haul to an area outside of the Project area. Remove utilities serving these items.
 - 5. Relocate: Move existing items from their present location to another location in the Project area. Extend utilities serving the present location to the new location.
 - 6. Remove: Remove existing items from their present location in the Project area and haul to an area outside of the Project area. Remove utilities serving these items.
 - 7. Replace: Remove existing items from their present location in the Project area, haul them to an area outside of the Project area, and furnish and install new items in the same or another location. Extend utilities serving the present location to the new location.
 - 8. Reuse: Move existing items from their present location to another location in the Project area. Extend utilities serving the present location to the new location.

1.03 SUBMITTALS

- A. Submit to ENGINEER for review two (2) copies of the following no later than 30 days prior to commencement of demolition work:
 - 1. A detailed schedule showing the following:
 - a. Anticipated demolition start date.
 - b. Coordination of shutoff, capping and abandoning of existing utility services as required.
 - c. Proposed demolition sequence.
 - d. Demolition completion date.

2. Proposed equipment, methods and operations of demolition and modifications specified herein.
 3. Proposed receiving location(s) of all materials to be hauled off site.
 4. Proposed route(s) to receiving location(s) of all materials to be hauled off site.
 5. Methods and procedures to be utilized to minimize soil erosion for heavy equipment and trucking operations.
 6. All required State and Local permits.
- B. Record Drawings accurately showing actual locations of capped utilities, subsurface obstructions, and other items which will be hidden after construction activities.

1.04 PROTECTION:

A. Existing Structures:

1. Demolition and disassembly will not be allowed until it is coordinated with OWNER's operations.
2. Maintain free and safe passage to and from buildings.
3. Prevent movement or settlement of adjacent structures.
4. Provide and place bracing, shoring and underpinning, and be responsible for safety and support of structures and assume liability for such movement, settlement, damage or injury.
5. Cease operations and notify ENGINEER immediately if safety of structure appears to be endangered. Take precautions to properly support structure. Do not resume operations until safe conditions are restored.
6. All active utility mains traversing the project site shall be maintained.
7. Do not close or obstruct any streets, sidewalks, alleys or passageways unless specifically authorized.

B. Barricades:

1. Provide, erect and maintain barricades, lighting and guard rails as required by applicable regulatory agencies to protect occupants of building and workers.
2. Provide temporary fencing for security if it is necessary to temporarily remove OWNER's existing security fencing for access to the site. Obtain OWNER's approval prior to removing any existing fencing.

C. Coordination with local authorities:

1. Cooperate with local authorities and utility companies whose work affects or will be affected by the demolition operations. Ascertain the rules, regulations and requirements of these authorities that affect the demolition process: notify them of conditions affecting their work. Disconnect or arrange for disconnection of utility services if required.
2. Comply fully with all provisions of the local codes, laws and ordinances applicable to work of this Section.

1.05 SEQUENCING AND SCHEDULING:

A. Scheduling:

1. Before commencing demolition work, coordinate modifications necessary to bypass the affected structure with OWNER.
2. Actual work shall not begin until ENGINEER has inspected and approved the modifications and authorized commencement of the demolition work.
3. Follow this procedure for each individual demolition operation.

PART 2 – PRODUCTS

2.01 SALVAGED MATERIALS:

- A. Ownership:
 - 1. OWNER shall have the option of retaining ownership of any or all existing equipment, materials, and items removed under this Work.
 - 2. Should OWNER decide not to retain ownership of certain items removed under the work of this Section, those items shall become property of CONTRACTOR and shall be promptly removed from the Project Site.
- B. Delivery: Deliver items which remain property of OWNER to a location, or locations, as selected by OWNER.

PART 3 – EXECUTION

3.01 PREPARATION:

- A. Permits: Obtain all necessary permits.
- B. Safety: Be responsible for all safety requirements in accordance with the General Conditions.
- C. Convenience: Carry out demolition work to cause as little inconvenience to surrounding areas as possible.

3.02 DEMOLITION:

- A. General:
 - 1. It is the CONTRACTOR's responsibility to turn off all applicable utilities prior to demolition.
 - 2. Repair all demolition performed in excess of that required at no cost to OWNER.
 - 3. Do not use explosives in the work.
 - 4. It is the CONTRACTOR's responsibility to maintain all access drives and roads utilized by construction/demolition traffic. This includes, but is not limited to, periodic street sweeping and repairing (patching/reconstructing) access drives and roads damaged by construction traffic.
- B. Burning: Do not burn materials on Site.
- C. Stockpiling: On site stockpiles of demolished materials shall be removed from the site within 48 hours.
- D. Disposal of materials:
 - 1. Remove contaminated, dangerous and other materials from Site and dispose of in accordance with applicable regulations.
 - 2. Arrange and pay for all required hauling, storage, collection and disposal. CONTRACTOR is responsible for any waste characterization that may be required by the waste receiver.
- E. Pollution Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
 - 1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

2. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations, as directed by OWNER. Return adjacent areas to condition existing prior to start of work.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY:

- A. The work includes all cast-in-place concrete.

1.02 REFERENCES:

- A. ASTM - American Society Testing Materials, latest edition.
- B. ACI - American Concrete Institute, latest edition.
- C. CRSI – Concrete Reinforcing Steel Institute.
- D. MDOT - Michigan Department of Transportation, *"2012 Standard Specifications for Construction"*.

1.03 SUBMITTALS:

- A. Proposed mix design prepared by an approved independent testing firm for each class of concrete. Select proportions according to ACI 301-72, Section 3.8, Method 1 or Method 2. Approval required.
- B. Shop drawings showing fabrication dimensions and locations for placing the reinforcing steel and accessories. Details of reinforcement and accessories shall be in accordance with ACI 315.
- C. Certifications for the following:
 - 1. Cement.
 - 2. Aggregates.
 - 3. Admixtures.
 - 4. Reinforcement.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Concrete:
 - 1. Cement: ASTM C150 or ASTM C595 (maximum fly ash content shall be 20% by weight). All cement used in exposed concrete shall be of the same brand from the same mill.
 - 2. Coarse aggregates: ASTM C33.
 - 3. Fine aggregate: ASTM C33.
 - 4. Mixing water: Clean, fresh, and potable.

5. Admixtures:
 - a. Air-entraining: ASTM C260.
 - b. Water-reducing, retarding, and accelerating: ASTM C494. Calcium chloride will not be permitted as an admixture.
 - c. Pozzolanic admixtures: ASTM C618, Type F or C, loss on ignition limited to 4 percent (4%).

- B. Reinforcement:
 1. Bars: Deformed, ASTM A615 (S1), Grade 60.
 2. Welded wire fabric: ASTM A185.

- C. Accessories:
 1. Tie wire: Sixteen (16) gauge annealed.
 2. Chairs, bar supports, bolsters, spacers: CRSI, Class C for structural slabs, Class A, for slabs-on-grade.
 3. Form ties: Commercially manufactured, water seal form ties with minimum 1-inch diameter steel or neoprene collar at mid-point for walls subject to hydrostatic pressure.

- D. Premolded Joint Filler:
 1. ASTM D1751, non-extruding, bituminous.

- E. Latex Bonding Agent: W.R. Meadows "Intralok", L&M Construction Chemicals "Everbond", Sonneborn "Soncrete", or equal.

- F. Epoxy Bonding Agent: L&M Construction Chemicals "Permunit", Sonneborn "Sonobond", Toch "Epotox 350", or equal.

- G. Vapor Barrier: 6 mil clear polyethylene film, below grade application.

- H. "Dry Shake" for Non-Slip Finish: Aluminum oxide type: L&M Construction Chemicals "Grip It", Toch "Toxgrip", Sonneborn "Frictex", or equal.

- I. Curing Compound:
 1. White membrane for paving and curb: ASTM C309, Type 2.
 2. Transparent membrane for floors and structures: ASTM C309, Type 1-D, Class B.

- J. Dampproofing: Apply bituminous mastic spray coating to the exterior of the concrete walls. Apply to thickness specified by the manufacturer. Provide product submittal.

- K. Joint Sealant: Semi-rigid, non-tracking type: W.R. Meadows "Sealtight Gardox", or equal.

- L. Wall Finish: Thoro "Thorseal" applied according to manufacturer's instruction may be substituted for a grout cleaned finish.

2.02 PROPORTIONING CONCRETE:

- A. Proportions and Materials:
 - Permissible Cement Types: I, IP, I-A, IP-A
 - Minimum Cement Content: 5.5 sacks/cyd. for 3500 psi, 6.0 sacks/cyd. for 4000 psi.
 - Coarse Aggregate: MDOT 6A
 - Sand: MDOT 902.08 and Table 902-4, 2NS
 - Maximum Water-Cement Ratio: 5.0 gal./sack

Entrained Air Content: five percent (5%) to eight percent (8%).

Maximum Slump: 3½-inch for floors and slabs on grade, 4 inches otherwise (individual batches may be ± ½ inch as long as the average of all batches is at or below maximum).

Minimum Compressive Strength, f_c (28 day) 4000 psi floors and slabs on grade, all other 3500 psi.

- B. Admixtures: Approval of ENGINEER required. Use in accordance with the manufacturer's instructions.
- C. If the CONTRACTOR intends to place concrete by pumping, the mix design shall be prepared in accordance with these specifications and the recommendations of ACI 304.

2.03 FABRICATING REINFORCEMENT:

- A. Fabricate in accordance with approved shop drawings and ACI 315.
- B. Reinforcing splices: Class B unless otherwise shown.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. In accordance with the requirements of ACI 301, Chapters 4 through 13, 17 and 18.

3.02 FIELD QUALITY CONTROL:

- A. Field inspection and testing will be performed by a firm appointed and paid for by the OWNER. When additional testing of materials or concrete is necessary because of their failure by test or inspection to meet specification requirements, the cost of additional testing shall be paid for by the CONTRACTOR. Additional testing for early form removal shall also be paid for by the CONTRACTOR.
- B. Provide access to all portions of the work and any necessary assistance in obtaining and handling samples at the project or other material sources. Three concrete test cylinders will be taken for every 50 cubic yards, or fraction thereof, for each class of concrete placed in any one day. One additional cylinder will be taken during cold weather concreting and be cured on the project site under the same conditions as the concrete it represents. One slump test will be taken for each set of cylinders taken.

END OF SECTION

SECTION 03 60 00

GROUTING

PART 1 - GENERAL

1.01 SUMMARY:

- A. The work includes the use of non-shrink grout for installing:
 - 1. Base plates, bearing plates, drilled-in anchor bolts, drilled-in reinforcing dowels, railing posts, or where called for on the Drawings.
- B. All grout shall be cementitious grout unless noted. Epoxy grout shall be used only where specifically called for on the Drawings.

1.02 SUBMITTALS:

- A. Submit product data describing the grout, including recommended mixing and placing instructions.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Cementitious Grout - Acceptable Products Include:

Trade Name	Manufacturer
Crystex	L&M Construction Chemicals, Inc.
Embeco 636	Master Builders
Ferrolith G-NC	Sonneborn Building Products
Five-Star Grout	U.S. Grout Corporation
Masterflow 713	Master Builders
Sauereisen F-100	Sauereisen Cements Company
SonogROUT	Sonneborn Building Products
Upcon Multi Purpose Grout (262)	Bostik, Upco Division

- B. Epoxy Grout - Acceptable Products Include:

Trade Name	Manufacturer
Concresive 1463	Adhesive Engineering Company
Upcon Epoxy Grout	Bostik, Upco Division
647 R Repair Grout	Ceilcote
Epoxy Grout 1-270	Permagile-Salmon Ltd.

- C. Flowable mix shall develop a minimum compressive stress of 6000 psi in twenty-eight (28) days for cementitious grout and 10,000 psi in twenty-eight (28) days for epoxy grout.

PART 3 - EXECUTION

3.01 PLACEMENT:

- A. Grout shall be mixed and placed per manufacturer's recommendations.
- B. All voids within area to be grouted must be filled.
- C. Strike-off grout cleanly and neatly. Rectify all defects.

END OF SECTION

SECTION 09 96 00

HIGH PERFORMANCE COATINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. This Section includes, but is not necessarily limited to, the furnishing and application of paint, stain and labeling products as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.

B. Work includes:

1. Surfaces to be painted or finished include, but are not necessarily limited to, the following interior, concealed, and exterior surfaces for all items located within the air release manhole, except as otherwise indicated on the Drawings or herein specified.
 - a. Equipment.
 - b. Ferrous metals, structural steel.
 - c. Exposed pipe and fittings including wall and floor sleeves.
 - d. All other surfaces not specifically excluded in the following paragraph.
2. Surfaces not to be painted or finished include the following:
 - a. Manufacturer's name and identification plates.
 - b. Galvanized steel.
 - c. Galvanized, aluminum or fiberglass grating.
 - d. Aluminum (unless indicated in the surface to be painted).
 - e. Stainless steel (unless indicated in the surfaces to be painted).
 - f. Prefinished wall, ceiling and floor coverings.
 - g. Items indicated on the Drawings as not to be painted.

C. Related Sections:

1. Documents affecting work of this Section include, but are not necessarily limited to:
 - a. General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.

1.02 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:

1. ASTM Standard Practice:
 - a. A780 - Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
2. ASME:
 - a. A13.1 - Scheme for the Identification of Piping Systems.
3. International Concrete Repair Institute Technical Guidelines:
 - a. 310.2 - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.
4. National Association of Pipe Fabricators, Inc.:
 - a. NAPF 500-03 - Surface Preparation Standard for Ductile Iron Pipe and Fittings Receiving Special External Coatings and/or Special Internal Linings.

5. Society for Protective Coatings - Surface Preparation Standards and Specifications:
 - a. SSPC-SP3 - Power Tool Cleaning.
 - b. SSPC-SP5 - White Metal Blast Cleaning.
 - c. SSPC-SP6 - Commercial Blast Cleaning.
 - d. SSPC-SP7 - Brush-Off Blast Cleaning.
 - e. SSPC-SP10 - Near-White Blast Cleaning.
 - f. SSPC-SP11 - Power Tool Cleaning to Bare Metal.
 - g. SSPC-SP12 - Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating.
 - h. SSPC-SP13 - Surface Preparation of Concrete.
 - i. SSPC-SP14 - Industrial Blast Cleaning.
 - j. SSPC-SP15 - Commercial Grade Power Tool Cleaning.
 - k. SSPC-SP16 - Brush-off Blast Cleaning of Non-Ferrous Metals.
 - l. SSPC-VIS1 - Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning.
 - m. SSPC-VIS3 - Guide and Reference Photographs for Steel Surfaces Prepared by Hand and Power Tool Cleaning.
6. Society for Protective Coatings - Paint and Coating Standards and Specifications:
 - a. SSPC-PA1 - Shop, Field, and Maintenance Painting of Steel.
 - b. SSPC-PA2 - Measurement of Dry Coating Thickness with Magnetic Gages.
 - c. SSPC-PA3 - A Guide to Safety in Paint Application.
7. Society for Protective Coatings - Qualification Procedures and Quality Systems:
 - a. SSPC-QP1 - Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures).

1.03 DEFINITIONS

A. Abbreviations:

1. DFT: Dry film thickness.
2. ICRI: International Concrete Repair Institute.
3. Mil: Thousandth of an inch.
4. PVC: Polyvinyl chloride.
5. FRP: Fiberglass reinforced plastic.
6. sf: Square feet.
7. DIP: Ductile iron pipe.

B. Terms:

1. Exposure: Environmental conditions to which different surfaces may be exposed are as follows:
 - a. Interior: All surfaces within the confines of a building or other enclosure not constantly exposed to weather, trapped moisture, high heat or other deteriorating conditions, and exposed to view.
 - b. Concealed: All surfaces within the confines of a building or other enclosure not constantly exposed to weather, trapped moisture, high heat or other deteriorating conditions, and normally concealed from view.
 - c. Immersed: Immersed surfaces include all surfaces below a water surface or exposed to spray. Surfaces exposed to spray include all areas to 8 inches above maximum water surface in quiescent tanks and to 18 inches above maximum water surface in mixed or agitated tanks. Also included as immersed surfaces are all floors, walls and the bottom side of the roof of an enclosed tank.
 - d. Exterior:

- 1) Above grade: All surfaces above finished grade and not included in a., b. or c. above.
- 2) Below grade: All surfaces below finished grade and not included in a., b. or c. above.

1.04 SUBMITTALS

A. Submit in accordance with Section 01 33 00 – Submittals.

B. Manufacturer's literature:

1. Submit a paint schedule listing for each coating system:
 - a. Paint system number. Use the same numbering system as the paint system schedule at the end of this specification.
 - b. Surface preparation.
 - c. For each coat, provide the paint product name and the dry film thickness.
2. Submit specification data sheets and color charts for all materials proposed for use on the Work.

C. Manufacturer's certificates:

1. Submit signed affidavit from coatings Manufacturer that submitted coatings are of same or better quality than those specified.

D. Applicator's experience.

1. Applicator shall have experience with the coating systems specified.
2. Experience shall be substantiated by previous project experience, certifications, seminar attendance, Manufacturer validation or similar means.

E. Product and maintenance schedules:

1. At or before the Completion of the Work, submit complete lists, in a room finish schedule, of the products used. Include item covered, coating Manufacturer's name, type of coating and color.
2. Provide pipe coding schedules listing pipe name, coating Manufacturer's name, type of coating and color.
3. Provide maintenance manuals detailing the proper procedures and materials to be used for maintenance and repainting of the various coatings.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: Applicator shall be experienced in performing high-performance coating work, shall have completed not less than 10 years with coating system applications similar in material and extent to those indicated for Project, and have a record of successful in-service performance.

1. Applicator shall be certified by SSPC-QP 1 for surface preparation and field coating application and SSPC-QP 3 for shop painting, as applicable.
2. Applicator's Personnel: Persons trained for application of specified coatings.

B. General:

1. Acceptability of materials and performance shall be determined by ENGINEER.

2. Testing or certifications may be required to aid ENGINEER determination.
3. Expense of testing and certifications when required and, unless noted otherwise in the Contract Documents, shall be borne by CONTRACTOR.
4. If destructive testing is required, CONTRACTOR shall repair damaged area. Expense of repair shall be borne by CONTRACTOR,
5. Request, in writing, a review of each coat by ENGINEER of first finished surface of each type for color, texture and workmanship. First accepted surface of each type and color shall be visibly labeled by ENGINEER with removable label as Project standard for that type and color of item. Labels shall remain in place until job is finished. For spray application, paint a surface of 100 square feet as Project standard.
6. Work may be inspected for proper surface preparation, pretreatment, priming, dry film thickness, curing, color and workmanship. Inspection equipment includes, but is not necessarily limited to the following:
 - a. Inspector's wet film and dry film thickness gages.
 - b. Zorelco 369/PHD pin hole detector.
 - c. Mark II Tooke Gage.
 - d. Keane-Tator Surface Profile Comparator.
 - e. Testex Press-O-Film and Micrometer.
 - f. Delmhorst Moisture Detector Model BD-7.

C. Labeling:

1. Include the following on a label on each container:
 - a. Manufacturer's name.
 - b. Type of coating.
 - c. Manufacturer's stock number.
 - d. Manufacturer's batch identification.
 - e. Color.
 - f. Instructions for mixing and reducing, where applicable.
 - g. Percent total solids by volume.
 - h. Identification of toxic substances and special instructions.
- D. It shall be CONTRACTOR's responsibility to ensure the compatibility of painting materials proposed for this Contract. CONTRACTOR shall coordinate this work with other trades to ensure compliance with these Specifications.
- E. Prior to ordering any of the materials of this Section, CONTRACTOR, ENGINEER, painting Subcontractor, and paint Manufacturer's representative shall attend a progress meeting in accordance with Section 01 31 19 – Project Meetings, and review the work to be performed under this Section.
- F. Manufacturer's conditions report: Manufacturer's representative shall review environmental site conditions for surface preparation and coating application. Manufacturer's representative shall inform paint Subcontractor, CONTRACTOR, and ENGINEER of measures to be taken to ensure high quality coating performance.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Deliver materials in original sealed containers of the Manufacturer with labels legible and intact.

B. Storage:

1. Store only acceptable Project materials on Project Site.
2. Store material in a suitable location and in such a manner as to comply with all safety requirements including any applicable federal, state, and local rules and requirements. Storage shall also be in accordance with instructions of the paint Manufacturer and requirements of insurance underwriters.
3. Restrict storage area to paint materials and related equipment.

1.07 PROJECT CONDITIONS

A. Environmental requirements:

1. Comply with Manufacturer's recommendations regarding environmental conditions under which coatings may be applied.
2. Environmental conditions which affect coating application include, but are not necessarily limited to: ambient air temperature, surface temperature, humidity, dew point and environmental cleanliness.
3. Do not expose epoxies during application and cure to sunlight and heaters that emit carbon dioxide and carbon monoxide.
4. CONTRACTOR shall demonstrate acceptability of environmental conditions as required by ENGINEER.

B. Existing painted surfaces:

1. When painting is specified over existing painted surfaces and existing coating types are not known, Samples of existing coatings shall be analyzed by a laboratory approved by ENGINEER to determine generic type of coating present. A written report from the lab shall be submitted to ENGINEER before any coating is applied. Required modifications to painting schedule shall not be justification for extra payment.
2. Alternate method for steel, concrete or masonry: Remove existing coating by abrasive blasting obtaining surface cleanliness and profile required for coating specified. Paint as new surface.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:

1. Materials selected for coating systems for each type of surface shall be the product of a single Manufacturer.
2. Except as otherwise specified, materials shall be the product of the following Manufacturers:
 - a. PPG Protective & Marine Coatings.
 - b. Sherwin-Williams Company.
 - c. Tnemec Company, Inc.

2.02 MATERIALS

A. Reference Manufacturer:

1. Products specified are as manufactured by Tnemec Company, Inc., unless otherwise indicated; similar products of acceptable manufacturers listed in Article 2.01 may be furnished in lieu of those listed.

B. Material types:

1. Paint, primer and related materials are included by Manufacturer's product numbers in the Schedules in this Section.

C. Colors:

1. Colors of all finish coats shall be as selected by ENGINEER.

2.03 MIXES

A. Mixing:

1. Paints shall be delivered to the Site ready-mixed, when this is possible.
2. Two-component paints may be mixed at the Site.
3. Mixing shall proceed until paint becomes smooth, homogeneous, and free of surface swirls or pigment lumps.
4. When mixing multi-component paints, remix each component individually, then blend the components, as recommended by the Manufacturer, until the mixture is completely uniform in color.

B. Thinning:

1. Thin first coat of paint applied to immersed concrete tank walls in accordance with Manufacturer's recommendations.
2. No other thinning will be permitted unless absolutely necessary.
3. Paint shall be spray-applied in as-received condition to demonstrate necessity for thinning.
4. Use only thinners as recommended by paint Manufacturer for specific use.
5. Amount of thinner used shall be reported to ENGINEER.
6. Measure viscosity to ensure proper thinning ratios have been used.

C. Tinting:

1. On-site tinting permitted only when acceptable to ENGINEER. Written approval required.
2. Use only tinting colors recommended by the Manufacturer for the specific type of coating.

2.04 PIPE MARKING

A. Identification labels:

1. Labels and arrows shall be preprinted and manufactured by a company which normally manufactures pipe identification systems.
2. Materials:
 - a. Smooth-wall pipes: Self-adhesive vinyl markers.
 - b. Ductile iron pipe and smooth-wall pipes: Acrylic/Vinyl pre-formed plastic.
3. Arrow(s) to indicate flow direction.
4. Colors: ANSI Z53.1 - Safety Color Code for Marking Physical Hazards.

5. Identification label color scheme:

Pipe Contents	Color Scheme
Fire-quenching fluids	White text on red
Toxic and corrosive fluids	Black text on orange
Flammable fluids	Black text on yellow
Combustible fluids	White text on brown
Potable, cooling, boiler feed, and other water	White text on green
Compressed air	White text on blue
User-defined	White text on purple
User-defined	Black text on white
User-defined	White text on grey
User-defined	White text on black

6. Pipe marking labels shall be sized as follows:

Pipe or Insulation OD	Lettering Height	Minimum Marker Length
1-1/4" or smaller	1/2"	8"
1-1/2" to 2"	3/4"	8"
2-1/2" to 6"	1-1/4"	12"
8" to 10"	2-1/2"	24"
Larger than 10"	3-1/2"	32"

7. Manufacturers:

- a. Brady Worldwide, Inc.
- b. EMED Co., Inc.
- c. Seton Identification Products.
- d. Or equal.

B. Color bands:

1. Thickness: 5-mil.
2. Adhesive backed vinyl tape.
3. Resistant to water, oil, fungus and chemicals.
4. Bands shall be the following widths:
 - a. Pipe up to and including two-inch diameter: 3/4 inch wide.
 - b. Pipe 2-1/2-inch to 6-inch diameter: 1 inches wide.
 - c. Pipe 8-inch to 12-inch diameter: 2 inches wide.
 - d. Pipe 14-inch diameter and over: 4 inches wide.
5. Manufacturers:
 - a. 3M Company, Vinyl Tape 471.
 - b. Seton Identification Products, Pipe Banding Tape.
 - c. Or equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspection:

1. Prior to the commencement of surface preparation or other coating activities, thoroughly inspect the surfaces to determine if the Work is ready to be prepared and painted.
2. Report in writing to ENGINEER, all conditions that may potentially affect proper application.
3. Do not commence surface preparation or other coating activities until such defects have been corrected.

B. Correction of defects:

1. Correct defects and deficiencies in surfaces which may adversely affect work of this Section.

3.02 PREPARATION

A. General:

1. Prepare surfaces in accordance with this article, the paint Manufacturer's recommendations and as specified in the painting schedule of this Section.
2. Cleanliness of abrasive blast-cleaned steel shall be determined by ENGINEER using SSPC-VIS-1, Visual Standard for Abrasive Blast Cleaned Steel. Small steel panels which have been abrasive blast-cleaned and approved for a specific cleanliness may be used for comparative purposes to facilitate inspection and approval. These panels shall be securely wrapped in clear plastic and sealed to protect them from deterioration and marked with appropriate cleanliness specification, i.e., SSPC-SP6.
3. Compressed air used for blasting shall be periodically checked to verify that it is clean, dry and oil-free by directing its flow toward a sheet of clean white paper. Oil and water separators shall be placed in the air line as close as possible to blast-cleaning equipment. Contaminated air shall not be used for blast cleaning.
4. Measure surface profile of abrasive blast-cleaned steel using a Keane-Tator Surface Profile Comparator or Testex Press-0-Film and Micrometer.
5. Abrasive media shall be selected to provide the type of profile required by the Manufacturer of the coating product. Abrasive media shall contain less than 1% free silica sand.
6. All motors, bearings, chain drives and other moving parts shall be protected by wrapping with plastic and sealing with tape. Protective covers shall be maintained in dust tight condition.
7. Steel and fabrication defects revealed by surface preparation, such as weld imperfections, delaminations, scabs and slivers shall be corrected by appropriate trade before proceeding further with surface preparation.
8. Dust and blast products shall be removed from the abrasive blast-cleaned surfaces by high pressure air or vacuum cleaning. Completely clean up all residues from blasting operations within the entire space to be painted prior to applying any coatings.
9. Surfaces shall be inspected after all surface preparation is complete and prior to application of any coatings.

B. Masonry walls:

1. New masonry walls shall cure for at least 28 days before coating.
2. Test walls for moisture content in accordance with ASTM D4263. Test consists of securely taping an 18-inch x 18-inch piece of 4-mil thick plastic film to the wall in various locations. The film shall be carefully sealed with tape to prevent the escape of moisture and shall remain in place for a minimum of 24 hours. If, after this period of

time, moisture is present between the plastic and the wall, additional time for the walls to dry will be required. A Delmhorst Moisture Detector Model BD-7 may also be used.

3. Remove dirt, mortar, scale, powder and other foreign matter from masonry surfaces which are to be coated by scrubbing with a carborundum stone and/or a stiff brush.
4. Remove oil and grease with a solution of tri-sodium phosphate, rinse well and allow to thoroughly dry.
5. Remove stains from masonry surface caused by weathering of corroding metals with a solution of sodium metasilicate after being thoroughly wetted with water and allow to thoroughly dry.
6. Coat masonry walls prior to installation of wall mounted equipment.

C. Concrete:

1. New concrete shall cure for at least 28 days before coating.
2. Test concrete for moisture content as specified in Article 3.02 B.2.
3. Remove oil and grease with a solution of tri-sodium phosphate prior to the commencement of any coating or blasting activities.
4. Prepare concrete surface to open up voids and cracks in accordance with the specification required for coating to be applied.
5. Patch voids and cracks that will cause discontinuities in coating using a patching compound compatible with the coating system.
6. Scrub concrete with stiff brush to remove loosely adhered patching compound.
7. Concrete shall be clean and dry before coating.

D. Ferrous metals:

1. Non-immersed ferrous metals:
 - a. Surface preparation - shop:
 - 1) Remove dirt, oil, grease and other foreign matter in accordance with SSPC-SP1 Solvent Cleaning.
 - 2) Abrasive blast clean surfaces to specification required for coating to be applied.
 - 3) Abrasive blast cleaning shall be done only when the relative humidity is no higher than 75% and the surface temperature of the steel is at least 5 degrees F above the dew point.
 - 4) Cleaned surfaces shall be coated before any visible rust forms on the surface. No cleaned surfaces shall be left uncoated for more than 24 hours.
 - 5) Apply coating as specified under this Section.
 - b. Surface preparation - field:
 - 1) Remove dirt, oil, grease and other foreign matter in accordance with SSPC-SP1 Solvent Cleaning.
 - 2) Prepare field welds by grinding to remove sharp edges, undercuts, recesses and pin holes. All weld slag and spatter shall be completely removed.
 - 3) All damages, scratches or abraded areas of shop primers and all field welds and all areas within 4 inches of field welds shall be cleaned before painting using surface preparation methods at least as effective as those specified for the structure itself.
 - 4) Feather out edges to make touch-up patches inconspicuous.
 - 5) CONTRACTOR may, at his option, clean and apply one overall coat of primer for each specified shop coat in place of touch-up or spot priming. CONTRACTOR shall meet all applicable surface preparation and application specifications herein.
2. Immersed ferrous metals:

- a. Surface preparation - field:
 - 1) Remove dirt, oil, grease and other foreign matter in accordance with SSPC-SP1 Solvent Cleaning.
 - 2) Prepare field welds by grinding to remove sharp edges, undercuts, recesses and pin holes. Weld slag and spatter shall be completely removed.
 - 3) Abrasive blast clean surfaces to specification required for coating to be applied.
 - 4) Abrasive blast cleaning shall be done only when the relative humidity is no higher than 75% and the surface temperature of the steel is at least 5 degrees F above the dew point.
 - 5) Cleaned surfaces shall be coated before any visible rust forms on the surface. No cleaned surfaces shall be left uncoated for more than 24 hours.
 - 6) Apply coating as specified under this Section.
 - 3. Ductile and cast iron pipe and fittings:
 - a. Use the appropriate coating system for ferrous metals except the surface preparation shall be in accordance with NAPF-03 as follows:
 - 1) Pipe previously coated with asphaltic paint: NAPF-03-04 except no staining may remain on the surface after abrasive blast cleaning.
 - 2) Pipe not previously coated with asphaltic paint: NAPF-03-04.
 - 3) Fittings previously coated with asphaltic paint: NAPF-03-05 Blast Clean #1.
 - 4) Fittings not previously coated with asphaltic paint in immersed service: NAPF-03-05 Blast Clean #1.
 - 5) Fittings not previously coated with asphaltic paint in non-immersed service: NAPF-03-05 Blast Clean #3.
- E. Stainless steel:
- 1. Prepare welds by grinding to remove sharp edges, undercuts, recesses and pin holes.
 - 2. Remove dirt, oil, grease and other foreign matter in accordance with SSPC-SP1 Solvent Cleaning.
 - 3. Use only solvents and cleaning solutions containing less than 200 ppm of halogens to prevent stress corrosion cracking.
- F. Nonferrous metals and galvanized steel:
- 1. Remove dirt, oil, grease and other foreign matter in accordance with SSPC-SP1 Solvent Cleaning.
 - 2. Remove white rust by hand or power brushing being careful not to damage or remove the galvanizing.
 - 3. Remove rust in accordance with SSPC-SP2 or SP3.
 - 4. On galvanized steel, touch-up damaged galvanized areas with one-package epoxy zinc-rich primer in accordance with ASTM A780.
 - 5. Coat aluminum with an asphalt or bituminous paint over the areas of contact with concrete.

3.03 APPLICATION

A. General:

- 1. All necessary safety precautions shall be taken in accordance with this Article, SSPC-PA Guide 3, Manufacturer's recommendations, federal, state, and local rules and requirements, and insurance underwriters.

2. All coatings shall be applied in accordance with this Article, SSPC-PA1, and the Manufacturer's recommendations.
3. Do not apply initial coating until moisture content of surface is within limitations recommended by paint Manufacturer. Moisture content shall be determined by one of the following methods.
 - a. As specified above.
 - b. By use of moisture meter approved by ENGINEER.
4. Coating thickness:
 - a. Coats shall be applied in a uniform manner and of the minimum mil thickness as called for in painting schedule.
 - b. Maximum mil thickness shall be as recommended by coating Manufacturer.
 - c. Where the mil thickness is omitted, it shall be as recommended by coating Manufacturer.
5. Sand and dust between each coat to remove defects visible from a distance of 5 feet.
6. Following coats to be applied within recoat recommendation of the Manufacturer. Schedule inspection so as not to interfere with recoat time.
7. All coats shall be smooth, free of brush marks, streaks, laps or pile-up of paints and skipped or missed areas.
8. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping.
9. Coatings on all hollow metal units to be spray applied.
10. Finish door tops, edges and bottoms the same as face surfaces.
11. Except for contact surfaces, surfaces of fabricated assemblies that are inaccessible after erection shall receive all field coats of paint before erection.
12. All cracks and crevices shall be filled with paint if practical.
13. Wet paint shall be protected against damage from dust or other detrimental foreign matter as much as is practical.
14. Remove grills, covers, and access panels from mechanical and electrical systems from location and paint separately:
15. The interior surface of all ducts shall be painted black in the immediate area of all supply and exhaust grilles.
16. Coat masonry walls prior to mounting equipment.
17. After conditions of temperature and relative humidity have reached acceptable measures for applying coatings, those conditions must be conservatively estimated to remain in effect for 6-hours after coating application has stopped.

3.04 PIPE IDENTIFICATION

A. General:

1. Non-buried piping installed as part of this Work shall be identified in accordance with this Section, as required in the Pipe Identification Schedule, and as indicated on the Drawings.
2. Exposed, non-submerged pipes shall be labeled as to contents and direction of flow. Pipe concealed above suspended ceilings does not require painting or banding, but labels are required.
3. Tanks, pumps, blowers, mixers and other process equipment shall be identified in accordance with Section 44 40 01 – Process Equipment Identification.

B. Color bands: Install color bands spaced every 25 feet, before and after each valve and where pipe enters or leaves a wall.

C. Labels and arrows:

1. Pipe contents text shall be determined by ENGINEER.
2. Place an arrow adjacent to every pipe label to indicate direction(s) of flow.
3. Pipe labels shall be positioned so that they can be easily seen from the normal angle of approach - below the centerline of the pipe if the pipe is overhead, and above the centerline if the pipe is below eye level. Pipe labels shall be placed:
 - a. Adjacent to all valves.
 - b. Adjacent to all changes of direction.
 - c. On both sides of wall and floor penetrations.
 - d. At regular intervals on straight runs. Maximum acceptable spacing is 50 feet; closer spacing where necessary for visibility.

D. Valves, fittings and supports:

1. All valves and fittings shall be painted the same base color as the pipe they adjoin.
2. Floor stands shall be painted the same base color as the pipe they adjoin.
3. Wall brackets and pipe hangers shall be painted the same base color as the wall or ceiling they adjoin. Gray if wall or ceiling is not painted.

3.05 PHYSICAL HAZARDS IDENTIFICATION

A. General:

1. Identify all physical hazards of the facilities constructed and installed under this Work.
2. Identify all physical hazards in accordance with the requirements and standards of OSHA Standard 1910, Section 1910.144 - Safety Color Code for Marking Physical Hazards, WPCF Manual of Practice No.1, and all governing state and local laws, ordinances and codes.
3. In the event of discrepancy between regulations and standards, the more strict requirements shall govern.

3.06 FIELD QUALITY CONTROL

A. Inspection:

1. To facilitate painting and inspection, each coat of paint shall be of a different color or tint.
2. Finished metal surfaces shall be free of skips, voids or pinholes in any coat when tested with a low voltage detector.
3. Do not apply additional coats until completed coat has been inspected and acknowledged in writing by ENGINEER.
4. Only coats of paint acknowledged in writing will be considered in determining number of coats applied.

B. Final touch-up:

1. Any surface damage shall be repaired with touch-up paint matching material used for original coating.
2. All repaired areas shall be rubbed out and polished to match surrounding finish. Finish repair shall be of the quality typically found within the auto body industry.
3. Touch up painting shall include but not be limited to pre-painted piping and equipment.

3.07 CLEANING

- A. Remove spilled, splashed or spattered paint from all surfaces.
- B. Do not mar surface finish of item being cleaned.
- C. Prior to acceptance of the Work of this Section, thoroughly clean all painted surfaces and related areas in accordance with Section 01 74 00 – Cleaning and Waste Management.

3.08 PROTECTION

A. General:

- 1. Adequately protect other surfaces from paint and damage.
- 2. Repair damage as a result of inadequate or unsuitable protection.
- 3. Shafts and machined surfaces shall be masked off to protect from paint.

B. Protective materials:

- 1. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.

C. Fire hazards:

- 1. Place cotton waste, cloths, and materials which may constitute a fire hazard in closed metal containers and remove daily from site.

D. Electrical plates and hardware:

- 1. Remove electrical plates, surface hardware, fittings and fastenings prior to painting operations.
- 2. These items are to be carefully stored, cleaned and replaced upon completion of work in each area.
- 3. Do not use solvent to clean hardware that may remove permanent lacquer finish.

E. Equipment with factory-applied final finishes:

- 1. Certain equipment with factory-applied finishes may be accepted by ENGINEER at his discretion. The finishes of equipment with approved factory-applied final finishes shall be protected from scratches and abrasions by all practical means. Any surface damage shall be repaired with touch-up paint furnished by equipment manufacturer by workmen skilled in this type of work. All repaired areas shall be rubbed out and polished to match surrounding finish. Finish repair shall be of the quality typically found within the auto body industry. If damage to item is severe in the judgment of ENGINEER, the equipment will be rejected or a new finish coat will be applied after proper surface preparation at the discretion of ENGINEER. In either case, no additional cost shall be incurred by OWNER.
- 2. Equipment with non-acceptable factory finishes shall be repainted in accordance with these specifications.

3.09 PAINT SCHEDULE

A. The following schedule is based on Tnemec Company, Inc. except as noted. See paragraph 2.01 for other acceptable Manufacturers.

	<u>Mil DFT</u>
1. Interior ferrous metals - non-immersed: Epoxy system EP-1	
(Shop) Surface preparation: SSPC-SP6	
(Shop) First Coat: Series 161 Tneme-Fascure	3.0-5.0
(Field) Second coat: Series 66 Hi-Build Epoxoline	4.0-6.0
(Field) Third Coat: Series 66 Hi-Build Epoxoline	4.0-6.0
2. Interior non-ferrous and galvanized metals - non-immersed: Epoxy system EP-2	
(Field) Surface preparation: SSPC-SP16	
(Field) First coat: Series 66 Hi-Build Epoxoline	2.0-4.0
(Field) Second coat: Series 66 Hi-Build Epoxoline	2.0-4.0
3. Ductile Iron Pipe – non-immersed interior: Epoxy system EP-19	
(Shop) Surface prep: NAPF 500-03-04 Abrasive Blast Cleaning of Ductile Iron Pipe.	
(Shop) First coat: Series 37H Chem-Prime H.S.	2.0-3.5
(Field) Second coat: Series 66 Hi-Build Epoxoline	4.0-6.0

END OF SECTION

SECTION 31 23 33

TRENCHING, EXCAVATING, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required for trenching, excavating and backfilling, special pipe foundations and special work below grade.

1.02 DEFINITIONS:

- A. Maximum Density: Maximum dry weight in pounds per cubic foot of a specific material..
- B. Optimum Moisture: Percentage of water at maximum density.
- C. Rock Excavation: Includes all boulders or rock weighing 4,000 pounds (approximately one cubic yard) or more and all solid or ledge rock, slate, shale, sandstone and other hard materials that require continuous use of pneumatic tools, heavy rippers or continuous drilling and blasting for removal. Pavements are not included.
- D. Suitable Excavated Material: Mineral (inorganic) soil free of cinders, refuse, sod, boulders, rocks, pavement, soft or plastic clays, vegetable or other organic material, and capable of being compacted as specified. Moisture content has bearing on the suitability of materials to be used.
- E. Granular Material: Coarse grained materials having no cohesion, which derives its resistance to displacement from internal stability.
- F. Cohesive Material: Fine grained material which derives its resistance to displacement by manual attraction between particles of the mass, involving forces of molecular origin (i.e. Clays are considered cohesive).
- G. Grade Terminology: Refer to detail on Drawings.

1.03 REFERENCES:

- A. MDOT - Michigan Department of Transportation, *"2012 Standard Specifications for Construction"*.
- B. ASTM - American Society of Testing Materials, latest edition.

1.04 JOB CONDITIONS:

- A. Obtain and comply with construction permits from agencies having jurisdiction over the work.
- B. Scheduling: Clean up promptly following utility installation backfilling.
- C. Dust Control: Broom or apply dust palliatives as needed.

- D. Driveway Closing: Eight (8) hour maximum with prior notification to resident. Maintain emergency access to all properties during construction.
- E. Signs, mailboxes and other movable surface features:
 - 1. Witness location prior to removal. Relocate to accessible location and maintain during construction.
 - 2. Upon completion of construction, replace to original position and condition.
 - 3. Replace regulatory traffic control signs immediately after utilities are placed and backfilled.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Trench Backfill:

- 1. Granular Material shall be MDOT 902.07, Table 902-3, Class III limited to 1.0 inch maximum size.
- 2. Select Granular Material shall be MDOT 902.07, Table 902-3, Class II or IIa limited to 1.0 inch maximum size.
- 3. Concrete shall be Grade S3, 3,000 psi compressive strength, 4 inch maximum slump.

PART 3 - EXECUTION

3.01 PREPARATION:

A. Clearing and Grubbing:

- 1. Save and protect all trees and vegetation not identified to be removed.
- 2. Repair or replace trees, shrubs and other vegetation damaged by CONTRACTOR's operation at no additional charge.

B. Conflicting Underground Facilities:

- 1. Before starting work, establish location and extent of existing underground facilities in work area.
- 2. Establish potential conflict areas prior to construction.
- 3. Excavate and expose existing underground facilities presenting potential conflict to determine their exact location and elevation.
- 4. Advise ENGINEER of conflicts and obtain instructions on how to proceed.
- 5. Make adjustments in proposed utility location at no additional cost to OWNER.
- 6. Make arrangements with owner of existing underground facilities for relocation, if necessary.
- 7. Schedule work accordingly.

3.02 EXCAVATION:

A. General:

- 1. Dispose of surplus and unsuitable excavated material.

2. Remove, salvage and stockpile topsoil on-site in area designated by ENGINEER.
3. Unsuitable material encountered in subgrade or below payment line: Notify ENGINEER and obtain instruction on how to proceed.

B. Trenches:

1. Depth: Provide a uniform and continuous bearing and support for proposed utility on solid and undisturbed or compact granular material.
2. Minimum Width: Allow space for jointing and bedding. Meet requirements of AWWA C600 or C605, as applicable, for water main.
3. Maximum Width: The following limitations shall apply at utility crown:
 - a. 6 inch through 10 inch diameter: 30 inches.
 - b. 12 inch through 30 inch diameter: Outside diameter plus 24 inches.
 - c. 30 inch and over diameter: Outside diameter plus 36 inches.
 - d. Elliptical: Outside pipe width plus 36 inches.

C. Blasting:

1. Not allowed unless otherwise indicated.
2. If allowed, obtain and comply with required permits.
3. If allowed, perform only during hours approved by OWNER.

D. Length of Open Trench shall be 200 feet maximum.

E. Damage to Existing Underground Utilities:

1. Report all damage to ENGINEER and utility owner.
2. Repair to utility owners standard.

3.03 BACKFILLING:

A. Pipe bedding area: Compact granular material to ninety percent (90%) of maximum density according to the Modified Proctor Method or to ninety-five percent (95%) of maximum density using the Michigan Cone Test.

B. Trench Backfill Area:

1. Under permanent pavement, shoulder areas and areas within a one on one slope from the shoulder edge:
 - a. Compact suitable excavated material or granular material in 9.0 inch layers to ninety percent (90%) of maximum density according to the Modified Proctor Method or to ninety-five percent (95%) of maximum density using the Michigan Cone Test.
2. Under nonpermanent pavement: Same as permanent pavement.
3. Under unimproved right-of-way areas: Compact suitable excavated material to eighty-five percent (85%) of maximum density.
4. Under landscaped and unimproved areas: Compact suitable excavated material to eighty percent (80%) of maximum density.
5. Under undercut existing structure: Place concrete.

C. Structures:

1. Density requirements: Same as Trenches.

2. Concrete structure: Place backfill only after seventy-five percent (75%) of concrete design strength has been reached.

3.04 TRENCH UNDERCUTTING AND BACKFILL:

- A. Excavation: Perform to ENGINEER's instructions.
- B. Backfill: Provide to payment line with granular material compacted in place.

3.05 COMPACTION, TESTING AND INSPECTION:

- A. Surplus excavated and unsuitable excavated material shall become the property of the CONTRACTOR.
- B. Dispose of surplus excavated or unsuitable excavated materials off-site.
- C. Performance and test equipment will be provided by ENGINEER or OWNER approved independent laboratory.
- D. Moisture - Density relationships:
 1. Cohesive (clays) soils: ASTM D 1557 (Modified Proctor).
 2. Granular (sands) soils: Michigan Cone Test.
- E. Field Density: Either of following:
 1. ASTM D-2167 (Rubber Balloon).
 2. ASTM D-2922 (Nuclear).
- F. Furnish equipment and personnel to provide access to test location and depth. Density tests will be performed at various levels, as determined by ENGINEER, during or after backfilling operation.
- G. Correct any deficiencies resulting from insufficient or improper compaction. Retesting of density in areas of failed tests shall be performed by ENGINEER at the CONTRACTOR's expense.

3.06 SOIL EROSION AND SEDIMENTATION CONTROL: See SECTION 01 57 13 – TEMPORARY EROSION AND SEDIMENTATION CONTROL.

END OF SECTION

SECTION 31 41 00

SHORING

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required for all temporary support of trench excavations and excavation enclosures.

1.02 JOB CONDITIONS:

- A. Interrupted Utility Service: Provide standby service to utility company standards prior to shoring installation.
- B. Installing and Removing by Jetting is prohibited.
- C. Scheduling clean-up: Promptly following utility installation.
- D. Shoring/Sheeting: Provide engineered sections and materials, with bracing as necessary, to provide required support to protect work space.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. General: Used or new, wood or steel.
- B. Pipe Laying Box Dimensions: Provide adequate working room and control of trench width to meet utility bedding requirements.
- C. Sheeting: Provide straight, uniform sections with interlock that is continuous the full length of the sheet.

PART 3 - EXECUTION

3.01 PERFORMANCE:

- A. Installation and Removal:
 - 1. General: Protect adjacent property, work and workers.
 - 2. Pipe laying box:
 - a. Permitted where safety of workers is sole consideration.
 - b. Prevent dislocation of utility and bedding when moving.
 - 3. Voids left by removal: Fill and compact in accordance with SECTION 31 23 33 - TRENCHING, EXCAVATING, BACKFILLING AND COMPACTING.
 - 4. Shore, sheet pile and brace excavations as required to maintain them secure, remove shoring as the backfilling progresses, but only when banks are safe against cave-ins or collapse. Where shoring or underpinning furnishes permanent or

temporary support, extreme care shall be taken to ensure that no settlement or collapse will occur. Conform to MIOSHA safety rules and regulations.

- B. Temporary Shoring Left in Place: Cut off minimum 2 feet below finished grade.

END OF SECTION

SECTION 32 12 16

HOT MIXED ASPHALT PAVING – MARSHALL MIXTURES

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes construction of new hot mixed asphalt (HMA) pavements and reconstruction of existing pavements with hot mixed asphalt pavement and related work.
- B. Definitions:
 - 1. Pavement structure: Any combination of subbase, aggregate base, base course, leveling course and surface course, including shoulders, placed on subgrade.
 - 2. Permanent pavement: All improved pavement surfaces above the quality of treated or untreated gravel.
 - 3. Subgrade: That portion of the earth grade upon which the pavement structure is to be placed.
 - 4. Subbase: The layer of specified material of designed thickness placed on the subgrade as a part of the pavement structure.
 - 5. Base course: The layer of specified or selected material of designed thickness placed on a subbase or a subgrade to support leveling and surface courses.
 - 6. Leveling course: Layer of specified material placed on the base course in preparation for the surface course.
 - 7. Surface course: The top layer of a pavement structure.
 - 8. Bond Coat: Asphalt emulsion used to enhance the adhesion between HMA courses.
 - 9. Maximum Specific Gravity of Asphalt (Gmm): The ratio of the weight in air of a unit volume of an un-compacted asphalt mixture to the weight of an equal volume of gas free distilled water at a given standard temperature.
 - 10. Maximum density (soils): Maximum unit weight of soil material according to Modified Proctor Method ASTM D1557.
 - 11. Density Control Target: Target density of a HMA mixture determined by multiplying the Gmm times the density of water (62.4lb/ft³).

1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, "2012 Standard Specifications for Construction".
- B. ASTM - American Society of Testing Materials, latest edition.
- C. MTM – Michigan Test Methods, latest edition.

1.03 SUBMITTALS:

- A. Asphalt Mix Designs: Provide job-mix formula (JMF) prepared by independent lab or approved by MDOT for hot mixed asphalt, base, leveling and surface courses to ENGINEER two weeks prior to paving. The job-mix formula shall include, at a minimum, the Gmm, Gmb, Gb, Gse, Gsb and parameters listed in Tables 1 & 2 of this specification.
- B. Certification of quality by producer for the following:
 - 1. Aggregates
 - 2. Asphalt cement
 - 3. Pavement marking material
 - 4. Prime coat
 - 5. Bond coat

1.04 JOB CONDITIONS:

- A. Seasonal Limitations:
 - 1. Removal of permanent pavement: Unless otherwise specified, execute during the period from March 15 to October 15.
 - 2. Restoration of permanent pavement: Unless otherwise specified, execute during the period from April 15 to November 15.
- B. Clean up promptly following pavement installation.
- C. Maintenance of Temporary Surfaces: Maintain temporary surfaces until permanent pavement installation is completed.
- D. Driveway Closing: Twenty-four (24) hour maximum. Provide proper notice to property owner.
- E. Allow access to the hot mixed asphalt plant for verification of mix proportions, aggregate gradations and temperatures.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Subbase: Granular material Class II, MDOT 902.07, Table 902-3.
- B. Aggregate Base: Aggregate 22A, MDOT 302.02 and 902.05.
- C. Aggregate Surface:
 - 1. Use Aggregate 22A when the aggregate surface will receive a hot mixed asphalt surface at a later date. MDOT 306.02 and 902.05.
 - 2. Use Aggregate 23A when the aggregate surface will not receive a hot mixed asphalt surface. MDOT 306.02 and 902.05.
- D. Hot Mix Asphalt (HMA) Base Course:
 - 1. MDOT 501.02, HMA 13A.
 - 2. MDOT 904.03, Asphalt binder PG 58-28.
- E. Hot Mix Asphalt (HMA) Leveling Course:
 - 1. MDOT 501.02, HMA 13A.
 - 2. MDOT 904.03, Asphalt binder PG 58-28
- F. Hot Mix Asphalt (HMA) Surface Course:
 - 1. MDOT 501.02, HMA 13A.
 - 2. MDOT 904.03, Asphalt binder PG 58-28.
 - 3. Aggregate Wear Index (AWI) 220.
- G. Bond Coat: Asphalt material SS-1h. MDOT 501.02 and 904.03C.
- H. Pavement Marking: MDOT 920.01.
 - 1. Special markings shall be 125 mil, Skid Optic, preformed hot tape manufactured by Ennis-Flint.

2.02 MIXTURES:

- A. Furnish hot mixed asphalt mixture designed using Marshall mixture design methods.
- B. The mix design shall be developed using a 50 blow Marshall hammer.
- C. Reclaimed Asphalt Pavement (RAP) may be substituted for up to 27% RAP binder by weight of the new material required to produce the HMA mixture. Greater than 27% RAP binder by weight (MDOT Tier 3) is not allowed.
- D. If greater than 17% RAP binder by weight of the total binder is proposed for the mixture, the selected binder grade shall be adjusted to compensate for the stiffness of the asphalt binder in the RAP. The Contractor shall supply blending chart and RAP test data used to determine the binder selection.
- E. The following Table 1 shall be used to determine the mix design criteria and volumetric properties of the specified mixture.

Table 1: Mix Design Criteria and Volumetric Properties

	Mixture No.				
	2C	3C	4C	13A	36A
Target Air Void, % (a)	3.00	4.00	4.00	4.00	4.00
VMA (min) (b)	11.00	13.00	14.00	14.00	15.00
VFA	65-78	65-78	65-78	65-78	65-78
Fines to Binder Ratio (max) (c)	1.2	1.2	1.2	1.2	1.2
Flow (0.01 inch)	8-16	8-16	8-16	8-16	8-16
Stability (min), lbs	1200	1200	1200	900	900
a. Lower target air voids by 1.00% if used in a separate shoulder paving operation. Consider reducing air void targets to 3.00% for lower traffic volume roadways when designing 13A and 36A mixtures. b. VMA calculated using Gsb of the combined aggregates. c. Ratio of the weight of aggregate passing the No. 200 sieve to total asphalt binder content by weight; including fines and binder contributed by RAP.					

- F. The following Table 2 shall be used to determine the aggregate properties of the specified mixture.

Table 2: Aggregate Properties

	Mixture No.				
	2C	3C	4C	13A	36A
Percent Passing Indicated Sieve or Property Limit					
1 ½ inch	100				
1 inch	91-100	100			
¾ inch	90 max.	91-100	100	100	
½ inch	78 max.	90 max.	91-100	75-95	100
⅜ inch	70 max.	77 max.	90 max.	60-90	92-100
No. 4	52 max.	57 max.	67 max.	45-80	65-90
No. 8	15-40	15-45	15-52	30-65	55-75
No. 16	30 max.	33 max.	37 max.	20-50	
No. 30	22 max.	25 max.	27 max.	15-40	25-45
No. 50	17 max.	19 max.	20 max.	10-25	
No. 100	15 max.	15 max.	15 max.	5-15	
No. 200	3-6	3-6	3-6	3-6	3-10
Crushed (min), % (MTM 117)	90	90	90	25	60

Soft Particle (max), % (a)	12.0	12.0	8.0	8.0	8.0
Angularity Index (min) (b)	4.0	4.0	4.0	2.5	3.0
L.A. Abrasion (max), % loss (c)	40	40	40	40	40
Sand Ratio (max) (d)	-	-	-	50	50
<p>a. The sum of the shale, siltstone, structurally weak, and clay-ironstone particles must not exceed 8.0 percent for aggregates used in top course. The sum of the shale, siltstone, structurally weak, and clay-ironstone particles must not exceed 12.0 percent for aggregates used in base and leveling courses.</p> <p>b. The fine aggregate angularity of blended aggregates, determined by MTM 118, must meet the minimum requirement. In mixtures containing RAP, the required minimum fine aggregate angularity must be met by the virgin material. NAA fine aggregate angularity must be reported for information only and must include the fine material contributed by RAP if present in the mixture.</p> <p>c. Los Angeles abrasion maximum loss must be met for the composite mixture, however, each individual aggregate must be less and 50.</p> <p>d. Sand ratio for 13A and 36A no more than 50% of the material passing the No. 4 sieve is allowed to pass the No. 30 Sieve.</p>					

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Removal: Remove all existing pavement structure required, as shown on the drawings.
 - 1. Pavement remnant limit: Remove pavement, curb, gutter, curb and gutter, sidewalk or similar structures to existing joint, where dimension is less than 3 feet.
 - 2. Provide saw cut joint full depth at removal limit.
 - 3. Butt joint: Provide on overlay projects where new pavement meets existing pavement. MDOT 501.03.C.3.
 - 4. Restore existing permanent pavement disturbed by construction equipment at no additional cost to OWNER.
- B. Dispose of all material removed during the construction.
- C. Crushing and shaping: MDOT 305.
- D. Cold-milling existing HMA surface: MDOT 501.
- E. Subgrade:
 - 1. Obtain approval prior to placing the subbase or aggregate base course.
 - 2. Construct to the required line, grade and cross section. MDOT 205.03.N.
 - a. Tolerance if subbase is required: Trim within 1 inch of design grade.
 - b. Tolerance if subbase is not required: Trim within $\pm \frac{3}{4}$ inch of design grade.
 - 3. Compaction:
 - a. Compact to not less than ninety percent (90%) of the maximum density according to the Modified Proctor Method ASTM D1557.
 - b. Compact to not less than ninety-five percent (95%) of the maximum density using the Michigan Cone Test.
- F. Excavation: Conform to MDOT 205.03.G.
- G. Embankment: Conform to MDOT 205.03.H and 205.03.I.
- H. Inspection: Obtain approval of ENGINEER subgrade and each layer of pavement structure prior to placing successive layer.

3.02 PERFORMANCE:

- A. Subbase:
 - 1. Thickness: Conform to design cross section.
 - 2. Construction method:
 - a. Place in equal layers not exceeding 15 inches loose measure.
 - b. Spread evenly and compact to not less than ninety-five percent (95%) maximum density according to Michigan Sand Cone Test.
 - 3. Tolerance: Construct sub-base to plan grade within a tolerance of ± 0.5 inch.
- B. Aggregate Base:
 - 1. Thickness: Conform to design cross section.
 - 2. Construction Method: MDOT 302.03.
 - 3. Tolerances:
 - a. Curbed streets: Shape the aggregate base course to the design grade and cross section within a tolerance of $\pm \frac{1}{4}$ inch.
 - b. Other: Shape within a tolerance of $\pm \frac{1}{2}$ inch of the design grade and cross section.
 - c. Check and correct grades and cross section prior to HMA placement if traffic use is allowed.
- C. Aggregate Surface:
 - 1. Thickness: Provide 8 inches compacted in place in two (2) equal courses, unless otherwise specified.
 - 2. Construction Method: MDOT 306.03.
- D. Hot Mixed Asphalt Base:
 - 1. Construction Methods: Conform placement of the hot mixed asphalt base mixture not exceeding lifts of 3 inches in accordance with MDOT 501.03.
 - 2. Tolerances:
 - a. Curbed streets: Shape the hot mixed asphalt base course to the design grade and cross section, within a tolerance of $\pm \frac{3}{8}$ inch.
 - b. Other: Unless otherwise specified, shape within $\pm \frac{3}{4}$ inch of the design grade and cross section.
- E. Bond Coat:
 - 1. Construction Method: MDOT 501.03.D.
 - 2. Application Rate: Provide 0.15 gallon per square yard.
- F. Hot Mixed Asphalt Leveling and Surface:
 - 1. Cutting: Saw vertically in straight lines parallel or perpendicular to pavement centerline.
 - 2. Thickness: Do not place hot mixed asphalt surface course mixture in lifts exceeding 2 inches unless otherwise approved. Provide design thickness.
 - 3. Construction Methods:
 - a. Paving: Conform method of paving to MDOT 501.03.
 - b. Prior to placement of hot mixed asphalt surface, verify crowns and grades of roadway for positive drainage. Any deficiencies in grade or crown shall be corrected prior to placement of surface course.
 - 4. Tolerances: Hot mixed asphalt surface on streets with new curbs shall have a finish elevation of $\frac{1}{4}$ inch above curb.

5. Asphalt Yield: The design asphalt yield has been based on 110 lbs/syd per inch of thickness. Construction asphalt yield in excess of 15% of the plan yield shall not be paid unless otherwise approved by the ENGINEER.
- G. Hot Mixed Asphalt Drive Approach:
1. Preparation: Construct drive approach on prepared subgrade or embankment as required to meet plan grades.
 2. Aggregate Base: Provide **8** -inches of Aggregate 22A compacted in place.
 3. HMA Mixture: Provide **3** -inches of HMA 13A.
- H. Hot Mixed Asphalt Patching:
1. Preparation: Saw cut vertically in straight lines parallel or perpendicular to pavement centerlines. Minimum dimension of area to be patched shall be 2 feet for placement and compaction of materials.
 2. Aggregate Base: Provide a minimum of 6 inches of Aggregate 22A compacted in place.
 3. HMA Mixture: Match existing pavement thickness (minimum 3 inches).

3.03 STRUCTURE COVER ADJUSTMENT:

- A. Construction Method: MDOT 403.03.C.
1. Adjust structure castings to finish grade or to a maximum of $\frac{1}{4}$ inch below finish grade of all manholes, catch basins and valve boxes.
 - a. Set grades of castings and valve boxes from street grades with castings tilted where necessary to meet proposed street grades and crown.
 - b. All castings, when adjusted to finish grade shall be placed in a bed of concrete grade S2 placed in the entire area disturbed for casting adjustment.
 2. Adjust castings to finish grade after the leveling course is complete.
 - a. Castings shall be kept below grade or flush with the proposed sand subgrade so as not to conflict with grading operations or conflict with placement of leveling course.
 - b. HMA removed from area for casting adjustment shall be saw cut square around the casting.
 3. Adjustment of new structures will not be a pay item.

3.04 PAVEMENT MARKINGS

- A. Construction Method: MDOT 811.03
- B. Contractor shall layout all proposed markings in accordance with the MMUTCD and MDOT Standards prior to placement for ENGINEER approval.

3.05 TESTING AND INSPECTION:

- A. Observation: By the ENGINEER or his designated authorized representative.
- B. Aggregates:
1. Sampling and Analysis: Michigan Testing Methods, Series 100.
 2. Exception: Provide certification of approved stockpiled material.
- C. Hot Mixed Asphalt Pavement Density:
1. Density acceptance of HMA mixtures will be measured with a nuclear density gauge using the Gmm from the approved Job-Mix Formula for the density control target.

The required in place density of the HMA mixture shall be 92.0-96.0% of the density control target.

2. The Contractor is responsible for determining Quality Control Density and establishing a rolling pattern that will achieve the required in place density.

D. Hot Mixed Asphalt Mix Composition:

1. Sampling:
 - a. Acceptance sampling shall include a minimum of two samples per mix type for each day of production with no less than three samples for each mix type per project.
 - b. Method of sampling shall be determined by the ENGINEER.
2. Extraction: ASTM D2172
3. Sieve Analysis: ASTM C117 and ASTM C136
4. Tolerance: Acceptance tolerances for HMA parameters are detailed in the following Table.

Table 3: Uniformity Tolerance Limits for HMA Mixtures

PARAMETER	Surface & Leveling Course	Base Course
	Range	Range
Binder Content	± 0.50	± 0.50
% Passing #8 and Larger Sieves	± 8.0	± 9.0
% Passing #30 Sieve	± 6.0	± 9.0
% Passing #200 Sieve	± 2.0	± 3.0
1. The mixture shall be proportioned to test as closely as possible to the Job-Mix-Formula. 2. The crushed particle content of the aggregate shall not be more than 10 percentage points above or below the crush particle content listed in the approved JMF.		

5. Acceptance: If for any one mixture, two consecutive aggregate gradations on one sieve, or binder contents exceed the uniformity tolerance or do not meet the minimum requirements for crushed particle content the mixture will be rejected.

END OF SECTION

SECTION 32 13 13

CONCRETE PAVING

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes construction of new concrete pavements and reconstruction of existing pavements with concrete pavement and related work.
- B. Definitions:
 - 1. Pavement Structure: Any combination of subbase, base course and surface course, including shoulders, placed on subgrade.
 - 2. Permanent pavement: All improved pavement surfaces above the quality of treated or untreated gravel.
 - 3. Subgrade: That portion of the earth grade upon which the pavement structure is to be placed.
 - 4. Subbase: The layer of specified material of designed thickness placed on the subgrade as a part of the pavement structure.
 - 5. Base Course: The layer of specified material of designated thickness placed on a subbase or subgrade to support the surface course.
 - 6. Surface Course: The top layer of a pavement structure.
 - 7. Maximum density (soils): Maximum unit weight of soil material according to Modified Proctor Method ASTM D1557.

1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, *"2012 Standard Specifications for Construction"*.
- B. ASTM - American Society of Testing Materials, latest edition.

1.03 SUBMITTALS:

- A. Concrete Mix Designs: Provide concrete mix designs meeting the requirements of MDOT Section 601, prepared by independent lab, in accordance with MDOT Section 605 to ENGINEER for approval two weeks prior to paving. Contractor may submit concrete mix designs previously approved by MDOT for Engineer's approval.
- B. Certification of quality by producer for the following:
 - 1. Cement
 - 2. Aggregates
 - 3. Admixtures
 - 4. Pavement marking material
 - 5. Curing Compound
 - 6. Steel reinforcement
- C. Batch Tickets in accordance with MDOT 6.01.03.A.4

- D. Concrete Test Specimens: CONTRACTOR shall deliver acceptance cylinders to the place of inspection and testing.

1.04 JOB CONDITIONS:

A. Seasonal Limitations:

1. Removal of permanent pavement: Unless otherwise specified, execute during the period from March 15 to October 15.
2. Restoration of permanent pavement: Unless otherwise specified, execute during the period from April 15 to November 15.

- B. Protect concrete from being damaged by rain. Concrete damaged by rain shall be replaced at no cost to OWNER.

C. Weather Limitations:

1. Cold Weather Protection: Protect concrete from freezing until the concrete has achieved a compressive strength of at least 1000psi.

- D. Clean up promptly following pavement installation.

- E. Maintenance of Temporary Surfaces: Maintain temporary surfaces until permanent pavement installation is completed.

- F. Driveway Closing: Twenty-four (24) hour maximum. Provide proper notice to property owner.

- G. Allow access to the concrete plant for verification of mix proportions and aggregate gradations.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Subbase: Granular material Class II, MDOT 902.07, Table 902-3.

- B. Aggregate Base: Aggregate 22A unless otherwise specified. MDOT 302.02 and 902.05.

C. Aggregate Shoulders and Approaches:

1. Use Aggregate 22A for construction of Class I shoulders and approaches. MDOT 307.02 and 902.05.
2. Use Aggregate 23A for construction of Class II shoulders and approaches. MDOT 307.02 and 902.05.
3. Use salvaged aggregate or Aggregate 23A for construction of Class III shoulders and approaches. MDOT 307.02 and 902.05.

- D. Pavement Marking: MDOT 920.01.

E. Concrete:

1. Use grade P1, 6.0 sack, Air Entrained MDOT Section 601.

2. Use grade P-NC, Air Entrained MDOT Section 601 and Section 603.02 Where indicated to achieve early compressive strength.
- F. Curing Compound:
1. Provide white membrane curing compound MDOT 903.06, unless otherwise noted.
- G. Chemical admixtures: MDOT Section 903.
1. Use of Calcium Chloride is not allowed.
- H. Steel Reinforcement: MDOT Section 905.
- I. Joint Materials: MDOT Section 914.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Removal: Remove all existing pavement structure as required, as shown on the drawings.
1. Pavement remnant limit: Remove pavement or similar structures to existing joint, where dimension is less than 3 feet.
 2. Provide saw cut joint full depth at removal limit.
 3. Restore existing permanent pavement disturbed by construction equipment at no additional cost to OWNER.
- B. Dispose of all material removed during the construction.
- C. Subgrade:
1. Obtain approval prior to placing the subbase or aggregate base.
 2. Construct to the required line, grade and cross section. MDOT 205.03.N.
 - a. Tolerance if subbase is required: Trim within 1 inch of design grade.
 - b. Tolerance if subbase is not required: Trim within $\pm \frac{3}{4}$ inch of design grade.
 3. Compaction:
 - a. Compact to not less than ninety percent (90%) of the maximum density according to the Modified Proctor Method ASTM D1557.
 - b. Compact to not less than ninety-five percent (95%) of the maximum density using the Michigan Cone Test.
- D. Excavation: Conform to MDOT 205.03.G.
- E. Embankment: Conform to MDOT 205.03.H and 205.03.I.
- F. Inspection: Obtain approval of ENGINEER for subgrade, sub-base and aggregate base prior to placing concrete pavement.

3.02 PERFORMANCE:

- A. Subbase:

1. Construction method:
 - a. Place in equal layers not exceeding 15 inches loose measure.
 - b. Spread evenly and compact to not less than ninety-five percent (95%) maximum density according to Michigan Sand Cone Test.
2. Tolerance: Construct subbase to plan grade within a tolerance of ± 0.5 inch.

B. Aggregate Base:

1. Construction Method: Conform the placing of aggregate base course with MDOT 302.03.
2. Tolerances:
 - a. Shape the aggregate base course to the design grade and cross section, within the tolerance of $\pm \frac{1}{4}$ inch.
 - b. Check and correct grades prior to pavement placement if traffic use is allowed.

C. Concrete Pavement:

1. Thickness: Provide the following thickness unless otherwise specified.
 - a. Residential Drives: 6 inches
 - b. Commercial / Industrial Drives: 8 inches
2. Construction Methods: Unless otherwise specified, conform paving procedures to MDOT 602.03.

D. Joints:

1. Provide construction, expansion and control joints as indicated in the plans and in accordance with MDOT 602.03.
2. Seal joints in accordance with MDOT 602.03.R and 602.03.S.

3.03 STRUCTURE COVER ADJUSTMENT:

A. Construction Method: MDOT 403.03.C.

1. Adjust structure castings to finish grade or to a maximum of $\frac{1}{4}$ inch below finish grade of all manholes, catch basins and valve boxes.
 - a. Set grades of castings and valve boxes from street grades with the castings tilted where necessary to meet proposed street grades and crown.
 - b. Castings shall be kept below grade or flush with the proposed sand subgrade so as not to conflict with grading operations.
2. Adjustment of new structures will not be a pay item.

3.04 TESTING AND INSPECTION:

A. Observation: By the ENGINEER or his designated authorized representative.

B. Concrete Acceptance Testing:

1. Temperature, slump and air content: Conduct tests on the first load of concrete placed and at a minimum of once per hour of continuous pour.
 - a. The temperature of the concrete shall be between 45°F and 90°F at the time of placement.
 - b. Slump of the concrete shall not exceed 3.0 inches or the slump indicated in the approved mix design.

- c. Air content at the time of placement shall be 6.5 ± 1.5 percent, unless otherwise noted.
2. Strength: The average compressive strength of two companion cylinders shall be equal to or greater than 3,500 psi at 28 days, unless otherwise noted.
 - a. Sample for strength at least once every 200 cubic yards.
 - b. Concrete strength will be based on compressive strength.
 - c. A single strength test consists of two cylinders.
 - d. Temperature, slump and air content tests shall be run at the same time as cylinders are cast.
3. Additional cylinders or beams may be molded and tested at the CONTRACTORS expense for early breaks and determination of concrete strength for opening to traffic or construction equipment.

C. Aggregates:

1. Sampling and Analysis: Michigan Testing Methods, Series 100.
2. Exception: Provide certification of approved stockpiled material.

END OF SECTION

SECTION 32 92 00

SURFACE PROTECTION AND RESTORATION

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required for protection and restoration of surface features such as site improvements, surface restoration and turf establishment, and all trees, shrubs, lawns and other surfaces disturbed by construction operations.
- B. Definition of Site Improvements: Fences, retaining walls and parking appurtenances, playing fields and equipment, sheds, mail boxes, underground lawn sprinkling systems and yard accessories.

1.02 REFERENCES:

- A. MDOT - Michigan Department of Transportation, *"2012 Standard Specifications for Construction"*.

1.03 SUBMITTALS:

- A. Submit the following:
 - 1. Manufacturer's certifications that materials provided meet specifications.
 - 2. Seed mixture.

1.04 JOB REQUIREMENTS:

- A. Surface Areas Disturbed by Construction Operation:
 - 1. Restoration and Turf Establishment: Fine grade to 4 inches below finished grade. Remove all stones and debris greater than 1-inch diameter. Place 4 inches of new topsoil screened and free from all foreign material, vegetation, clumps, and stones greater than 1/2-inch diameter. Rake smooth to finished grade, seed, fertilize and mulch, or place mulch blanket pegged in place, where specified or directed by ENGINEER. Place sod in areas indicated on the Drawings.
- B. Scheduling:
 - 1. Restoration of lawns and other surface features: Promptly following curb and gutter, site or utility improvements, and paving.
 - 2. Restoration of site improvements: Promptly following utility installation and paving.
 - 3. Clean up: Promptly following restoration.
- C. Seasonal Limitations: MDOT 816.03.C.4.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Trees, Shrubs and Plants: MDOT 917.
- B. Topsoil:
 - 1. Seeding and sodding: MDOT 917.07.
 - 2. Trees, shrubs and plants: MDOT 815.03.A and 917.07.
- C. Grass Seed: MDOT 917.12.
 - 1. Lawns: THM mixture, unless otherwise approved.
 - 2. Other areas: THV mixture, if approved.
- D. Chemical Fertilizer: MDOT 917.10, Class A.
 - 1. Phosphorus not allowed unless otherwise approved.
- E. Hydro-mulch: MDOT 917 – Recycled newsprint or wood fiber.
- F. Co-polymer Gel: Finn Hydro Gel B, or equal.
- G. Sod: MDOT 917.13.
- H. Mulch Blanket: Excelsior or straw mulch blanket listed on the current Qualified Products List, MDOT Materials Sampling Guide. MDOT 917.15.B.
- I. Site Improvements: Provide materials equal to or better than those that existed prior to start of construction whether shown or not shown on the drawings.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Inspection: Approval required.

3.02 TREES AND SHRUBS:

- A. Protection: All items not indicated for removal.
- B. Damaged branches: Trim and seal within fifteen (15) days.
- C. Replacement: MDOT 815. Place mulching around tree with diameter one foot greater than ball diameter.

3.03 TOPSOIL:

- A. Place 4 inches of new topsoil in preparation of seeding or sodding. Topsoil shall be screened and free from all foreign material, vegetation, clumps, and stones greater than ½-inch diameter.

- B. Construction methods: MDOT 816.03.A.
- 3.04 SEEDING, FERTILIZING AND MULCHING:
- A. Construction methods: MDOT 816.
- 3.05 HYDROSEEDING:
- A. Construction methods: Hydro-seed with mixture of seed, fertilizer, and mulch, and co-polymer gel (between June 1 and September 1) with the following rates:
 - 1. Seed: 220 pounds per acre.
 - 2. Fertilizer: 228 pounds per acre.
 - 3. Mulch: 1,200 pounds per acre of recycled newsprint or 2,000 pounds per acre of wood fiber.
 - 4. Co-polymer gel: 10 pounds per acre.
- 3.06 MULCH BLANKET:
- A. Construction Methods: MDOT 816.
- 3.07 SODDING:
- A. Construction Methods: MDOT 816.03.D.
- 3.08 SITE IMPROVEMENTS:
- A. Protection: All items not indicated for removal.
 - B. Replacement: Remove carefully, store and protect, and replace.
 - C. Restoration: Approval required.

END OF SECTION

SECTION 33 05 24

HORIZONTAL DIRECTIONAL DRILLING

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the work required to install a carrier or casing pipe for underground utilities under an obstacle using the method commonly known as horizontal directional drilling (HDD), to the grades and alignments shown on the Drawings.

1.02 REFERENCES:

- A. ASTM - American Society of Testing Materials, *Latest Edition*.
- B. PPI - Plastics Pipe Institute
- C. AWWA - American Water Works Association
- D. ANSI - American National Standards Institute

1.03 GENERAL REQUIREMENTS:

- A. The CONTRACTOR shall be responsible for the method of construction, the stability and accuracy of the drilled and reamed hole and pits constructed, and all costs for damages resulting from any failure thereof. The CONTRACTOR shall be solely responsible for the safety of the pits and related structures and personnel engaged in underground construction throughout the duration of the work.
- B. The CONTRACTOR's methods and schedule shall consider the overall project requirements and anticipated subsurface soils and groundwater conditions. The CONTRACTOR's selection of inadequate, inappropriate or inefficient equipment and methods will not be cause for adjustments to the contract price or contract time.
- C. The general dimensions, arrangement and details for the drilled hole and pits to be constructed shall be as needed to complete the required work.
- D. Methods of excavation, equipment and procedures for the directional drilling operation and pits shall be selected by the CONTRACTOR to provide adequate working space and clearances for the work to be performed.
- E. Pit excavation methods, groundwater control and pit support techniques shall be selected by the CONTRACTOR.
- F. The CONTRACTOR shall comply with the HDD Plan for Preventing and Controlling the Loss of Drilling Mud in Paragraph 3.15 SCHEDULES.

1.04 CONTRACTOR QUALIFICATIONS:

- A. The CONTRACTOR who will complete the work contained in this Section must be experienced in the type of work specified in this Section and must have successfully completed similar projects within the last three years.

- B. Personnel that will perform the work must be trained and experienced in the fabrication and installation of the materials and equipment, as well as being knowledgeable of the design and the reviewed shop drawings.
- C. At the ENGINEER's request, the CONTRACTOR responsible for the completion of the work contained in this Section shall submit a list of jobs successfully completed within the last three years. Information on each job must include the following:
 - 1. Date of Project
 - 2. Location
 - 3. Length of Directional Drill
 - 4. Size and Material of Pipe
 - 5. General CONTRACTOR's name, contact and phone number.
 - 6. OWNER's name, contact and phone number.
 - 7. Other information relevant to the successful completion of the project.

1.05 SAFETY:

- A. The CONTRACTOR shall become familiar with, and shall at all times conform to, all applicable codes, ordinances and laws in relation to the work required.
- B. Directional drilling equipment machine safety requirements shall include a common grounding system to prevent electrical shock in the event of a high voltage underground cable strike. The grounding system shall connect all pieces of interconnecting machinery; the drill, mud mixing system, drill power unit, drill rod trailer, operator's booth, worker grounding mats and any other interconnected equipment to a common ground. The drill shall be equipped with an "electrical strike" audible and visual warning system that shall notify the system operators of an electrical strike.
- C. Operators of the drill shall wear electrical shock protection equipment and operate from common grounding mats as required.

1.06 SUBMITTALS:

- A. Submit in accordance with SECTION 01 33 00 - SUBMITTALS.
- B. Proposed drill profile data including the minimum information listed below:
 - 1. Entrance angle
 - 2. Exit angle
 - 3. Minimum radius of curvature
 - 4. Depth of pipe every 50 feet
 - 5. Pilot hole diameter
 - 6. Back ream hole diameter
 - 7. Wet or dry pullback
 - 8. Estimated maximum pullback force
- C. Pipe data including, but not limited to, the following:
 - 1. Manufacturer's brochures and catalog sheets
 - 2. Dimensions
 - a. Inside diameter
 - b. Outside diameter
 - c. Standard dimension ratio
 - d. Yield stress

D. Connection to ductile iron pipe and restraint:

1. Manufacturer
2. Product data sheet
3. Dimension drawing
4. Installation instructions

E. Drilling Fluid:

1. Bentonite (or alternate):
 - a. Product manufacturer
 - b. Product data sheet
 - c. Mixing instructions
2. Polymer:
 - a. Product manufacturer
 - b. Product data sheet
 - c. Mixing instructions
 - d. Material safety data sheet (MSDS)

F. Drill Path Documentation upon completion: See Article 3.07.

1.07 DELIVERY, STORAGE AND HANDLING:

A. Handle and store materials in a manner that will prevent:

1. Deterioration or damage
2. Contamination with foreign matter
3. Damage by weather or elements

B. After the pipe is fused together and before it is pulled through the drilled hole, the CONTRACTOR shall be responsible to provide vehicular and emergency access to all properties affected by the fused pipeline. The CONTRACTOR shall be responsible to repair all damage to existing surface and site improvements damaged by the fused pipeline.

1.08 UTILITY PROTECTION:

A. All underground utilities shown on the drawings are shown according to the best available information. It is the CONTRACTOR's responsibility to verify the location of all existing utilities prior to working in the area.

B. All utilities are to remain in service and shall be protected by the CONTRACTOR from any damage as a result of his operations.

C. Where utilities are encountered and are not shown on the drawings, the CONTRACTOR shall report them to the OWNER before proceeding with the work.

D. All utilities damaged by the CONTRACTOR's activities shall be repaired or replaced by the CONTRACTOR without preventable delay. All costs to repair the utility including, but not limited to, materials, labor, inspection, testing and temporary service shall be born by the CONTRACTOR with no cost to the OWNER.

E. All utilities in close proximity to the drill pilot bore, back ream or product pipe installation must be exposed in accordance with all codes, ordinances and regulations to ensure, by

visual inspection, that the CONTRACTOR's work has not caused any damage to the utility or to the CONTRACTOR's work and adequate clearance between the utility and the CONTRACTOR's work is maintained.

1.09 APPLICABLE REGULATIONS:

- A. All work covered by this Section shall be performed in accordance with all applicable federal, state and local laws, regulations, codes and ordinances which pertain to such work, as well as the supplemental regulations contained in these specifications. If a conflict exists between any laws, regulations, codes or ordinances, the most stringent shall govern.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. PIPE

1. PVC:

- a. Polyvinyl-chloride (PVC) pipe shall be in accordance with current AWWA Standard C-900. Joints shall be butt fusion welded.
- b. Fittings: AWWA C153, cement lined.
- c. Joint restraint:
 - 1) Restraint devices shall consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of AWWA C110.
 - 2) Gland body, wedges and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536.
 - 3) Three test bars shall be incrementally poured per production shift as per Underwriter's Laboratory specifications and ASTM A536. Testing for tensile, yield and elongation shall be done in accordance with ASTM E8.
 - 4) Chemical and nodularity tests shall be performed as recommended by the Ductile Iron Society, on a per ladle basis.
 - 5) Joint restraint shall be Ebaa Iron Series 2000PV for PVC, Series 2000 for DIP, or equal.
- d. CONTRACTOR is responsible for calculating loads placed on the pipe during its installation based on the CONTRACTOR's chosen means and methods of construction. It is CONTRACTOR's responsibility to ensure the pipe will withstand all loadings placed on it during installation. If the pipe with wall thickness specified will not withstand the installation loads, it is the CONTRACTOR's responsibility to size the pipe to withstand the installation loads.

2. Stainless steel:

- a. Pipe: ASTM A778.
 - 1) Threaded: Type 304 or 304L, Schedule. 40S.
- b. Fittings:
 - 1) Threaded: MSS-SP-114 for dimensions, ANSI B1.20.1; Class 150 for pipe threads.

B. DRILLING FLUIDS

- 1. The CONTRACTOR must use a high-quality Bentonite drilling fluid or equivalent to ensure hole stabilization, cuttings transport, bit and electronics cooling, and hole lubrication to reduce drag on the drill pipe and the product pipe. Oil-based drilling

fluids or fluids containing additives that can contaminate the soil or ground water will not be considered acceptable substitutes. Composition of the drilling fluid must comply with all federal, state and local environmental regulations.

2. Polymer used as lubrication in the drilling fluid is acceptable, if desired.
3. Drilling fluids must be mixed with water that is free from significant solids and contamination. Potable water is acceptable. River water is acceptable provided no organic matter or soil particulates are mixed into the drilling fluid. It is the CONTRACTOR's responsibility to apply for and obtain any necessary permits for the procurement of drilling fluid water. It is also the CONTRACTOR's responsibility to pay permit application fees, metering charges or any other costs associated with drilling fluid mixing water.

C. MODULAR MECHANICAL SEAL:

1. Interlocking links shaped to continuously fill the annular space between pipe and wall opening.
2. Provide leak-free seal between passing pipe and sleeve.
3. Materials of construction:
 - a. Links: EPDM.
 - b. Pressure plates: Glass reinforced nylon.
 - c. Bolts and nuts: 316 Stainless steel.
4. Furnish mechanical retaining assemblies at the locations indicated on the Drawings.
5. Manufacturers and models:
 - a. Advance Products & Systems, Incorporated, Innerlynx.
 - b. Calpico, Incorporated, Sealing Linx.
 - c. Pipeline Seal and Insulator, Inc., Link Seal.
 - d. Or equal.

D. TRACER WIRE:

1. Contractor shall install, with the directionally drilled pipe, a 12-gauge copper clad steel locator wire with insulation suitable for direct burial. The tracer wire shall be as manufactured by Copperhead Industries, or equal. In rural areas, a test station shall be installed at approximately 1000-foot intervals, near a fire hydrant or other structure that would fall closest to that interval. In built up urban areas, a station shall be provided at each intersection.

2.02 EQUIPMENT:

- A. Directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the pipe; a drilling fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the crossing; a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be re-used; a magnetic guidance system to accurately guide boring operations; a vacuum truck of sufficient capacity to handle the drilling fluid volume; and trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

2.03 AIR RELEASE VALVE CHAMBERS:

- A. Chambers shall be precast concrete.
- B. Precast Units: ASTM C478.

1. Joints: Cement mortar, preformed bituminous rope or "O"-ring gaskets.
 2. Pipe Opening: Pipe diameter plus 6 inch, maximum.
- C. Concrete: 3500 psi 28 day, 4 inch maximum slump.
- D. Concrete Brick: ASTM C55, Grade N-1.
- E. Grade Rings: ASTM C478 with "O" ring gaskets or ASTM D4976 HDPE adjusting rings with butyl sealant manufactured by Ladtech, Inc. or equal.
- F. Mortar: ASTM C270, 1 part Portland cement, 1 part lime and 3 parts sand by volume.
- G. Chamber Steps:
1. Plastic with 3/8 inch steel reinforcement.
 2. Dimensions: 10 inch deep by 10 inch wide, 5 inch tread depth.
- H. Standard Chamber Casting: East Jordan 1045Z1, Type B vented cover or Neenah R-1916-F vented cover, with letter S.
- I. Watertight Manhole Castings (bolted and gasketed): East Jordan 1045ZPT 1040APT 4-bolt Sanitary Sewer Assembly or Neenah R-1916 F with watertight assembly; with letter S. Provide vent pipe as detailed on drawings.

PART 3 - EXECUTION

3.01 ALIGNMENT AND PROFILE OPTIONS:

- A. Alignment and profile shown on the drawings.
- B. An alternate alignment and profile developed by the CONTRACTOR with the following requirements:
1. Alignment must be within easement(s) and right-of-way.
 2. Clearance between utilities is maintained.
 3. 15-foot minimum vertical distance between the drill path and the bottom of a river to prevent drilling fluid breakout.
 4. ENGINEER approved.

3.02 PIPE FUSION

- A. All pipe shall be joined with the "butt fusion" method in accordance with the pipe manufacturer's recommendations. Socket fusion, extrusion welding, hot gas welding and mechanical connections are not acceptable.
- B. Butt fusion joining shall produce a joint of equal or greater tensile strength than the strength of the pipe.

3.03 DRILL ENTRANCE AND EXIT PITS

- A. The CONTRACTOR is responsible for the design and construction of the drill entrance and exit pits. Supports may be required to maintain safe working conditions. Ensure stability of the pit, minimize loosening, and minimize soil deterioration and disturbance of the surrounding ground.

- B. Entrance and exit pits must be contained in the easement(s) and right-of way.
- C. Drill entrance and exit pits must be maintained at minimum size to allow only the minimum amount of drilling fluid storage prior to transfer to mud recycling or processing system or for removal from the site.
- D. Drilling fluid will not be allowed to freely flow on the site or around the entrance or exit pits. Fluid spilled must be removed as soon as possible and the ground restored to original condition.
- E. Pits must be shored to OSHA standard if workers are required to enter the pits for any reason.

3.04 DRILL ENTRANCE AND EXIT ANGLES

- A. Entrance and exit angles of the drill can be whatever the CONTRACTOR desires such that the elevation profile maintains adequate ground cover to ensure no drilling fluid breakout occurs and that ground exit occurs within the designated easement(s) or right-of-way. The CONTRACTOR is responsible for ensuring that entrance and exit angles ensure pullback forces do not exceed 5% strain on the pipe.

3.05 GUIDANCE SYSTEM

- A. The guidance system must have the capability of measuring inclination, roll and azimuth. The guidance system must have an independent means to ensure the accuracy of the installation. The CONTRACTOR will demonstrate a viable method to eliminate accumulated error due to the inclinometer (pitch or accelerometer). The guidance system will be capable of generating a plot of the borehole survey for the purpose of an as-built drawing. The guidance system must meet the following specifications:

Inclination:	Range Accuracy	-90° to +90° 0.2°
Azimuth:	Range Accuracy	0° to 360° 0.5°
Roll:	Range Accuracy	0° to 360° 0.2°

3.06 PILOT HOLE TOLERANCES

- A. The pilot hole shall be drilled along the agreed-to alignment and profile with the following tolerances:
 - 1. Vertical
 - a. Plus 4 feet (deeper or additional ground cover).
 - b. Minus 1 foot (shallower or reduced ground cover), except that the resulting pipe cover shall not be less than specified or indicated on the plans.
 - 2. Horizontal
 - a. Plus or minus 2.5 feet.
 - 3. Curve radius
 - a. Curve radius shall not exceed the pipe manufacturer's recommendations and that of the drilling equipment.

3.07 DRILL PATH DOCUMENTATION

- A. The CONTRACTOR is responsible for maintaining drilling logs that provide drill path data every 25 feet along the drill path. Information logged every 25 feet will, at a minimum, include the following:
 - 1. Pilot hole
 - a. Distance out or station
 - b. Depth below a known ground surface elevation
 - c. Plus or minus (left or right) of alignment
 - d. Torque
 - e. Drill fluid flow rate
 - f. Time
 - 2. Back ream
 - a. Distance out or station
 - b. Pull back force
 - c. Torque
 - d. Drill fluid flow rate
 - e. Time

3.08 PIPE GOUGING

- A. The CONTRACTOR shall take every precaution to prevent gouging of the pipe prior to and during pipeline installation.
- B. It is expected some pipe gouging will occur during pullback. However, the constructed pipeline shall not have any gouges that are deeper than 10% of the pipe wall thickness. Pipe that has gouges greater than 10% of the pipe wall thickness will not be accepted.

3.09 INSTALLING PRODUCT PIPE

- A. After the pilot hole is completed, install a swivel to the reamer and commence pullback operations. Pre-reaming of the tunnel may be necessary and is at the option of the CONTRACTOR.
- B. Reaming diameter will not exceed 1.4 times the diameter of the product pipe being installed.
- C. Allow sufficient length of product pipe to extend past the termination point to allow connections to adjacent pipe sections or gate valves. Pulled pipes will be allowed 24 hours of stabilization prior to making tie-ins. The length of extra product pipe will be at the CONTRACTOR'S discretion.
- D. Install an AWWA C153 Mechanical Joint Adaptor, per the manufacturer's requirements, when connecting the pipe to a valve or hydrant.

3.10 YIELD STRESS

- A. The yield stress shall be calculated from the HDPE material submitted and the cross-sectional area of the pipe. The result will be the force at which the HDPE pipe will yield.

- B. The pullback force will be monitored throughout the pullback. At no time shall the equipment be operated to produce a pullback force that exceeds 75% of the yield force.

3.11 CLEANUP

- A. All excavated soil, soil cuttings and drilling fluid shall be the property of the CONTRACTOR. All material shall be disposed of in accordance with all laws, regulations, codes, ordinance and these specifications.
- B. Immediately upon completion of the work in this section, all rubbish and debris shall be removed from the job site. All construction equipment and implements of service shall be removed and the entire area involved shall be left in a neat, clean and acceptable condition.
- C. If a drilling fluid breakout should occur, the area shall be cleaned immediately and the surface washed and returned to original condition.
- D. Every precaution shall be implemented to prevent a drilling fluid breakout in the river. It is the CONTRACTOR's responsibility to conduct construction activities to prevent this occurrence. However, if a drilling fluid breakout occurs in the river, it is the CONTRACTOR's responsibility to clean up any resultant contamination. The CONTRACTOR is also responsible for any damage to property or the environment due to such a breakout.

3.12 HYDROSTATIC TESTING

- A. The pipe shall be hydrostatically tested before being connected to other piping systems. The pipe shall be tested independently of other hydrostatic tests.
- B. Hydrostatic testing will consist of filling the constructed pipeline with water taking care to bleed off trapped air. The CONTRACTOR shall pressurize the pipe to 150 psi for a minimum of 4 hours to give the pipe time to expand. During this initial 4 hours, make-up water shall be added as-needed to maintain the pressure within 5 psi of the specified pressure. At the end of the first 4 hours, the pipe shall be pressurized to the specified pressure and the test commences. The pipeline shall be maintained under the test pressure for a continuous period of between 1 and 3 hours, as determined by the ENGINEER, by pumping water into the line at frequent intervals. The volume of water so added to maintain pressure within 5 psi of the specified pressure shall be measured and considered to represent the "leakage" from the line during the interval.

The allowable "leakage" for the pipeline shall not exceed the allowances given in the following table.

Nominal Pipe Size (In)	Allowable "Leakage" (Gal/100' of Pipe)		
	1-Hour Test	2-Hour Test	3-Hour Test
3	0.10	0.15	0.25
4	0.13	0.25	0.40
6	0.30	0.60	0.90
8	0.50	1.0	1.5
10	0.75	1.3	2.1
11	1.0	2.0	3.0
12	1.1	2.3	3.4

14	1.4	2.8	4.2
16	1.7	3.3	5.0
18	2.2	4.3	6.5
20	2.8	5.5	8.0
22	3.5	7.0	10.5
24	4.5	8.9	13.3
28	5.5	11.1	16.8
32	7.0	14.3	21.5
36	9.0	18.0	27.0
40	11.0	22.0	33.0
48	15.0	27.0	43.0

It is understood that the pipe will continue to expand after the initial 4 hours under pressure and throughout the 1 to 3-hour test period. The allowable "leakage" presented in the table above accounts for this expansion and no additional allowable "leakage" will be considered.

- C. Under no circumstances shall the total time under the specified test pressure exceed 8 hours. If the test is not completed due to leakage, equipment failure, etc., the test shall be terminated and the pipeline shall be de-pressurized and permitted to "relax" for a minimum of 8 hours prior to the next testing sequences.
- D. If there are no visual leaks or significant pressure drops during the final test period, and the measured "leakage" is less than allowable, the pipeline passes the hydrostatic test.
- E. In the event that the "leakage", as determined by the ENGINEER, exceeds the specified allowable, the CONTRACTOR shall be responsible to repair or replace the pipeline until the pipeline passes the hydrostatic test, as determined by the ENGINEER.

3.13 TRACER WIRE

- A. The Contractor shall install, with the directionally drilled pipe, a 12 gauge copper clad steel locator wire with insulation suitable for direct burial. In rural areas, a test station shall be installed at approximately 1,000 foot intervals, near a fire hydrant or other structure that would fall closest to that interval. In built up urban areas, a station shall be provided at each intersection. Tracer wire shall be installed with the directionally drilled pipe.

3.14 SCHEDULES:

- A. Horizontal Directional Drilling Plan for Preventing and Controlling the Loss of Drilling Mud (5 sheets).

END OF SECTION

SECTION 33 05 24

HORIZONTAL DIRECTIONAL DRILL PLAN

FOR

PREVENTING AND CONTROLLING THE LOSS OF DRILLING MUD

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- 6.0 – ABANDONMENT

SECTION 33 05 24

HORIZONTAL DIRECTIONAL DRILL PLAN

1.0 INTRODUCTION:

- A. This directional drill contingency plan provides specific procedures and steps to prevent and/or to contain inadvertent releases of drilling mud (also referred to as frac-outs) for waterbodies that are crossed using horizontal directional drilling (HDD) techniques.

2.0 HORIZONTAL DIRECTIONAL DRILLING PROCESS:

- A. Installation of a pipeline by HDD is generally accomplished in three stages. The first stage consists of directionally drilling a small-diameter pilot hole along a pre-determined path. The second stage enlarges this pilot hole to a diameter that will accommodate the pipeline. Numerous "reaming" passes will be necessary with each pass enlarging the diameter of the pilot hole incrementally. The third stage involves pulling the pipeline through the enlarged hole.

During the drilling of the pilot hole, directional control is achieved by using a non-rotating drill string with an asymmetrical leading edge. The asymmetry of the leading edge creates a steering bias, which allows the operator to control the direction of the drill bit. The actual path of the pilot hole is monitored during drilling by taking periodic readings of the inclination and azimuth. These readings are used to calculate the horizontal and vertical coordinates along the pilot holes relative to the initial entry point on the surface.

Once the pilot hole is complete, it is enlarged using reaming tools that are often custom-made for a particular diameter pipe or type of soil. The reamers are typically attached to the drill string at the exit point and are rotated and drawn to the drilling rig, thus enlarging the pilot hole with each pass. Pipe installation is accomplished by attaching a prefabricated pull section behind a reaming assembly at the exit point and pulling the entire assembly back to the drilling rig.

Ideally, horizontal directional drilling involves no disturbance to the bed or banks of a stream or wetland. However, it is possible that geologic irregularities could be encountered during drilling, and drilling could fail. This plan describes the potential for failure of horizontal directional drilling, the contingency methods that would be implemented in the event of inadvertent release of drilling fluids to water or land, and drill hole abandonment procedures.

The feasibility of the horizontal directional drill method primarily depends on the local geologic setting, as well as site topography and other surface features. For example, horizontal directional drilling may not be feasible in areas of glacial till or outwash interspersed with boulders and cobbles, highly fractured bedrock, or non-cohesive coarse sands and gravels. These formations increase the likelihood that drilling could fail due to refusal of the drill bit, continuous loss of drilling fluid through fractures or weak areas in the ground, or collapse of the bore hole in non-cohesive, unstable substrate.

Fortunately, surface characteristics at the proposed Project drill sites are generally favorable for HDD.

Also, subsurface geotechnical investigations indicate that conditions are favorable for horizontal directional drilling.

3.0 MONITORING PROCEDURES:

- A. The Project Engineer and construction personnel will continuously monitor operations during drilling activities. Monitoring activities will include:
- Visual inspection along the drill path, including monitoring the water body for evidence of a release.
 - Continuous examination of drilling fluid pressures and returns flows.

4.0 NOTIFICATION PROCEDURES

- A. If in the course of an inspection an inadvertent release is discovered, steps will be taken by construction personnel to contain the release as described in Section 5.0, Corrective Action and Cleanup.

If monitoring indicates an in-stream release, the Project Engineer will immediately notify the appropriate Federal and State agencies as soon as possible by telephone and/or facsimile of an in-stream release event, detailing the nature of the release and corrective actions being taken. The notified agencies will determine whether additional measures need to be implemented.

If a release occurs that may migrate downstream and affect water quality, downstream water users will be contacted.

5.0 CORRECTIVE ACTION AND CLEANUP

- A. By monitoring drilling operations continuously, it is intended to correct problems before they occur. In addition, containment equipment including earth-moving equipment, portable pumps, hand tools, sand, hay bales, silt fence, lumber, and a suction dredge will be readily available at the drill site. If a release does occur, the following measures will be implemented to stop or minimize the release and to clean it up:
- The drilling contractor will decide what modifications to make to the drilling technique or composition of drilling fluid (e.g., thickening of fluid by increasing bentonite content) to reduce or stop minor losses of drilling fluid.
 - If a minor bore path void is encountered during drilling, making a slight change in the direction of the bore path may avoid loss of circulation.
 - If the bore head becomes lodged resulting in loss of drilling pressure, the borehole may be sized by moving the bore head back and forth to dislodge the stuck materials.
 - If necessary, drilling operations will be reduced to assess the extent of the release and to implement other possible corrective actions.
 - If public health and safety are threatened, drilling fluid circulation pumps will be turned off. This measure will be taken as a last resort because it increases the potential for drill hole collapse resulting from loss of down-hole pressure.
 - If a land release is detected, the drilling crew will take immediate corrective action to contain the release and to prevent migration off site.
 - The contractor will construct pits and berms around the borehole entry point to contain inadvertent releases onto the ground.
 - Any drilling mud released into the pits will be pumped by contractor personnel into a mud-processing unit for recycling of drilling fluid and separation of cuttings.
 - Additional berms will be constructed around the bore pit as directed by the Project Engineer to prevent release materials from flowing into the water body.
 - If the amount of an on-land release does not allow practical collection, the affected area will be diluted with fresh water and allowed to dry. Steps will be taken (such as

berm, silt fence, and/or hay bale installation) to prevent silt-laden water from flowing into the water body.

- If hand tools cannot contain a small on-land release, small collection sumps (less than 5 cubic yards) may be constructed to pump the released material into the mud processing system.
- Contractor HDD crews will immediately implement non-mechanized measures to contain the spread of drilling fluids, including the installation of hay bales or silt fence.
- Sump pumps or vacuum trucks will be used to remove and dispose of any drilling fluids.

6.0 ABANDONMENT

- A. If corrective actions do not prevent or control releases from occurring into the water body, the HDD Contractor may opt to re-drill the hole along a different alignment or suspend the Project altogether. In either case, the following procedures will be implemented to abandon the drill hole.
- The method for sealing the abandoned drill hole is to pump thickened drilling fluid into the hole as the drill assembly is extracted, and using cement grout to make a cap.
 - Closer to the surface of the hole(s) (within approximately 10 feet of the surface), a soil cap will be installed by filling with soil extracted during construction of the pit and berms.
 - The bore hole entry location will be graded by the contractor to its original grade and condition after the drill hole has been abandoned.

END OF SECTION

