



LAND PRESERVE
A REGIONAL RESOURCE

Riverview Land Preserve
20863 Grange Road
Riverview, Michigan 48193

209-4221510-012

March 2023

2023 Spring GCCS Construction Riverview Land Preserve

Bid No. 2533



complex world | CLEAR SOLUTIONS™

00010 - TABLE OF CONTENTS
FOR
RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00010 – TABLE OF CONTENTS
SECTION 00100 – INVITATION TO BID
SECTION 00200 – INSTRUCTIONS TO BIDDERS
SECTION 00410 – BID FORM
SECTION 00430 – BID BOND
SECTION 00451 – QUALIFICATION STATEMENT
SECTION 00510 – NOTICE OF AWARD
SECTION 00520 – AGREEMENT
SECTION 00610 – PERFORMANCE BOND
SECTION 00615 – PAYMENT BOND
SECTION 00620 – CONTRACTORS APPLICATION FOR PAYMENT
SECTION 00700 – GENERAL CONDITIONS
SECTION 00800 – SUPPLEMENTARY CONDITIONS
 SECTION 00800.A – RIVERVIEW GENERAL CONDITIONS
 SECTION 00800.B – RIVERVIEW ETHICS POLICY
 SECTION 00800.C – CITY OF RIVERVIEW INSURANCE REQUIREMENTS
 SECTION 00800.D – BIDDER CERTIFICATION OF COMPLIANCE
 SECTION 00800.E – UPDATED FORM 1099 VENDORS QUESTIONNAIRE
 SECTION 00800.F – CONTRACTORS LIEN WAIVER AND RELEASE

DIVISION 1 – GENERAL REQUIREMENT SPECIFICATIONS
 SECTION 01010 – SUMMARY OF WORK
 SECTION 01025 – MEASUREMENTS AND PAYMENT
 SECTION 01300 – ADMINISTRATIVE REQUIREMENTS
 SECTION 01330 – SUBMITAL PROCEDURE
 SECTION 01600 – PRODUCT REQUIREMENT
 SECTION 01700 – EXECUTION AND CLOSEOUT REQUIREMENTS

APPENDIX A – CONSTRUCTION QUALITY ASSURANCE (CQA) PLAN – REVISED JUNE 2016

APPENDIX B – PROJECT DRAWINGS – 2023 SPRING GCCS CONSTRUCTION

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00100 – INVITATION TO BID

INVITATION TO BID

CITY OF RIVERVIEW

Sealed proposals will be received by the City Clerk, 14100 Civic Park Drive, Riverview, Michigan until 2:00 PM, Eastern Daylight Savings Time, Thursday, March 30, 2023, at which time and place the bids will be publicly opened and read aloud for:

BID #2533- 2023 SPRING GCCS CONSTRUCTION

Specifications are available online with the Bid Net (formerly Michigan Inter-governmental Trade Network) at www.bidnetdirect.com and on the City Web site at http://www.cityofriverview.com/departments/purchasing/invitations_to_bid.php. All bids must be plainly marked on the envelope, " **BID #2533- 2023 SPRING GCCS CONSTRUCTION**".

There will not be a pre-bid meeting, due to current restrictions. A site inspection may be arranged by appointment and in accordance with safety measures in place at the time.

The City of Riverview reserves the right to reject any or all bids and waive defects in bidding in the best interest of the City.

Jeffrey Dobek
City Manager

Publish: March/9/2023

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00200 - INSTRUCTIONS TO BIDDERS

TABLE OF CONTENTS

	Page
ARTICLE 1 – Defined Terms.....	1
ARTICLE 2 – Copies of Bidding Documents	1
ARTICLE 3 – Qualifications of Bidders.....	1
ARTICLE 4 – Site and Other Areas; Existing Site Conditions; Examination of Site; Owner’s Safety Program; Other Work at the Site	1
ARTICLE 5 – Bidder’s Representations	3
ARTICLE 6 – Pre-Bid Conference.....	4
ARTICLE 7 – Interpretations and Addenda	4
ARTICLE 8 – Bid Security	4
ARTICLE 9 – Contract Times.....	5
ARTICLE 10 – Liquidated Damages	5
ARTICLE 11 – Substitute and “Or-Equal” Items	5
ARTICLE 12 – Subcontractors, Suppliers, and Others	5
ARTICLE 13 – Preparation of Bid.....	6
ARTICLE 14 – Basis of Bid	7
ARTICLE 15 – Submittal of Bid	7
ARTICLE 16 – Modification and Withdrawal of Bid.....	8
ARTICLE 17 – Opening of Bids.....	8
ARTICLE 18 – Bids to Remain Subject to Acceptance.....	8
ARTICLE 19 – Evaluation of Bids and Award of Contract	8
ARTICLE 20 – Bonds and Insurance	9
ARTICLE 21 – Signing of Agreement.....	9
ARTICLE 22 – Sales and Use Taxes	9

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.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

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

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within 10 days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:
- A. Evidence of Bidder's authority to do business in the state where the Project is located.
- B. Bidder's state or other contractor license number, if applicable.
- C. Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."
- D. Other required information regarding qualifications
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

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

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

4.02 *Existing Site Conditions*

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
 1. The Supplementary Conditions identify:
 - a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
 - b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
 - c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
 2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
 3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
 4. Geotechnical Baseline Report: Not used.
- 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. Bidder may contact the Land Preserve Director to arrange for a tour of the work if desired.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional

examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

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

4.05 *Other Work at the Site*

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

ARTICLE 5 – BIDDER'S REPRESENTATIONS

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

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;
- E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of

construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

- F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

- 6.01 A pre-bid conference will not be held as stated in the invitation or advertisement to bid. Site inspections may be arranged by appointment.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of 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 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.
- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default,

annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which the Work is to be substantially completed and 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, and those “or-equal” or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an “or-equal” or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.
- 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 days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work:
- A. Surveyor
 - B. Piping
 - C. Electrical and electronic systems
 - D. Geosynthetic materials and installation
 - E. Stone and granular materials
 - F. Seeding
- 12.04 If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- 12.05 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 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.
- 13.04 A Bid by an individual shall show the Bidder's name and official address.

- 13.05 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.
- 13.06 All names shall be printed in ink below the signatures.
- 13.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.09 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 *Unit Price*

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

14.02 *Allowances*

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

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. An electronic copy of the Bid Form is available upon request to Engineer. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.
- 15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package

plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to City of Riverview, 14100 Civic Park Drive, Riverview, MI 48193.

- 15.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

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

ARTICLE 17 – OPENING OF BIDS

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

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

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

- B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
 - C. Bid prices will be compared after adjusting for differences in time of Substantial Completion (total number of calendar days to substantially complete the Work) designated by Bidders. The adjusting amount will be determined at the rate set forth in the Agreement for liquidated damages for failing to achieve Substantial Completion, or such other amount that Owner has designated in the Bid Form.
 - 1. The method for calculating the lowest bid for comparison will be the summation of the Bid price shown in the Bid Form plus the product of the Bidder-specified time of Substantial Completion (in calendar days) times the rate for liquidated damages (in dollars per day).
 - 2. This procedure is only used to determine the lowest bid for comparison and contractor selection purposes. The Contract Price for compensation and payment purposes remains the Bid price shown in the Bid Form.
- 19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 20 – BONDS AND INSURANCE

- 20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

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

ARTICLE 22 – SALES AND USE TAXES

- 22.01 Owner is exempt from Michigan state sales and use taxes on materials and equipment to be incorporated in the Work. A certificate or tax ID number will be provided upon award of the contract. .

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00410 – BID FORM
BID #2533

TABLE OF CONTENTS

	Page
Contents	
ARTICLE 1 – Bid Recipient	1
ARTICLE 2 – Bidder’s Acknowledgements	1
ARTICLE 3 – Bidder’s Representations	1
ARTICLE 4 – Bidder’s Certification	2
ARTICLE 5 – Basis of Bid	3
ARTICLE 6 – Time of Completion	5
ARTICLE 7 – Attachments to this Bid.....	5
ARTICLE 8 – Defined Terms.....	5
ARTICLE 9 – Bid Submittal	5

ARTICLE 1 – BID RECIPIENT

- 1.01 This Bid is submitted to:
- City of Riverview
14100 Civic Park Drive
Riverview, Michigan 48193-7689
- 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 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

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

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

- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-

related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of 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):

ITEM		QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1.0	General				
	1.1 Mobilization / Demobilization	1	LS	\$	\$
	1.2 General Conditions	1	LS	\$	\$
2.0	Drilling – 36" Dia. borehole	1409	LF	\$	\$
3.0	Well Installation				
	3.1 Perforated 8"-11 HDPE Piping	1074	LF	\$	\$
	3.2 Solid 8-11" HDPE Piping	335	LF	\$	\$
	3.3 Wellhead and Dual Well Cap	17	EA	\$	\$
4.0	HDPE Gas Collection Piping				
	4.1 18"-17 HDPE Lateral Piping	1484	LF	\$	\$
	4.2 12"-17 HDPE Lateral Piping	1324	LF	\$	\$
	4.3 8"-17 HDPE Lateral Piping	523	LF	\$	\$
	4.4 6"-17 HDPE Lateral Piping	1858	LF	\$	\$
	4.5 Salvage 18"-17 HDPE Lateral Piping	268	LF	\$	\$
	4.6 Salvage 6"-17 HDPE Lateral Piping	607	LF	\$	\$
5.0	Well Abandonment	7	EA	\$	\$
TOTAL BASE BID PRICE				\$	

BIDDER: _____

SIGNATURE: _____ DATE: _____

This Bid is submitted to:

City of Riverview
14100 Civic Park Drive
Riverview, Michigan 48193

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

Total Base Bid Price (in words): _____

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete on or before May 22, 2023, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before May 27, 2023.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
- A. Required Bid security;
 - B. List of Proposed Subcontractors;
 - C. List of Proposed Suppliers;
 - D. List of Project References;
 - E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
 - F. Contractor's License No.: _____ [or] Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;
 - G. Required Bidder Qualification Statement with supporting data.

ARTICLE 8 – DEFINED TERMS

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

ARTICLE 9 – BID SUBMITTAL

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

By: _____
[Signature]

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail
address: _____

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

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00430 - 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*):

City of Riverview
14100 Civic Park Drive
Riverview, Michigan 48193-7689

BID

Bid Due Date: **March 30, 2023**

Description (Project Name— Include Location): **Riverview Land Preserve – 2023 SPRING
GCCS Construction**

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

Bidder'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

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.

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00451 - QUALIFICATIONS STATEMENT

**THE INFORMATION SUPPLIED IN THIS DOCUMENT IS CONFIDENTIAL TO THE EXTENT
PERMITTED BY LAWS AND REGULATIONS**

1. SUBMITTED BY:

Official Name of Firm:

Address:

2. SUBMITTED TO:

3. SUBMITTED FOR:

2023 Spring GCCS Construction

Owner:

City of Riverview

Project Name:

2023 Spring GCCS Construction

TYPE OF WORK:

Landfill Gas wellfield construction – piping, vertical wells,

fittings, and accessories

4. CONTRACTOR'S CONTACT INFORMATION

Contact Person:

Title:

Phone:

Email:

5. AFFILIATED COMPANIES:

Name: _____

Address: _____

6. TYPE OF ORGANIZATION:

☐ SOLE PROPRIETORSHIP

Name of Owner: _____

Doing Business As: _____

Date of Organization: _____

☐ PARTNERSHIP

Date of Organization: _____

Type of Partnership: _____

Name of General Partner(s): _____

☐ CORPORATION

State of Organization: _____

Date of Organization: _____

Executive Officers:

- President: _____

- Vice President(s): _____

- Treasurer: _____

- Secretary: _____

☐ LIMITED LIABILITY COMPANY

State of Organization:

Date of Organization:

Members:

☐ JOINT VENTURE

Sate of Organization:

Date of Organization:

Form of Organization:

Joint Venture Managing Partner

- Name:

- Address:

Joint Venture Managing Partner

- Name:

- Address:

Joint Venture Managing Partner

- Name:

- Address:

7. LICENSING

Jurisdiction: _____

Type of License: _____

License Number: _____

Jurisdiction: _____

Type of License: _____

License Number: _____

8. CERTIFICATIONS

CERTIFIED BY:

Disadvantage Business Enterprise: _____

Minority Business Enterprise: _____

Woman Owned Enterprise: _____

Small Business Enterprise: _____

Other (_____): _____

9. BONDING INFORMATION

Bonding Company: _____

Address: _____

Bonding Agent: _____

Address: _____

Contact Name: _____

Phone: _____

Aggregate Bonding Capacity: _____

Available Bonding Capacity as of date of this submittal: _____

10. FINANCIAL INFORMATION

Financial Institution: _____

Address: _____

Account Manager: _____

Phone: _____

INCLUDE AS AN ATTACHMENT AN AUDITED BALANCE SHEET FOR
EACH OF THE LAST 3 YEARS

11. CONSTRUCTION EXPERIENCE:

Current Experience:

List on **Schedule A** all uncompleted projects currently under contract (If Joint Venture list each participant's projects separately).

Previous Experience:

List on **Schedule B** all projects completed within the last 5 Years (If Joint Venture list each participant's projects separately).

Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Are there any judgments, claims, disputes or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

12. SAFETY PROGRAM:

Name of Contractor's Safety Officer: _____

Include the following as attachments:

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) OSHA No. 500- Log & Summary of Occupational Injuries & Illnesses for the past 5 years.

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all OSHA Citations & Notifications of Penalty (monetary or other) received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all safety citations or violations under any state all received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

Provide the following for the firm listed in Section V (and for each proposed Subcontractor furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) the following (attach additional sheets as necessary):

Workers' compensation Experience Modification Rate (EMR) for the last 5 years:

YEAR _____	EMR _____
YEAR _____	EMR _____
YEAR _____	EMR _____
YEAR _____	EMR _____
YEAR _____	EMR _____

Total Recordable Frequency Rate (TRFR) for the last 5 years:

YEAR _____	TRFR _____
YEAR _____	TRFR _____
YEAR _____	TRFR _____
YEAR _____	TRFR _____
YEAR _____	TRFR _____

Total number of man-hours worked for the last 5 Years:

YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____

Provide Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) Days Away From Work, Days of Restricted Work Activity or Job Transfer (DART) incidence rate for the particular industry or type of Work to be performed by Contractor and each of Contractor's proposed Subcontractors and Suppliers) for the last 5 years:

YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____

13. EQUIPMENT:

MAJOR EQUIPMENT:

List on **Schedule C** all pieces of major equipment available for use on Owner's Project.

I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HERewith, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION: _____

BY: _____

TITLE: _____

DATED: _____

NOTARY ATTEST:

SUBSCRIBED AND SWORN TO BEFORE ME

THIS _____ DAY OF _____, 20____

NOTARY PUBLIC - STATE OF _____

MY COMMISSION EXPIRES: _____

REQUIRED ATTACHMENTS

1. Schedule A (Current Experience).
2. Schedule B (Previous Experience).
3. Schedule C (Major Equipment).
4. Audited balance sheet for each of the last 3 years for firm named in Section 1.
5. Evidence of authority for individuals listed in Section 7 to bind organization to an agreement.
6. Resumes of officers and key individuals (including Safety Officer) of firm named in Section 1.
7. Required safety program submittals listed in Section 13.
8. Additional items as pertinent.

SCHEDULE A

CURRENT EXPERIENCE

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE C - LIST OF MAJOR EQUIPMENT AVAILABLE

[illegible]

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00510 – NOTICE OF AWARD

NOTICE OF AWARD

Date of
Issuance:

Owner: City of Riverview

Owner's Contract No.: Bid No. 2533

Engineer:

Engineer's Project No.: 209-4221510-012

Project: 2023 Spring GCCS Construction

Contract Name:

Bidder:

Bidder's
Address:

TO BIDDER:

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

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

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

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

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

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

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

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

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

Owner

Authorized Signature

By:

Title:

Copy: Engineer

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00520 – AGREEMENT STIPULATED PRICE

THIS AGREEMENT is by and
between City of Riverview (“Owner”) and
_____ (“Contractor”).

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:
- A. 15 new and redrilled landfill gas wells; including 15 well heads, 15 dual well caps, and cover restoration as shown in the construction drawings,
 - B. Install and salvage 18”, 12”, 8” and 6” landfill gas collection piping and all related fittings and valves per the construction drawings.
 - C. Abandon 7 landfill gas wells per the construction drawings.

ARTICLE 2 – THE PROJECT

- 2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **Riverview Land Preserve – 2023 Spring GCCS Construction.**

ARTICLE 3 – ENGINEER

- 3.01 The Project has been designed by Tetra Tech.
- 3.02 The Owner has retained Tetra Tech (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

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*

The Work will be substantially completed on or before **May 22, 2023** and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before **May 27, 2023**.

4.03 *Liquidated Damages*

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 \$1500 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 \$1,500 for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

4.04 *Special Damages*

After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

The Provisions of Paragraph 4.04.A above are not intended to exclude other actual damages, including but not limited to other consequential damages.

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:

ITEM		QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1.0	General				
	1.1 Mobilization / Demobilization	1	LS	\$	\$
	1.2 General Conditions	1	LS	\$	\$
2.0	Drilling – 36" Dia. borehole	1409	LF	\$	\$
3.0	Well Installation				
	3.1 Perforated 8"-11 HDPE Piping	1074	LF	\$	\$
	3.2 Solid 8-11" HDPE Piping	335	LF	\$	\$
	3.3 Wellhead and Dual Well Cap	17	EA	\$	\$
4.0	HDPE Gas Collection Piping				
	4.1 18"-17 HDPE Lateral Piping	1484	LF	\$	\$
	4.2 12"-17 HDPE Lateral Piping	1324	LF	\$	\$
	4.3 8"-17 HDPE Lateral Piping	523	LF	\$	\$
	4.4 6"-17 HDPE Lateral Piping	1858	LF	\$	\$
	4.5 Salvage 18"-17 HDPE Lateral Piping	268	LF	\$	\$
	4.6 Salvage 6"-17 HDPE Lateral Piping	607	LF	\$	\$
5.0	Well Abandonment	7	EA	\$	\$
TOTAL BASE BID PRICE				\$	

For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item): The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

ARTICLE 6 – PAYMENT PROCEDURES**6.01 Submittal and Processing of Payments**

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

Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment within 30 days of the receipt of the approved Applications for Payment each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit

Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract
 - a. 90 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
 - b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

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

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall 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:

Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

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.

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

Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

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.

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.

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.

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.

The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

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*

The Contract Documents consist of the following:

1. This Agreement (pages 1 to 8, inclusive).
2. Performance bond (pages 1 to 3, inclusive).
3. Payment bond (pages 1 to 3, inclusive).
4. General Conditions (pages 1 to 70, inclusive).
5. Supplementary Conditions (pages 1 to 8, inclusive).
6. Specifications as listed in the table of contents of the Project Manual.
7. Drawings (not attached but incorporated by reference) consisting of 5 sheets with each sheet bearing the following general title: **Riverview Land Preserve – 2023 Spring GCCS Construction**.
8. Addenda (numbers to , inclusive).
9. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages to , inclusive).
10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.

The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 9.

The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 Terms

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

10.02 Assignment of Contract

Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 Successors and Assigns

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

10.04 Severability

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

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

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

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

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

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

OWNER:

CONTRACTOR:

By: _____

By: _____

Title: _____

Title: _____

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

Attest: _____

Attest: _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

License
No.:

(where applicable)

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

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00610 - PERFORMANCE BOND

CONTRACTOR *(name and address):*

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

OWNER *(name and address):*

City of Riverview, 14100 Civic Park Drive, Riverview, Michigan 48193

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):* **Riverview Land Preserve – 2023 Spring GCCS Construction, Riverview, Michigan**

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.

EJCDC® C-610, Performance Bond

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:

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00615 - PAYMENT BOND

CONTRACTOR *(name and address)*:

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

OWNER *(name and address)*:

City of Riverview, 14100 Civic Park Drive, Riverview, Michigan 48193

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*: **Riverview Land Preserve – 2023 Spring GCCS Construction, Riverview, Michigan**

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.

satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

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
 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
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond 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.

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:



Contractor's Application for Payment No. 	
Application Period:	Application Date:
To (Owner):	From (Contractor):
Project:	Contract:
Owner's Contract No.:	Contractor's Project No.:
	Engineer's Project No.:

Application For Payment
Change Order Summary

Approved Change Orders			1. ORIGINAL CONTRACT PRICE.....	\$
Number	Additions	Deductions	2. Net change by Change Orders.....	\$
			3. Current Contract Price (Line 1 ± 2).....	\$
			4. TOTAL COMPLETED AND STORED TO DATE	
			(Column F total on Progress Estimates).....	\$
			5. RETAINAGE:	
			a. X Work Completed.....	\$
			b. X Stored Material.....	\$
			c. Total Retainage (Line 5.a + Line 5.b).....	\$
			6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5.c).....	\$
TOTALS			7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application).....	\$
NET CHANGE BY			8. AMOUNT DUE THIS APPLICATION.....	\$
CHANGE ORDERS			9. BALANCE TO FINISH, PLUS RETAINAGE	
			(Column G total on Progress Estimates + Line 5.c above).....	\$

Contractor's Certification The undersigned Contractor certifies, to the best of its knowledge, the following: (1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment; (2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such Liens, security interest, or encumbrances); and (3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.		Payment of: \$ (Line 8 or other - attach explanation of the other amount)
		is recommended by: (Engineer) (Date)
		Payment of: \$ (Line 8 or other - attach explanation of the other amount)
		is approved by: (Owner) (Date)
Contractor Signature		Approved by: Funding or Financing Entity (if applicable) (Date)
By:	Date:	

Progress Estimate - Lump Sum Work

Contractor's Application

For (Contract):					Application Number:			
Application Period:					Application Date:			
		B	Work Completed		E	F		G
A		B	C	D	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (F / B)	Balance to Finish (B - F)
Specification Section No.	Description	Scheduled Value (\$)	From Previous Application (C+D)	This Period				
	Totals							

Progress Estimate - Unit Price Work

Contractor's Application

[illegible]

Stored Material Summary

Contractor's Application

[illegible]

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00700 – GENERAL CONDITIONS

TABLE OF CONTENTS

	Page
Article 1 – Definitions and Terminology	5
1.01 Defined Terms	5
1.02 Terminology	9
Article 2 – Preliminary Matters	10
2.01 Delivery of Bonds and Evidence of Insurance	10
2.02 Copies of Documents.....	10
2.03 Before Starting Construction	10
2.04 Preconstruction Conference; Designation of Authorized Representatives.....	11
2.05 Initial Acceptance of Schedules	11
2.06 Electronic Transmittals.....	11
Article 3 – Documents: Intent, Requirements, Reuse.....	12
3.01 Intent	12
3.02 Reference Standards.....	12
3.03 Reporting and Resolving Discrepancies.....	12
3.04 Requirements of the Contract Documents	13
3.05 Reuse of Documents	14
Article 4 – Commencement and Progress of the Work.....	14
4.01 Commencement of Contract Times; Notice to Proceed.....	14
4.02 Starting the Work	14
4.03 Reference Points	14
4.04 Progress Schedule	14
4.05 Delays in Contractor’s Progress.....	15
Article 5 – Availability of Lands; Subsurface and Physical Conditions; Hazardous Environmental Conditions	16
5.01 Availability of Lands	16
5.02 Use of Site and Other Areas	16
5.03 Subsurface and Physical Conditions.....	17
5.04 Differing Subsurface or Physical Conditions	17
5.05 Underground Facilities	19
5.06 Hazardous Environmental Conditions at Site	20

Article 6 – Bonds and Insurance	22
6.01 Performance, Payment, and Other Bonds.....	22
6.02 Insurance—General Provisions	23
6.03 Contractor’s Insurance.....	24
6.04 Owner’s Liability Insurance	26
6.05 Property Insurance	26
6.06 Waiver of Rights	28
6.07 Receipt and Application of Property Insurance Proceeds.....	29
Article 7 – Contractor’s Responsibilities	29
7.01 Supervision and Superintendence	29
7.02 Labor; Working Hours.....	30
7.03 Services, Materials, and Equipment.....	30
7.04 “Or Equals”	30
7.05 Substitutes.....	31
7.06 Concerning Subcontractors, Suppliers, and Others	33
7.07 Patent Fees and Royalties	34
7.08 Permits	35
7.09 Taxes.....	35
7.10 Laws and Regulations.....	35
7.11 Record Documents	36
7.12 Safety and Protection.....	36
7.13 Safety Representative.....	37
7.14 Hazard Communication Programs	37
7.15 Emergencies.....	37
7.16 Shop Drawings, Samples, and Other Submittals.....	37
7.17 Contractor’s General Warranty and Guarantee	39
7.18 Indemnification.....	40
7.19 Delegation of Professional Design Services.....	41
Article 8 – Other Work at the Site	41
8.01 Other Work	41
8.02 Coordination	42
8.03 Legal Relationships	42
Article 9 – Owner’s Responsibilities	43
9.01 Communications to Contractor.....	43
9.02 Replacement of Engineer	43
9.03 Furnish Data	43

9.04	Pay When Due.....	43
9.05	Lands and Easements; Reports, Tests, and Drawings.....	43
9.06	Insurance.....	44
9.07	Change Orders	44
9.08	Inspections, Tests, and Approvals	44
9.09	Limitations on Owner's Responsibilities	44
9.10	Undisclosed Hazardous Environmental Condition.....	44
9.11	Evidence of Financial Arrangements.....	44
9.12	Safety Programs	44
Article 10 – Engineer's Status During Construction.....		44
10.01	Owner's Representative.....	44
10.02	Visits to Site	44
10.03	Project Representative.....	45
10.04	Rejecting Defective Work.....	45
10.05	Shop Drawings, Change Orders and Payments.....	45
10.06	Determinations for Unit Price Work	45
10.07	Decisions on Requirements of Contract Documents and Acceptability of Work	45
10.08	Limitations on Engineer's Authority and Responsibilities.....	45
10.09	Compliance with Safety Program	46
Article 11 – Amending the Contract Documents; Changes in the Work		46
11.01	Amending and Supplementing Contract Documents.....	46
11.02	Owner-Authorized Changes in the Work	47
11.03	Unauthorized Changes in the Work	47
11.04	Change of Contract Price.....	47
11.05	Change of Contract Times	48
11.06	Change Proposals	48
11.07	Execution of Change Orders.....	49
11.08	Notification to Surety.....	50
Article 12 – Claims		50
12.01	Claims	50
Article 13 – Cost of the Work; Allowances; Unit Price Work.....		51
13.01	Cost of the Work	51
13.02	Allowances	53
13.03	Unit Price Work.....	54
Article 14 – Tests and Inspections; Correction, Removal or Acceptance of Defective Work.....		55

14.01	Access to Work.....	55
14.02	Tests, Inspections, and Approvals	55
14.03	Defective Work	56
14.04	Acceptance of Defective Work	56
14.05	Uncovering Work	56
14.06	Owner May Stop the Work.....	57
14.07	Owner May Correct Defective Work.....	57
Article 15 – Payments to Contractor; Set-Offs; Completion; Correction Period.....		58
15.01	Progress Payments	58
15.02	Contractor's Warranty of Title	61
15.03	Substantial Completion	61
15.04	Partial Use or Occupancy	62
15.05	Final Inspection.....	62
15.06	Final Payment.....	62
15.07	Waiver of Claims.....	64
15.08	Correction Period.....	64
Article 16 – Suspension of Work and Termination		65
16.01	Owner May Suspend Work	65
16.02	Owner May Terminate for Cause	65
16.03	Owner May Terminate For Convenience.....	66
16.04	Contractor May Stop Work or Terminate.....	66
Article 17 – Final Resolution of Disputes.....		67
17.01	Methods and Procedures	67
Article 18 – Miscellaneous.....		67
18.01	Giving Notice	67
18.02	Computation of Times.....	67
18.03	Cumulative Remedies.....	67
18.04	Limitation of Damages	68
18.05	No Waiver.....	68
18.06	Survival of Obligations	68
18.07	Controlling Law	68
18.08	Headings	68

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.

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00800 - SUPPLEMENTARY CONDITIONS

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

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

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE SC-1 – CITY OF RIVERVIEW GENERAL CONDITIONS FOR BIDDERS

The City of Riverview General Conditions for Bidders, attached (Section 00800.A), supersedes all applicable Standard General Conditions and other provisions of the Contract Documents.

ARTICLE SC-2 – CITY OF RIVERVIEW ETHICS ORDINANCE

Contractor must comply with the City of Riverview Ethics Ordinance, attached (Section 00800-B and C). Bidders shall submit a completed Bidder's Certificate of Compliance with City of Riverview Ethics Ordinance, included as a Supplement to Bid Form.

ARTICLE SC-3 – RIVERVIEW LAND PRESERVE OPERATIONS PROCEDURES

The Riverview Land Preserve Comprehensive Operations Plan and the Riverview Integrated Contingency Plan contain provisions regarding the operations of the landfill, working with the waste materials, management of landfill gases and odors, management of leachate, the prevention of spills and other releases, and various other requirements. The requirements placed on the Owner through those plans are part of the Contractor's obligation in fulfilling this Contract. The Contractor shall comply with all requirements in the Plans and assist the Owner and Engineer in preparing any required documentation. The Plans are incorporated by reference in this Contract.

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

SC-5.03 Subsurface and Physical Conditions

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

- A. The following reports of subsurface conditions at or adjacent to the Site are known to Owner:
 - 1. Riverview Land Preserve Vertical Expansion, dated December 2003, revision 3 March 2004, prepared by Shaw Environmental, Inc.

2. Riverview Land Preserve Comprehensive Operations Plan, dated September 2015, prepared by Cornerstone Environmental Group, LLC
 3. Cell 6 Construction Documentation Report, Riverview Land Preserve, dated November 2010, prepared by Cornerstone Environmental Group, LLC
 4. Cell 5 Construction Documentation Report, Riverview Land Preserve, prepared February 22, 2007 and revised June 15, 2007, prepared by Cornerstone Environmental Group, LLC
 5. Operations and Maintenance Manual, Leachate Operations Plan (system as-built drawings), 2007, prepared by Cornerstone Environmental Group, LLC
 6. Michigan Department of Environmental Quality, Solid Waste Area Construction Permit #4060, issued April 8, 2004
 7. Michigan Department of Environmental Quality, Solid Waste Area Operating License #9600, issued May 7, 2020
 8. Riverview Land Preserve Operations and Maintenance Manual, Leachate Operations Plan, dated June, 2018 prepared by Cornerstone Environmental Group, LLC
 9. Riverview Land Preserve Hydrogeological Monitoring Plan, dated February 2007, prepared by Cornerstone Environmental Group, LLC
 10. Downriver Utility Wastewater Authority (DUWA) Industrial Wastewater Discharge Permit D-10804 issued January 20, 2020
 11. Various as-built plans, monitoring reports, laboratory analytical data and other records maintained as part of the routine operation and monitoring of the landfill.
- D. Contractor may examine copies of reports and drawings identified in SC 5.03.C and SC 5.03.A that were not included with the Bidding Documents at the Riverview Land Preserve during regular business hours, or may request copies from Engineer.
- E. Reliance by Contractor on Technical Data Authorized:
- Contractor may rely upon the accuracy of the Technical Data contained in such reports and drawings, but such reports and drawings are not Contract Documents. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

SC-5.06 Add the following subparagraphs 5.06.A.1 and 5.06.A.2:

1. The following reports regarding Hazardous Environmental Conditions at the Site are known to Owner:
 - a. Riverview Land Preserve Vertical Expansion, dated December 2003, revision 3 March 2004, prepared by Shaw Environmental, Inc.
 - b. Riverview Land Preserve Comprehensive Operations Plan, revised September 2018, prepared by Cornerstone Environmental Group, LLC
 - c. Operations and Maintenance Manual, Leachate Operations Plan (system as-built drawings), 2018 prepared by Cornerstone Environmental Group, LLC
 - d. Riverview Land Preserve Operations and Maintenance Manual, Leachate Operations Plan, dated June, 2018 prepared by Cornerstone Environmental Group, LLC
2. All of the information in such drawings constitutes Technical Data on whose accuracy Contractor may rely.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.02 Insurance—General Provisions

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

1. Insurance shall be provided which meets the minimum requirements of the City of Riverview Insurance Requirements which is attached (Section 00800.D) to the Supplementary Conditions.

ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES

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

1. Regular working hours will be Monday through Friday, 7:00am to 4:30pm and Saturday 7:00am to 11:30am.
2. Owner's legal holidays are New Years' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas.
3. Work may be conducted outside of these regular working hours with prearrangement with the Owner and the Owner's Representative.

ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION

SC-10.03 Project Representative

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

- B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.
 1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and

approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.
3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
4. Liaison:
 - a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
6. Shop Drawings and Samples:
 - a. Record date of receipt of Samples and Contractor-approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
 - c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.
7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
8. Review of Work and Rejection of Defective Work:
 - a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the

requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

9. Inspections, Tests, and System Start-ups:

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

10. Records:

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

11. Reports:

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

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

13. Completion:

- a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.

- b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
 - c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.
- C. The RPR shall not:
 - 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
 - 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
 - 3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
 - 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.
 - 5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
 - 6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
 - 7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
 - 8. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

SC-17.02 Arbitration

- A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the rules of American Arbitration Association (with a single arbitrator), subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question

would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.

- C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.
- D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.
- E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

SC-17.03 Add the following new paragraph immediately after Paragraph 17.02. *[Note: If there is no Paragraph 17.02, because neither arbitration nor any other dispute resolution process has been specified here in the Supplementary Conditions, then revise this to state "Add the following new paragraph immediately after Paragraph 17.01" and revise the numbering accordingly.]*

SC-17.03 Attorneys' Fees: For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

Additional Attachments:

The below listed documents are to be reviewed and submitted by the CONTRACTOR:

Section 00800.E - Taxpayer Identification and Questionnaire

Section 00800.F – Contractors Lien Waiver and Release



**CITY OF RIVERVIEW
SECTION 00800.A - GENERAL CONDITIONS FOR BIDDERS
CONSTRUCTION**

ACCEPTANCE OF BIDS: The City of Riverview reserves the right to reject any and all bids, to waive any informal technicalities or defects, the scope and nature of which it shall be the sole judge, in any bid, insofar as such technicality or defects do not legally, materially or substantially change such bid. The said City, unless otherwise specified by the contractor, reserves the right to accept any item on bid.

If the contractor fails to state the time within which a bid must be accepted, it is understood and agreed that said City shall have ninety (90) days from bid opening date in which to accept bid.

ERROR IN BID: In case of error in the extension of prices in the bid, the unit price will govern. No bid shall be altered, amended or withdrawn, unless the acceptance date has expired, after the opening date of bids. Negligence on the part of the contractor in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

SAMPLES OF MATERIALS: Samples of items, when requested, must be furnished free of expense to the City, at the time bids are opened or later if such are called for after the bids have been opened, and if such samples are not destroyed in the process of sampling, they will be returned at the contractor's expense.

SIGNATURES ON BIDS: Each bid must contain the full name and business address of the contractor, any person signing a bid sheet for their self or as agent, employee or officer of another must show their title and, if requested by the City shall furnish proof of their authority to make such bid. Any person signing said bid shall do so in their own handwriting.

ALTERNATE BIDS: Alternate bids will be considered providing such items which appear on such bids meet specifications. Where equivalent items are bid upon, said City reserves the sole right in determining whether they meet specifications.

BID SHEETS: Service providers shall use the bid sheet furnished with these conditions when submitting their quotations. Failure to submit this sheet as required shall render the bid informal. Bid sheets must contain prices on per unit and aggregate basis and the total amount of the bid must be stated on the bid sheet.

FEDERAL OR STATE SALES, EXCISE OR USE TAXES: The City of Riverview is exempt from State and Federal taxes. However, any materials purchased by a contractor to be used in the construction, alteration, repair, or improvement of property owned by the city is taxable to the contractor. Construction contracts will be construed to include all applicable taxes and the City will not be responsible for any sales or use taxes unless the contract specifies otherwise.

INITIATION OF CONSTRUCTION: The number of calendar days in which construction will be started after contract is executed and purchase order is placed shall be stated in the bid. When no time frame is stated by the contractor, it is understood and agreed that construction is to be started within fifteen (15) days after receipt of order, unless otherwise stated in the specifications.

COMPLIANCE: Contractor shall abide by all federal, state and local laws and statutes.

SPECIFICATIONS: It is understood that reference to attached specifications shall be sufficient to make the terms of such specifications binding on the contractor. In some instances, the name of a manufacturer, a special brand, or make of an item is used in describing the item(s) desired. This does not restrict the contractor to that manufacturer or specific article but is simply used to indicate the character or quality of the article(s) or service desired. Articles or services on which the bids are submitted must be equal to that specified, and a statement to that effect shall be made a part of such bid.

Where conflict occurs between the requirements of the General Conditions and the requirements of the Specifications, the requirements of the Specifications will govern.

INSPECTION: Final inspection and acceptance or rejection will be made at the time of service, but all products and workmanship shall be subject to inspection and test at all times and places. The right is reserved to reject articles which contain defective material and workmanship. Rejected materials shall be removed by and at the expense of the service provider promptly after notification of rejection. The City shall not be obligated to pay the full price for any items that do not meet specifications; however, payment maybe made at a proper reduction in price.

BID OPENING: Bids may be mailed or delivered to the City Clerk of the City of Riverview, Michigan. All bids will be opened and publicly read at a time specified in the request for bid. Bids received after the specified time for opening, as shown on the request for bid will not be accepted.

CANCELLATION: The City reserves the right to cancel an accepted bid or contract in whole or in part due to nonperformance or defective product(s).

BOND REQUIREMENTS: The City reserves the right to request, where applicable, performance bonds, material and/or labor bonds in the amount of the bid.

Proposer shall furnish performance and payment Bonds, each in an amount at least equal to the contract price as security for the faithful performance and payment of a proposer's obligations under the contract documents. These Bonds shall remain in effect at least until one (1) year after the date of final payment, except as otherwise provided by Laws and Regulations or as specified in the Bond. Proposer shall also furnish such other Bonds as are required by the bid documents. All bonds shall be in the forms prescribed by the bidding documents and be executed by such Sureties a (i) are licensed to conduct business in the state where the service is provided, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U. S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the authority to act.

If the Surety on any bond furnished by the proposer is declared as bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the service is located or it ceases to meet requirements of clauses (i) and (ii) in the previous paragraph, proposer shall within five (5) days thereafter substitute another bond and Surety, both of which shall be acceptable to the City of Riverview.

PERMIT REQUIREMENTS: Successful proposer will be responsible for securing any necessary permits for complying with all required inspections where local, state or federal.

MULTI-YEAR CONTRACTS: The City reserves the right to terminate multi-year contracts due to non-appropriation of funds.

FINANCIAL STATEMENTS: Financial Statements will be submitted upon request to be held in confidence and to be returned upon the completion of the contract.

TERM OF PAYMENT: Payment will be made in full after the satisfactory completion of the service. Executed contracts must specifically state if there is to be any partial payment or other deviation from this method of payment.

OWNERSHIP: The City of Riverview is the owner of all work and related documentation done on behalf of the City unless otherwise agreed to in writing. All work and related documentation shall be promptly turned over to the City upon request. This requirement shall survive the termination of the agreement between the parties, and is enforceable by injunction action if necessary, in which case the service provider shall be liable for the City's actual legal fees and costs.

NONASSIGNABILITY: Neither this agreement nor any part of it shall be assigned by either party without the prior written consent of the other party. The consent shall not be unreasonably withheld.

If subcontractors are to be utilized in this agreement, consent must be granted prior to bid award. Any subcontractor must be listed in the bid response.

**ARTICLE II.
OFFICERS AND EMPLOYEES**

**DIVISION 3
SECTION 00800B - PUBLIC ETHICS**

Sections 2-71 – 2-78. OFFICERS AND EMPLOYEES; PUBLIC ETHICS

Sec. 2-71 Violation; result.

Violation of this division by the city manager, or an officer or employee may result in disciplinary action, up to and including discharge, in accordance with city policies, applicable collective bargaining agreements, and employment contracts. Violation of this division by an elected official may result in censuring by unanimous vote of the remaining members of the city council. (Code 1978, 2-46 (d))

Sec. 2-72. Compliance with other requirements.

Compliance with other ordinances, policies and/or statements concerning ethics, including section XIII of the purchasing manual concerning ethics also is required. (Code 1978, 1-6.1 (i))

Sec. 2-73. Ethical standards generally.

All elected officials, the city manager, and officers and employees of the city shall fulfill their duties with the utmost attention to serving the best interests of the citizens of the city. (Code 1978, 1-6.1 (a))

Sec. 2-74. Certain decisions or transactions prohibited.

An elected official, the city manager, or an officer or employee may not participate in a decision or transaction on behalf of the city which would result in direct financial benefit to the official, the city manager or the officer or employee. (Code 1978, 1-6.1 (b))

Sec. 2-75. Conflict of interest; conflicting employment.

If an elected official, the city manager, or an officer or employee believes that he or she may be placed in a potential conflict of interest in violation of this division, that individual shall immediately provide written notification to the city council, (if an elected official or the city manager, or to his or her immediate supervisor, if an officer or employee.) An elected official, the city manager, and/or an officer or employee shall not accept employment that conflicts with performance of his or her duties with the city. (Code 1978, 1-6.1 (c))

Sec. 2-76. Solicitation and/or acceptance of items without reimbursement prohibited; violations; result; campaign contributions excluded.

Elected officials, the city manager, officers and employees may not solicit or accept any gifts, favors, gratuities, or special consideration from anyone currently doing business with the city, seeking to do business with the city, who may currently be negotiating to do business with the city in the future, or who otherwise is or may seek any action or approval by the city, unless specifically allowed by city policy. Specifically, elected officials, the city manager, officers and employees may not solicit or accept, without reimbursement; meals, sporting event tickets, social amenities, or attendance at any event with any organization that does business or seeks to do business with the city, unless specifically sanctioned as a city-sponsored event. A city-sponsored event is one which is sanctioned by recognition by the city council as an event that promotes a policy position of the city. Specifically excluded from this ordinance are contributions to a candidate's campaign committee which are reported in accordance with state law. (Code 1978, 1-6.1 (e))

Sec. 2-77. Acceptance of certain souvenirs permitted.

Nothing in this division shall prohibit the acceptance of a souvenir, i.e., an item bearing some identification or logo of an individual, company, or other entity, if the souvenir involves normal sales, promotion, advertising or publicity and the case of the souvenir does not exceed \$10.00. (Code 1978, 1-6.1 (f))

Sec. 2-78. Certification of compliance required; failure to comply; result

All professional service contracts awarded by the city must include an annual certification of compliance with this division. All bid solicitations by the city requiring written quotations or formal bid procedures shall require a certification from the bidder that said bidder did not offer or deliver any gift, favors, gratuities, or other special consideration to any elected official, the city manager or an officer or employee of the city and that it has otherwise fully complied with this division. Failure of a bidder to comply with this division may result in debarment or termination of a pending or existing contract by the city council. (Code 1978, 1-6.1 (g))

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 00800.C – INSURANCE REQUIREMENTS

CITY OF RIVERVIEW
INSURANCE REQUIREMENTS

The contractor, and any and all of their subcontractors, shall not commence work under this contract until they have obtained the insurance required under this paragraph. All coverage shall be with insurance companies licensed and admitted to do business in the State of Michigan. All coverage's shall be with insurance carriers acceptable to the city of Riverview.

1. **Workers' Compensation Insurance:** The Contractor shall procure and maintain during the life of this contract, Workers' Compensation Insurance, including Employers' Liability Coverage, in accordance with all applicable statutes of the State of Michigan.

2. **Commercial General Liability Insurance:** The Contractor shall procure and maintain during the life of this contract, Commercial General Liability Insurance on an "Occurrence Basis" with limits of liability not less than \$3,000,000.00 per occurrence and aggregate combined single limit, Personal Injury, Bodily Injury, and Property Damage. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractors Coverage; (D) Broad Form General Liability Extensions or equivalent; (E) Deletion of all Explosion, Collapse, and Underground (XCU) Exclusions, if applicable.

3. **Motor Vehicle Liability:** The Contractor shall procure and maintain during the life of this contract Motor Vehicle Liability Insurance, including Michigan No-Fault Coverage's, with limits of liability not less than \$3,000,000.00 per occurrence combined single limit, Bodily Injury, and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and all hired vehicles.

4. **Additional Insured:** Commercial General Liability and Motor Vehicle Liability Insurance, as described above, shall include an endorsement stating that the following shall be ***Additional Insured's***: The City of Riverview, all elected and appointed officials, all employees and volunteers, agents, all boards, commissions, and/or authorities and board members, including employees and volunteers thereof along with City Engineer, Wayne County, and the State of Michigan where applicable.

5. **Cancellation Notice:** Workers' Compensation Insurance, Commercial General Liability Insurance, and Motor Vehicle Liability Insurance, as described above, shall include an endorsement stating the following: "It is understood and agreed that Thirty (30) days Advance Written Notice of Cancellation, Non-Renewal, Reduction, and/or Material Change shall be sent to: John Hajkus, City of Riverview, 14100 Civic Park Drive, Riverview, MI 48193.

6. **Owners' and Contractors' Protective Liability:** The Contractor shall procure and maintain during the life of this contract, a separate Owners' and Contractors' Protective Liability Policy with limits of liability not less than \$3,000,000.00 per occurrence and aggregate combined single limit, Personal Injury, Bodily Injury, and Property Damage. The City of Riverview shall be "Named Insured" on said coverage. Thirty (30) days Notice of Cancellation shall apply to this policy.

7. Proof of Insurance Coverage: The Contractor shall provide the City of Riverview at the time that the contracts are returned by him/her for execution, certificates and policies as listed below with the City of Riverview as a named insured:

- a. Two (2) copies of Certificate of Insurance for Workers' Compensation Insurance;
- b. Two (2) copies of Certificate of Insurance for Commercial General Liability Insurance;
- c. Two (2) copies of Certificate of Insurance for Vehicle Liability Insurance;
- d. Original Policy, or original Binder pending issuance of policy, for Owners' & Contractors' Protective Liability Insurance.
- e. If so requested, Certified Copies of all policies mentioned above will be furnished.

8. If any of the above coverage's expire during the term of this contract, the Contractor shall deliver renewal certificates and/or policies to City of Riverview at least ten (10) days prior to the expiration date.

NOTE #1: Items 6 and 7 d are intended primarily (but not exclusively, as indicated in this manual) for construction type contracts, such as road work, sewer work, and building projects.

NOTE #2: For Builders' Risk or Professional Liability services, contact your MMRMA representative.

NOTE #3: In the event that the Contractor cannot provide coverage limits as required, a minimum limit of \$1,000,000.00 per occurrence, \$2,000,000.00 aggregate, with umbrella coverage of \$3,000,000.00 minimum.

NOTE#4: Contractor shall be responsible for any deductible or self insured retention.

CITY OF RIVERVIEW

**SECTION 00800.D - BIDDER CERTIFICATE OF COMPLIANCE WITH
SECTION 2-71 – 2-78 OF THE CITY CODE – OFFICERS AND EMPLOYEES; PUBLIC ETHICS**

CERTIFICATION

I, _____ hereby certify that neither I, nor anyone associated with
_____, of whom I have knowledge, has offered or delivered any gifts, favors, gratuities
or special consideration to an elected official of the City, the City Manager, City Officials or employees.

I further certify that I have received a copy of and have read the above – entitled section of the Riverview City
Code and I understand it and agree to fully abide by its provisions. I further am aware that failure of a bidder to
comply with this Ordinance may result in debarment or termination of a pending or existing contract by the City
Council.

Name of Business

Nature of Business and/or Bid Solicitation

(Date)

(Signature)

(Please Print)

SECTION 00800.E
IDENTIFICATION OF FORM 1099 VENDORS
QUESTIONNAIRE FOR ALL CONTRACTORS

VENDOR NAME: _____
(Same as on W-9) (Provide COMPLETE name)

ADDRESS: _____

CITY, STATE AND ZIP CODE: _____

**TELEPHONE
NUMBER:** _____

***** TAXPAYER IDENTIFICATION NUMBER (TIN):** _____

***** or EMPLOYER IDENTIFICATION NUMBER (EIN):** _____

***** or SOCIAL SECURITY NUMBER (SSN):** _____

1. SERVICE PROVIDER? _____ **YES** _____ **NO**

Definition of Service-Includes, but is not limited to: Training; Instructors; Appraisal Services; Rental of Space; Equipment; Parking Spaces; Expenses commingled with fees and commissions; Architectural and Engineering Services; Moving Services; Courier Services; News Clipping Services; Security and Guard Services; Maintenance Services for Building and Equipment; including ADP; Cleaning Services for Drapes, Carpet, Furniture; Vehicle Repairs; Trash and Snow Removal; Copy or Printing Services; Equipment Rental or Leases; Construction Services; Seizure Expenses (Towing, Storage, Locksmith, Appraisals, Auctioneering, Title Search); Court Reporters; Video Preparation; Repairs to Equipment; Purchase and Maintenance of Equipment; Telephone Answering.

The List above applies even when the service mentioned is only a part, even secondary part of the contract/order.

If NO--Form 1099 does not apply.

If YES-- Continue:

2. HEALTH SERVICE PROVIDER? _____ **YES** _____ **NO**

If YES - Form 1099 applies. Indicate on the contract/order, 1099 required. Also state the Employer Identification Number (EIN) or Social Security Number (SSN) on contract/order.

If NO - Continue:

3. IS THE CONTRACTOR A CORPORATION? _____ **YES** _____ **NO**

If YES - Form 1099 does not apply (except for health service corporations). However, you should confirm corporate status.

If NO - Form 1099 applies. Indicate on contract/order, 1099 required. Also state the Employer Identification Number (EIN) or the Social Security Number (SSN) on the contract/order.

***** Required Information**

Request for Taxpayer Identification Number and Certification

Give Form to the
requester. Do not
send to the IRS.

Print or type See Specific Instructions on page 2.	1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.	
	2 Business name/disregarded entity name, if different from above	
	3 Check appropriate box for federal tax classification; check only one of the following seven boxes: <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner. <input type="checkbox"/> Other (see instructions) ▶ _____	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <i>(Applies to accounts maintained outside the U.S.)</i>
	5 Address (number, street, and apt. or suite no.)	Requester's name and address (optional)
	6 City, state, and ZIP code	
7 List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number									
				-				-	
or									
Employer identification number									
				-					

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here	Signature of U.S. person ▶	Date ▶
------------------	-------------------------------	--------

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at www.irs.gov/fw9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)

- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding? on page 2.

By signing the filled-out form, you:

- Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
- Certify that you are not subject to backup withholding, or
- Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
- Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

Note. If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States:

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),

3. The IRS tells the requester that you furnished an incorrect TIN,

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code* on page 3 and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships* above.

What is FATCA reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code* on page 3 and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account, list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note. ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C Corporation, or S Corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box in line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box in line 3.

Limited Liability Company (LLC). If the name on line 1 is an LLC treated as a partnership for U.S. federal tax purposes, check the "Limited Liability Company" box and enter "P" in the space provided. If the LLC has filed Form 8832 or 2553 to be taxed as a corporation, check the "Limited Liability Company" box and in the space provided enter "C" for C corporation or "S" for S corporation. If it is a single-member LLC that is a disregarded entity, do not check the "Limited Liability Company" box; instead check the first box in line 3 "Individual/sole proprietor or single-member LLC."

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space in line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2—The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities
- 5—A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
- 8—A real estate investment trust
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940
- 10—A common trust fund operated by a bank under section 584(a)
- 11—A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
- 13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 5 ²
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note. You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on this page), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at www.ssa.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/businesses and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, or 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code* earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor ²
4. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee ¹ The actual owner ¹
5. Sole proprietorship or disregarded entity owned by an individual	The owner ³
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor ⁴
For this type of account:	Give name and EIN of:
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity ⁴
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 2.

***Note.** Grantor also must provide a Form W-9 to trustee of trust.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: spam@uce.gov or contact them at www.ftc.gov/idtheft or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

00800.F - CONTRACTORS LIEN WAIVER AND RELEASE

Project: _____

Upon receipt of the sum of \$ _____, the sufficiency of which is hereby acknowledged, the undersigned Contractor does hereby waive, discharge, and release any and all liens, claims, and rights to liens against _____, ("Owner") and any and all other property owned by or the title to which is in the name of the above-referenced Owner and against any and all funds of the Owner appropriated or available for the construction of said project, and any and all warrants drawn upon or issued against any such funds or monies, which the undersigned Contractor may have or may hereafter acquire or possess as a result of the furnishing of labor, materials, and/or equipment, and the performance of Work by the Contractor on or in connection with said project, whether under and pursuant to the above-mentioned contract between the Contractor and the Owner pertaining to said project.

This Waiver and Release applies to all facts, acts, events, circumstances, changes, constructive or actual delays, accelerations, extra work, disruptions, interference's and the like which have occurred, or may be claimed to have occurred, excepting only any claims currently unresolved for which written notice has been provided to the Owner from the Contractor in accordance with the Contract.

Except as specifically described above, the undersigned expressly waives all claims against the Owner or the Project. The undersigned freely and voluntarily chooses to accept the terms and conditions of this Waiver and Release in return for the payment recited above.

The undersigned further agrees that making and receipt of payment and execution of this Waiver and Release shall in no way release the undersigned from its continuing obligations with respect to the completion of any work remaining undone, punch list work, warranty and guaranty work, and any other obligations of the undersigned to the Owner.

Application and Certification for Payment # _____: \$ _____

In Witness Whereof, on behalf of the undersigned, with full authority, I have executed this waiver and Release under seal effective the _____ day of _____ 20____

CONTRACTOR

STATE OF _____ }

} ss.:

COUNTY OF _____ }

On this the _____ day of _____, 20____, before me, the undersigned, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 01010 - SUMMARY OF WORK

PART 1 GENERAL

1.1 PROJECT INFORMATION

- A. The Riverview Land Preserve (RLP) is located on Grange Road in Riverview, Michigan, Wayne County, ¼ mile north of King Road, between Allen Road and Fort Street. The RLP is presently licensed by the State of Michigan, Department of Environmental Quality (MDEQ) under the provisions of Part 115 of Public Act 451, as a Type II (non-hazardous) waste disposal facility.
- B. The landfill gas produced at the RLP is collected from a series of landfill gas wells and collected in a landfill gas collection and control system (GCCS). The landfill gas is ultimately brought to a power plant owned by Riverview Energy Systems (RES) to make electricity (approximate capacity of 3,200 scfm or 1,600 scfm per turbine). Any surplus gas is destroyed in the existing landfill gas flares.
- C. The Contractor shall provide all materials, equipment, tools, and labor to redrill two (2) and drill eleven (11) new landfill gas wells, install fifteen (15) pumps, and install 8" and 4" lateral piping as directed for 2023 Spring GCCS Construction at the RLP, as shown in the Construction Drawings.

1.2 WORK TO BE DONE

- A. The Contractor shall furnish all material, labor, equipment, and incidentals required to perform the Work under the Contract including, but not limited to the following:
 - 1. Drilling of 36" diameter boreholes for landfill gas well installation.
 - 2. Furnish and install seventeen (17) 8"-11 landfill gas wells, including completion of the wells, perforated and solid piping, stone backfill, bentonite, safety grate and other incidentals as needed.
 - 3. Install 18"-17, 12"-17, 8"-17 and 6"-17 HDPE lateral piping, fitting, flanges and appurtenances as indicated on the Construction Drawings.
 - 4. Salvage 18" and 6" lines as directed on the Construction Drawings.
 - 5. Abandon one (1) horizontal well and six (6) redrilled wells per as indicated on Construction Drawings.
 - 6. Place additional gravel and grade road surfaces to restore driveways and roads if needed.
 - 7. Survey all as-built construction and return survey data to the Owner and Owner Representative.
- B. The Work shall be in accordance with the Drawings and Technical Specifications and addendum (if any).
- C. The Owner has the final determination of the construction material to be used for each well on an individual basis that will best suit the operational plan of the RLP at the time construction.

1.3 WORK BY OWNER

- A. Information or services under the Owner's control will be furnished by the Owner with reasonable promptness to avoid delay in the orderly progress of the Work.

1.4 CONTRACTOR USE OF SITE AND PREMISES

- A. Limit use of site and premises to allow:
 - 1. Owner occupancy.
 - 2. Work by Others and continued operations by Owner.
- B. The Contractor shall confine his materials and their storage, and the operation of his workmen to limits indicated by laws, ordinances permits, directions of the Owner's representative and as shown, and will not unreasonably encumber the premises with such materials, but shall store them in orderly fashion so that they will not interfere with the work under this Contract or other contracts, or with the operation of the Owner's facilities. The Contractor shall not load nor permit any part of the work to be loaded with a weight that will endanger its safety or unduly affect the work or any part thereof. The Contractor shall enforce the instructions of the Owner's representative regarding signs, fires, and smoking.
- C. Contractor staging and material stockpile areas shall be approved by the Owner.
- D. Neither the Contractor nor any of his employees shall park any vehicle anywhere on the site, except at such locations as shown or as specifically approved by the Owner for the purpose.

1.5 OWNER OCCUPANCY

- A. Cooperate with Owner to minimize conflict and to facilitate Owner's activities.
 - 1. The GCCS system is operated by RES to fuel the energy plant located on site. Any disruption to flow shall be coordinated with the Owner and RES to minimize interruption to their operation.
- B. Schedule the Work to accommodate this requirement.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 01025 - MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for measurement and payment for the Work to be done under the respective items listed in the itemized quantity listing for this project.

1.2 GENERAL

- A. The following paragraphs describe measurement of and payment for the Work to be done under the respective items listed in the Bid Form for this Contract.
- B. Each lump sum and unit price stated in the Bid Form shall constitute full compensation for not only all labor, equipment, and materials necessary and required to complete all Work specified under that particular item including cleaning up, but also all costs for doing related Work as set forth in these Specifications and/or on the Drawings or implied in carrying out their intent.
- C. Limits of payment designated on the Drawings shall not be modified without written permission by the OWNER or Engineer.

1.3 COMPUTATION OF QUANTITIES

- A. Measurement of linear items, such as piping, shall be for quantities actually field installed to the specified work limits, based upon surveyed stations recorded along the straight or curved centerline of each respective item.
- B. No partial payments shall be made for items that have not been tested and approved.
- C. The list of Contract Items format is such as to require lump sum bid prices wherever possible to obviate need of precise measurement in the field. Each lump sum item, however, shall be accompanied, where applicable, by a corresponding unit price that may be used in the event of a (necessary) change order. The sum of the totals of the individual item total prices shall equal the total lump sum bid price for each overall item.
- D. No change in unit cost will be allowed for quantities under or over those stated on the Bid Proposal Form. No change in payment limits will be allowed unless agreed to by the OWNER's Engineer.

PART 2 PROCEDURES

All quantities associated with each item in the Bid Proposal Form section are approximate and are to be used for bid purposes only and are not for construction quantities. The exact quantities shall be determined during construction by the methods outlined in each item below.

2.1 CONTRACT ITEMS

- A. Item No. 1.1 – Mobilization / Demobilization
 - 1. The lump sum price for this item shall be payment in full for mobilization and demobilization of all parts, materials, and equipment to the site, as well as any overhead cost associated with the start-up of the Work.
 - 2. Fifty percent of lump sum payment will be paid at mobilization and fifty percent will be paid at demobilization.
- B. Item No. 1.2 – General Conditions
 - 1. The lump sum price for this item shall be payment in full for the Contractor to perform any other Work, including submittals, which is not specified or shown, but which is necessary to complete the Work. Included in this price shall be all supervision, access, site cleaning, site protection and restoration, coordination, permits, licenses, fees, bonds, and general activities.
 - 2. Progress payments will be made based upon percentage of completed construction.
- C. Item No. 2.0 – Drilling 36" Diameter Boreholes
 - 1. The unit price for this item shall be payment in full for labor and equipment required for drilling of boreholes. Contractor shall provide all equipment required to complete the work including construction of benches on side slopes, and transporting the waste material to the landfill's active face. **All heavy equipment operators other than drill rigs shall be active members of Operating Engineers Local 324 or an affiliated union.** Contractor shall provide copies of all drilling logs to the OWNER.
 - 2. Boreholes which cannot be drilled to design depth due to obstruction will be paid for lineal feet of complete drilling based on documented information.
 - 3. Drilling will be measured in linear feet. Measurement will be based upon as-built information provided by contractor and verified by the CQA Monitor.
- D. Item No. 3.1 and 3.2 – 8" HDPE Well Piping
 - 1. The unit price for this item shall be payment in full for provision and installation of well construction materials, including perforated and solid HDPE 8" SDR-11 pipe, stone backfill, bentonite, soil backfill, safety grate, end caps, and other incidentals as needed.

2. Well Installation – Owner reserves the right to select well pipe materials based on site conditions and other factors at the time of installation.
3. Installation of the gas wells shall be measured in linear feet. Measurement will be based upon as-built information and survey provided by contractor and verified by the CQA Monitor.

E. Item No. 3.3 – QED Precision Quick Change Wellhead and Dual Well Cap

1. The unit price for this item shall be payment in full for provision and installation of QED Precision Quick Change Wellheads (ORP215M-R) and QED dual-extraction well caps on all new and redrilled wells.
2. Payment will be made on complete installation as verified by CQA Monitor.

F. HDPE Gas Collection Piping

Item No. 4.1 – 4.6 HDPE Piping

1. The unit price for this item shall be payment in full for installation of 18"-17, 12"-17, 8"-17 and 6"-17 HDPE header/lateral piping. Salvaging of specified lines previously in-place will be included as items 4.5 and 4.6. Header pipes shall be pressure tested prior to installation to verify joint integrity. This price shall include all trenching, grading, bedding, backfill, and restoration of all disturbed surfaces to complete the installation.
2. All risers, fittings and flanges for pipes are considered to be incidental to this bid item.
3. Contractor shall verify grades prior to installation. Minimum of 3% grade shall be provided within the solid waste boundary.
4. Installation of the HDPE lateral piping will be measured in horizontal linear feet along the installation line. Measurement will be based upon as-built and survey information provided by OWNER and the CQA Monitor.

G. No. 5.0 – Well Abandonment

1. The unit price for this item shall be payment in full for materials, equipment and labor to complete well abandonment as directed by the project plans and details.
2. Payment for each item will be made based on verified complete abandonment as verified by the CQA Monitor.

Progress payments will be made based upon percentage of completed construction.

END OF SECTION

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 01300 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Coordination and Project conditions.
- B. Preconstruction meeting.
- C. Site mobilization meeting.
- D. Progress meetings.
- E. Preinstallation meetings.
- F. Closeout meeting.
- G. Alteration procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction.
- B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practical; place runs parallel with lines of building. Use spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.
- E. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion
- F. After Owner's occupancy of premises, coordinate access to Site for correction of defective Work and Work not complying with Contract Documents, to minimize disruption of Owner's activities.

1.3 PRECONSTRUCTION MEETING

- A. Engineer will schedule and preside over meeting after Notice of Award.
- B. Minimum Agenda:
 - 1. Submission of executed bonds and insurance certificates.
 - 2. Distribution of Contract Documents.
 - 3. Submission of list of subcontractors, list of products, schedule of values, and Progress Schedule.
 - 4. Designation of personnel representing parties in Contract, including CQA Consultant and Engineer.
 - 5. Communication procedures.
 - 6. Procedures and processing of requests for interpretations, field decisions, submittals, substitutions, Applications for Payments, proposal requests, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
 - 8. Critical Work sequencing.
- C. Record minutes and distribute copies to participants within 3 days after meeting, including Engineer, Owner, and those affected by decisions made.

1.4 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum two week intervals.
- B. CQA Consultant will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.
- C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Engineer, and CQA Consultant.
- D. Minimum Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems impeding planned progress.
 - 5. Review of submittal schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of Progress Schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on Progress Schedule and coordination.
 - 13. Other business relating to Work.
- E. CQA Consultant: Record minutes and distribute copies to participants within 3 days after meeting.

1.5 PREINSTALLATION MEETINGS

- A. When required in individual Specification Sections, convene preinstallation meetings at Project Site before starting Work of specific Section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific Section.
- C. Notify Engineer 7 days in advance of meeting date.
- D. Prepare agenda and preside over meeting:
 - 1. Review conditions of installation, preparation, and installation procedures.
 - 2. Review coordination with related Work.
- E. Record minutes and distribute copies to participants within 3 days after meeting.

1.6 CLOSEOUT MEETING

- A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.
- B. Attendance Required: Contractor, Construction Manager, major subcontractors, Engineer, Owner, and CQA Consultant.
- C. Notify Engineer 7 days in advance of meeting date.
- D. Minimum Agenda:
 - 1. Start-up of facilities and systems.
 - 2. Operations and maintenance manuals.
 - 3. Testing, adjusting, and balancing.
 - 4. System demonstration and observation.
 - 5. Operation and maintenance instructions for Owner's personnel.
 - 6. Contractor's inspection of Work.
 - 7. Contractor's preparation of an initial "punch list."
 - 8. Procedure to request Engineer inspection to determine date of Substantial Completion.
 - 9. Completion time for correcting deficiencies.
 - 10. Inspections by authorities having jurisdiction.
 - 11. Certificate of Occupancy and transfer of insurance responsibilities.
 - 12. Partial release of retainage.
 - 13. Final cleaning.
 - 14. Preparation for final inspection.
 - 15. Closeout Submittals:
 - a. Project record documents.
 - b. Operating and maintenance documents.
 - c. Operating and maintenance materials.
 - d. Affidavits.
 - 16. Final Application for Payment.
 - 17. Contractor's demobilization of Site.
 - 18. Maintenance.
- E. Record minutes and distribute copies to participants within 3 days after meeting.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 ALTERATION PROCEDURES

- A. Landfill will be operating during progress of construction. Cooperate with Owner in scheduling operations to minimize conflict and to permit continuous usage.
 - 1. Perform Work not to interfere with operations of occupied areas.
 - 2. Keep utility and service outages to a minimum and perform only after written approval of Owner.
 - 3. Clean Owner-occupied areas daily. Clean spillage, overspray, and heavy collection of dust in Owner-occupied areas immediately.
- B. Comply with Section 017000 - Execution and Closeout Requirements
- C. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- D. Remove debris and abandoned items from area and from concealed spaces.
- E. Prepare surface and remove surface finishes to permit installation of new Work and finishes.
- F. Finish surfaces as specified in individual product Sections.

END OF SECTION

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 01330 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Definitions.
- B. Submittal procedures.
- C. Construction progress schedules.
- D. Proposed product list.
- E. Product data.
- F. Use of electronic CAD files of Project Drawings.
- G. Shop Drawings.
- H. Samples.
- I. Other submittals.
- J. Design data.
- K. Test reports.
- L. Certificates.
- M. Manufacturer's instructions.
- N. Manufacturer's field reports.
- O. Erection Drawings.
- P. Construction photographs.
- Q. Contractor review.
- R. Architect/Engineer review.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.

- B. Informational Submittals: Written and graphic information and physical Samples that do not require responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal with transmittal letter.
- B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- C. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.
- D. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite Project. Coordinate submission of related items.
- F. For each submittal for review, allow 14 days excluding delivery time to and from Contractor.
- G. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
- H. Allow space on submittals for Contractor and Engineer review stamps.
- I. When revised for resubmission, identify changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- K. Submittals not requested will not be recognized nor processed.
- L. Incomplete Submittals: Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Engineer.

1.4 PROPOSED PRODUCT LIST

- A. Within 14 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.5 PRODUCT DATA

- A. Product Data: Action Submittal: Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Submit number of copies Contractor requires, plus two copies Engineer will retain.
- C. Electronic submittals as PDF electronic files may be discussed as an option
- D. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.6 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

- A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.
- B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
 - 1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Architect/Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
 - 2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
 - 3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
 - 4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
 - 5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
 - 6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

1.7 SHOP DRAWINGS

- A. Shop Drawings: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
 - 1. Include signed and sealed calculations to support design.
 - 2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 - 3. Make revisions and provide additional information when required by authorities having jurisdiction.

1.8 SAMPLES

- A. Samples: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Samples for Selection as Specified in Product Sections:
 - 1. Submit to Engineer for aesthetic, color, and finish selection.
 - 2. Submit Samples of finishes, textures, and patterns for Architect/Engineer selection.
- C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
- D. Include identification on each Sample, with full Project information.
- E. Submit number of Samples specified in individual Specification Sections; Engineer will retain one Sample.
- F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.
- G. Samples will not be used for testing purposes unless specifically stated in Specification Section.
- H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.9 OTHER SUBMITTALS

- A. Closeout Submittals: Comply with Section 017000 - Execution and Closeout Requirements.

- B. Informational Submittal: Submit data for Engineer's knowledge as Contract administrator or for Owner.
- C. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.10 TEST REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.11 CERTIFICATES

- A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

1.12 MANUFACTURER'S INSTRUCTIONS

- A. Informational Submittal: Submit manufacturer's installation instructions for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to Engineer in quantities specified for Product Data.
- C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.13 MANUFACTURER'S FIELD REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.14 CONSTRUCTION PHOTOGRAPHS

- A. Provide photographs of site and construction throughout progress of Work
- B. Photographs are to be taken on daily basis as work proceeds.
- C. Identify each image date and time of view

- D. Digital Images: Deliver complete set of digital image electronic files on CD-ROM to Owner with Project record documents. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as sensor, uncropped.

1.15 CONTRACTOR REVIEW

- A. Review for compliance with Contract Documents and approve submittals before transmitting to Engineer.
- B. Contractor: Responsible for:
 - 1. Determination and verification of materials including manufacturer's catalog numbers.
 - 2. Determination and verification of field measurements and field construction criteria.
 - 3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
 - 4. Determination of accuracy and completeness of dimensions and quantities.
 - 5. Confirmation and coordination of dimensions and field conditions at Site.
 - 6. Construction means, techniques, sequences, and procedures.
 - 7. Safety precautions.
 - 8. Coordination and performance of Work of all trades.
- C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
- D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Architect/Engineer.

1.16 ENGINEER REVIEW

- A. Do not make "mass submittals" to Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 15 or more submittals or items in one week. If "mass submittals" are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review "mass submittals" based on priority determined by Engineer after consultation with Owner.
- B. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.
- C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.
- D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 01600 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.

PART 2 PRODUCTS

2.2 GENERAL

- A. At minimum, comply with specified requirements and reference standards.
- B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.

2.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

2.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products according to manufacturer's instructions.
- B. Store products with seals and labels intact and legible.
- C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.

- D. For exterior storage of fabricated products, place products on sloped supports aboveground.
- E. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- F. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- G. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.
- H. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

PART 3 EXECUTION

Not Used

END OF SECTION

RIVERVIEW LAND PRESERVE
2023 SPRING GCCS CONSTRUCTION

SECTION 01700 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Field engineering.
- B. Closeout procedures.
- C. Project record documents.
- D. Product warranties and product bonds.
- E. Maintenance service.
- F. Examination.
- G. Preparation.
- H. Execution.
- I. Protecting installed construction.
- J. Final cleaning.

1.2 FIELD ENGINEERING

- A. Employ land surveyor registered in State of Michigan.
- B. Owner will locate and Contractor shall locate and protect survey control and reference points. Promptly notify Engineer of discrepancies discovered.
- C. Control datum for survey NAD 83.
- D. Verify setbacks and easements; confirm Drawing dimensions and elevations.
- E. Provide field engineering services. Establish elevations, lines, and levels using recognized engineering survey practices.
- F. Submit copy of site drawing signed by land surveyor certifying elevations and locations of the Work are in conformance with Contract Documents.
- G. Maintain complete and accurate log of control and survey Work as Work progresses.
- H. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.

- I. Promptly report to Architect/Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.
- J. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect/Engineer.

1.3 CLOSEOUT PROCEDURES

A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:

- 1. Submit maintenance manuals, Project record documents and digital images of construction photographs and other similar final record data in compliance with this Section.
- 2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
- 3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
- 4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
- 5. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
- 6. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
- 7. Perform final cleaning according to this Section.

B. Substantial Completion Inspection:

- 1. When Contractor considers Work to be substantially complete, submit to Engineer:
 - a. Written certificate that Work, or designated portion, is substantially complete.
 - b. List of items to be completed or corrected (initial punch list).
- 2. Within 7 days after receipt of request for Substantial Completion, Engineer will make inspection to determine whether Work or designated portion is substantially complete.
- 3. Should Engineer determine that Work is not substantially complete:
 - a. Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
 - b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer.
 - c. Engineer will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.

4. When Engineer finds that Work is substantially complete, Engineer will:
 - a. Prepare Certificate of Substantial Completion on EJCDC C-625 - Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Engineer and Owner (final punch list).
 - b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
5. After Work is substantially complete, Contractor shall complete Work listed for completion or correction within time period stipulated.

C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.

1. When Contractor considers Work to be complete, submit written certification that:
 - a. Contract Documents have been reviewed.
 - b. Work has been examined for compliance with Contract Documents.
 - c. Work has been completed according to Contract Documents.
 - d. Work is completed and ready for final inspection.
2. Submittals: Submit following:
 - a. Final punch list indicating all items have been completed or corrected.
 - b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
 - d. Accounting statement for final changes to Contract Sum.
 - e. Contractor's affidavit of payment of debts and claims
 - f. Contractor affidavit of release of liens
 - g. Consent of surety to final
3. Perform final cleaning for Contractor-soiled areas according to this Section.

D. Final Completion Inspection:

1. Within 7 days after receipt of request for final inspection, Engineer will make inspection to determine whether Work or designated portion is complete.
2. Should Engineer consider Work to be incomplete or defective:
 - a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
 - b. Contractor shall remedy stated deficiencies and send second written request to Engineer that Work is complete.
 - c. Engineer will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.

1.4 STARTING OF SYSTEMS

- A. Coordinate schedule for startup of various equipment and systems.

- B. Notify Engineer 7 days prior to startup of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.

1.5 PROJECT RECORD DOCUMENTS

- A. Maintain on Site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, product data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates used.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
 - 1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
 - 2. Include locations of concealed elements of the Work.
 - 3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
 - 4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
 - 5. Identify and locate existing buried or concealed items encountered during Project.
 - 6. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

- 7. Field changes of dimension and detail.
- 8. Details not on original Drawings.

1.6 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in by responsible Subcontractors, suppliers, and manufacturers within 10 days after completion of applicable item of Work.
- B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Submit prior to final Application for Payment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.7 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available with correct characteristics and in correct locations.

3.8 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- C. Prohibit traffic from landscaped areas.

3.9 FINAL CLEANING

- A. Execute final cleaning prior to final Project assessment.

- B. Clean Site; sweep paved areas, rake clean landscaped surfaces.
- C. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION

APPENDIX A
CONSTRUCTION QUALITY ASSURANCE PLAN –
REVISED JUNE 2016

Construction Quality Assurance Plan

Riverview Land Preserve

City of Riverview, Wayne County, Michigan

June 2016

Prepared for:



Riverview Land Preserve
20863 Grange Road
Riverview, Michigan 48192



39395 West Twelve Mile Road, Suite 103
Farmington Hills, MI 48331
(877) 633-5520

REPORT CERTIFICATION

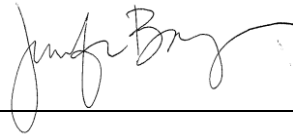
Construction Quality Assurance Plan
Riverview Land Preserve
City of Riverview, Wayne County, Michigan

The material and data in this report were prepared under the supervision and direction of the undersigned.

Cornerstone Environmental Group, LLC



Steven D. Wintheiser
Senior Project Manager



Jennifer E. Bowyer, P.E.
Project Engineer

TABLE OF CONTENTS

REPORT CERTIFICATION	II
LIST OF TABLES, FIGURES AND DRAWINGS	VII
1 INTRODUCTION.....	1
2 RESPONSIBILITY AND AUTHORITY	2
2.1 OWNER.....	2
2.1.1 AUTHORITY	2
2.2 CONSTRUCTION CONTRACTOR.....	2
2.3 DESIGN ENGINEER	3
2.4 CONSTRUCTION QUALITY ASSURANCE CONSULTANT	3
2.5 CONSTRUCTION QUALITY ASSURANCE OFFICER	3
2.6 LAND SURVEYOR	3
2.7 TESTING LABORATORY	4
3 DOCUMENTATION	5
3.1 REPORT FORMS AND RECORD KEEPING DOCUMENTS	6
3.2 PROJECT FORMS	6
3.3 PROBLEM IDENTIFICATION AND CORRECTIVE MEASURE.....	6
3.4 FINAL CONSTRUCTION REPORT.....	7
4 PRECONSTRUCTION MEETING	8
4.1 PRECONSTRUCTION MEETING	8
4.2 WEEKLY PROGRESS MEETINGS	8
4.3 PROBLEM RESOLUTION MEETING.....	9
5 GENERAL EARTHFILL.....	10
5.1 CONSTRUCTION MATERIAL	10
5.2 CONSTRUCTION PLACEMENT AND TESTING	10
6 LANDFILL CELL SUBGRADE	12
6.1 INTRODUCTION	12
6.2 SOIL BARRIER CONFORMATION.....	12
6.2.1 SOIL BORINGS.....	12
6.2.2 GEOPHYSICAL CONFORMATION	13

6.3	POTENTIAL CONFORMATION DIFFICULTIES	13
6.3.1	RECOMPACTION AND RETESTING.....	13
7	COMPACTED SOIL LINERS.....	15
7.1	CONSTRUCTION MATERIALS	15
7.2	CONSTRUCTION PLACEMENT AND TESTING	15
8	COMPACTED SOIL PREPARATION FOR GEOMEMBRANE INSTALLATION	18
9	GEOSYNTHETIC CLAY LINER	19
9.1	MATERIALS	19
9.2	GEOSYNTHETIC CONTRACTOR SUBMITTALS	20
9.3	GCL DELIVERY AND STORAGE	20
9.4	GCL INSTALLATION	21
9.4.1	WEATHER CONDITIONS.....	21
9.4.2	METHOD OF INSTALLATION	21
9.4.3	TEMPORARY ANCHORING	23
9.4.4	PERMANENT ANCHORING	23
9.4.5	REPAIRS.....	23
9.5	GEOMEMBRANE PLACEMENT	24
9.6	GCL ACCEPTANCE	24
10	LLDPE AND HDPE GEOMEMBRANE	25
10.1	MATERIALS	25
10.1.1	RESIN 25	
10.1.2	GEOMEMBRANE.....	26
10.2	GEOSYNTHETICS CONTRACTOR SUBMITTALS.....	32
10.3	GEOMEMBRANE DELIVERY AND STORAGE	32
10.4	GEOMEMBRANE INSTALLATION	33
10.4.1	ANCHOR TRENCH.....	33
10.4.2	WEATHER CONDITIONS.....	33
10.4.3	DEPLOYMENT METHODS	34
10.4.4	PREVENTION OF DAMAGE	34
10.4.5	FIELD PANEL IDENTIFICATION AND DEPLOYMENT.....	35
10.4.6	GEOMEMBRANE PANEL THICKNESS MEASUREMENT	35
10.5	SEAMING SPECIFICATIONS	35
10.5.1	GENERAL PROCEDURES.....	35
10.5.2	TRIAL WELDS	35

10.5.3	SEAMING AND TESTING EQUIPMENT.....	37
10.5.4	SEAM PREPARATION	37
10.5.4.1	Extrusion Welding.....	37
10.5.4.2	Fusion Welding.....	38
10.6	NON-DESTRUCTIVE SEAM TESTING.....	38
10.6.1	AIR PRESSURE TESTING.....	38
10.6.2	VACUUM BOX TESTING.....	39
10.7	DESTRUCTIVE SEAM TESTING	40
10.7.1	SAMPLING	40
10.7.2	TESTING	41
10.8	DEFECTS AND REPAIRS	42
10.9	GEOMEMBRANE ACCEPTANCE	44
11	GEONET, GEOTEXTILE, AND BONDED GEOCOMPOSITE MATERIAL.....	45
11.1	SUBMITTALS	45
11.2	MATERIALS	46
11.2.1	GEONET	46
11.2.2	GEOTEXTILE	46
11.2.3	GEOCOMPOSITE.....	47
11.3	MATERIAL DELIVERY, HANDLING, AND STORAGE	47
11.4	MATERIAL DEPLOYMENT.....	48
11.5	FIELD SEAMS	48
11.6	DEFECTS AND REPAIRS	50
11.7	MATERIAL ACCEPTANCE.....	50
12	DEPLOYMENT AND INSTALLATION OF GEOSYNTHETIC COMPONENTS	52
13	GRANULAR SOILS.....	54
13.1	MATERIALS	54
13.2	CONSTRUCTION METHODS/PLACEMENT	55
13.3	SURVEY.....	55
14	PIPING	56
14.1	PIPE MATERIAL	56
14.2	DELIVERY AND STORAGE	56
14.3	PIPE INSTALLATION	56
14.4	TESTING.....	57
15	PUMPS AND ELECTRICAL	60

15.1	LEACHATE SUMP CERTIFICATION	60
16	GENERAL EARTHFILL LAYER AND VEGETATIVE GROWTH FOR FINAL COVER SYSTEM.....	61
16.1	MATERIALS	61
16.2	CONSTRUCTION METHODS/PLACEMENT	62
16.3	SURVEY.....	62
17	TOPSOIL.....	63
17.1	MATERIALS	63
17.2	TESTING.....	63
17.3	INSTALLATION	64
	LIMITATIONS.....	65

List of Tables, Figures and Drawings

Tables

Table 9.1	Geosynthetic Clay Liner Roll Material Properties
Table 10.1	Geomembrane Resin Requirements
Table 10.2	Smooth High Density Polyethylene (HDPE) Minimum Properties
Table 10.3	Textured High Density Polyethylene (HDPE) Minimum Properties
Table 10.4	Smooth Linear Low Density Polyethylene (LLDPE) Minimum Properties
Table 10.5	Textured Linear Low Density Polyethylene (LLDPE) Minimum Properties
Table 10.6	Seam Sample Requirements
Table 11.1	Geonet Minimum Requirements
Table 11.2	Geotextile Minimum Requirements

Figures

Figure 1	Required Interface Strength for Cap FML/Soil cover Under Saturated Conditions
----------	---

1 INTRODUCTION

This Construction Quality Assurance (CQA) Plan has been prepared for the Riverview Land Preserve (RLP) to meet the requirements of the Michigan Natural Resources and Environmental Protection Act, Public Act 451, Part 115, of 1994, Solid Waste Management (Act 451), and to ensure high quality installation and construction of various landfill components of the liner and final cover systems at the RLP. This CQA Plan establishes a program that will verify that the constructed landfill units are in compliance with all design criteria and specifications in the Engineering Design Report and Contract Plans. This CQA Plan has been developed to supplement the specifications contained in the Engineering Design Report and will be implemented under direction of a CQA Officer who is a registered professional engineer. This CQA Plan addresses all of the following physical components at the Riverview Land Preserve:

- subgrade;
- low-permeability soil liners;
- flexible membrane liners;
- geosynthetic clay liners;
- leachate collection and removal systems;
- final cover systems; and
- dikes.

2 RESPONSIBILITY AND AUTHORITY

This section contains a general description of the responsibility and authority of the parties involved in the project. All parties involved in the construction project shall comply with the responsibilities presented in this section.

2.1 Owner

The City of Riverview is the Landfill Owner. All Contractors are directly responsible to the City of Riverview. The Owner is responsible for awarding bids; coordinating communication for the project; scheduling and coordinating the work; and, the resolution of all CQA issues. The Owner may, for all or for any portion of the work, designate an organization or individual to act as the Owner's Representative. An Owner's Representative is typically a Project/Construction Management Firm or Engineer who would coordinate the Owner's responsibilities.

2.1.1 Authority

The City of Riverview is the facility Owner and has responsibility for design, construction, and operation of the facility. The Owner is responsible for completion of construction and for construction quality control and quality assurance. The City of Riverview has final authority with respect to all phases of construction associated with this project. Each Contractor shall be responsible for the supervision of their employees and the implementation of their own Quality Assurance/Quality Control (QA/QC) program.

2.2 Construction Contractor

This organization can be either one party or several parties. A General Contractor could be hired by the Owner to be responsible for the entire construction project, including hiring and managing subcontractors. If the Owner does not hire a General Contractor to manage the entire project, the construction project will, at a minimum, involve an Earthworks Contractor and a Geosynthetics Contractor.

The Earthworks Contractor is responsible for the proper construction of the earthwork-related portions of the landfill lining and/or final cover system. These tasks could include: site preparation, excavation, pre-processing of soil materials, backfilling, placement and compaction of soil components, grading the site to the plans and specifications, placement of granular materials, protection of the soil components during construction, and placement of vegetative cover.

The Geosynthetics Contractor is contracted directly by the Owner or subcontracted to the General Contractor to install the geosynthetic materials specified in the approved engineering plans and specifications. The geosynthetic materials can include geomembranes for waste containment; geosynthetic clay liners for waste containment;

geotextiles for isolating different materials or for filtering; and geonets for drainage. The Geosynthetics Contractor is responsible for supplying all materials, labor and equipment needed to install the geosynthetic materials that meet the project specifications.

2.3 Design Engineer

The Design Engineer is responsible for the project design and will typically prepare the project's engineering/contract plans (plans) and specifications. The design will meet the Owner's operational and performance requirements for the landfill and will comply, at a minimum, with the applicable requirements of Michigan Act 451, Part 115. The Design Engineer is also responsible for review, generation, and approval of all design and/or specification modifications that apply to the design. The Design Engineer reports directly to the Owner.

2.4 Construction Quality Assurance Consultant

The CQA Consultant is responsible for the implementation of the CQA Plan for the construction project. The CQA Consultant will be responsible for construction monitoring to observe compliance with the approved plans and specifications. The CQA Consultant is responsible to observe and document the completion of each component of the construction prior to placement of the subsequent component. The CQA Consultant, at the direction of the Owner, may also be responsible for the soil and/or geosynthetic material sampling and testing required to comply with the CQA Plan. Specific duties of the CQA Consultant include: observation of construction materials, documentation of construction conditions, performance testing in accordance with the project's approved plans and specifications, documenting that the construction is performed in conformance with the approved engineering plans and specifications at the locations observed, preparation of as-constructed record construction documents, and preparation of a report that documents the observations and testing associated with the construction project.

2.5 Construction Quality Assurance Officer

The CQA Officer shall be a Professional Engineer registered in the State of Michigan with experience in civil engineering and construction projects. The CQA Officer is typically an employee of the CQA Consultant. The CQA Officer is responsible for overall coordination of documentation submitted in support of the CQA Plan. The CQA Officer is responsible for implementation of the CQA Plan and certifying that the facility components have been constructed in conformance with the project's approved plans and specifications.

2.6 Land Surveyor

The Surveyor shall be contracted directly by the Owner or subcontracted by the General Contractor to provide equipment and personnel needed to perform surveying activities as required by the construction project.

2.7 Testing Laboratory

The Testing Laboratory is responsible for providing soil and/or geosynthetic testing as required in the project's approved plans and specifications.

3 DOCUMENTATION

The CQA Consultant will prepare a daily written summary report for each day's construction and monitoring activities. The daily summary reports will contain, at a minimum, the following information:

1. Date, project name, location, waste containment unit under construction, personnel involved in major activities and other relevant identification information.
2. Description of weather conditions, including minimum and maximum temperature and precipitation, if any.
3. Summary of all quality assurance tests performed indicating which tests pass and failed. This information may be documented and cross-referenced on additional field forms.
4. Summaries of any meetings held and actions recommended or taken.
5. Specific work units and locations of construction underway during that particular day.
6. Chronological description of work in progress including any notices to or requests from the General Contractor.
7. Description of off-site materials received, including any quality control data provided by the suppliers.
8. Calibrations conducted for field test equipment.
9. Decisions made regarding approval of units of material or work, and/or corrective action to be taken in areas that require rework.
10. Laboratory samples collected, identified, forwarded to the testing laboratory, and identity of the laboratory.
11. A record of communications with other parties on-site, or any other outside parties, including regulatory agencies, regarding the day's construction activities.
12. Results of monitoring activities and data including: material delivery report, geomembrane deployment, trial weld information, geomembrane seaming and repair records, non-destructive seam testing, destructive sample records, soil placement, test pad information, and soil samples/tests taken. This data will be maintained in appropriate forms and will be cross-referenced.

3.1 Report Forms and Record keeping Documents

The CQA Consultant is responsible to prepare all field report forms; checklists and data sheets to substantiate that the required construction monitoring tasks have been implemented. Typically, these report forms and checklists will include: Daily Record keeping Report, Construction Problem Resolution Form, Design and/or Specification Modification/Clarification Form and Photographic Records.

3.2 Project Forms

Construction Contractors will be responsible for submitting certain forms to the Engineer. The following Engineers Joint Contract Documents Committee (EJCDC) documents or Engineer approved equivalent shall be used as indicated for the project:

1. Form EJCDC No. 1910-8-B **Construction Change Authorization** shall be submitted through the Engineer for any change order requests.
2. Form EJCDC No. 1910-8-F **Work Change Directive** shall be submitted through the Engineer for any contract change directives.
3. Form EJCDC No. 1910-8-D **Certificate of Substantial Completion** shall be submitted at the end of the project to determine the commencement of applicable warranties and to allow the owner to utilize the facility.
4. Form EJCDC No. 1910-8-E **Application for Payment** shall be used for payment application.

3.3 Problem Identification and Corrective Measure

A problem is defined as material or workmanship that does not meet the requirements of the approved engineering plans, specifications or the CQA Plan, or any obvious defect in material or workmanship, even if there is conformance with the plans and specifications. The Michigan Department of Environmental Quality (MDEQ) shall be notified if corrective measures deviate from approved construction plans. The term MDEQ shall be synonymous for the Michigan Department of Environmental Quality or whatever agency is designated by the State of Michigan to implement Act 451.

At a minimum, problem identification and corrective measure reports shall include the following information:

1. Introduction of the problem.
2. A description of the problem or deficiency, including additional sketches or photographs, if available, to adequately describe the problem.

3. A discussion of the probable cause of the problem or deficiency.
4. Reference to any test results or retests performed.
5. Detailed description of how and when the problem was identified.
6. Detailed description of measures implemented to resolve the problem and prevent recurrence.

3.4 Final Construction Report

Upon completion of the construction project, the CQA Consultant will prepare a final construction report to the Owner and MDEQ. At a minimum, the final construction report will contain the following information:

1. A description of the construction project and activities.
2. As-constructed plans to document elevations and locations of the construction project. All elevations shall be referenced to United States Geologic Survey (USGS) datum. Record drawings shall indicate the following information:
 - a) Dimensions and maximum/minimum elevation of each landfill cell. Elevations shall be within 0.2 feet of the project's approved plans,
 - b) The location and elevation of sumps and gravity leachate collection pipelines. Elevations shall be within 0.2 feet of the project's approved plans,
 - c) The surface elevation of the final cover system. The final cover elevations shall not exceed 1 foot from the project's approved plans.
3. Field test data summaries including sample numbers, test locations, lift, and pass/fail status for each test. Laboratory samples collected and test results reported by the laboratory.
4. Diagrams that indicate location of tests.
5. Summary of construction problems/deficiencies that were identified and resolutions of the problems/deficiencies.
6. Documentation that the project's approved plans and specifications were met.
7. A certification by the CQA Officer that the construction meets the requirements of the approved engineering plans, Part 115 Administrative Rules and the CQA Plan.

4 PRECONSTRUCTION MEETING

4.1 Preconstruction Meeting

After the Owner selects the Contractor(s) for the construction project, and prior to initiation of any construction activities, a Preconstruction meeting is conducted to review the scope of the project. The meeting shall be attended by all parties involved in the construction project. Issues that are discussed and reviewed at this meeting include:

1. Roles and responsibilities of all parties as defined in the CQA Plan and in the project's approved plans and specifications.
2. Lines of communication and authority.
3. Testing frequency and procedures.
4. Modifications to the design and/or the CQA Plan.
5. Procedures for soil material processing.
6. Procedures for documentation and report submittals.
7. Coordination of work effort.
8. Project schedule.
9. On-site safety.
10. Procedures for dust control, protection of the soil liner, erosion control, and housekeeping requirements.
11. Soil requirements and specifications.
12. Geosynthetic requirements and specifications.
13. Equipment and usage.
14. Procedures for final acceptance of work.

4.2 Weekly Progress Meetings

Routine weekly progress meetings may be held at the jobsite and are attended by the Owner, Design Engineer, Contractor(s) and the CQA Consultant. The weekly meetings are conducted to review the construction progress of the previous week, the status of the project schedule, any construction problems/deficiencies and/or corrective actions,

anticipated construction problems, and the proposed construction schedule for the next week.

4.3 Problem Resolution Meeting

A problem/deficiency resolution meeting will be held on-site as necessary to review any construction problem that has been identified. The construction problem will be defined and discussed by appropriate parties. The intent of the meeting is to identify, isolate and resolve the construction problem to meet the project's approved plans and specifications. This meeting shall be documented by the CQA Consultant.

5 GENERAL EARTHFILL

5.1 Construction Material

General earthfill consists of granular and/or cohesive materials that are used for the purpose of general earthfill construction. The soil used in the construction of general earthfill shall be relatively free of organics, debris or other deleterious material.

5.2 Construction Placement and Testing

The CQA Consultant shall perform the following:

1. For every general earthfill material type, or when visual observations indicate that a change has occurred in the borrow soils, obtain a soil sample and perform the following tests:
 - a) Moisture-density relationship test using Modified Proctor (ASTM D1557) or Standard Proctor (ASTM D698).
 - b) Atterberg Limits, ASTM D4318.
 - c) Grain Size Analysis by sieve and hydrometer, ASTM D422.
 - d) Unified Soil Classification, ASTM D2487.
2. Monitor and document the placement and compaction of the soils used for general earthfilling.
3. Determine the in-place moisture content and dry density of the low permeability soil liner by nuclear methods following ASTM D6938, latest edition. In place tests shall be performed at a minimum frequency of one test per acre per lift to verify compliance with the requirements of item (4) below.
4. Verify that general earthfill is compacted to at least 90% of the maximum dry density determined by the Modified Proctor (ASTM D1557) or at least 95% of the maximum dry density determined by the Standard Proctor (ASTM D698).
5. Perform photographic documentation of construction to confirm conformance to project requirements.
6. Prepare a certification report that documents the observations and testing of the construction of the general earthfill materials.

The Earthwork Contractor shall perform all of the following during construction of general earthfill:

1. Place and compact each lift with a general thickness of 9 inches after compaction.
2. Compact each soil lift thoroughly and uniformly to the required density.
3. Protect the general earthfill from detrimental climatic effects during construction by doing all of the following:
 - a) Remove all ice, snow, and frozen soil during winter construction prior to placing a lift and not using any frozen soil in any part of the compacted soil liner system;
 - b) Recompact any soil lift of which its integrity is so adversely affected by weather that it no longer meets the requirements of the CQA Plan, at the discretion of the Owner, CQA Officer, and/or MDEQ;
 - c) Cover to prevent frost penetration during and following placement during winter construction;
 - d) Remove observed roots, rocks, rubbish or off-specification soils.

6 LANDFILL CELL SUBGRADE

6.1 Introduction

Prior to construction of the compacted soil liner and installation of the geomembrane liner, the Contractor will excavate overburden soil to the subgrade elevations indicated in the approved plans.

The phased construction of the Riverview Land Preserve requires incremental confirmation of the soil barrier beneath each cell during construction. The hydrogeologic report prepared as part of the Construction Permit Application shows the presence of a soil barrier beneath the landfill site.

The confirmation of the soil barrier during construction shall be limited to the confirmation of the findings in the hydrologic report.

6.2 Soil Barrier Conformation

The soil barrier shall be shown, as per Rule 912.(2), to be in compliance with respect to both its thickness and hydraulic conductivity. The thickness of the soil barrier, as shown on the drawings, shall be confirmed through the use of physical measurements taken on the soil borings, which may be further augmented with geophysical methods.

6.2.1 Soil Borings

A series of soil borings shall be performed in accordance with Rule 912(4), to provide physical confirmation of the soil barrier and to retrieve samples for homogeneity testing. The following tests shall be performed on a minimum of one sample retrieved from each boring:

1. Particle size distribution by sieve and hydrometer, ASTM D422;
2. Atterberg Limits, ASTM D4318;
3. Unified Soil Classification, ASTM D2487; and
4. Hydraulic conductivity of an undisturbed sample, as per Rule 920.

The results of the above laboratory tests shall be used to illustrate the homogeneity and adequacy of the soil barrier. The location of each boring will be located, based on the site coordinate grid.

Soil borings shall be performed on a grid spacing such that the total number of borings performed would result in a ratio of 1 boring per acre of cell area which overlies the natural

soil barrier. The grid spacing and number of borings shall be approved by MDEQ. The sampled depth shall vary for each borehole and be documented. The spacing for soil borings may change from one construction sequence to another, as additional information is retrieved and information is gained from the soil borings of each sequence.

6.2.2 Geophysical Confirmation

In-lieu of confirmation through the use of soil borings alone, the Owner may augment a limited number of soil borings with geophysical methods.

The geophysical testing methods shall employ soil resistivity, or other approved methods, to estimate the in-situ properties and homogeneity of the soil barrier. A geophysical testing plan specifying the testing methods and frequencies shall be submitted to the MDEQ for approval prior to any geophysical confirmation activities.

6.3 Potential Confirmation Difficulties

If the soil borings and geophysical methods result in insufficient data to confirm the presence of the soil barrier under the entire cell, additional measures may be required. These recompaction measures will augment areas where the required thickness or properties of the soil barrier were not confirmed. As per Rule 104.(f), the confirmed soil barrier thickness shall be increased to account for the presence of any anomalous soils. The minimum thickness and permeability properties of the soil barrier are specified on the drawings.

6.3.1 Recompaction and Retesting

Utilizing the results of the confirmation work, those areas where inadequate soil barrier has been identified shall be located. Depending on the area and depth of the soil barrier needing repairs, either of the following methods may be utilized:

1. In areas where sufficient soil barrier depth has been confirmed but inadequate permeabilities have been identified, the in-situ materials may be reworked in-place to achieve the desired permeability.
2. In areas where insufficient soil barrier thickness has been confirmed, the undesirable materials shall be removed. The soil barrier shall be installed by following the compacted soil liner guidelines in Section 7 of this CQA Plan.

Lenses of anomalous soils visually identified by the CQA Consultant as visible on the excavated surface shall be investigated. No action is required if a lens can be shown to:

1. Not extend outside the overall landfill footprint;
2. And is not hydraulically connected to other lenses;

3. And sufficient soil barrier thickness exists in the location of the lens such that when the thickness of the lens is subtracted from the soil barrier thickness, sufficient soil barrier thickness is provided.

The lens shall be excavated to and backfilled with compacted soil liner.

If soil barrier replacement is necessary, the Contractor shall perform the soil barrier installation in accordance with the requirements of this CQA Plan and to the satisfaction of the CQA Consultant and Owner. If a design specification criterion cannot be met, or unusual conditions hinder the work, then the CQA Consultant shall develop and present to the Owner suggested solutions for approval.

The CQA Consultant shall schedule appropriate retests after the work deficiency has been corrected. Retests recommended by the CQA Consultant must verify that the defect has been corrected before any additional work is performed by the Contractor in the area of the deficiency.

All soil barrier installation shall be documented in accordance with Section 7 of this CQA Plan. Certification documents shall be prepared showing accurate survey information on the repaired areas.

The Surveyor will establish a 100-foot survey grid system on the landfill cell base and survey locations along the cell perimeter to verify proper line and grade in accordance with the engineering plans. Grade tolerance is 0.0 to - 0.2 feet from the engineering plans and maintaining thickness of the liner components indicated in the engineering plans and specifications.

The CQA Consultant will document the excavation and construction activities associated with the landfill cell subgrade.

7 COMPACTED SOIL LINERS

7.1 Construction Materials

The soil used in the construction of the compacted low permeability soil liner (compacted soil liner) shall meet the following requirements:

1. The compacted soil liner shall be constructed of soils which have a classification of SC, CH, CL, CL/ML or ML as determined by the Unified Soil Classification System, ASTM D2487.
2. The compacted soil liner shall exhibit a laboratory hydraulic conductivity that is equal to or less than 1×10^{-7} cm/sec for the cell liner system and 1×10^{-5} cm/sec for the final cover system within the density and moisture content range specified for the construction as determined by the laboratory study of the moisture, density and hydraulic conductivity relationship as described in 7.2 (1) below. At a minimum, the material shall be compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557 (Modified Proctor) or 95 percent of the maximum dry density as determined by ASTM D698 (Standard Proctor), at a moisture greater than optimum as determined by the moisture-density relations test.
3. The final cover infiltration layer is to be constructed of earthen material that exhibits a laboratory hydraulic conductivity less than or equal to 1.0×10^{-5} cm/sec.

7.2 Construction Placement and Testing

The CQA Consultant shall perform the following:

1. Establish a relationship between moisture content, dry density and hydraulic conductivity by laboratory testing of potential soil borrow prior to placement of the soil. A moisture density relation of the soil by ASTM D1557 (Modified Proctor) or ASTM D698 (Standard Proctor), shall be performed on a representative sample of the borrow source. The sample shall be tested to determine its Unified Soil Classification according to ASTM D2487. Specimens of this sample shall be tested for hydraulic conductivity using the procedures as described in item (4) below. The test specimens shall be prepared at appropriate moisture contents and dry densities to establish a range of values which yield hydraulic conductivities (by ASTM D5084) no greater than 1×10^{-7} cm/sec for the landfill cell liner systems, and no greater than 1×10^{-5} cm/sec for the impervious soil component of final cover system. The compaction requirements for this soil borrow source shall be at least 90% of the maximum dry density determined by ASTM D1557 (Modified Proctor) or at least 95% of the maximum dry density determined by ASTM D698 (Standard Proctor), at a moisture content equal to or greater than optimum moisture.

2. Monitor and document the placement and compaction of the soils used in the compacted soil liner systems. All of the following information shall be documented with respect to soil compaction:
 - a) Type and weight of compaction equipment.
 - b) Method of surface preparation.
 - c) Method of adjusting soil moisture, if any.
 - d) Method of controlling desiccation.
 - e) Thickness of each lift after compaction.
 - f) General observations of the number of passes and uniformity of compaction coverage.
 - g) Observation of the reduction in clod size.
 - h) Documentation of liner repairs, including removal and replacement of frozen or desiccated soils.
1. For every 5,000 cubic yards placed, or when visual observations indicate that a change has occurred in the borrow soils, obtain a soil sample and perform the following tests:
 - a) Moisture-density relationship test using Modified Proctor (ASTM D1557) or Standard Proctor (ASTM D698).
 - b) Atterberg Limits, ASTM D4318.
 - c) Grain Size Analysis by sieve and hydrometer, ASTM D422.
 - d) Unified Soil Classification, ASTM D2487.
 - e) Natural Moisture Content, ASTM D2216.
4. For every 10,000 cubic yards placed, obtain an undisturbed sample of compacted soil liner and perform hydraulic conductivity testing using ASTM D5084 as amended by Act 451 Part 115 R299.4920(2). An alternate test method may be used if reviewed and approved by the MDEQ. All holes created obtaining an undisturbed sample shall be filled with granular bentonite.
2. Determine the in-place moisture content and dry density of the compacted soil liner by nuclear methods following ASTM D6938, latest edition. In-place tests shall be performed at a minimum frequency of one test per acre per lift and a minimum of three tests per day of construction, or lift of soil, to verify compliance with the requirements of item (1) above. All holes created by in-place testing shall be filled with granular bentonite.
3. Prepare a certification report that documents the observations and testing of the construction of the compacted soil liners.

The Earthwork Contractor shall perform all of the following during construction of the compacted soil liner system:

1. Place and compact each lift with a general thickness of 6 inches after compaction.
2. Compact each soil lift thoroughly and uniformly to the density, and at the moisture content determined necessary to achieve the required hydraulic conductivity as described in Section 7.2 (1).
3. Integrate each lift into the previous lift by techniques such as scarifying each lift and by using compaction equipment that is capable of penetrating the thickness of each compacted lift, except such a compactor shall not be used in the first 2 lifts immediately above a synthetic material or other sensitive liner system component.
4. Protect the compacted soil liner from detrimental climatic effects during construction by doing all of the following:
 - a) Remove all ice, snow, and frozen soil during winter construction prior to placing a lift and not using any frozen soil in any part of the compacted soil liner system.
 - b) Recompect any soil lift of which its integrity is so adversely affected by weather that it no longer meets the requirements of the CQA Plan, at the discretion of the Owner and CQA Officer.
 - c) Cover to prevent frost penetration during and following placement of the soil layer during winter construction.
 - d) Provide measures to ensure that the compacted soil liner is protected from desiccation by covering the soil liner or by sprinkling the soil liner with water. Any compacted soil liner that has experienced significant desiccation cracking is to be repaired.
 - e) Remove observed debris, roots and any angular or sharp rocks larger than two inches in diameter.

The Surveyor will perform the following:

1. Survey the compacted soil liner system as directed by the Owner to verify that the system meets the engineering plans and specifications. The Surveyor will establish a 100-foot survey grid system on the landfill cell base and survey locations along the cell perimeter to verify proper line and grade in accordance with the engineering plans. Grade tolerance is 0.0 to + 0.2 feet from the project's approved plans and maintaining thickness of the liner components indicated in the project's approved plans and specifications.

8 COMPACTED SOIL PREPARATION FOR GEOMEMBRANE INSTALLATION

The CQA Consultant shall perform the following:

1. Inspect the subgrade surface for compliance with the requirements of this CQA Plan noted below.
2. Identify areas that do not meet the requirements of the CQA Plan and need repair; the CQA Consultant will monitor and document the repairs made to the subgrade.

The Contractor shall perform the following:

1. Prepare the subgrade to a smooth surface, using a smooth drum roller, with grades that meet the project's approved plans with a tolerance of +0.2 feet.
2. Remove debris, organic materials, roots, any angular or sharp rocks larger than two inches in diameter or other material that may damage the geomembrane liner material.
3. Repair any compacted soil liner that exhibits significant desiccation cracking as directed by the CQA Consultant. All backfill soils used to repair any areas of the compacted soil liner system shall meet the applicable requirements of the CQA Plan.
4. Protect the prepared subgrade from damage due to desiccation, flooding and freezing.

The Geomembrane Contractor/Installer shall perform the following:

1. Inspect the subgrade surface.
2. Accept in writing that the subgrade surface is acceptable for geomembrane installation prior to deployment of the geomembrane material.

9 GEOSYNTHETIC CLAY LINER

The proposed design includes the installation of a geosynthetic clay liner (GCL) as indicated in the project's approved plans and specifications for the landfill liner system.

9.1 Materials

The GCL shall be manufactured using high quality bentonite clay whose primary constituent is the clay mineral sodium montmorillonite, and will meet the required free swell, fluid loss, and hydraulic conductivity values.

The GCL Manufacturer shall submit copies of the GCL roll Quality Control Certificates. Manufacturer Quality Control testing frequency shall at a minimum meet the requirements of the Geosynthetic Research Institute Test Method GRI-GCL3. These certificates shall, at a minimum, include: bentonite clay loading (mass per unit area), and peel strength. Additionally, these certificates shall include the results of hydraulic conductivity testing performed at a minimum frequency of one (1) per lot.

The delivered GCL for construction of landfill must conform to the following minimum properties (Table 9.1) and the latest revisions to Geosynthetic Research Institute Test Method GRI-GCL3. The GCL Manufacturer shall submit a signed statement that the material supplied, at a minimum, meets these specifications.

Table 9.1

**Geosynthetic Clay Liner
Roll Material Properties**

Property	Test Method	Requirements
Fluid Loss	ASTM D5891	18 ml maximum
Swell Index	ASTM D5890	24 ml/2 g. minimum
Moisture Content ⁽¹⁾⁽²⁾	ASTM D2216	35% maximum
Tensile Strength	ASTM D6768	23 lb./in. minimum
Peel Strength	ASTM D6496	2.1 lb./in. minimum
Mass per Unit Area ⁽³⁾	ASTM D5993	0.75 lb./ft ² minimum
Hydraulic Conductivity ⁽⁴⁾	ASTM D5887	5.0 x 10 ⁻⁹ cm/sec maximum
NOTE: 1 The moisture content shall be that of the bentonite clay in the manufactured GCL product 2 The moisture content is to be reported as the weight of water divided by the wet weight of bentonite clay sample. 3 The bentonite clay loading (mass/unit area) shall be determined at a moisture content of 0%. 4 The hydraulic conductivity shall be specified by the Design Engineer, and measured at an effective confining stress of 5 psi. 5 Testing will be performed at minimum frequencies in compliance with GRI-GCL3.		

The CQA Consultant shall review the submittals provided by the GCL Manufacturer to verify compliance with the requirements of the CQA Plan.

9.2 Geosynthetic Contractor Submittals

The Geosynthetic Contractor shall submit to the Owner the following information prior to the start of the GCL installation:

1. Schedule of GCL installation.
2. Drawings of construction details for landfill gas vents and/or other features as required by the Design Engineer or CQA Consultant.

The CQA Consultant shall verify that all submittals required of the Geosynthetic Contractor have been received and meet the requirements of the CQA Plan. The schedule and drawings submitted by the Geosynthetic Contractor, once approved by the CQA Consultant, shall be the basis of the GCL deployment.

9.3 GCL Delivery and Storage

The Geosynthetic Contractor shall perform the following:

1. Prepare the GCL roll storage area to protect the GCL from dirt, mud, dust, moisture, and damage at all times prior to deployment. The GCL rolls shall be protected against vandalism, adverse weather and other hazards. The rolls should be stored to allow

access for roll identification. The integrity and legibility of roll labels must be maintained during storage. The rolls must be protected from the elements by the application and maintenance of a proper cover.

2. Instruct all personnel of the proper handling techniques so as not to damage any of the GCL rolls.
3. Be responsible for off-loading the GCL rolls when delivered to the job-site.
4. Assure that the GCL rolls are packaged, shipped, and stored on-site in such a manner that the GCL rolls are not subjected to damage or moisture.
5. Identify and separate all damaged rolls from undamaged rolls and store these rolls at a location designated by the Owner until disposition of the damaged rolls is determined.
6. Store the GCL rolls per the GCL Manufacturer's recommendations.

The CQA Consultant shall perform the following:

1. Inspect the GCL roll storage area to verify compliance with the CQA Plan.
2. Visually inspect the surface of all GCL rolls for visible defects and/or damage. Compare the roll number against the GCL Manufacturer's QC Certifications for compliance with the project's engineering plans and specifications and the CQA Plan. Any damage detected shall be documented and the Geosynthetic Contractor will be notified.

9.4 GCL Installation

The GCL can be deployed on the soil subgrade that has been inspected and accepted by the CQA Consultant and the Geosynthetic Contractor.

9.4.1 Weather Conditions

The Geosynthetic Contractor shall not deploy the GCL material during precipitation events or on areas with frost or precipitation accumulation. The GCL material shall not be deployed on softened or unstable subgrade.

9.4.2 Method of Installation

GCL panels shall be placed in a controlled manner to prevent damage to the GCL materials or other in-place material. Any such damage shall be repaired by the Geosynthetic Contractor.

Personnel working on the GCL shall not smoke, wear damaging shoes, or engage in other activities that could damage the material. Traffic on the GCL panels shall be minimized. The Geosynthetic Contractor shall provide protection of the GCL from equipment or concentrated personnel traffic associated with the project.

GCL panels shall be deployed in such a manner as to be in contact with the material directly beneath it and preclude folds, wrinkles that may become folds, and bridging. Any wrinkles, folds or bridging that is observed shall be removed through realignment or the GCL panel or cutting and repairing the panel in accordance with the CQA Plan.

In addition to the above, the Geosynthetic Contractor shall comply with requirements as set forth in Section 12 of this Plan, Deployment and Installation of Geosynthetic Components, pertaining to the use of wheeled vehicles on geosynthetics during construction.

Each adjoining GCL panel shall be overlapped a minimum of six (6) inches on each side and a minimum end-to-end overlap of twelve (12) inches, or greater if required by the Geosynthetic Contractor's Installation QC Procedures. The minimum overlap shall be indicated by a line, or series of lines spaced no more than fifty (50) feet on the exposed surface of the GCL panel. The overlap area shall be free of dirt, gravel, and debris. The overlap shall be maintained to prevent seam openings during the installation and covering process. The Geosynthetic Contractor is responsible for assuring that the GCL panels remain overlapped throughout the installation process and until the overlying material is placed. Bentonite clay powder or other approved supplement shall be applied between the GCL layers in the overlap area as required by the GCL Manufacturer's specifications and the Geosynthetic Contractor's Installation QC Procedures.

Orient GCL seams on sideslopes greater than 5% parallel to the fall of the slope, unless approved by the Design Engineer

Placement of the GCL shall be in such a manner as to reduce the risk of water infiltration into the bentonite clay portion of the GCL. The GCL shall be covered with a geomembrane and/or soil materials as required by the project design, as soon as practical, to provide maximum protection against the elements. The Geosynthetic Contractor shall direct stormwater drainage away from the GCL by construction of temporary stormwater diversion berms, or other similar structures.

The GCL shall not come into contact with water or any other fluids that may cause hydration of the bentonite clay of the GCL. Premature hydration of the bentonite clay component of the GCL shall be cause for removal of the hydrated material at no expense to the Owner. Prematurely hydrated material includes material hydrated beneath a geomembrane prior to seaming, but excludes material hydrated within the limits of an anchor trench.

The Geosynthetic Contractor shall not install more GCL panels than can reasonably be covered with geomembrane that same day. The Geosynthetic Contractor shall also limit the

installation of GCL panels during periods of impending bad weather such that the amount of uncovered GCL panels is minimized.

The Geosynthetic Contractor shall clean the work area daily by removing scrap material and other debris associated with installation activities and disposing of it properly.

The CQA Consultant shall observe and document the GCL deployment to verify that all provisions of the CQA Plan have been followed.

9.4.3 Temporary Anchoring

The Geosynthetic Contractor is responsible for the temporary anchoring of the GCL during construction. The Geosynthetic Contractor shall use sandbags or other means necessary to restrain the GCL without damage and to prevent the material from being pulled from proper alignment. Areas of damage caused by improper or insufficient temporary anchoring shall, as determined by the CQA Consultant and required by the Owner, be repaired or removed, disposed and replaced at the expense of the Geosynthetic Contractor. Scrap tires are not considered an acceptable method for temporary anchoring of GCL.

9.4.4 Permanent Anchoring

The Geosynthetic Contractor is responsible for the permanent anchoring of the GCL material. Permanent anchorage shall comply with the project's approved plans and specifications, and shall be installed as soon as practicable following repairs and testing of the GCL material and the installation of the overlying materials.

9.4.5 Repairs

Holes, tears or damage to the GCL material shall be repaired by placing a patch, below the damaged area, extending a minimum of one (1) foot in all directions beyond the edges of the defect. Bentonite clay powder or other supplement shall be applied between the GCL panel and the patch if required by the GCL Manufacturer's specifications and the Geosynthetic Contractor's Installation QC Procedures. Patches and repairs greater than two (2) feet in any direction shall not be allowed on slopes greater than 10%. GCL panels containing repairs greater than two (2) feet in any direction on slopes greater than 10% shall be replaced.

GCL panels with holes or tears extending more than 25% across the panel width shall be removed and replaced or covered by a single patch. GCL panels, or portions of panels, which contain excessive patching, as determined by the Owner, shall be removed and replaced, or repaired with a single patch.

The CQA Consultant shall verify and document that GCL repairs are performed as required by the CQA Plan.

9.5 Geomembrane Placement

The placement of geomembrane on the GCL shall be discussed and agreed upon by the appropriate parties in attendance at a construction meeting. The cover material shall be placed the same day that the GCL is installed. Therefore, only the amount of GCL that can be covered the same day shall be deployed. The placement of cover material shall be performed so as not to induce excessive stresses or slippage of the GCL. Equipment shall not be operated directly on the GCL with the exception of ATV's. No wheeled equipment shall be operated on the geomembrane. This provision is subject to change based on current MDEQ guidance.

9.6 GCL Acceptance

The Geosynthetic Contractor shall retain ownership and responsibility of the GCL until acceptance by the Owner. The Owner will accept the Geosynthetic when:

1. All required documentation from the GCL Manufacturer and the Installation Contractor has been received and accepted.
2. The Geosynthetic installation is complete; and the GCL material is intact and is not in a hydrated condition that could damage the GCL as allowed by the Engineer.
3. Verification that all repairs are complete.
4. The geosynthetic installation has been accepted in a final approval notice signed by the CQA Consultant and the Owner.

10 LLDPE AND HDPE GEOMEMBRANE

The proposed design may include the installation of a linear low-density polyethylene (LLDPE) and/or a high-density polyethylene (HDPE) geomembrane liner as indicated in the project's approved plans and specifications for the landfill cover and base liner. Act 451 Part 115 allows the use of other geomembrane materials for the final cover system. This section of the CQA Plan addresses only polyethylene geomembrane materials for use for the landfill liner and/or the final cover.

10.1 Materials

10.1.1 Resin

The Geomembrane Manufacturer shall provide the following information prior to delivery of the geomembrane to the jobsite:

1. The Resin Supplier's name, resin production facility, resin identification, and production date of the resin.
2. A copy of the QC certificates issued by the Resin Supplier.
3. Results of tests conducted by the supplier to verify the raw material quality including specific gravity, carbon black content and melt flow index.
4. A certification from the supplier that the polymer used in the geomembrane meets the following criteria of Table 10.1:

Table 10.1

Geomembrane Resin Requirements

Property	Test Method	Requirement
Specific Gravity ⁽¹⁾	ASTM D792 or D1505	HDPE 0.932 (min) LLDPE 0.926 (max)
Carbon Black	ASTM D1603 or D4218	between 2.0% and 3.0%
NOTE: 1 Values are to be determined prior to the addition of carbon black.		

5. Reports of tests that are conducted by the manufacturer to verify the quality of the raw materials including specific gravity and melt flow index. These tests shall be performed at a frequency of at least one per resin batch but not less than one (1) per every 200,000 pounds of resin used in the manufacturing of the geomembrane.

6. A certification that reclaimed polymer is not added to the resin and that polymer recycled during the manufacturing process does not exceed 2% of the resin.

The CQA Consultant shall review the submittals provided by the manufacturer to verify compliance with the requirements of the CQA Plan.

10.1.2 Geomembrane

The geomembrane manufacturer shall perform the following:

1. Provide a certification that the geomembrane manufactured for this project meets the following criteria:
 - a) The geomembrane contains no more than 1% by weight of additives, fillers, or extenders, excluding carbon black;
 - b) The geomembrane is without striations, roughness other than produced due to texturing, pinholes, blisters, surface bubbles, undispersed raw materials, or any other indication of contamination;
 - c) The delivered HDPE geomembrane sheets for construction of landfill base must conform to the following minimum properties (Table 10.2 and Table 10.3) and the latest revisions to Geosynthetic Research Institute Test Method GRI-GM13.
 - d) The delivered LLDPE geomembrane sheets for construction of landfill cover must conform to the following minimum properties (Table 10.4) and the latest revisions to Geosynthetic Research Institute Test Method GRI-GM17.
 - e) The geomembrane is chemically resistant to anticipated wastes and waste leachate based on ASTM Test Method D5747.
2. Provide a copy of the manufacturer's geomembrane properties and quality control requirements, and instructions for geomembrane delivery, storage and handling.
3. Provide QC certificates for the rolls of geomembrane to be delivered to the job site. Each QC certificate shall include:
 - a) Roll number, geomembrane type, thickness, manufacturer, date of production, and roll dimensions. Each finished roll shall be identified by a number corresponding to the particular batch of resin used.
 - b) The manufacturer's test results on samples from rolls of geomembrane from the same production lot, which verifies that the rolls meet the requirements of this CQA Plan. These samples shall be tested to confirm that the requirements of the CQA Plan are met, except that testing for environmental stress crack resistance and low

temperature impact need not be performed. The test data shall be identified by roll number.

4. The manufacturer is responsible for the production of extrusion beads and/or welding rod from polyethylene resin that shall meet the requirements of the CQA Plan.

The CQA Consultant shall verify that the manufacturer's submittals meet the requirements of the CQA Plan.

Table 10.2

Smooth High Density Polyethylene (HDPE) Minimum Properties

Property	Test Method	Value	Units	Frequency
Thickness (min. avg.)	ASTM D5199	60	Mils	Per Roll
a. Lowest individual of any 10 values		-10	%	
Density (min.)	ASTM D1505 or D792	0.940	g/cm ³	200,000 lb.
Tensile Properties ⁽¹⁾	ASTM D6693			20,000 lb.
a. Yield Strength	Type IV	126	lb./in.	
b. Break Strength		228	lb./in.	
c. Elongation at Yield		12	%	
d. Elongation at Break		700	%	
Tear Resistance (min.)	ASTM D1004	42	lb.	45,000 lb.
Puncture Resistance (min.)	ASTM D4833	108	lb.	45,000 lb.
Stress Crack Resistance ⁽²⁾	ASTM D5397	500	hours	Per GRI GM10
Carbon Black Content Allowable Range	ASTM D4218 ⁽³⁾	2-3	%	20,000 lb.
Carbon Black Dispersion	ASTM D5596	See Note 4		45,000 lb.
Oxidative Induction Time (OIT) ⁽⁵⁾				200,000 lb.
a. Standard OIT	ASTM D3895	100	minutes	
b. High Pressure OIT	ASTM D5885	400	minutes	
Oven Aging at 85°C ⁽⁵⁾ ⁽⁶⁾	ASTM D5721			Per each formulation
a. Standard OIT (min.) %retained after 90 days	ASTM D3895	55	%	
b. High Pressure OIT (min.) %retained after 90 days	ASTM D5885	88	%	
UV Resistance ⁽⁷⁾	ASTM D7238			Per each formulation
a. Standard OIT (min.)	ASTM D3895	N.R. ⁽⁸⁾		
b. High Pressure OIT (min.) %retained after 1600 hrs. ⁽⁹⁾	ASTM D5885	50	%	

NOTES:

- Machine direction (MD) and cross-machine direction (XMD) average values should be on the basis of 5 test specimens each direction. Yield elongation calculated using a gage length of 1.3 inches. Break elongation calculated using a gage length of 2.0 inches
- The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.
- Other methods such as D1603 (tube furnace) or D6370 (TGA) are acceptable if an appropriate correlation to D4218 (muffle furnace) can be established.
- Carbon black dispersion (only near spherical agglomerates) for 10 different views: minimum 9 of 10 in Category 1 or 2, and 1 in Category 3.
- Manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content of the geomembrane.
- It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response.
- The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C.
- Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.
- UV resistance is based on percent retained value regardless of the original HIP-OIT value.

Table 10.3

Textured High Density Polyethylene (HDPE) Minimum Properties

Property	Test Method	Value	Units	Frequency
Thickness (min. avg.) lowest ind. for 8 of 10 values lowest ind. for any 10 values	ASTM D5994	60 (-5%) ⁽¹⁾ -10% -15%)	mils	Per roll
Asperity Height (min. avg.)	ASTM D7466	16	mils	Every 2 nd roll ⁽¹⁾
Density (min. avg.)	ASTM D1505 or D792	0.940	g/cm ³	200,000 lb.
Tensile Properties (min. average) ⁽²⁾ a) Yield Strength b) Break Strength c) Elongation at Yield\ d) Elongation at Break	ASTM D6693 Type IV	126 90 12 100	lb./in. lb./in. % %	20,000 lb.
Tear Resistance (min.)	ASTM D1004	42	lb.	45,000 lb.
Puncture Resistance (min.)	ASTM D4833	90	lb.	45,000 lb.
Stress Crack Resistance ⁽³⁾	ASTM D5397	500	hours	Per GRI GM10
Carbon Black Content - Allowable Range	ASTM D4218 ⁽⁴⁾	2-3	%	20,000 lb.
Carbon Black Dispersion	ASTM D5596	See Note 5		45,000 lb.
Oxidative Induction Time (OIT) ⁽⁶⁾ a. Standard OIT b. High pressure OIT	ASTM D3895 ASTM D5885	100 400	min. min.	200,000
Oven Aging at 85°C, retained @ 90 days ^{(6),(7)} a. Standard OIT (min.) b. High pressure OIT (min.)	ASTM D5721 ASTM D3895 ASTM D5885	55 80	% %	Per each formulation
UV Resistance ⁽⁸⁾ a. Standard OIT (min.) b. HPOIT (min.) retained @ 1600 hrs ⁽¹⁰⁾	ASTM D7238 ASTM D3895 ASTM D5885	N.R. ⁽⁹⁾ 50	% %	Per each formulation

NOTES:

- 1 Alternate for the measurement side for double sided textured sheet.
- 2 Machine direction (MD) and cross-machine direction (XMD) average values should be on the basis of 5 test specimens each direction. Yield elongation calculated using a gage length of 1.3 inches. Break elongation calculated using a gage length of 2.0 inch.
- 3 P-NCTL test is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test should be conducted on smooth edges of textured rolls or on smooth sheets made from the same formulation as being used for the textured sheet materials.
- 4 Other methods such as D1603 (tube furnace) or D6370 (TGA) are acceptable if an appropriate correlation to D4218 (muffle furnace) can be established.
- 5 Carbon black dispersion (only near spherical agglomerates) of 10 different views: minimum 9 of 10 in Category 1 or 2, and 1 in Category 3.
- 6 The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane.
- 7 It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response.
- 8 The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C.
- 9 Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.
- 10 UV resistance is based on percent retained value regardless of the original HIP-OIT value.

Table 10.4**Smooth Linear Low Density Polyethylene (LLDPE) Minimum Properties**

Property	Test Method	Value	Units	Frequency
Thickness (min. Ave.) lowest individual of any 10 values	ASTM D5199	40 ¹ -10%	mils	Per roll
Density (min)	ASTM D 505/D792	0.939	g/cm ³	200,000 lb.
Tensile Properties ⁽¹⁾ (min. avg.) a) Break Strength b) Elongation at Break	ASTM D6693 Type IV	152 800	lb./in. %	20,000 lb.
2% Modulus	ASTM D5323	2400	lb./in.	Per formulation
Tear Resistance (min. average)	ASTM D1004 Die C	22	lb.	45,000 lb.
Puncture Resistance	ASTM D4833	56	lb.	45,000 lb.
Axi-Symmetric Break Strain	ASTM D5617	30	%	Per formulation
Carbon Black Content	ASTM D4218 ⁽³⁾	2-3	%	45,000 lb.
Carbon Black Dispersion	ASTM D5596	See note 3		45,000 lb.
Oxidative Induction Time (OIT) ⁽⁴⁾ a. Standard OIT b. High Pressure OIT	ASTM D3895 ASTM D5885	100 400	min. min.	200,000 lb.
Oven Aging at 85°C, retained @90 days ⁽⁵⁾ a. Standard OIT (min.) b. High Pressure OIT (min)	ASTM D5721 ASTM D3895 ASTM D5885	35 60	% %	Per formulation
UV Resistance ⁽⁶⁾ a. Standard OIT (min) b. HPOIT (min) retained @ 1600 hrs. ⁽⁸⁾	ASTM D7238 ASTM D3895 ASTM D5885	N.R. ⁽⁷⁾ 35	 %	Per formulation
NOTES: 1 Machine Direction (MD) and cross-machine direction (XD) average values should be on the basis of 5 test specimens each direction. Break elongation calculated using a gage length of 2.0 inches at 2.0 inches/minute. 2 Other methods such as D1603 (tube furnace) or D6370 (TGA) are acceptable if an appropriate correlation to D4218 (muffle furnace) can be established. 3 Carbon black dispersion for 10 views: 9 in Category 1 or 2 and 1 in Category 3 4 The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane. 5 It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response. 6 The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C. 7 Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples. 8 UV resistance is based on percent retained value regardless of the original HIP-OIT value.				

Table 10.5**Textured Linear Low Density Polyethylene (LLDPE) Minimum Properties**

Property	Test Method	Value	Units	Frequency
Thickness (min. Ave.) Lowest ind. for 8 of 10 values lowest ind. for any of the 10	ASTM D5994	40 (-5%) ¹ -10% -15%	mils	Per roll
Asperity height (min. average) ⁽¹⁾⁽²⁾	ASTM D7466	16	mils	Every 2 nd Roll (1)
Density (max)	ASTM D1505/D792	0.939	g/cm ³	200,000 lb.
Tensile Properties (min. avg.) ⁽³⁾ a) Break Strength b) Elongation at Break	ASTM D6693 Type IV	60 250	lb./in. %	20,000 lb.
Tear resistance (min. average)	ASTM D1004	22	lb.	45,000 lb.
Puncture resistance	ASTM D4833	44	lb.	45,000 lb.
Carbon black content allowable range	ASTM D4218 ⁽⁴⁾	2-3	%	45,000 lb.
Carbon black dispersion	ASTM D5596	See note 5		45,000 lb.
Oxidative Induction Time (OIT) ⁽⁵⁾ a. Standard OIT (min.) b. High Pressure OIT (min.)	ASTM D3895 ASTM D5885	100 400	min. min.	200,000 lb.
Oven Aging at 85°C, retained @ 90 days ⁽⁶⁾ a. Standard OIT (min.) b. High Pressure OIT (min)	ASTM D5721 ASTM D3895 ASTM D5885	35 60	% %	Per formulation
UV Resistance ⁽⁷⁾ a. Standard OIT (min) b. High Pressure OIT (min) %retained after 1600 hrs. ⁽⁹⁾	ASTM D7238 ASTM D3895 ASTM D5885	N.R. ⁽⁸⁾ 35	 %	Per formulation
NOTES: 1 Alternate the measurement side for double sided textured sheet. 2 Machine direction (MD) and cross-machine direction (XMD) average values should be on the basis of 5 test specimens each direction. Break elongation calculated using a gage length of 2.0 in. at 2.0 in./min. 3 Other methods such as D1603 (tube furnace) or D6370 (TGA) are acceptable if an appropriate correlation to D4218 (muffle furnace) can be established. 4 Carbon black dispersion (only near spherical agglomerates) for 10 different views: Minimum 9 of 10 in Category 1 or 2, and 1 in Category 3. 5 The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane. 6 It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response. 7 The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C. 8 Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples. 9 UV resistance is based on percent retained value regardless of the original HIP-OIT value.				

10.2 Geosynthetics Contractor Submittals

The Geosynthetics Contractor shall submit to the Owner the following information prior to the start of geomembrane installation:

1. Schedule of geomembrane installation.
2. Geomembrane Panel layout drawings.
3. Drawings of construction details for anchor trenches, sumps and other features as required by the CQA Consultant.
4. A resume for the Master Seamer to be assigned to the project. A Master Seamer must be present on-site during all geomembrane-seaming operations and shall have completed seaming on at least 1,000,000 square feet of polyethylene geomembrane, using both extrusion and fusion welding methods.
5. A resume for each Seamer to be assigned to the project. Each Seamer shall have seamed a minimum of 100,000 square feet of polyethylene geomembrane.
6. Resumes of any Seamers subsequently assigned to the project shall also be submitted. Seamer apprentices or assistants do not need the requisite experience as long as they are working under the direct supervision of a qualified Seamer.

The CQA Consultant shall verify that all submittals required of the Geosynthetics Contractor have been received and meet the requirements of the CQA Plan. The schedule and drawings submitted by the Geosynthetics Contractor, once approved by the CQA Consultant, shall be the basis of geomembrane deployment.

10.3 Geomembrane Delivery and Storage

The Geosynthetics Contractor shall perform the following:

1. Assure that the geomembrane rolls or panels are packaged, shipped, off-loaded, and stored on-site in such a manner that the rolls are not subjected to damage.
2. Prepare the roll storage area to protect the geomembrane from dirt, mud, dust, and damage at all times prior to deployment. The geomembrane shall be protected against vandalism, adverse weather and other hazards.
3. Instruct all personnel of the proper handling techniques so as not to damage any of the geomembrane rolls.
4. Assure that the geomembrane material is not folded; folded geomembrane material shall be rejected.

5. Stack the geomembrane rolls per the manufacturer's recommendations, but no more than five rolls high.
6. Identify and separate all damaged rolls from undamaged rolls and store these rolls at a location designated by the Owner until the disposition of the damaged rolls is determined.

The CQA Consultant shall perform the following:

1. Inspect the geomembrane roll storage area to verify compliance with the CQA Plan.
2. Observe the material off-loading and storage of geomembrane rolls to verify compliance with the requirements of the CQA Plan.
3. Visually inspect the surface of all geomembrane rolls for visible defects and/or damage. Any damage detected shall be documented.

10.4 Geomembrane Installation

10.4.1 Anchor Trench

The CQA Consultant shall verify that the anchor trench has been constructed according to the requirements of the engineering plans and specifications and the CQA Plan. The CQA Consultant shall observe and document the placement of the geomembrane in the anchor trench and the placement of the anchor trench backfill material as required by the project's approved plans and specifications. The anchor trench shall not be backfilled until the destructive and non-destructive testing of the seams to be buried have met the specifications within the CQA Plan.

The Geosynthetics Contractor shall perform the following:

1. Anchor trenches shall be constructed and maintained to the nominal dimensions shown on the project's approved plans and specifications, and with rounded edges.
2. Provide for adequate drainage of the anchor trench.
3. Backfill the anchor trench according to the project's approved plans and specifications and the CQA Plan.

10.4.2 Weather Conditions

The CQA Consultant shall verify and document that geomembrane seaming is performed only during weather conditions that are considered acceptable, as described by this CQA Plan in the following sections.

The Geosynthetics Contractor shall perform the following:

1. Not weld during precipitation events, in the presence of excess moisture (i.e. heavy fog or dew, areas of ponded water), or during conditions of winds that affect the control of the welding temperatures (unless engineering controls are installed).
2. Ensure that field seaming is not performed in adverse weather conditions that could impair the quality of the geomembrane installation, unless protective structures or other methods are used to maintain seam integrity during construction.

10.4.3 Deployment Methods

The Geosynthetics Contractor shall install the geomembrane according to the panel layout drawings previously submitted to the Owner. The Design Engineer shall approve alternate panel layouts. The geomembrane shall be deployed in a manner so as to be in a loose and relaxed condition at the time of geomembrane seaming.

The Geosynthetic Contractor shall comply with requirements as set forth in Section 12 of this Plan, Deployment and Installation of Geosynthetic Components, pertaining to the use of wheeled vehicles on geosynthetics during construction.

10.4.4 Prevention of Damage

The Geosynthetics Contractor shall be responsible to assure that:

1. Installation personnel do not use equipment or tools that may damage the geomembrane.
2. No installation personnel shall smoke, wear damaging shoes, or engage in other activities that could damage the geomembrane.
3. The method used to unroll the panels shall not cause scratches or crimps in the geomembrane and shall not damage the supporting soil.
4. The method used to deploy the geomembrane shall minimize wrinkles.
5. Bridging of grade changes by the geomembrane shall be removed as directed by, and at the discretion of the CQA Consultant.
6. Adequate loading (i.e. sandbags or similar items that will not damage the geomembrane) shall be placed on the geomembrane to prevent uplift and relocation of panels by wind.
7. Direct contact with the geomembrane shall be minimized (i.e. the geomembrane in traffic areas is to be protected by geotextiles, additional geomembrane layer, or other materials approved by the CQA Consultant).

The CQA Consultant shall observe the geomembrane deployment to verify that all provisions for prevention of geomembrane damage have been followed.

10.4.5 Field Panel Identification and Deployment

The Geosynthetics Contractor shall assign each field panel a unique identification number consistent with the panel layout drawings submitted to the Owner. The Geosynthetics Contractor shall deploy field panels according to the panel layout drawing. Each panel deployed shall be recorded by the Geosynthetics Contractor. Identification number, location and date shall be recorded.

The CQA Consultant shall verify that each panel is clearly identified. The CQA Consultant shall verify and document that the panel deployment proceeds according to the panel layout drawing, and that pertinent information is recorded.

10.4.6 Geomembrane Panel Thickness Measurement

Panel thickness measurements will be provided by the geomembrane manufacturer. The CQA Consultant may document that thickness measurements provided by the manufacturer are consistent with field measurements.

10.5 Seaming Specifications

10.5.1 General Procedures

The Geosynthetics Contractor shall perform the following:

1. Overlap (shingle) the geomembrane panels such that any fluid flowing across the seams would flow from the top panel to the underlying panel.
2. Orient all seams located on slopes steeper than 5% parallel to the fall of the slope, unless approved by the Design Engineer.
3. Align seams with the least possible number of wrinkles and "fishmouths". "Fishmouths" are to be cut, removed and patched.
4. Field seam only in weather conditions which will not impair the quality of the geomembrane liner, unless approved by the CQA Consultant.

The CQA Consultant will observe and document the geomembrane seaming activities to verify that the requirements of the CQA Plan are met.

10.5.2 Trial Welds

The Geosynthetic Contractor shall perform the following:

1. Begin geomembrane seaming only after geomembrane seaming equipment and Seamers have successfully completed trial welds.
2. Perform trial welds at:
 - a) At the beginning of each seaming period.
 - b) At least once each five-hours, for each seaming apparatus used that day.
 - c) After each break in seaming of one hour or more.
3. Perform trial welds in the same surroundings and environmental conditions as the production welds.
4. The trial weld shall be a minimum of 10 feet long for self-propelled seaming devices, and a minimum of 3 feet for hand-held devices.
5. One inch (1") wide cutouts of the trial weld will be subject to shear and peel adhesion testing at the site. A minimum of three cutouts will be tested for shear, and an additional three cutouts will be tested for peel using a digital readout tensiometer and the testing procedures of ASTM D 6392.

A trial weld sample shall be considered passing, according to the following table (Table 10.5), for all specimens tested in peel and shear:

Table 10.6

Seam Sample Requirements

Property	40 mil LLDPE Smooth & Textured	60 mil HDPE Smooth & Textured
Shear Strength	60 ppi	120 ppi
Shear Elongation ⁽¹⁾	50%	50%
Peel Adhesion -- Fusion	50 ppi	91 ppi
Peel Adhesion -- Extrusion	44 ppi	78 ppi
NOTE: (1) - for laboratory tested samples only		

For trial welds, all specimens must meet the seam strength criteria with 0% incursion into the welded area.

A failed trial weld shall not be retested. The seaming equipment and the Seamer that produced the failed trial weld shall not be allowed to weld the project geomembrane until deficiencies or conditions are corrected and successful trial welds are achieved.

The CQA Consultant shall observe the trial weld preparation and testing, and verify that requirements of the CQA Plan are met. The CQA Consultant will document trial welds, test results, and appropriate responses.

10.5.3 Seaming and Testing Equipment

The Geosynthetics Contractor shall perform the following:

1. Use extrusion welders and track fusion welders for field seaming. Extrusion welders shall be equipped with gauges to indicate the temperature in the welder and the pre-heat nozzle temperature.
2. Provide a field tensiometer for on-site shear and peel tests. This device shall meet the requirements for testing bonded seam strength (shear) and peel adhesion according to ASTM D6392.
3. Provide air pressure/vacuum pump, air pressure measuring devices, and vacuum boxes with the capabilities for air pressure and vacuum box testing as required in the CQA Plan.
4. Provide coupon die and press to produce weld coupons in the field for shear and peel testing.
5. If portable gasoline-powered electric generators need to be used on the geomembrane liner, use a protective lining and splash pad large enough to collect spilled fuel under the generator.

10.5.4 Seam Preparation

10.5.4.1 Extrusion Welding

The Geosynthetics Contractor shall perform the following:

1. Overlap the geomembrane panels to be welded a minimum of three inches. Unless approved by the Engineer, extrusion welding will not be used for production seams.
2. Clean the geomembrane panel prior to seaming to assure that the area is clean and free of moisture, dirt, dust and debris.
3. Purge the extruder prior to beginning the seam to remove all heat-degraded extrudate from the barrel.
4. Keep the welding rod clean and dry.

The CQA Consultant shall verify and document that geomembrane seam overlapping and preparation for extrusion welding is performed as required by the CQA Plan.

10.5.4.2 Fusion Welding

The Geosynthetic Contractor shall perform the following:

1. Overlap the geomembrane panels a minimum of four (4) inches.
2. Clean the geomembrane seam area prior to seaming to assure that the area is clean and free from moisture, dirt, dust, and debris. No grinding is required for fusion geomembrane welding.
3. Use a protective, moveable layer ('rub sheet') directly below the overlap of geomembrane that is to be seamed, if required to prevent build-up of moisture between the panels.

The CQA Consultant shall verify and document that geomembrane overlapping and preparation for fusion seaming is performed as required by the CQA Plan. All production seaming shall be performed by fusion welding processes.

10.6 Non-Destructive Seam Testing

The Geosynthetic Contractor shall perform non-destructive tests on all field seams over their full length. Test equipment required for non-destructive testing shall be furnished and operated by the Geosynthetics Contractor. Where the seam cannot be non-destructively tested, as determined by the CQA Contractor, the Geosynthetics Contractor shall submit to the CQA Contractor an alternate testing method for approval.

The CQA Consultant shall observe and document the results of all non-destructive seam testing. The CQA Consultant shall verify that the test methods meet the requirements of the CQA Plan, and document that all seams that fail non-destructive tests are repaired according to the CQA Plan.

10.6.1 Air Pressure Testing

The Geosynthetics Contractor shall perform the following:

1. Conduct air pressure testing wherever determined feasible by the CQA Consultant on dual track fusion seams.
2. Use the following equipment for air pressure testing of dual track fusion seams:
 - a) An air pump or pressure tank equipped with a pressure gauge capable of generating and sustaining a minimum pressure of 25 psi and mounted on a cushion to protect the geomembrane. The air pump may be manual or motor driven.
 - b) A manometer or other pressure measuring device equipped with a sharp needle.

3. Use the following procedures when performing air pressure testing:
 - a) Seal both ends of the seam area to be tested.
 - b) Insert a manometer or other approved pressure gauge into both ends of the channel created by the dual track fusion welding. Means of pressurizing must be provided.
 - c) Energize the air pump to a minimum pressure of 25 psi, the valve shall be closed, and the pressure shall be sustained for five minutes. Long seams may require a stabilization period prior to the start of the testing period to account for pressure equalization and temperature fluctuations.
 - d) If there is a loss of pressure exceeding three (3) psi for 60 mil material or four (4) psi for 40 mil material, or the pressure does not stabilize, the faulty area shall be located, repaired and retested.
 - e) Ensure that the air channel is not obstructed by releasing air from the end of the seam opposite the manometer and observe pressure drop.
 - f) Remove the manometer and seal the holes.

10.6.2 Vacuum Box Testing

The Geosynthetics Contractor shall perform the following:

1. Perform vacuum box testing for all seams that cannot be air tested.
2. Use the following equipment for vacuum pressure testing:
 - a) A vacuum box assembly consisting of a rigid housing, a transparent viewing window, a soft gasket attached to the bottom, a valve assembly and a vacuum gauge capable of registering, up to 10 psi.
 - b) A vacuum pump assembly equipped with a pressure controller and pipe connections.
 - c) Additional fittings and connections as needed to perform the tests.
3. Use the following procedure when performing the vacuum pressure testing:
 - a) Trim excess geomembrane sheet overlap, if any.
 - b) Apply a soapy solution to a length of the geomembrane approximately 12 inches by 48 inches along the seam (approximately the length of the vacuum box).

- c) Place the vacuum box over the wetted area and apply pressure to seal the box over the seam. Apply a minimum vacuum pressure of five (5) psig to the interior of the box.
- d) For a period of approximately 10 seconds, examine the geomembrane seam through the viewing window for the indication of soap bubbles.
- e) If no bubbles appear, release the vacuum and move the vacuum box to the next area of the seam, with a minimum three (3) inch overlap. Repeat the process.
- f) Mark all areas where soap bubbles formed and repair the seam as required in the CQA Plan. Retest the repaired seam.

10.7 Destructive Seam Testing

10.7.1 Sampling

The Geosynthetic Contractor shall perform the following:

1. Obtain at least one destructive test sample per day per seaming crew or machine or every 500 feet of seam, whichever is greater, from locations specified by the CQA Consultant. Additional destructive test samples shall be taken as directed by the CQA Consultant.
2. Cut the destructive test samples as seaming progresses in the locations designated by the CQA Consultant. The destructive test samples shall be nominally 12 inches wide by 45 inches long, with the seam centered lengthwise. One cutout from each end of the sample will be field tested prior to destructive testing. The remaining sample is to be cut into thirds (2-15" samples, 1-12" sample), with two pieces given to the CQA Consultant (1-15" laboratory test sample and 1-12" archive sample) and the other sample retained by the Geosynthetics Contractor, if requested.
3. Label all samples with the location and seam number and record the date, location, time, roll number, seam number, welding machine, welding technician, and ambient temperature.
4. Repair all holes in the geomembrane resulting from obtaining the destructive test samples. All patches shall be vacuum tested.
5. Locate and document the destructive test sample locations on the panel layout drawing.

The CQA Consultant shall perform the following:

1. Determine and identify the locations for destructive test sampling.

2. Verify and document that the Geosynthetics Contractor's destructive sampling and testing procedures meet the requirements of the CQA Plan.
3. Send the destructive test samples to an off-site laboratory for testing. On-site destructive testing performed in a controlled environment by qualified individuals of the CQA Consultant may be utilized in place of an off-site laboratory, if approved by the Owner.
4. Verify and document that all destructive test results meet the requirements of the CQA Plan. Observe and document all subsequent activities relating to the repair and patching of the destructive test sample location.

10.7.2 Testing

The CQA Consultant shall perform the following:

1. Test destructive samples for bonded seam strength (shear) and for peel adhesion. Samples from dual track welds shall be tested for peel adhesion on both tracks of the seam.
2. Cut out ten, one-inch wide replicate specimens from the destructive test sample. Test five specimens for shear and five specimens for peel strength in accordance with ASTM D6392. The passing criteria is as follows:
 - a) For HDPE seams (both smooth and textured), four (4) out of five (5) peel specimens must meet or exceed the values listed in Table 10.6 with 50% or less seam separation as a percentage of the total weld area. The fifth specimen must achieve 80% of the passing strength requirement listed in Table 10.6, with 50% or less seam separation as a percentage of the total weld area.
 - b) For LLDPE seams (both smooth and textured), four (4) out of five (5) peel specimens must meet or exceed the values listed in Table 10.6 with 50% or less seam separation as a percentage of the total weld area. The fifth specimen must achieve 80% of the passing strength requirement listed in Table 10.6, with 50% or less seam separation as a percentage of the total weld area. All five (5) specimens tested in shear shall meet the elongation requirement of 50%.
 - c) The following are unacceptable break codes per their description in ASTM D6392; for Fusion Welds: AD and AD-BRK > 25%, for Extrusion Welds: AD1, AD2, and AD-WLD (unless strength is achieved, for AD-WLD only).
3. The Geosynthetic Contractor shall ensure that the following procedures are followed if a sample fails a field destructive test:

- a) Retrace the welding path to an intermediate location (at a distance of approximately 10 feet from each side of the failed test), at the CQA Consultant's discretion, and take additional destructive test samples. If this test passes the CQA Plan criteria, then the seam shall be repaired between that location and the original failed test location. If the test fails, the process is repeated. All failed test samples must be bounded by passing test samples or the point at which the particular seaming device was taken out of service.
- b) A laboratory destructive test of a previously performed trial weld sample may be used as a bounding sample for a failed destructive test.
- c) Over the length of seam failure, either cut out the old seam, reposition the panel and reseam, or install a cap-strip, as required by the CQA Consultant.
- d) Vacuum test all extrusion weld repairs. Additional destructive samples may be taken at the discretion of the CQA Consultant.

The CQA Consultant shall perform the following:

- 1. Verify and document that the testing and sampling procedures meet the requirements of the CQA Plan.
- 2. Verify and document that the results of the testing performed meets the requirements of the CQA Plan.
- 3. Observe and document all subsequent activities associated with the geomembrane repairs required by the failing destructive sample tests.

10.8 Defects and Repairs

The CQA Consultant shall perform the following:

- 1. As each geomembrane panel is deployed, or as soon as possible after deployment, observe the geomembrane surface for damage and imperfections including holes, cracks, thin spots, tears, punctures, blisters and foreign material. The surface of the geomembrane shall be clean at the time of the CQA Consultant's observations.
- 2. Identify, mark and observe non-destructive testing of suspect locations.
- 3. Verify and document that all defects found as a result of:
 - a) The inspection and testing of suspected areas.
 - b) Non-destructive tests.
 - c) Destructive tests.

- d) Any other inspection or observation, are identified for repair.
- 4. Verify and document that all identified defects are appropriately repaired in accordance with the CQA Plan. Repair equipment, materials and procedures are subject to the approval of the CQA Consultant.
- 5. Verify and document that all repairs are non-destructively tested and either pass the test, or are again repaired and tested until passing test results are achieved.
- 6. Record the locations and types of defects and record the repairs and non-destructive testing at these locations.

The Geosynthetic Contractor shall perform the following:

- 1. Clean the geomembrane surface prior to inspection of the geomembrane by the CQA Consultant. The geomembrane surface shall be brushed, blown, or washed if the amount of dust or mud inhibits observations.
- 2. Perform non-destructive tests of each suspect location, in the presence of the CQA Consultant. Each location that fails the non-destructive tests shall be marked by the CQA Consultant, and repaired according to the procedures in the CQA Plan.
- 3. Repair any portion of the geomembrane which exhibits a flaw or fails a destructive or non-destructive test as follows:
 - a) Small holes shall be repaired by extrusion welding. If the hole is larger than 1/4 inch, the hole is to be patched.
 - b) Failed seams shall be repaired in accordance with Section 10.7.2(3)(c) or (d).
 - c) Tears shall be repaired by patching. Where the tear is on a slope or an area of stress and has a sharp edge, the tear is to be rounded by cutting prior to patching.
 - d) Blisters, large holes, undispersed raw materials and contamination by foreign matter shall be repaired by large patches.
 - e) Surfaces of the geomembrane that is to be patched shall be abraded and cleaned no more than 15 minutes prior to the repair. No more than 5% of the thickness shall be removed by abrading.
 - f) Folded geomembrane that has been creased or otherwise damaged, shall be replaced. Patching may be permitted with the approval of the CQA Consultant.
 - g) Patches shall be round or oval in shape, made of the same geomembrane, and extend a minimum of three inches beyond the edge of the defect. All patches shall be of the same compound and thickness as the geomembrane being repaired. All patches

shall have their top edge beveled with a grinder prior to placement on the geomembrane.

- h) All surfaces must be clean and dry at the time of repairs. All seaming equipment used in the repairs must be approved by the CQA Consultant. All repair procedures, materials, and techniques must be approved by the CQA Consultant.
- 4. Perform non-destructive tests on each repair location. Repairs that pass the non-destructive test shall be noted as an acceptable repair. Failed tests indicate that the repair shall be repeated and retested until a passing test is achieved. The CQA Consultant may also require a destructive seam test sample to be taken from a repaired seam. Acceptance of the repaired seam shall then also be subject to the sampling, testing and acceptance criteria of the CQA Plan.

10.9 Geomembrane Acceptance

The Geosynthetic Contractor shall retain ownership and responsibility of the geomembrane until acceptance by the Owner. The Owner will accept the geomembrane installation when:

- 1. All required documentation from the geomembrane manufacturer and the Geosynthetics Contractor has been received and accepted.
- 2. The geomembrane installation is complete.
- 3. Verification that all field seams and repairs, including associated testing, is complete.
- 4. The geosynthetic installation has been accepted in a final approval notice signed by the CQA Consultant and the Owner.

11 GEONET, GEOTEXTILE, AND BONDED GEOCOMPOSITE MATERIAL

The proposed design may include geonet, geotextile and/or geocomposite materials as indicated in the engineering plans and specifications for drainage and stability purposes in the landfill cover and base liner. This section of the CQA Plan addresses geonet, geotextile, and geocomposite materials for use in the landfill liner system and/or the final cover.

11.1 Submittals

The manufacturer of the geonet, geotextile and bonded geocomposite shall submit the following:

1. Manufacturer's specifications and certification stating that the materials meet or exceed the applicable requirements of Tables 11.1 and 11.2.
2. Manufacturer's instructions for handling and storage of the geonet, geotextile and/or the bonded geocomposite.
3. Manufacturer's quality control test results for geonet, geotextile and/or bonded geocomposite. These test results shall identify each roll of bonded geocomposite with the corresponding roll identifications of the geonet and geotextiles incorporated therein such that the results of the following tests can be positively correlated with the geocomposite roll identification. The testing shall be performed by the manufacturer as follows:
4. The geonet shall be sampled at a minimum frequency of one (1) per every 100,000 square feet delivered to the jobsite and shall be tested by the manufacturer to verify that the requirements in Table 11.1 are met.
5. The geotextile shall be sampled at a minimum frequency of one (1) per every 100,000 square feet delivered to the jobsite and shall be tested by the manufacturer to verify that the requirements in Table 11.2 are met. Testing for UV Resistance is not required; certification by the manufacturer that this requirement is achieved shall be provided.
6. The bonded geocomposite shall be sampled at a minimum frequency of one (1) per every 100,000 square feet delivered to the jobsite. The geonet and the geotextile from the geocomposite samples shall be certified that the requirements of Section 11.2.3 are met.

The CQA Consultant shall verify and document that the information submitted by the manufacturer meets the requirements of the CQA Plan.

11.2 Materials

11.2.1 Geonet

The geonet shall be comprised of HDPE and shall meet the following minimum average roll values (Table 11.1):

Table 11.1

Geonet Minimum Requirements

Property	Test Method	Criteria
Specific Gravity	ASTM D792 or D1505	0.935
Carbon Black Content	ASTM D1603 or D4218	2 to 3%
Thickness	ASTM D5199	0.250 inches
Transmissivity ⁽¹⁾	ASTM D4716	0.0010 m ² /sec @ gradient of 1.0 and normal load of 10,000 psf
Tensile Strength (MD)	ASTM D7179	50 ppi
NOTES: (1) Net transmissivity not applicable if used in a geocomposite. See Section 11.2.3.2		

11.2.2 Geotextile

The geotextile shall consist of continuous filament, needle punched, non-woven material and shall meet the following minimum average roll values:

Table 11.2

Geotextile Minimum Requirements

Property	Test Method (ASTM)	Nonwoven Geotextile Weight				
		6 oz/yd ²	8 oz/yd ²	10 oz/yd ²	12 oz/yd ²	16 oz/yd ²
Grab Strength	D4632	160 lb.	220	270	300 lb.	370 lb.
Puncture Strength	D6241	450 lb.	600	725	800 lb.	900 lb.
Trapezoidal Tear	D4533	65 lb.	90	100	115 lb.	145 lb.
Apparent Opening Size	D4751	≤ #70 sieve	≤ #80 sieve	≤ #100 sieve	≤ #100 sieve	≤ #100 sieve
UV Resistance	D4355, 500 hr.	> 70%	> 70%	> 70%	> 70%	> 70%
Water Flow Rate	D4491	125 gpm/ft ²	100 gpm/ft ²	75 gpm/ft ²	65 gpm/ft ²	40 gpm/ft ²
Permittivity	D4491	1.63 sec-1	1.26 sec-1	0.94 sec-1	0.8 sec-1	0.5 sec-1
Permeability	D4491	0.3 cm/sec	0.3 cm/sec	0.3 cm/sec	0.3 cm/sec	0.25 cm/sec

The geotextile shall meet the opening size criteria based upon the following formulas:

$$\frac{O_{95}(\text{Geotextile})}{d_{85}(\text{Upper}_{-}\text{Soil})} < 2$$

11.2.3 Geocomposite

The bonded geocomposite shall be comprised of a geonet heat bonded to, and sandwiched between two geotextiles for slopes and geonet heat bonded to and sandwiched between a single geotextile for the landfill floor. The geonet shall meet the requirements of Table 11.1. The geotextile shall be not less than 6 oz/yd² and shall meet the requirements of Section 11.2.2. The geocomposite shall meet the following additional requirements:

1. The geotextile/geonet bond shall exhibit a minimum ply adhesion strength of 0.5 pound per inch with a minimum average ply adhesion strength of 1.0 pound per inch, when tested in accordance with ASTM D7005.
2. The bonded geocomposite shall exhibit a transmissivity equal to, or greater than 4.59 x 10⁻⁴ m²/sec, as specified in the design report calculations dated 12/12/2003.
3. Testing shall be performed in accordance with ASTM D4716 to demonstrate compliance with this requirement. The adequacy of the transmissivity test results shall be determined by the CQA Consultant.
4. The bonded geocomposite to be used in the final cover system shall exhibit a transmissivity equal to, or greater than that specified in the design report. Testing shall be performed in accordance with ASTM D4716 to demonstrate compliance with this requirement. The adequacy of the transmissivity test results shall be determined by the CQA Consultant.

11.3 Material Delivery, Handling, and Storage

The Geosynthetics Contractor shall perform the following:

1. Assure that the geonet, geotextile, and bonded geocomposite rolls are packed, shipped, off-loaded and stored by appropriate methods to prevent damage. The Geosynthetics Contractor shall be responsible for replacing any damaged or unacceptable material at no cost to the Owner.
2. Protect the materials from mud, dust, dirt, and other damaging conditions. The manufacturer's procedures for shipping, handling and storage shall be followed.
3. Ship the geotextiles and bonded geocomposites in a closed container.

4. Assure that the geonet, geotextile and the bonded geocomposite rolls are clearly labeled with the manufacturer's name, roll number, lot number, and batch number. Information shall be provided by the manufacturer that clearly identifies the corresponding roll information for the geonet and geotextiles incorporated into the geocomposite.

The CQA Consultant visually inspect the surface of all rolls for defects and/or damage, and document any observed damage to any of the rolls.

11.4 Material Deployment

The Geosynthetics Contractor shall perform the following:

1. Assure that all geonet, geotextile, and bonded geocomposite materials are handled in a manner to prevent damage.
2. Assure that no materials are placed over the geomembrane until all required documentation regarding the geomembrane installation is complete.
3. Assure that the surface on which the materials are to be placed does not contain stones or excessive dust that could cause damage to any geosynthetic component.
4. In periods of high winds, weight all geosynthetic components with sandbags or similar material. The Geosynthetics Contractor shall be responsible for damage to the geosynthetic components resulting from wind damage.
5. Cut the geonet, geotextile and bonded geocomposite materials using an approved cutter. Care must be taken to protect the underlying geomembrane when the materials are being cut in-place.
6. Use equipment to deploy the geosynthetic components that will not cause damage to any material.
7. Assure that no personnel working on the geosynthetic materials shall smoke, wear damaging shoes or engage in other activities that could damage the materials.

In addition to the above, the Geosynthetic Contractor shall comply with requirements as set forth in Section 12 of this Plan, Deployment and Installation of Geosynthetic Components, pertaining to the use of wheeled vehicles on geosynthetics during construction. The CQA Consultant shall observe and document the deployment of geonet, geotextile and bonded geocomposite to verify that all provisions of the CQA Plan are met.

11.5 Field Seams

The Geosynthetic Contractor shall perform the following:

1. Field seams for geonet:

- a) The overlap for seams shall be six inches.
- b) Adjacent panels of the geonet shall be joined using self-locking nylon straps placed at five feet intervals along the seam length on the sides and at one foot intervals along the seam length at the ends. Only ties which do not damage the underlying geomembrane shall be used. Metal ties shall not be allowed.
- c) Ties shall be white or bright-colored for easy identification.
- d) Where more than one layer of geonet is installed, overlaps must be staggered and layers tied together.
- e) Orient all seams located on slopes steeper than 5% parallel to the fall of the slope, unless approved by the Design Engineer.

2. Field seams for geotextile:

- a) The overlap for seams shall be at least four inches.
- b) The geotextile shall be continuously sewn between panels, unless other seaming methods are approved by the CQA Consultant.
- c) The thread used to sew the geotextile panels together shall meet the manufacturer's requirements.
- d) Orient all seams located on slopes steeper than 5% parallel to the fall of the slope, unless approved by the Design Engineer.

3. Field seams for bonded geocomposite:

- a) The overlap for seams shall be six inches.
- b) Adjacent panels of the geonet shall be joined using self-locking nylon straps placed at five feet intervals along the seam length on the sides and at one foot intervals along the seam length on the ends. Butt seams between roll ends shall be covered by a piece of geotextile overlapped six (6) inches on each side of the geocomposite seam, and heat bonded in place. Only ties which do not damage the underlying geomembrane shall be used. Metal ties shall not be allowed.
- c) Ties shall be white or bright-colored for easy identification.
- d) The geotextile shall be continuously sewn between panels.

- e) The thread used to sew the geotextile panels together shall meet the manufacturer's requirements.
- f) Orient all seams located on slopes steeper than 5% parallel to the fall of the slope, unless approved by the Design Engineer.

The CQA Consultant shall observe and document the seaming of geonet, geotextile, and bonded geocomposite to verify that the requirements of the CQA Plan are met.

11.6 Defects and Repairs

The Geosynthetic Contractor shall repair any holes or tears in the geosynthetic materials as follows, using patches made from the same material:

1. Damaged areas of geotextile shall be repaired by sewing a patch in place with a 12-inch overlap in all directions.
2. Damaged areas of geonet shall be repaired by placing a patch overlapping two feet beyond the edges of the hole or tear in all directions. A geonet patch shall be secured to the original geonet every six inches using nylon ties. If the damaged area comprises over 50% or more of the geonet roll width, the damaged area shall be cut out and the two portions of the geonet shall be joined.
3. Damage to a bonded geocomposite shall be repaired as noted for geonets, and the upper geotextile of the patch shall be sewn to the upper geotextile of the geocomposite.

The CQA Consultant shall observe and document the repairs made to the geonet, geotextile and bonded geocomposite to verify that repairs are made according to the requirements of the CQA Plan.

11.7 Material Acceptance

The Geosynthetics Contractor retains ownership and responsibility for the geonet, geotextile and bonded geocomposite materials until accepted by the Owner.

The Owner will accept the geosynthetic components installation when:

1. All required documentation from the manufacturer and the Geosynthetics Contractor has been received and accepted.
2. The installation is complete.
3. The completion of field seams and repairs, including associated testing, is verified.

4. Written certification documents, including drawings, sealed by the CQA Consultant have been received by the Owner.

12 DEPLOYMENT AND INSTALLATION OF GEOSYNTHETIC COMPONENTS

In addition to deployment and installation requirements detailed in previous sections of this Plan, MDEQ has proposed that the following minimum allowable controls be implemented in order to allow vehicles to be utilized to install geosynthetics which shall be implemented by all parties involved in the construction of the landfill:

1. Use of vehicles for the deployment of geosynthetic components shall not harmfully affect the integrity of liner subgrade. As an example, either by adversely affecting the moisture-density (compaction) or leaving ruts.
2. Use of vehicles directly on geosynthetics is to be minimized to the extent possible by preplanning the panel layout to minimize the number and length of seams required.
3. The vehicle used for deployment shall be chosen to minimize static and dynamic forces, with ground pressure being no more than 4 pounds per square inch of contact surface. The ground pressure for each vehicle must be calculated and documented by CQA Consultant. Ground contact pressure is to be calculated by dividing the gross vehicle weight (weight of the tractor/vehicle and attachments including the driver and a full tank of fuel) by the actual surface contact area of the tires. Surface contact area of the tires must be measured on a smooth hard surface with the tire inflation at the same level as will be utilized during deployment of the Geosynthetics. NOTE: Tires with an "Agriculture" tread will have a much smaller surface contact area than a tire with a "turf" tread.
4. Use of vehicles shall be limited to deployment of geosynthetics and not other uses, such as carrying personnel or equipment.
5. No more than one person shall be on the vehicle at any time.
6. Vehicles shall not to be used on slopes greater than four on one.
7. Four wheel drive shall be required on all vehicles and engaged at all times.
8. There shall be no sudden starts of the vehicle or spinning of tires. The vehicle shall be equipped with a centrifugal clutch. To avoid spinning of tires, power shall be applied slowly and smoothly.
9. There shall be no sudden stops of the vehicle. Sliding of tires is not allowed.
10. Vehicle tires shall be inspected for mud, dirt, rock, debris, and other conditions that could potentially puncture or damage the geosynthetic material prior to driving onto the geosynthetic materials from the subgrade. The tires shall be cleaned as necessary to

remove mud, dirt, rock, debris, and other conditions that could potentially puncture or damage the geosynthetic material.

11. Excessive turning while driving on the Geosynthetic material shall not be allowed. Tight radius turns shall be prohibited. Movement shall be primarily forward and backward while deploying. Turning shall be minimized to the greatest extent possible. In general, vehicles shall enter and exit lined areas at right angles.
12. Vehicles shall not be driven over wrinkles, i.e., wrinkles in the liner are NOT allowed to be folded over or to be otherwise “creased.”

These minimum allowable controls are incorporated into this Plan in order to allow for the use of wheeled vehicles during deployment and installation of geosynthetic components as specified above. If **ANY violation** of the above conditions is observed by the CQA Consultant, Owner, or MDEQ/Certified Health Department representatives, then no further use of vehicles directly on a geosynthetic layer will be allowed for the duration of project.

In addition, if **ANY damage** to a geosynthetic layer from the use of vehicles is observed by the CQA Consultant, Owner, or MDEQ/Certified Health Department representatives, then no further use of vehicles directly on a geosynthetic layer will be allowed for the duration of project.

This section is subject to revision based on other regulatory changes which further describe the deployment of geosynthetic materials.

13 GRANULAR SOILS

All granular materials used in the landfill construction project for drainage layers, protective soil layers, gas venting layers and pipe bedding shall meet the requirements of this section and the engineering plans and specifications.

13.1 Materials

The granular soils and select aggregates used in the leachate collection and removal system, the landfill gas collection system and drainage layer components of the final cover shall meet the following requirements:

1. The granular soil and select aggregate shall be free of organic material, debris, trash, clay clods or other deleterious material. No sharp-edged rocks or hard objects shall be allowed.
2. The granular soil drainage layer shall have maximum particle size of 1.5-inches, if used in conjunction with a protective geotextile. Granular soil drainage layer shall have 98% of the particle size less than 3/8-inch, if placed in direct contact with the geomembrane. The granular soil drainage layer shall be comprised of clean subangular material durable non-carbonate origin (carbonate content less than 15 percent) and shall be free of any materials capable of damaging the liner material.
3. Granular drainage soils shall have no more than 5% by weight may pass the #200 US Standard Sieve by washing.
4. The select aggregate shall be placed on a six (6) ounce non-woven geotextile to protect the geomembrane. In no instance shall the select aggregate be place directly on the geomembrane.
5. Samples of granular soil and select aggregate shall be obtained on a frequency of at least one per every 1,000 cubic yards placed and tested for grain size distribution using a sieve analysis in accordance with ASTM D422.
6. Granular soil and select aggregate samples shall be obtained on a frequency of at least one per every 2,500 cubic yards placed and tested for hydraulic conductivity in accordance with ASTM D2434. The granular soil samples shall be collected and tested by the CQA Consultant. The CQA Consultant will verify that the test results meet the requirements of the CQA Plan.
7. Granular soils and select aggregate shall meet the minimum permeability as required by the project design.

8. Select aggregate shall be tested for carbonate content in accordance with ASTM D3042, modified to a pH of 4.0, at a frequency of one per project or one per every 10,000 cubic yards placed, whichever is greater.

13.2 Construction Methods/Placement

The Contractor shall install the granular soils in accordance with the following:

1. Low ground-pressure tire or track equipment shall be utilized for work on the granular soil materials whenever the thickness of the granular soil material is less than 24 inches. The granular soil beneath roadways for transporting material over the cell floor and sideslopes shall be at least three feet thick at all times. Excessive rutting shall be prevented. No portion of any earthmoving equipment shall be allowed to contact the underlying geomembrane material at any time.
2. Granular soil material shall be placed to minimize stresses on the underlying geomembrane. Placement of granular soil shall proceed by pushing the granular soil up the sideslope. No granular soil shall be allowed to fall or slide into place down the sideslope.

The CQA Consultant will perform the following:

1. Observe the placement of the granular soil and document soil material uniformity and the presence or absence of foreign materials.
2. Observe for potential and actual damage to the geomembrane during granular soil placement. When damage is suspected, the geomembrane surface shall be exposed to verify its condition. Actual damage to the geomembrane shall be documented and corrective action shall be taken in accordance with procedures outlined in the CQA Plan.
3. Certify that the granular soil material has been placed in accordance with the engineering plans and specifications at the locations tested.

13.3 Survey

The Surveyor shall survey the granular soil layer on a 100-foot grid system to verify the granular soil layer thickness. Alternately, direct depth checks may be used to determine the granular soil layer thickness. Locations where the granular soil layer thickness is less than that required on the engineering plans shall be increased to meet the project specifications. The CQA Consultant will document the placement of additional granular soil material to meet the requirements of the CQA Plan.

14 PIPING

All piping used in the landfill construction project shall meet the requirements of the engineering plans and specifications.

14.1 Pipe Material

The pipe manufacturer will provide the CQA Consultant with the following information:

1. Documentation that the pipe provided to this construction project that the pipe meets the engineer's specifications.

The CQA Consultant shall review the manufacturer's information to verify that the CQA Plan requirements are met.

14.2 Delivery and Storage

The CQA Consultant will document the following information when the pipe is delivered to the jobsite:

1. Name of manufacturer.
2. Product type and identification number.
3. Batch or lot number.
4. Date of manufacture.
5. Pipe diameter (I.D.).
6. Pipe Standard Dimension Ratio (SDR).

The pipe will be protected during shipment from excessive heat or cold, puncture or other damage. The pipe will be stored on-site in a manner to protect it from damage.

The CQA Consultant will inspect the pipe delivery paperwork to ensure that the information is correct. The CQA Consultant will also document in the daily summary report of the pipe material delivery.

14.3 Pipe Installation

The pipe will be joined by methods as defined by the Pipe Manufacturer.

The CQA Consultant shall perform the following:

1. Inspect the pipe material for compliance with the engineering plans and specifications.
2. Observe and document the placement and backfill of the pipe for compliance with the engineering plans and specifications.
3. Observe and document the placement and joining of the pipe for compliance with the engineering plans and specifications.

The Geosynthetic Contractor shall perform the following:

1. Pipe placement shall not be performed in the presence of excessive moisture.
2. Prepare the pipe subgrade condition and slope according to the engineering plans and specifications.
3. Join the pipe sections according to the pipe manufacturer's specifications.
4. Backfill the pipe according to the project's approved plans and specifications.

The Surveyor shall survey the installed pipe every 100 feet and at appurtenances to verify that the pipe location and grade is in conformance with the engineering plans and specifications.

14.4 Testing

The Contractor shall perform following:

1. Air test pipe segments which comply to the following:
 - a) Extend beyond the liner system.
 - b) Butt-fusion welded.
2. Ensure pipe section to be tested is clean and free of dirt, sand or other foreign material.
3. Pressure test in accordance with OSHA and ASTM requirements.
4. Use the following equipment for air testing pipe:
 - a) Polyethylene flange adapter with steel blind flange.
 - b) Temperature gauge (0°C to 100°C) tapped and threaded into blind flange.
 - c) Pressure gauge (0 to 15 psig).
 - d) Inlet valve to facilitate air pressure hose.

- e) Ball valve to release pipe pressure at test completion.
 - f) Polyethylene reducers to be used to adapt test flange to size of pipe being tested.
 - g) Air compressor shall provide adequate air supply for testing.
 - h) Pressurizing equipment shall include a regulator set to avoid over-pressurizing and damaging otherwise acceptable pipe.
5. Provide verification and results of gauge calibration prior to (less than 60 days) and after Project completion.
6. Use the following procedure when performing air tests:
- a) Ensure that appropriate safety measures are in place.
 - b) Set pressurizing equipment regulator to avoid over-pressurizing and damaging otherwise acceptable line.
 - c) Install blind flange with test apparatus on one end of section being tested and a fused cap on the opposite end.
 - d) Apply test pressure of 10 psig to test segment.
 - e) Observe test pressure for one (1) hour.
 - f) Correct pressure drop for temperature change.
 - g) Pressure drop over one (1) hour period should not exceed 1%.
7. The geosynthetic Contractor shall ensure that the following procedures are followed if a test segment fails:
- a) Check entire length of pipe and fusion joints for cracks, pinholes, perforations or other possible leakage points.
 - b) Check blocked risers and capped end for leakage and check gaskets at blind flanges.
 - c) Verify leaks by applying soap water solution and observe for bubble formation.
 - d) Repair pipe and fused joint leaks by cutting out leak area and re-fuse suitable segments.
 - e) After leaks are repaired, retest.

The CQA Consultant shall perform the following:

1. Verify and document that the testing procedures meet the requirements of the CQA Plan.
2. Verify and document that the results of the testing performed meets the requirements of the CQA Plan.
3. Observe and document all subsequent activities associated with the repairs required by the failing tests and the retesting of the failed segment.

15 PUMPS AND ELECTRICAL

Construction records shall include an inspection and testing of the sump, leachate removal and detection equipment, and any other associated equipment or structures to ensure that the design specifications including material and equipment specifications, coating specifications, and mechanical and electrical equipment installation specifications, are met.

15.1 Leachate Sump Certification

The CQA Consultant shall review the following compared to the engineering drawings and also document the following information, which is to be included in the Construction Certification Report:

1. Sump size (as determined from as-built survey data);
2. Working sump volume verified in the field (as determined by flooding the sump);
3. Effective stone porosity (as determined by ASTM C127 or through direct calculations based on field data obtained in 15.1(1) and (2) above);
4. As-built leachate removal pump on and off levels programmed into the pump control system (as determined by actual testing). Levels shall be documented in inches and correspond to as-built elevations of the constructed sump;
5. A description of the installed pump location (as determined by field measurements);
6. The pump cycle time, pump run time, and the pumping time required to remove liquids within the effective sump volume. This test may be conducted with stormwater collected within the sump or supplemented with water from other onsite sources; and
7. A description of the sump material and seam quality.

16 GENERAL EARTHFILL LAYER AND VEGETATIVE GROWTH FOR FINAL COVER SYSTEM

The protective cover layer shall be constructed of 24 inches of earthen material installed directly above the geomembrane component of the final cover system. The protective cover layer shall be constructed in accordance with the following requirements:

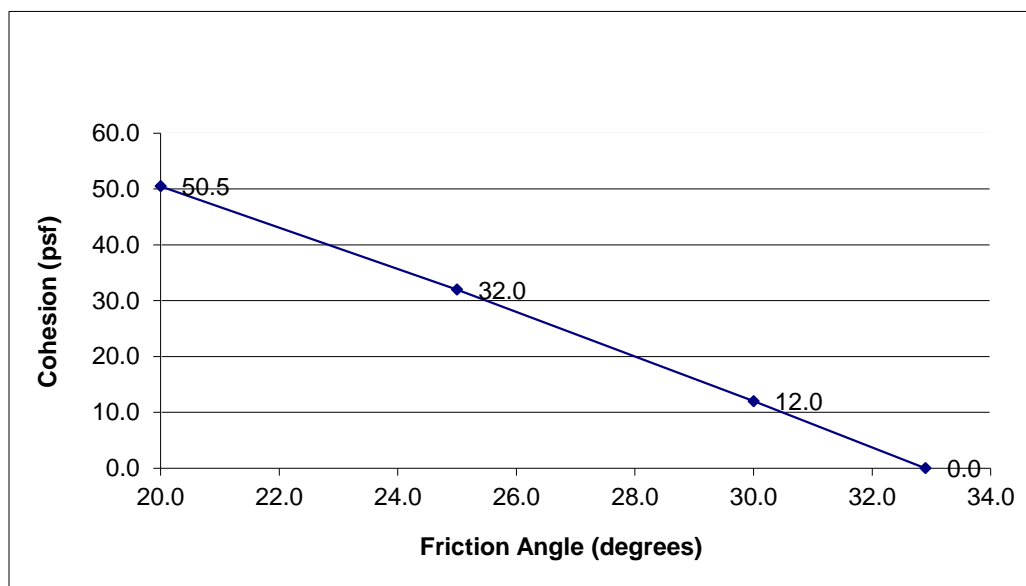
16.1 Materials

The soil used in the construction of the protective cover layer shall meet the following requirements:

1. The cover soil shall be free of refuse, concrete, debris, or other deleterious material that could puncture the underlying geomembrane. No sharp-edged rocks or hard objects shall be allowed.
2. The cover soil samples shall be collected and tested by the CQA Consultant. The CQA Consultant will verify that the test results meet the requirements of the CQA Plan.
3. Samples of cover soil shall be obtained at a frequency of at least one per material type and tested for direct shear interface. The geomembrane/protective cover soil interface shall have a minimum strength under saturated conditions as defined by Figure 1.

4. Figure 1

Required Interface Strength for Cap FML/Soil Cover Under Saturated Conditions



16.2 Construction Methods/Placement

The Contractor shall install the cover soils in accordance with the following:

1. Low ground-pressure tire or track equipment shall be utilized for work on the cover soil. The soil beneath roadways for transporting material over the construction area shall be at least three (3) feet thick at all times. Excessive rutting shall be prevented. No portion of any earthmoving equipment shall be allowed to contact the underlying geomembrane material at any time.
2. Cover soil material shall be placed to avoid damage to the geomembrane.

The CQA Consultant will perform the following:

1. Observe the placement of the cover soil and document soil material uniformity and the presence or absence of foreign materials.
2. Observe for potential and actual damage to the geomembrane during cover soil placement. When damage is suspected, the geomembrane surface shall be exposed to verify its condition. Actual damage to the geomembrane shall be documented and corrective action shall be taken in accordance with procedures outlined in the CQA Plan.
3. Certify that the cover soil material has been placed in accordance with the engineering plans and specifications at the locations tested.

16.3 Survey

Direct depth checks shall be used to determine the cover soil layer thickness. Locations where the cover soil layer thickness is less than that required on the project's approved plans shall be increased to meet the project specifications. The CQA Consultant will document the placement of additional cover soil material to meet the requirements of the CQA Plan.

17 TOPSOIL

All materials used for the construction and installation of the topsoil layer shall meet the requirements of this section and the engineering plans and specifications.

17.1 Materials

Topsoil used for supporting vegetative growth shall be provided by any of the following sources: on-site stockpile of native site material; on-site stockpile of off-site material; off-site material delivered by the Contractor. All materials used for topsoil shall meet the following requirements:

1. Soil material used as topsoil shall be loam, sandy loam, fine sandy loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, clay, loamy sand, loamy fine sand, sand, and fine sand, suitable to support vegetative growth.
2. Off-site topsoil shall not contain stones, lumps, roots, or similar objects larger than 2 inches in any dimension.
3. Off-site topsoil shall have a pH between 5.8 and 7.6.
4. Off-site topsoil shall have a minimum organic content of 3.0 percent and a composite average of 3.5 percent.

17.2 Testing

The Contractor shall perform the following:

1. Samples of topsoil shall be obtained at a frequency of at least one per material type and tested for grain size using ASTM D422, for pH using ASTM D2976, and for organic content using ASTM D2974.
2. If the Contractor is providing the material from an off-site source, the Contractor shall submit evidence of the required testing along with a minimum 50-pound sample of the proposed soil for each different material type.
3. No material shall be placed unless approved by the Engineer.
4. If, in the opinion of the Engineer, the soil is unsuitable for the proposed application, the Contractor shall submit to the Engineer the required suitable evidence specified above for soil from a different source.

17.3 Installation

Topsoil shall be installed in accordance with the following:

1. Topsoil shall be installed in a single six (6) inch lift.
2. The Contractor shall take care to insure that underlying soil remains intact and does not become mixed with the topsoil during installation.

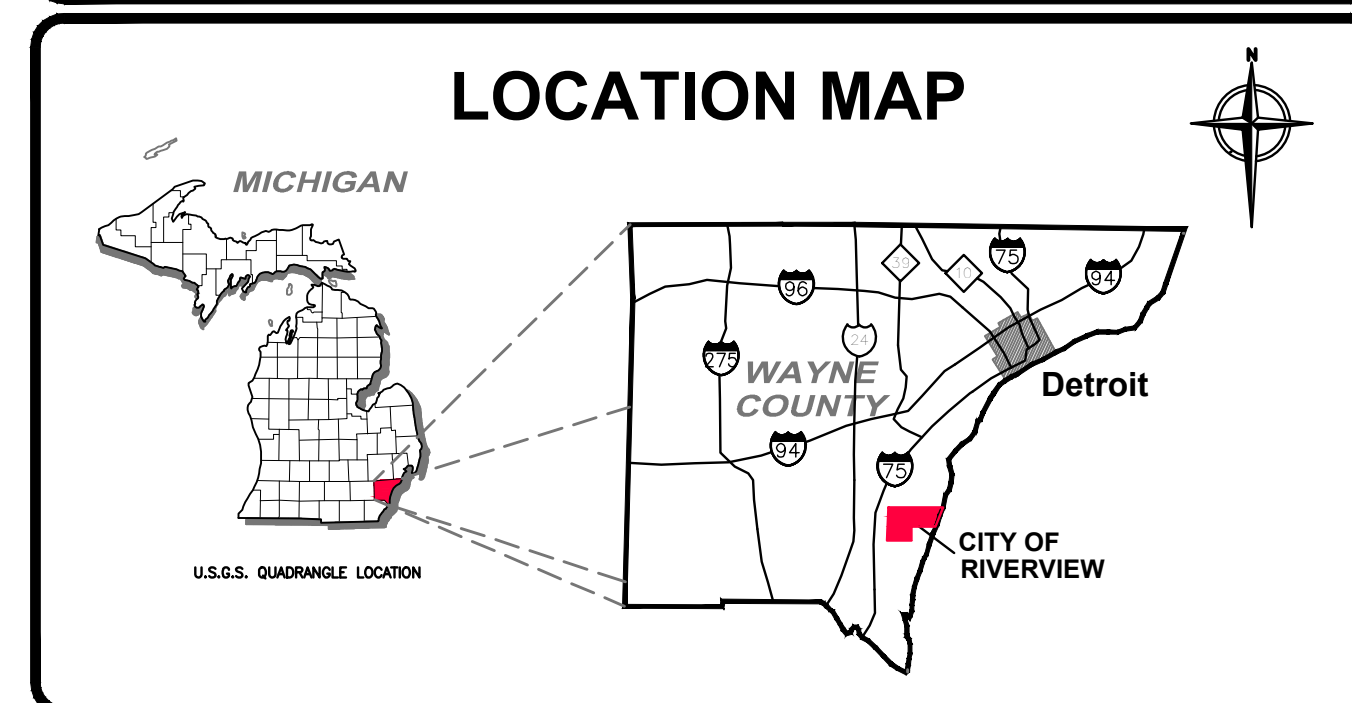
LIMITATIONS

The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

APPENDIX B
PROJECT DRAWINGS –
2023 SPRING GCCS CONSTRUCTION

MARCH 2023



**20863 GRANGE ROAD
RIVERVIEW, MI 48192**



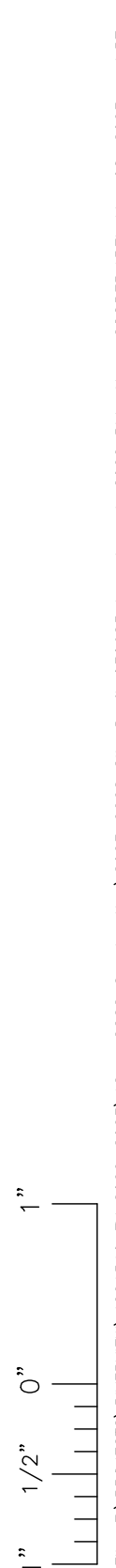
SHEET INDEX

	TITLE SHEET
1	EXISTING CONDITIONS PLAN
2	PROPOSED CONDITIONS PLAN
3	DETAILS 1
4	DETAILS 2
5	SPECIFICATIONS

CORNERSTONE PROJECT NO. 4221510.012
CITY OF RIVERVIEW BID NO. 2533

FOR BID


This drawing represents intellectual property of Cornerstone Engineering Group, LLC. Any modification to the original by other than Cornerstone Engineering Group, LLC personnel violates its original purpose and as such is rendered void. Cornerstone Engineering Group, LLC will not be held liable for any changes made to this document without express written consent of the originator.



- NOTES:

-

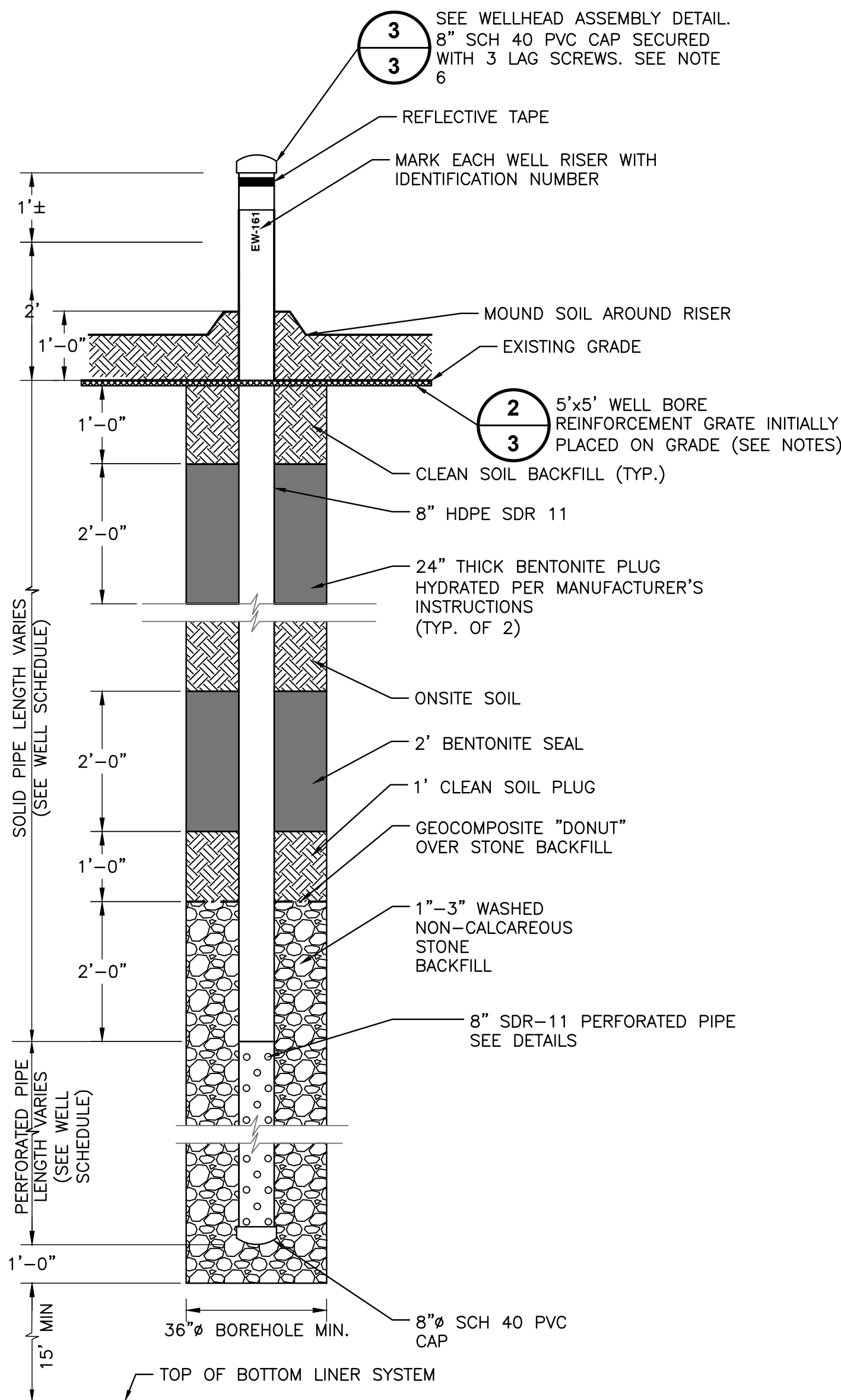
This drawing represents intellectual property of Tetra Tech. Any modification to the original by other than Tetra Tech personnel violates its original purpose and as such is rendered void. Tetra Tech will not be held liable for any changes made to this document without express written consent of the printer.



SHEET NO.

PROJECT NO.

PROJECT NO.
1510-012

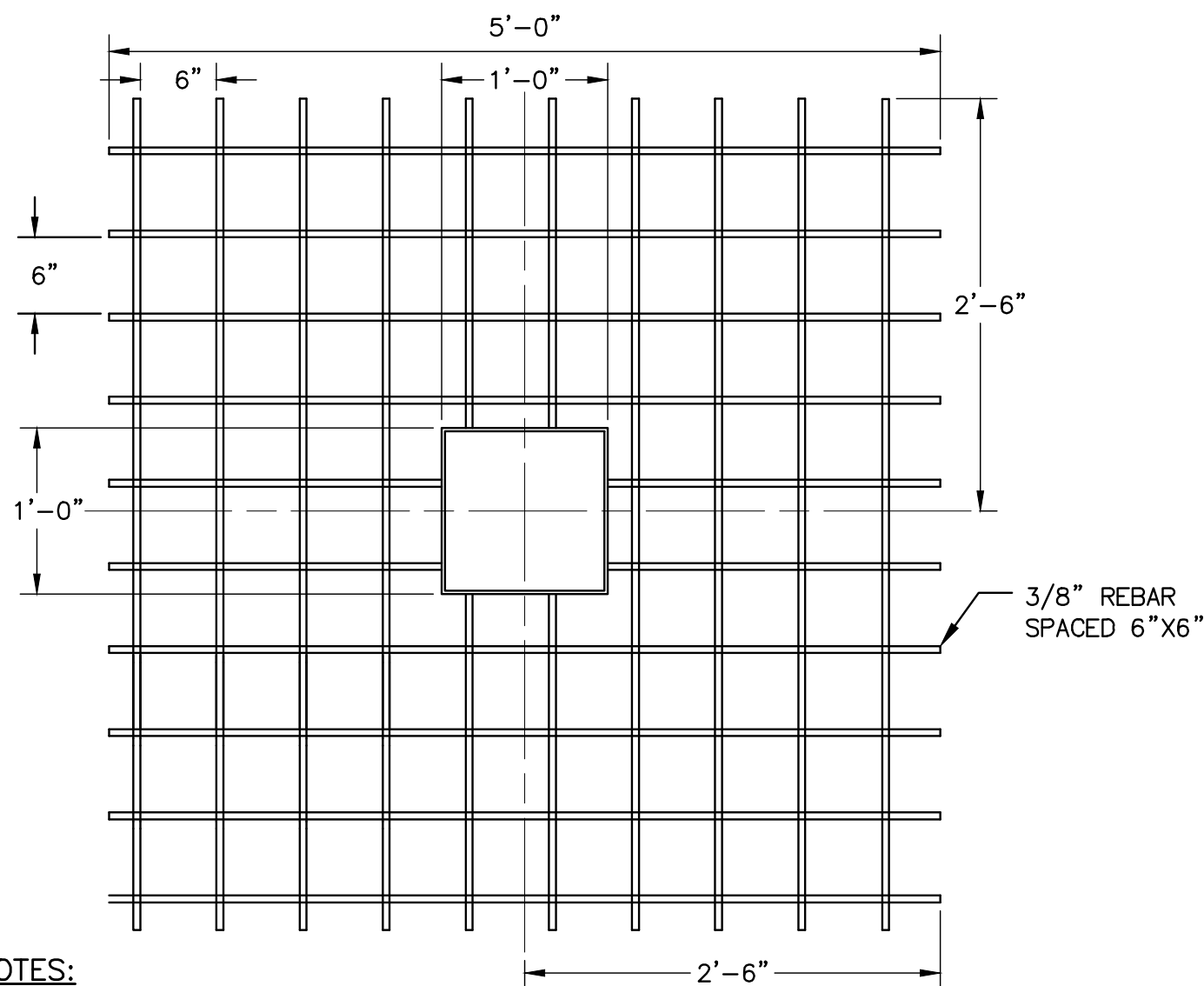


NOTES:

- ENGINEER SHALL SURVEY THE PROPOSED WELL LOCATIONS AND PROVIDE THE EXISTING GROUND SURFACE ELEVATION AT EACH LOCATION PRIOR TO THE COMMENCEMENT OF WELL DRILLING.
- ENGINEER SHALL ADJUST WELL SCHEDULE AS NECESSARY BASED ON THE PRE-CONSTRUCTION SURVEY.
- ALL SIGNATURES ARE REQUIRED ON THE FINAL WELL SCHEDULE PRIOR TO COMMENCEMENT OF DRILLING.
- WELL BORE SAFETY GRATE SHALL BE 100% WELDED AND CONFIGURED WITH 3/8" REBAR WITH 6"x6" SPACING. GRATE SHALL HAVE A 12"x12" SQUARE CENTER SPACED CUTOUT FOR WELL CASING.
- INSTALL WELL BORE SAFETY GRATE ON GRADE AROUND WELL IMMEDIATELY AFTER COMPLETING WELL. DURING INSTALLATION OF LATERAL RISER, GRATE SHALL BE BURIED.
- TOP OF EXTRACTION WELLS SHALL BE CAPPED WITH 6" OR 8" PVC END CAP, UNTIL WELLHEAD INSTALLATION IS COMPLETE.
- BEFORE DEMOBILIZING, RECHECK ALL WELLS AND ADD CLAY OR BENTONITE TO SEAL SURFACE PENETRATION.

EXTRACTION WELL (TYP.)

DETAIL 1
SCALE: NOT TO SCALE

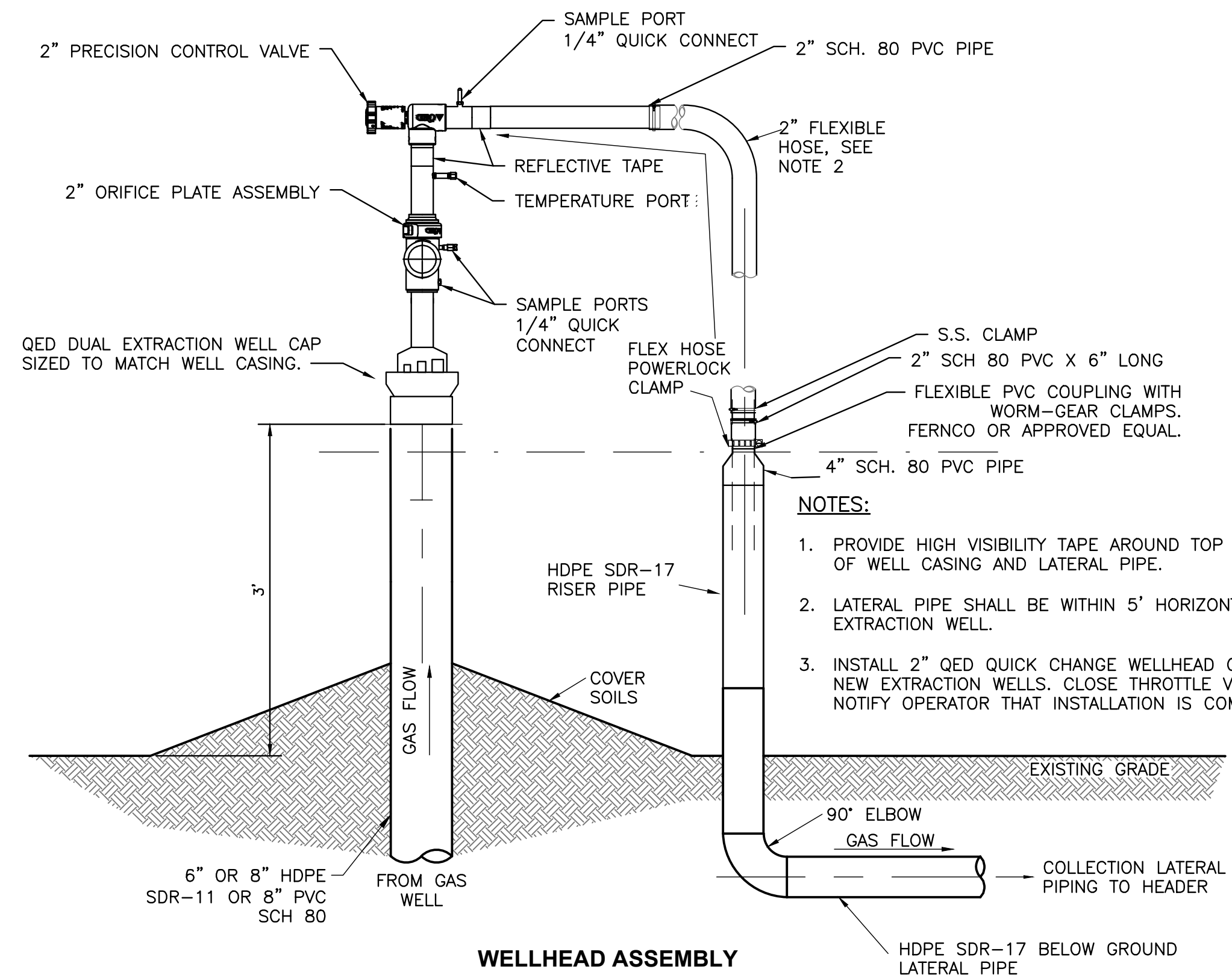


NOTES:

- WELL BORE SAFETY GRATE TO BE INSTALLED 6" TO 24" BELOW GRADE, ABOVE THE TOP 2 FOOT THICK BENTONITE PLUG.
- WOODEN MATERIALS ARE NOT PERMITTED.
- REMOVE AS FEW BARS AS POSSIBLE TO FIT WELL CASING.

WELL BORE SAFETY GRATE

DETAIL 2
SCALE: NOT TO SCALE



WELLHEAD ASSEMBLY

DETAIL 3
SCALE: NOT TO SCALE

				2023 SPRING GCCS CONSTRUCTION										
WELL ID	SURVEY STAKE ID	NORTHING (FT)	EASTING (FT)	APPROX. ELEVATION (FT MSL)					BOREHOLE DEPTH (FT) (D _a) ³	PIPE LENGTH (FT)			GRAVEL PACK (FT)	Comment
				GROUND SURFACE ¹	BOTTOM OF WASTE ²	DEPTH OF WASTE (FT) ⁴	TOP OF PERF	BOTTOM OF BOREHOLE		PERFORATED (D _{p1})	SOLID WALL (D _{s1}) ⁵	SOLID WALL ABOVE GRADE		
GW-2301		2,325	4,494	729	642.53	86	709	653	76	56	20	3	59	
GW-2302		2,184	4,567	696	649.75	46	681	660	36	21	15	3	24	
GW-2303		2,244	4,718	701	645	56	681	655	46	26	20	3	29	
GW-2304		2,389	4,790	724	649	75	704	659	65	45	20	3	48	
GW-2305		2,294	4,908	693	634	59	673	644	49	29	20	3	32	
GW-2306		2,426	4,970	703	636.24	66	683	646	56	36	20	3	39	
GW-2307		2,546	5,077	697	633.26	63	677	643	53	33	20	3	36	
GW-2308		2,709	5,034	711	642	69	691	652	59	39	20	3	42	
GW-2309		2,881	5,011	714	653	61	694	663	51	31	20	3	34	
GW-2310		3,030	5,008	713	658	54	693	668	44	24	20	3	27	
GW-2311		3,221	5,009	710	661	49	690	671	39	19	20	3	22	
GW-1105R3		2,464	3,933	767	579	188	747	589	178	158	20	3	161	
GW-1106R2		2,458	4,158	751	609	141	731	619	131	111	20	3	114	
GW-1310R4		2,234	3,871	743	581	162	723	591	152	132	20	3	135	
GW-1503R3		2,273	3,990	745	583	163	725	593	153	133	20	3	136	
GW-1504R2		2,224	4,229	721	615	105	701	625	95	75	20	3	78	
GW-1613R		2,324	4,158	745	609	137	725	619	127	107	20	3	110	
* Borehole depth limited to 150'														
17 WELLS									1,409	1,074	335	51	1,125	

FOR BID

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	03/09/2023	DATE OF ISSUE	CD	CD	CD	CD
2		DATE OF ISSUE	CD	CD	CD	CD
3		DATE OF ISSUE	CD	CD	CD	CD



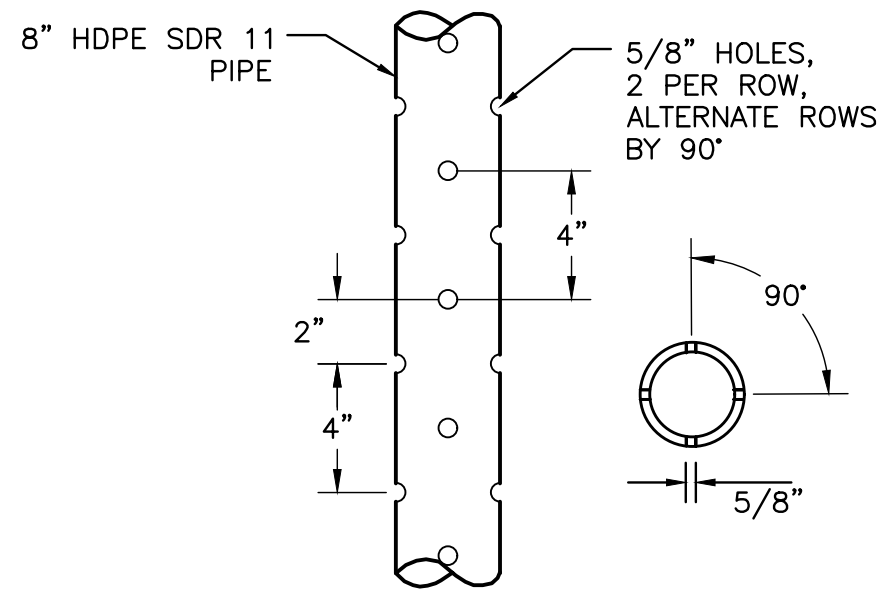
CITY OF RIVERVIEW
RIVERVIEW LAND PRESERVE
WAYNE COUNTY, MI

2023 SPRING GCCS CONSTRUCTION
DETAILS 1

SHEET NO.

3

PROJECT NO.
4221510-012

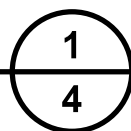


NOTES:

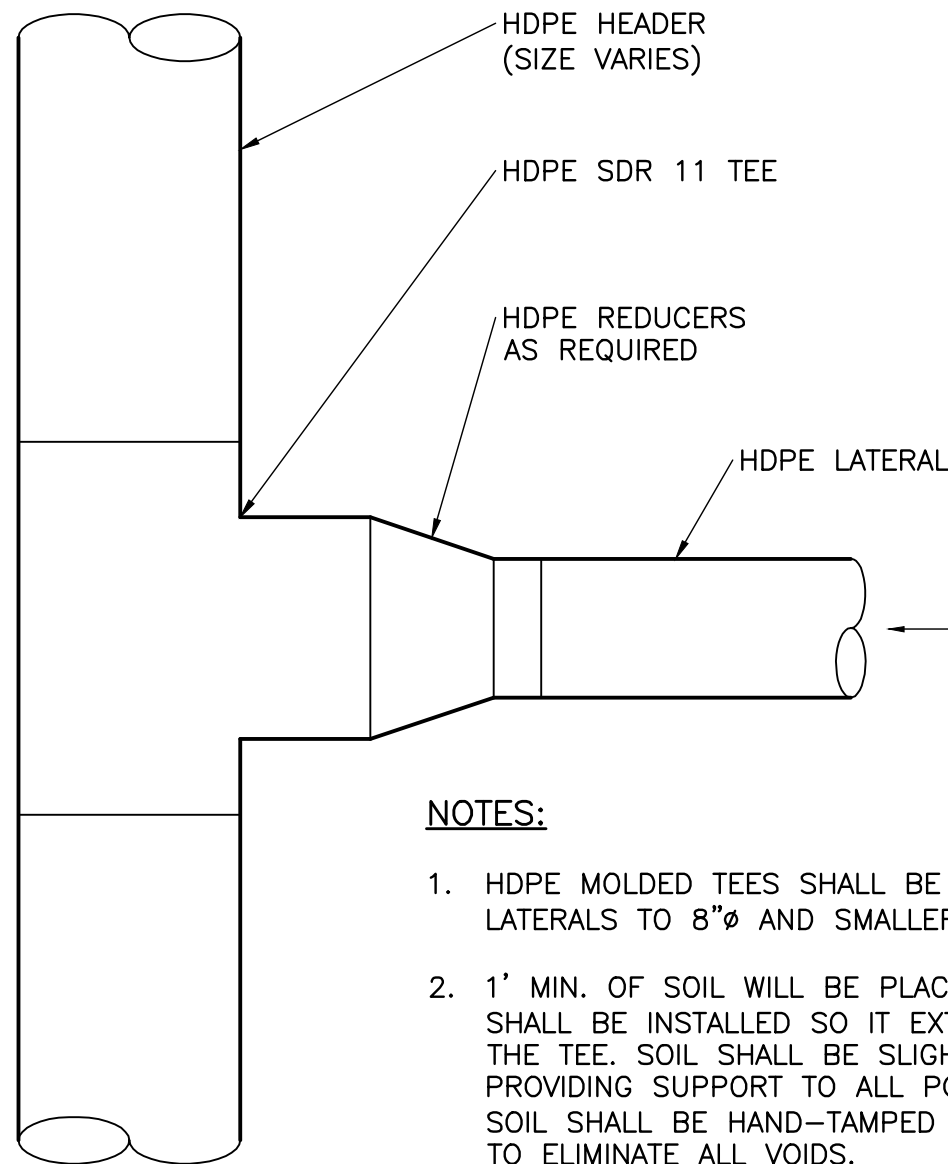
1. PERFORATIONS SPACED 90° APART HORIZONTALLY.
2. PERFORATIONS SPACED 4" APART VERTICALLY.
3. 90° AND 270° ROWS STAGGERED 2" BELOW 0° AND 180° ROWS.

PERFORATED PIPE

DETAIL



SCALE: NOT TO SCALE

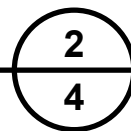


NOTES:

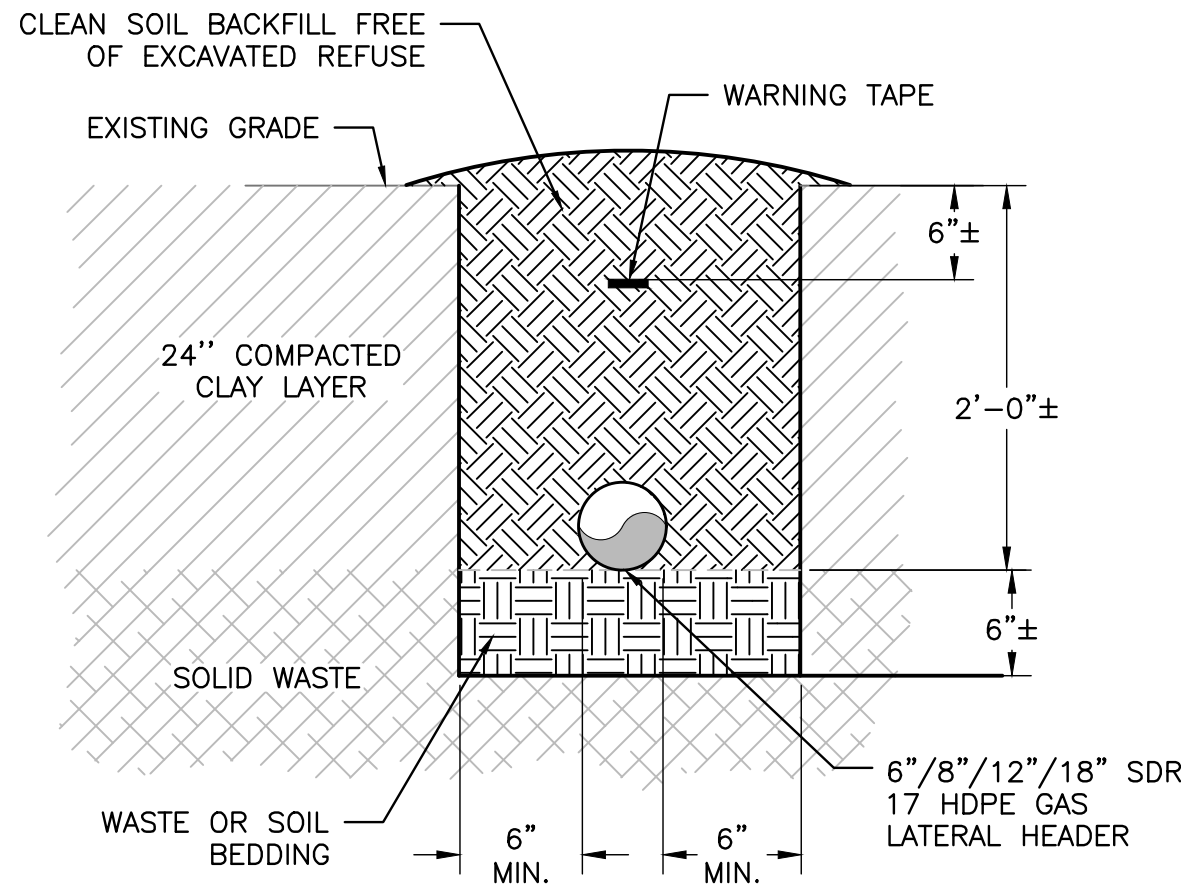
1. HDPE MOLDED TEES SHALL BE USED TO TIE-IN 2"Ø AND LARGER LATERALS TO 8"Ø AND SMALLER HEADER.
2. 1' MIN. OF SOIL WILL BE PLACED BELOW EACH TEE. THE SOIL SHALL BE INSTALLED SO IT EXTENDS 3' MIN. IN EACH DIRECTION OF THE TEE. SOIL SHALL BE SLIGHTLY MOISTENED AND HAND-TAMPED PROVIDING SUPPORT TO ALL POINTS OF THE TEE. CLEAN, GRADED SOIL SHALL BE HAND-TAMPED ABOVE TEE (1' MIN.) BEING CAREFUL TO ELIMINATE ALL VOIDS.
3. WHEN PERFORMING TIE-IN, COORDINATE WITH GAS PLANT OPERATOR (RES) AND WELLFIELD OPERATOR.

LATERAL TIE-IN WITH TEE

DETAIL

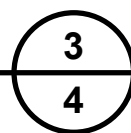


SCALE: NOT TO SCALE

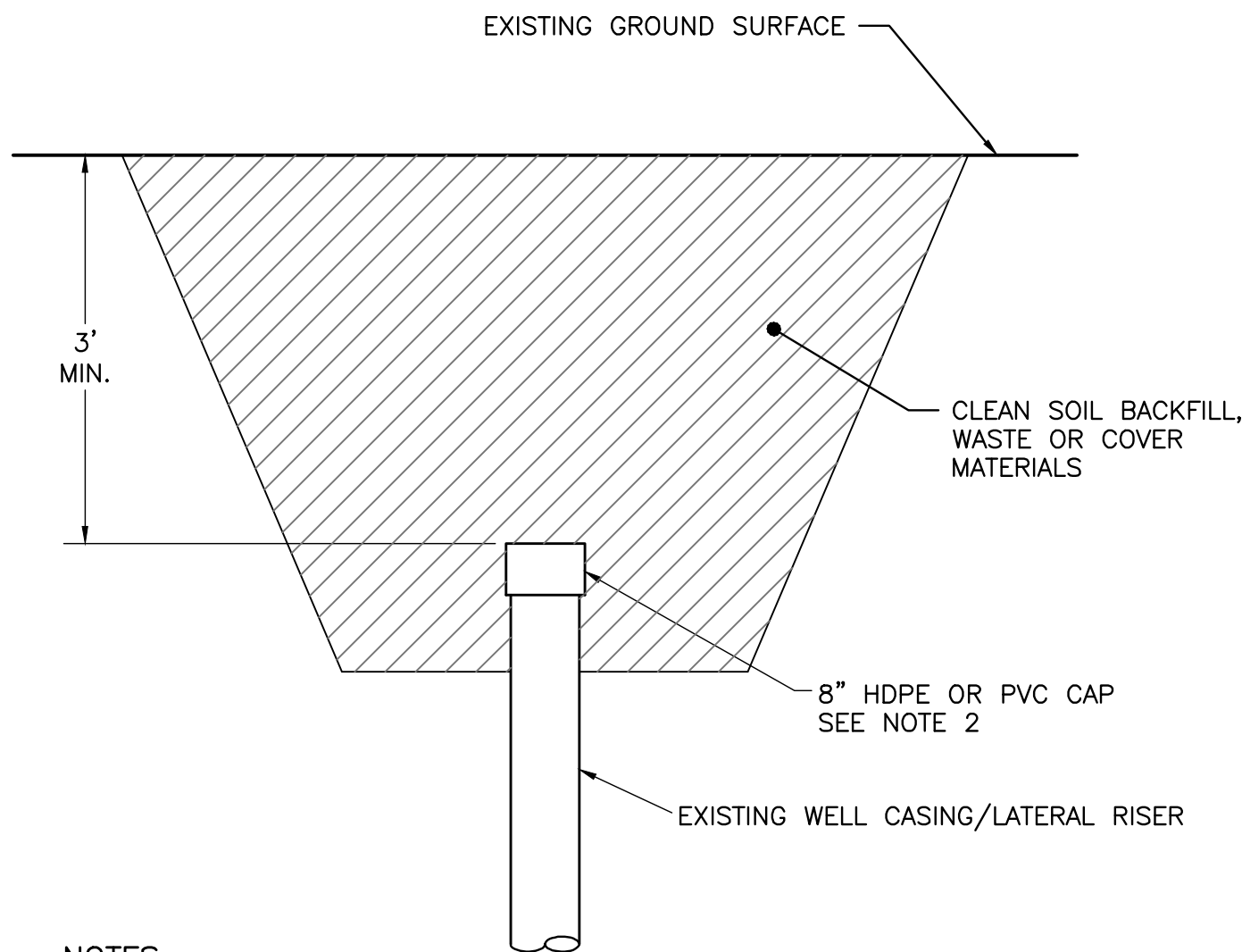


LATERAL MAIN TRENCH
IN INTERMEDIATE COVER AREA

DETAIL



SCALE: NOT TO SCALE

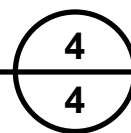


NOTES:

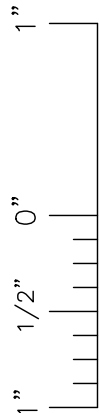
1. ALL ABOVE GROUND PIPING SHALL BE REMOVED AND REMAINING BELOW GRADE PIPE CAPPED. EXCAVATION SHALL BE BACKFILLED WITH CLEAN SOIL.
2. CAPS FOR PVC CASINGS SHALL BE GLUED. CAPS FOR HDPE CASINGS SHALL BE FUSED.
3. WELLHEAD SHALL BE REMOVED AND REUSED WHERE POSSIBLE OR STORED IN A LOCATION APPROVED BY OWNER, UNLESS DIRECTED OTHERWISE.
4. WELL CASING SHALL BE FILLED WITH BENTONITE GRANULES PRIOR TO CAPPING AND BURIAL

EXTRACTION WELL ABANDONMENT

DETAIL



SCALE: NOT TO SCALE



This drawing represents intellectual property of Tetra Tech. Any modification to this drawing for other than the project for which it was prepared is prohibited. Tetra Tech will not be held liable for any changes made to this document without written consent of the originator.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE	03/09/2023	DRAWN BY CDA	CHECKED BY CRK	DESIGNED BY CRK	APPROVED BY JEB	



TETRA TECH

ALL PROFESSIONAL ENGINEERING WORK IS PERFORMED BY ONLY LICENSED PROFESSIONAL ENGINEERS UNDER THE APPROPRIATE STATE REGISTERED PROFESSIONAL ENTITY.

CITY OF RIVERVIEW
RIVERVIEW LAND PRESERVE
WAYNE COUNTY, MI

2023 SPRING GCCS CONSTRUCTION
DETAILS 2

FOR BID

SHEET NO.

4

PROJECT NO.
4221510-012

GENERAL NOTES:

- CONTRACTOR SHALL LIMIT OPERATION OF VEHICLES TO DESIGNATED AREAS TO PREVENT DAMAGE TO SURFACES AND MINIMIZE IMPACT ON LANDFILL OPERATIONS.
- ALL VEGETATED SURFACES SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER.
- ALL HDPE PIPE AND FITTINGS SHALL CONFORM TO ASTM D-2513 OR ASTM F-714.
- ALL HDPE PIPE JOINTS AND FITTINGS SHALL BE FUSION-WELDED.
- ALL PVC CONNECTIONS MUST BE MADE WITH THE USE OF SCH 80 COUPLERS, GLUE, LAG SCREWS OR CAPS, AS NECESSARY.
- CONTRACTOR SHALL NOTIFY THE ENGINEER AND OWNER OF ANY CONFLICT ENCOUNTERED WHILE COMPLETING THE WORK.
- CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS TO COMPLETE THE WORK AS SHOWN ON THE ATTACHED PLANS.
- CONTRACTOR'S CREW SHALL CONSIST OF UNION OPERATORS ASSOCIATED WITH OPERATING ENGINEERS LOCAL 324 OR AN AFFILIATED UNION.
- OWNER SHALL PROVIDE: PRECONSTRUCTION SURVEY OF WELL LOCATIONS
CONSTRUCTION QUALITY ASSURANCE SERVICES
COMPLETION OF WELLHEAD
- CONTRACTOR SHALL STAGE WORK IN COORDINATION WITH LANDFILL OPERATORS TO MINIMIZE DISRUPTION TO LANDFILL OPERATION. CONTRACTOR SHALL PROVIDE ADEQUATE STAFF & EQUIPMENT TO REMOVE WASTE MATERIALS AND DELIVER STONE.
- WORK SHALL NOT VARY FROM DESIGN WITHOUT APPROVAL OF THE ENGINEER. WORK THAT VARIES FROM DESIGN WITHOUT APPROVAL WILL NOT BE PAID FOR.

SUBMITTALS

- CONTRACTOR SHALL PROVIDE MATERIAL CERTIFICATIONS AND/OR SHOP DRAWINGS FOR ALL MATERIALS FOR ENGINEER'S APPROVAL PRIOR TO START OF WORK.

PIPING

- CONTRACTOR TO UNLOAD PIPE MATERIALS DELIVERED TO THE FACILITY. STORE OR STOCK PIPE TO PREVENT DAMAGE FROM MARRING, CRUSHING, OR PUNCTURE. LIMIT STACKING HEIGHT TO 6'. STORE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. PROTECT PIPE FROM EXCESSIVE HEAT OR HARMFUL CHEMICALS.
- PIPE MATERIAL TO BE HIGH PERFORMANCE, HIGH MOLECULAR WEIGHT, HDPE (HIGH DENSITY POLYETHYLENE) PIPE MADE FROM TYPE 4710 RESIN AND CONFORMING TO ASTM D-2513 AND MEET THE PLASTIC PIPE INSTITUTE (PPI) MATERIAL DESIGNATION PE4710. USE SDR-17 FOR GAS HEADER PIPE.
- FITTINGS FOR POLYETHYLENE PIPE SHALL HAVE THE CELL CLASSIFICATION EQUAL TO OR EXCEEDING COMPOUND USED IN PIPE TO ENSURE COMPATIBILITY OF POLYETHYLENE RESINS. DUCTILE IRON OR EQUIVALENT BACKUP FLANGES SHALL BE UTILIZED AS RECOMMENDED BY THE MANUFACTURER. UTILIZE, AT A MINIMUM, GRADE 5 ZINC PLATED CARBON STEEL FOR BELOW GRADE AND STAINLESS STEEL FOR ABOVE GRADE NUTS AND BOLTS. UTILIZE ONLY BUNA-N (BUNO NITRILE) OR VITON FLANGE GASKETS.
- CONTRACTOR SHALL PROVIDE QUALIFIED FUSION OPERATORS TO FUSE PIPING. BUTT FUSION EQUIPMENT FOR JOINING PROCEDURES IS CAPABLE OF MEETING CONDITIONS RECOMMENDED BY MANUFACTURER INCLUDING FOR TEMPERATURE, ALIGNMENT AND FUSION PRESSURES. DO NOT BEND PIPE TO A GREATER DEGREE THAN THE MINIMUM RADIUS RECOMMENDED BY MANUFACTURER FOR TYPE AND GRADE.
- BEFORE BUTT FUSING PIPE, INSPECT EACH LENGTH FOR PRESENCE OF DIRT, SAND, MUD, SHAVINGS, AND OTHER DEBRIS AND ANIMALS. USE COMPATIBLE FUSION TECHNIQUES WHEN POLYETHYLENE OF DIFFERENT MELT INDEXES ARE FUSED TOGETHER. REFER TO MANUFACTURERS RECOMMENDATIONS.
- ELBOWS IN HEADER LINE SHALL CONSIST OF FABRICATED PARTS, RATHER THAN MOLDED PARTS.
- THE CONTRACTOR SHALL LAY OUT THE HEADER PIPE TO CONFORM TO FIELD CONDITIONS. PROVIDE 48" MINIMUM COVER (UNLESS SPECIFIED OTHERWISE) AND 5% MINIMUM SLOPE CROSSING BELOW PERIMETER AND MAIN HAUL ROADS. PROVIDE MINIMUM PIPE DRAINAGE SLOPES OF 3% WITHIN WASTE LIMIT AND 1% OUTSIDE OF WASTE LIMIT. CONTRACTOR RESPONSIBLE FOR CUT (3' MAX, UNLESS OTHERWISE NOTED PER PLAN) AND FILL BENEATH PIPE TO ENSURE PROPER DRAINAGE, AS APPROVED BY THE OWNER/ENGINEER.
- ALL CONNECTIONS TO EXISTING PIPING SHALL BE CONFIRMED BY THE CONTRACTOR PRIOR TO BIDDING. SOME CONNECTIONS MAY REQUIRE EXCAVATION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL DISCONNECTIONS AND RECONNECTIONS FOR INSTALLATION OF NEW PIPING WHERE NECESSARY.
- CONTRACTOR TO REMOVE AND REUSE EXISTING PIPING AND FITTINGS WHERE APPLICABLE. CAP ALL ABANDONED PIPE. IF ABANDONED PIPE IS HDPE, USE FUSED ON HDPE CAP. IF ABANDONED PIPE IS PVC, USE PVC SCH 40 CAP SECURED WITH SET SCREWS AT 90° AND SILICONE SEALANT AS NECESSARY. ALL EXISTING PIPING THAT IS NOT IN USE, AS DIRECTED BY THE ENGINEER, SHALL BE RELOCATED BY THE CONTRACTOR TO THE ON-SITE STORAGE FACILITY.

PIPE PRESSURE TESTING

- COMMENCE TEST PROCEDURES WHEN FOLLOWING CONDITIONS ARE MET:
 - PIPE SECTION TO BE TESTED IS CLEAN AND FREE OF DIRT, PIPE SHAVINGS, SAND OR OTHER FOREIGN MATERIAL.
 - PLUG PIPE OUTLETS WITH TEST PLUGS OR FUSE END CAP ONTO PIPE. BRACE EACH PLUG SECURELY TO PREVENT BLOWOUTS.
 - ADD AIR SLOWLY. PRESSURIZING EQUIPMENT SHALL INCLUDE REGULATOR SET TO AVOID OVER-PRESSURIZING AND DAMAGING OTHERWISE ACCEPTABLE LINE.
 - PROVIDE BULKHEADS, FLANGES, VALVES, BRACING, BLOCKING OR OTHER TEMPORARY SECTIONALIZING DEVICES THAT MAY BE REQUIRED. REMOVE TEMPORARY SECTIONALIZING DEVICE AFTER TESTS COMPLETE.

TESTING EQUIPMENT FOR HDPE PIPING

- COMMENCE TEST PROCEDURES WHEN FOLLOWING CONDITIONS ARE MET:
 - PIPE SECTION TO BE TESTED IS CLEAN AND FREE OF DIRT, PIPE SHAVINGS, SAND OR OTHER FOREIGN MATERIAL.
 - PLUG PIPE OUTLETS WITH TEST PLUGS OR FUSE END CAP ONTO PIPE. BRACE EACH PLUG SECURELY TO PREVENT BLOWOUTS.
 - ADD AIR SLOWLY. PRESSURIZING EQUIPMENT SHALL INCLUDE REGULATOR SET TO AVOID OVER-PRESSURIZING AND DAMAGING OTHERWISE ACCEPTABLE LINE.
 - PROVIDE BULKHEADS, FLANGES, VALVES, BRACING, BLOCKING OR OTHER TEMPORARY SECTIONALIZING DEVICES THAT MAY BE REQUIRED. REMOVE TEMPORARY SECTIONALIZING DEVICE AFTER TESTS COMPLETE.
- PROVIDE EQUIPMENT FOR TESTING PROCEDURE.
- TESTING EQUIPMENT (OR EQUAL METHOD FOR PRESSURIZING LINE):
 - POLYETHYLENE FLANGE ADAPTER WITH PVC BLIND FLANGE EQUAL IN SIZE TO PIPELINE.
 - TEMPERATURE GAUGE TAPPED AND THREADED INTO BLIND FLANGE.
 - PRESSURE GAUGE (0 TO 15 PSI MINIMUM).
 - TIRE VALVE TO FACILITATE AIR PRESSURE HOSE.
 - BALL VALVE TO RELEASE PIPE PRESSURE AT TEST COMPLETION.
 - POLYETHYLENE REDUCERS TO BE USED TO ADAPT TEST FLANGE TO SIZE OF PIPE BEING TESTED.
 - AIR COMPRESSOR SHALL PROVIDE ADEQUATE AIR SUPPLY FOR TESTING.
- NOTIFY OWNER AND ENGINEER 24 HOURS PRIOR TO TEST.
 - PIPE TEST SEGMENTS:
 - BUTT WELD.
 - LESS THAN 2,000' LONG.
 - FITTED WITH CAP ON ONE END AND TEST APPARATUS ON OTHER END.
 - TEST ENVIRONMENT:
 - LAY TEST SEGMENT ON GROUND SURFACE AND ALLOW TO REACH CONSTANT OR AMBIENT AIR TEMPERATURE BEFORE TEST.
 - PERFORM TEST DURING PERIOD WHEN PIPE SEGMENT WILL BE OUT OF DIRECT SUNLIGHT TO MINIMIZE PRESSURE CHANGES AS RESULT OF TEMPERATURE FLUCTUATIONS.
 - TEST:
 - APPLY TEST PRESSURE OF BETWEEN 5 PSIG TO 10 PSIG TO TEST SEGMENT.
 - OBSERVE TEST PRESSURE FOR 1 HOUR.
 - PRESSURE DROP OVER 1 HOUR PERIOD SHALL NOT EXCEED 1%.
 - CORRECT PRESSURE DROP FOR TEMPERATURE.
 - TEST FAILURE: PERFORM FOLLOWING WHEN PIPE SEGMENT FAILS PREINSTALLION TEST.
 - CHECK ENTIRE LENGTH OF PIPE AND FUSIONS FOR CRACKS, PINHOLES, PERFORATIONS OR OTHER POSSIBLE LEAKAGE POINTS.
 - CHECK BLOCKED RISERS AND CAPPED END FOR LEAKAGE.
 - VERIFY LEAKS BY APPLYING SOAP WATER SOLUTION AND OBSERVE FOR BUBBLE FORMATION.
 - REPAIR PIPE AND FUSED JOINT LEAKS BY CUTTING OUT LEAKING AREA AND REBOND SUITABLE SEGMENTS.
 - RETEST AFTER LEAKS ARE REPAIRED.

TRENCHING, BACKFILLING AND COMPACTION

- REMOVE UNSUITABLE MATERIAL FROM WITHIN THE TRENCH PRIOR TO PLACEMENT OF PIPE SYSTEMS. DISPOSE AT ACTIVE AREA OR AT LOCATION PROSCRIBED BY OWNER.
- BACKFILL WITH EXCAVATED SUITABLE MATERIAL. IN WASTE AREAS, CAP THE TRENCH W/COVER SOIL AS TYPICAL AT THE SITE.

SURVEY STAKEOUT AND RECORD SURVEYING

- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS, NEW AND EXISTING, BY MEASUREMENTS AND SURVEYS AT THE JOB SITE. THE CONTRACTOR SHALL TAKE ANY AND ALL OTHER MEASUREMENTS NECESSARY TO VERIFY CONFORMANCE WITH THE DRAWINGS AND TO PERFORM THE WORK PROPERLY.
- ALL FIELDWORK SHALL BE COORDINATED AND CONTINUOUSLY SUPERVISED BY THE CONTRACTOR.
- OWNER SHALL PROVIDE 3rd PARTY SURVEY SERVICES FOR LAYOUT AND RECORD INFORMATION. CONTRACTOR SHALL COORDINATE WITH OWNER TO SCHEDULE SURVEY SERVICES.

SITE RESTORATION AND DEMOBILIZATION

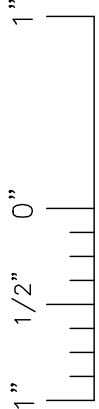
- CONTRACTOR SHALL RESTORE SURFACES TO ORIGINAL CONDITION OR BETTER. PROVIDE SEED AND MULCH TO RESTORE GRASSY AREAS. PROVIDE ROAD GRAVEL AS NEEDED AND GRADE ROAD SURFACES TO A SMOOTH SURFACE TO THE APPROVAL OF THE OWNER.
- CONTRACTOR SHALL CLEAN ALL WORK AREAS, INCLUDING REMOVAL OF DEBRIS, EXCESS MATERIALS, AND EQUIPMENT. DISPOSAL OF WASTE OR EXCESS MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR. EQUIPMENT SHALL BE STORED IN A DESIGNATED AREA AND SECURED TO AVOID INTERFERENCE WITH LANDFILL OPERATIONS WHEN NOT IN USE.
- MEET WITH OWNER PRIOR TO DEMOBILIZATION AND DEVELOP A PUNCH LIST OF REQUIREMENTS TO BE COMPLETED PRIOR TO DEMOBILIZING EQUIPMENT.

CQA MONITORING

- THE CQA CONSULTANT WILL BE RESPONSIBLE FOR CONSTRUCTION MONITORING TO OBSERVE COMPLIANCE WITH THE PROJECT'S DESIGN PLANS AND SPECIFICATIONS.
- THE CQA CONSULTANT SHALL BE RESPONSIBLE FOR: OBSERVATION OF CONSTRUCTION MATERIALS, DOCUMENTATION OF CONSTRUCTION CONDITIONS, PERFORMANCE TESTING IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, DOCUMENTING THAT THE CONSTRUCTION IS PERFORMED IN CONFORMANCE WITH THE PROJECT'S DESIGN PLANS AND SPECIFICATIONS AT THE LOCATIONS OBSERVED, PREPARATION OF AS-CONSTRUCTED RECORD DOCUMENTS, AND PREPARATION OF A REPORT THAT DOCUMENTS THE OBSERVATIONS AND TESTING ASSOCIATED WITH THE PROJECT.
- THE CQA CONSULTANT WILL PREPARE A DAILY SUMMARY REPORT FOR EACH DAY'S CONSTRUCTION AND MONITORING ACTIVITIES. DAILY SUMMARY REPORTS SHALL INCLUDE:
 - DATE, PROJECT NAME, LOCATION, UNIT UNDER CONSTRUCTION, PERSONNEL INVOLVED IN MAJOR ACTIVITIES, AND OTHER RELEVANT IDENTIFICATION INFORMATION
 - DESCRIPTION OF WEATHER CONDITIONS
 - SUMMARY OF TESTING PERFORMED
 - A RECORD OF COMMUNICATIONS WITH OTHER PARTIES ON-SITE OR ANY OTHER OUTSIDE PARTIES, INCLUDING REGULATORY AGENCIES, REGARDING THE DAY'S CONSTRUCTION ACTIVITIES
 - CHRONOLOGICAL DESCRIPTION OF WORK IN PROGRESS INCLUDING ANY NOTICES OR REQUESTS FROM THE CONTRACTORS
 - DESCRIPTION OF OFF-SITE MATERIALS RECEIVED, INCLUDING ANY QC DATA PROVIDED BY THE SUPPLIERS
 - FIELD TESTING EQUIPMENT CALIBRATION RECORDS
 - DECISIONS MADE REGARDING APPROVAL OF MATERIALS OR UNITS OF WORK, AND/OR CORRECTIVE ACTIONS TAKEN IN AREAS THAT REQUIRE REWORK
 - LABORATORY SAMPLES COLLECTED AND FORWARDED TO THE TESTING LABORATORY
 - RESULTS OF MONITORING ACTIVITIES AND DATA INCLUDING: PIPE PRESSURE TESTS, SOIL PLACEMENT, AND SOIL SAMPLES/TESTS TAKEN.
- UPON COMPLETION OF THE PROJECT, THE CQA CONSULTANT WILL PREPARE AND PROVIDE COPIES OF A FINAL CONSTRUCTION DOCUMENTATION REPORT TO THE OWNER. AT A MINIMUM, THE FINAL CONSTRUCTION DOCUMENTATION REPORT WILL CONTAIN THE FOLLOWING INFORMATION:
 - A DESCRIPTION OF THE CONSTRUCTION PROJECT AND ACTIVITIES
 - AS-CONSTRUCTED PLANS TO DOCUMENT ELEVATIONS AND PROJECT COMPONENTS, AS REQUIRED FOR COMPLIANCE WITH THE PROJECT'S DESIGN PLANS AND SPECIFICATIONS
 - FIELD TEST DATA SUMMARIES
 - DIAGRAMS INDICATING LOCATIONS OF TESTS
 - SUMMARY OF CONSTRUCTION PROBLEMS OR DEFICIENCIES THAT WERE IDENTIFIED AND RESOLUTIONS THAT VARIED FROM THE PROJECT'S DESIGN PLANS AND/OR SPECIFICATIONS
 - A CERTIFICATION BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN WITH EXPERIENCE IN CIVIL ENGINEERING AND CONSTRUCTION PROJECTS THAT THE PROJECT MEETS THE REQUIREMENTS OF THE PROJECT'S DESIGN PLANS AND SPECIFICATIONS

GENERAL SEEDING AND MULCHING

- CONTRACTOR SHALL SOW SEED DURING PLANTING SEASON RECOMMENDED BY SUPPLIER. IF TIME DOES NOT PERMIT PLACEMENT DUE TO WINTER WEATHER, CONTRACTOR SHALL RETURN FOR SEEDING AND MULCHING AT A LATER DATE.
- CONTRACTOR SHALL WARRANTY THE VEGETATION FOR A PERIOD OF ONE YEAR. AREAS WHICH DO NOT DISPLAY VIGOROUS GROWTH DURING THE GROWING SEASON WILL BE REPAIRED AT CONTRACTOR'S EXPENSE.
- A 12-12-12 FERTILIZER SHALL BE UNIFORMLY APPLIED AT A RATE OF 400 LB/ACRE AND BLENDED INTO THE TOPSOIL COVER PRIOR TO SEEDING.
- CONTRACTOR SHALL USE "RIVERVIEW SPECIAL MIX"(RVS-1225500) FROM THE CISCO COMPANIES, OR APPROVED EQUAL, FOR SEEDING. SEED MIXTURE SHALL BE 52.81% ANNUAL RYEGRASS, 41.69% FAWN TALL FESCUE, 4.98% SUPER HAIFA II WHITE CLOVER, 0.01% CROP SEED, AND 0.01% WEED SEED. AT A RATE OF 140 LBS/ACRE OR PER SUPPLIERS RECOMMENDATION.
- CONTRACTOR SHALL APPLY WEATHERED SMALL GRAIN STRAW MULCH TO THE SOIL AFTER OR DURING THE APPLICATION OF THE SEED. APPLICATION RATE SHALL BE 2 TONS/ACRE, OR 100 LBS (2-3 BALES) PER 100 SQUARE FEET.
- ALL SEEDING AND MULCHING SHALL BE COMPLETED IN ACCORDANCE WITH MDOT STANDARD SPECIFICATION FOR CONSTRUCTION SECTION 816-TURF ESTABLISHMENT.



FOR BID

REV	DATE	DESCRIPTION			DWN BY	DES BY	CHK BY	APP BY	
DATE OF ISSUE		DRAWN BY CDA			CHECKED BY		CRK		
03/09/2023		DESIGNED BY CRK			APPROVED BY		JEB		

This drawing represents intellectual property of Tetra Tech. Any modification to the original is done with Tetra Tech's consent and subject to copyright law. Tetra Tech will not be held liable for any changes made to this document without express written consent of Tetra Tech.



ALL PROFESSIONAL ENGINEERING WORK IS PERFORMED BY DULY LICENSED PROFESSIONAL ENGINEERS UNDER THE APPROPRIATE STATE REGISTERED PROFESSIONAL ENTITY.

CITY OF RIVERVIEW
RIVERVIEW LAND PRESERVE
WAYNE COUNTY, MI

2023 SPRING GCCS CONSTRUCTION
SPECIFICATIONS

SHEET NO.

5

PROJECT NO.
4221510-012