



Cedar Rapids Linn County Solid Waste Agency – Site 2

2024 Landfill Gas System Improvements

Construction Documents Project Manual



Issued for Bid

November 2023

HDR Project No. 10383401



00 01 07
SEALS AND SIGNATURES

	<p>I hereby certify that the portion of the Specifications described below was prepared by me or under my direct supervision and that I am registered Professional Engineer under the laws of the State of Iowa.</p> <div style="display: flex; justify-content: space-between;"><div style="text-align: center;"> KATHRYN KINLEY</div><div style="text-align: center;"><u>11.21.23</u> DATE</div></div> <p>All pages or Specification divisions or sections covered by this seal:</p> <p>Divisions 01 through 40; excluding Division 00.</p>
---	---

Engineer's seal and signature does not apply to the documents that comprise Division 00, Bidding and Contracting Requirements.

It is a violation of applicable laws and regulations governing professional licensing and registration for any person, unless acting under the direction of the licensed and registered design professional(s) indicated above, to alter in any way the Specifications in this project manual.

END OF SEALS AND SIGNATURES

TABLE OF CONTENTS

HDR SPECIFICATIONS CHECKING STANDARD
NOT USED

HELPFUL LINKS
NOT USED

PROJECT INFORMATION
NOT USED

DIVISION 00 — PROCUREMENT AND CONTRACTING REQUIREMENTS

00 01 01 - PROJECT MANUAL COVER
00 01 07 - SEALS AND SIGNATURES
00 01 10 - TABLE OF CONTENTS
00 11 13 - ADVERTISEMENT FOR BIDS (EJCDC C-111-2018)
00 21 13 - INSTRUCTIONS TO BIDDERS (EJCDC C-200-2018)
00 41 13 - BID FORM (EJCDC C-410-2018)
00 43 14 - BID BOND DAMAGES FORM (EJCDC C-435-2018)
00 45 14 - SUDAS BIDDER STATUS FORM
00 45 48 - WORKSHEET REGARDING AUTHORIZATION TO TRANSACT BUSINESS
00 52 13 - AGREEMENT (EJCDC C-520-2018)
00 61 13.13 - PERFORMANCE BOND (EJCDC C-610-2018)
00 61 13.16 - PAYMENT BOND (EJCDC C-615-2018)
00 62 25 - CERTIFICATE OF SUBSTANTIAL COMPLETION (EJCDC C-625—2018)
00 62 26 - NOTICE OF ACCEPTABILITY (EJCDC C-626—2018)
00 72 13 - GENERAL CONDITIONS (EJCDC C-700-2018)
00 73 01 - SUPPLEMENTARY CONDITIONS (EJCDC C-800-2018)

DIVISION 01 — GENERAL REQUIREMENTS

01 11 00 - SUMMARY OF WORK
01 11 20 - JOB CONDITIONS
01 22 00 - MEASUREMENT AND PAYMENT
01 25 13 - PRODUCT SUBSTITUTIONS
01 29 76 - PROGRESS PAYMENT PROCEDURES
01 29 76A - APPLICATION FOR PAYMENT
01 31 19 - PROJECT MEETINGS
01 31 26 - ELECTRONIC COMMUNICATION PROTOCOLS
01 33 00 - SUBMITTALS
01 33 04 - OPERATION AND MAINTENANCE MANUALS
01 35 05 - ENVIRONMENTAL PROTECTION AND SPECIAL CONTROLS
01 50 00 - TEMPORARY FACILITIES AND CONTROLS
01 65 50 - PRODUCT DELIVERY, STORAGE, AND HANDLING
01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS
01 71 23 - FIELD ENGINEERING
01 73 29 - DEMOLITION, ABANDONMENT, REMOVAL AND SALVAGE
01 77 19 - CLOSEOUT REQUIREMENTS
01 78 39 - PROJECT RECORD DOCUMENTS

DIVISION 02 — EXISTING CONDITIONS
NOT USED

DIVISION 03 — CONCRETE
NOT USED

DIVISION 04 — MASONRY
NOT USED

DIVISION 05 — METALS
NOT USED

DIVISION 06 — WOOD, PLASTICS, AND COMPOSITES

NOT USED

DIVISION 07 — THERMAL AND MOISTURE PROTECTION

NOT USED

DIVISION 08 — OPENINGS

NOT USED

DIVISION 09 — FINISHES

NOT USED

DIVISION 10 — SPECIALTIES

10 14 00 - IDENTIFICATION DEVICES

DIVISION 11 — EQUIPMENT

NOT USED

DIVISION 12 — FURNISHINGS

NOT USED

DIVISION 13 — SPECIAL CONSTRUCTION

NOT USED

DIVISION 14 — CONVEYING EQUIPMENT

NOT USED

DIVISION 21 — FIRE SUPPRESSION

NOT USED

DIVISION 22 — PLUMBING

NOT USED

DIVISION 23 — HEATING VENTILATING AND AIR CONDITIONING

NOT USED

DIVISION 25 — INTEGRATED AUTOMATION

NOT USED

DIVISION 26 — ELECTRICAL

NOT USED

DIVISION 27 — COMMUNICATIONS

NOT USED

DIVISION 28 — ELECTRONIC SAFETY AND SECURITY

NOT USED

DIVISION 31 — EARTHWORK

31 09 21 - EXTRACTION WELLS

31 23 00 - EARTHWORK

31 23 33 - TRENCHING, BACKFILLING, AND COMPACTING FOR UTILITIES

DIVISION 32 — EXTERIOR IMPROVEMENTS

32 92 00 - SEEDING, SODDING AND LANDSCAPING

DIVISION 33 — UTILITIES

NOT USED

DIVISION 34 — TRANSPORTATION

NOT USED

DIVISION 35 — WATERWAY AND MARINE

NOT USED

DIVISION 40 — PROCESS INTERCONNECTIONS

40 05 00 - PIPE AND PIPE FITTINGS - BASIC REQUIREMENTS

40 05 51 - VALVES - BASIC REQUIREMENTS

DIVISION 41 — MATERIAL PROCESSING AND HANDLING EQUIPMENT

NOT USED

DIVISION 42 — PROCESS HEATING, COOLING, AND DRYING EQUIPMENT

NOT USED

DIVISION 43 — PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE EQUIPMENT

43 25 52 - PNEUMATIC PUMP

DIVISION 44 — POLLUTION AND WASTE CONTROL EQUIPMENT

NOT USED

DIVISION 45 — INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT

NOT USED

DIVISION 46 — WATER AND WASTEWATER EQUIPMENT

NOT USED

DIVISION 48 — ELECTRICAL POWER GENERATION

NOT USED

ADVERTISEMENT FOR BIDS

CEDAR RAPIDS LINN COUNTY SOLID WASTE AGENCY
MARION, IOWA
SITE 2 - 2024 LANDFILL GAS SYSTEM IMPROVEMENTS

General Notice

Cedar Rapids Linn County Solid Waste Agency (Owner) is requesting Bids for the construction of the following Project:

CRLCSWA Site 2 Landfill
2024 Landfill Gas System Improvements
10383401

Bids for the construction of the Project will be received at the office of the **Agency** located at **1954 County Home Road, Marion, Iowa 52302**, until **Tuesday, January 9th at 1:00 PM local time**. At that time the Bids received will be publicly opened and read. Pending COVID restrictions, CRLCSWA reserves the right to hold the bid opening via a conference call platform such as WebEx.

A public meeting for this project will be held on December 19, 2023 during the monthly board meeting.

The Project includes the following Work:

This project will include installation of new and redrilled vertical gas extraction wells, horizontal collectors, and gas laterals, headers, air and forcemain lines, and a new condensate sump, as well as leachate recirculation piping and appurtenances.

Bids are requested for the following Contract: CRLCSWA Site 2 – 2024 Landfill Gas System Improvements

Obtaining the Bidding Documents

Information and Bidding Documents for the Project can be obtained at the following designated website:

Rapids Reproductions, Inc.
<https://rapidsrepro.com>
6015 Huntington Ct. N.E.
Cedar Rapids, IA 52402
Telephone: 319-364-2473
Email: info@rapidsrepro.com

On <https://rapidsrepro.com/planroom>, search The Public Plan Room for CRLCSWA Site 2 – 2024 Landfill Gas System Improvements.

If downloading from Rapids Reproductions for the first time, you will need to create a free membership account prior to downloading. Please contact Rapids Reproductions for assistance with free membership registration, downloading and working with this digital project information. There will be no cost to the Bidder for downloading Bidding Documents.

Bidding Documents may be downloaded from the designated website. Prospective Bidders are urged to register with the designated website as a Bidding Documents holder, even if Bidding Documents are obtained from a third-party plan room or source other than the designated website in either electronic or paper format. The designated website will be updated periodically with Addenda, lists of registered

Bidding Documents holders, reports on the Site, and other information relevant to submitting a Bid for the Project. All official notifications, Addenda, and other Bidding Documents will be offered only through the designated website. Neither Owner nor Engineer will be responsible for Bidding Documents, including Addenda, if any, obtained from sources other than the designated website.

The Issuing Office for the Bidding Documents is:

HDR Engineering, Inc.
5815 Council Street NE, Suite B
Cedar Rapids, IA 52402
Attn. Katie Kinley
Phone: 402.392.6980
Email: katie.kinley@hdrinc.com

Prospective Bidders may obtain or examine the Bidding Documents at the Issuing Office on Monday through Friday between the hours of 9 AM and 4 PM local time, and may obtain copies of the Bidding Documents from the Issuing Office as described below. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda, if any, obtained from sources other than the Issuing Office.

Paper copies of the Bidding Documents may be obtained from the Issuing Office by paying a deposit of \$200 for each set. Bidders who return full sets of the Bidding Documents in good condition within 10 days after receipt of Bids will receive a full refund. Non-Bidders, and Bidders who obtain more than one set of the Bidding Documents, will receive a refund of \$100 for documents returned in good condition within the time limit indicated above. Make deposit checks for Bidding Documents payable to HDR.

Pre-bid Conference

A non-mandatory pre-bid conference for the Project will be held on December 22, 2024 at 1 p.m. CST at Site 2. Attendance at the pre-bid conference is encouraged but not required.

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

Project Schedule

Schedule requirements for this project include the following:

- Earliest Mobilization Date: Upon Approval of Bonds and Insurance
- Latest Mobilization Date: Monday, June 24, 2024
- Substantial Completion: Friday, October 18, 2024
- Final Completion & Demobilization: Thursday, October 31, 2024

Questions

All questions in regard to this project will need to be submitted by January 5th, 2024 at 5:00 PM local time.

Bidders shall contact the HDR (Katie.Kinley@hdrinc.com and Morgan.Mays@hdrinc.com) for all questions directed towards this project.

Instructions to Bidders:

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

This Advertisement is issued by:

Owner: Cedar Rapids Linn County Solid Waste Agency

By: Karmin McShane

Title: Executive Director

Date: December 1, 2024

INSTRUCTIONS TO BIDDERS

FOR CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1— Defined Terms.....	1
Article 2— Bidding Documents.....	1
Article 3— Qualifications of Bidders.....	3
Article 4— Pre-Bid Conference	4
Article 5— Site and Other Areas; Existing Site Conditions; Examination of Site; Owner’s Safety Program; Other Work at the Site.....	4
Article 6— Bidder’s Representations and Certifications.....	7
Article 7— Interpretations and Addenda	7
Article 8— Bid Security	7
Article 9— Contract Times.....	8
Article 10— Substitute and “Or Equal” Items.....	9
Article 11— Subcontractors, Suppliers, and Others	9
Article 12— Preparation of Bid	10
Article 13— Basis of Bid	11
Article 14— Submittal of Bid.....	11
Article 15— Modification and Withdrawal of Bid.....	12
Article 16— Opening of Bids	12
Article 17— Bids to Remain Subject to Acceptance	12
Article 18— Evaluation of Bids and Award of Contract	12
Article 19— Bonds and Insurance.....	13
Article 20— Signing of Agreement.....	14
Article 21— Sales and Use Taxes	14
Article 22— Contracts to Be Assigned	Error! Bookmark not defined.

ARTICLE 1—DEFINED TERMS

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

ARTICLE 2—BIDDING DOCUMENTS

- 2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use, nor does it grant or confer ownership or any property interest in the Bidding Documents and other documents distributed for the Project. Authorization to download documents, or other distribution, includes the right for Bidding Documents holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the Bidding Documents holder pays all costs associated with printing or reproduction. Paper or other types of printed documents may not be re-sold under any circumstances.
- 2.03 Owner has established a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner recommends that Bidder register as a Bidding Documents holder with the Issuing Office at such website, and obtain a complete set of the Bidding Documents from such website. Bidders may rely that sets of Bidding Documents obtained from the Bidding Documents Website are complete, unless an omission is blatant. Registered Bidding Documents holders will receive Addenda issued by Owner or Issuing Office.
- 2.04 Bidder may register as a Bidding Documents holder and obtain complete sets of Bidding Documents, in the format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely that sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered Bidding Documents holders will receive Addenda issued by Owner or Issuing Office.
- 2.05 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) may distribute the Bidding Documents, or make them available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are encouraged to register as Bidding Documents holders from the Bidding Documents Website or Issuing Office. Owner is not responsible for omissions in Bidding

Documents or other documents obtained from plan rooms or other such sources (such as other prospective bidders), or for a Bidder's failure to obtain Addenda from a plan room.

2.06 *Electronic Documents*

- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to prospective Bidders as Electronic Documents in the manner specified.
 - 1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor any bidder's or the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.
- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in paper versions of the documents, and for Bidder's reliance upon such derived information.
- C. After the Contract is awarded, the Owner will provide or direct the Engineer to provide for the use of the Contractor certain documents that were developed by Engineer as part of the Project design process, as Electronic Documents in native file formats as originally prepared by Engineer.
 - 1. Electronic Documents that are available in native file format include:
 - a. Drawing files
 - 2. Release of such documents will be solely for the convenience of the Contractor and subject to additional requirements, if any, for such release as indicated in Specifications Section 01 31 26 – Electronic Communication Protocols. No such document is a Contract Document.
 - 3. Unless the Contract Documents explicitly identify that such information will be available to the Successful Bidder (Contractor), nothing herein will create an obligation on the part of the Owner or Engineer to provide or create such information, and the Contractor is not entitled to rely on the availability of such information in the preparation of its Bid or pricing of the Work. In all cases, the Contractor shall take appropriate measures to verify that electronic/digital information provided in Electronic Documents is appropriate and adequate for Contractor's specific purposes.
 - 4. In no case will Contractor be entitled to additional compensation or time for completion due to any differences between the actual Contract Documents and any related document in native file format.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within 4 days of Owner's or Engineer's request, Bidder must submit the following information:
- A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
 - B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract. Such statement or certification, as applicable, shall be signed by the same officer of Bidder's company that signed the Bid.
 - C. Bidder's state (or other issuing entity) contractor license number, if applicable.
 - D. Subcontractor and Supplier qualification information.
 - E. Other required information regarding qualifications.
- 3.02 Prospective Bidders must submit required information regarding their qualifications. Owner will review the submitted information to determine which contractors are qualified to bid on the Work. Owner will issue an Addendum listing those contractors that Owner has determined to be qualified to construct the Project. Bids will only be accepted from listed contractors. The information that each prospective Bidder must submit to seek prequalification includes the following:
- A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
 - B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.
 - C. Prospective Bidder's state (or other) contractor license number, if applicable.
 - D. Subcontractor and Supplier qualification information.
 - E. Other required information regarding qualifications.
- 3.03 Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:
- A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
 - B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.
 - C. Bidder's state (or other) contractor license number, if applicable.
 - D. Subcontractor and Supplier qualification information.
 - E. Other required information regarding qualifications.

- 3.04 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.05 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.06 Bidders shall be experienced in the kind of Work to be performed, shall have the or be able to obtain construction equipment necessary for the Work, and shall possess sufficient capital to properly perform the Work within the time allowed. Bids received from Bidders who have previously failed to complete work within the time required, or who have previously performed similar work in an unsatisfactory manner, may be rejected. A Bid may be rejected if Bidder cannot show and document to Owner's satisfaction that Bidder has the necessary ability, facilities, equipment, and resources to commence the Work at the time prescribed and thereafter to prosecute and complete the Work at the rate or within the times specified. A Bid may be rejected if Bidder is already obligated for the performance of other work which would delay the commencement, prosecution or completion of the Work.

ARTICLE 4—PRE-BID CONFERENCE

- 4.01 A pre-bid conference will not be conducted for this Project.
- 4.02 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.
- 4.03 A mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bids will not be accepted from Bidders who do not attend the conference. It is each Bidder's responsibility to sign in at the pre-bid conference to verify its participation. Bidders must sign in using the name of the organization that will be submitting a Bid. A list of Bidders that attended the pre-bid conference and are, on that basis alone, eligible to submit a Bid for this Project, will be issued in an Addendum.
- 4.04 Information presented at the pre-bid conference does not alter the Bidding Documents. Owner or Issuing Office will issue Addenda to make any changes to the Bidding Documents that result from discussions at the pre-bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

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

- 5.01 *Site and Other Areas*
 - A. The Site is identified in the Bidding Documents, including in Specifications Section 01 11 00 – Summary of Work. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

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

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:
 - a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.
 - b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.
 - c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
2. Owner will make copies of reports and drawings referenced above available to any prospective Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-Related Documents*

- A. Owner has not verified the contents of other Site-related documents not provided in this bid package, and Bidder may not rely on the accuracy of any data or information in such documents. Bidder is responsible for any interpretation or conclusion Bidder draws from the other Site-related documents.
- B. Other Site-related documents are not part of the Contract Documents.
- C. Bidders are encouraged to review other Site-related documents, but Bidders will not be held accountable for any data or information in such documents unless specified in an Addendum. The requirement to review and take responsibility for documentary Site information is limited to information in (1) the Contract Documents and (2) the Technical Data.
- D. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

- A. A Site visit is scheduled following the pre-bid conference.
- B. Bidders visiting the Site are required to: (1) arrange their own transportation to the Site; and (2) each Bidder visiting the Site is responsible for providing and using its own personal protective equipment appropriate for the Site and conditions, and in accordance with posted requirements, if any. Comply with Paragraph 5.05 of these Instructions to Bidders.
- C. All access to the Site, other than during a regularly scheduled Site visit, must be coordinated through the following Owner or Engineer contact for visiting the Site: Garrett Prestegard, GPrestegard@solidwasteagency.org . Bidder must conduct the required Site visit during normal working hours, Mondays through Fridays.
- D. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- E. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.
- F. Bidder must comply with Laws and Regulations regarding excavation and location of utilities, obtain necessary 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.
- G. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

- A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be indicated in the Supplementary Conditions. Where the Bidding Documents indicate an Owner's safety program, visitors to the Site during the bidding phase and at other times shall comply with Owner's safety programs.

5.06 *Other Work at the Site*

- A. Reference is made to Specifications Section 01 11 00 – Summary of Work, 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 potentially confidential matters), if any.

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

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

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

ARTICLE 7—INTERPRETATIONS AND ADDENDA

- 7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.
- 7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information for such questions is as follows:
 - A. Katie Kinley, P.E., Katie.kinley@hdrinc.com
 - B. Morgan Mays, P.E., Morgan.Mays@hdrinc.com
- 7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all Bidding Documents holders registered with the Issuing Office. Questions received less than seven days prior to the date for opening of Bids may not be answered.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Bidding Documents.
- 7.05 Addenda that engineer judges to have a material or significant effect on Bidders’ preparation of pricing and other requirement element of the Bid will be transmitted via Addendum for Bidders’ receipt not less than three days prior to the scheduled date for receipt of the Bids. Clarifications or modifications that Engineer deems will not have a material or substantial effect on the preparation of Bids may be transmitted for Bidders’ receipt later, for receipt prior t the deadline for receipt of Bids.

ARTICLE 8—BID SECURITY

8.01 *Required Form and Amount of Bid Security*

- A. A Bid must be accompanied by bid security made payable to Owner in an amount of 5 percent of Bidder’s maximum Bid price (determined by adding the base bid and all alternates) and in the form of a bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions.
- B. Such bid bond will be issued in the form included in the Bidding Documents.

8.02 *Bid Security of Successful Bidder*

- A. The Bid security of the apparent Successful Bidder will be retained until Owner awards the Contract to such Bidder, and such Bidder has signed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Successful Bidder's bid security will be released.
- B. If the Successful Bidder fails to sign and deliver the Contract and furnish the required Contract security within the number of days, indicated in Paragraph 20.01 of these Instructions to Bidders, 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.
- C. Upon Successful Bidder's default:
 - 1. When the bid security is a penal sum bid bond, the entire penal sum amount of the bid bond will be forfeit and due Owner.
 - 2. When the bid security is a damages form of bid bond, to the extent of Owner's damages will be forfeit and due Owner.
 - 3. If a type of bid security other than a bid bond is allowed and is furnished, the amount that will be forfeit and due Owner will be the same as for the form of bid bond included in the Bidding Documents. Owner will so notify the defaulting Bidder in writing of the annulment and the amount of the forfeiture, with documentation of the amount forfeited.
- D. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.

8.03 *Bid Security of Bidders other than the Successful Bidder*

- A. 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.
- B. 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.
- C. Release of Bid Security: Owner may release any Bidder's bid security by returning such bid security to the associated Bidder. When bid security is in the form of a bid bond, Owner may dispose of or destroy the bid bond and so advise the associated Bidder in writing that the bid bond has been released.

ARTICLE 9—CONTRACT TIMES

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

ARTICLE 10—SUBSTITUTE AND “OR EQUAL” ITEMS

- 10.01 The Contract for the Work, as awarded, will be on the basis of materials, equipment, and procedures specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or “or-equal” items or procedures. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or “or-equal” item of material or equipment or procedure, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.
- 10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, and will perform the Work in accordance with procedures indicated in the Bidding Documents, as supplemented by Addenda, if any. Assumptions regarding the possibility of post-bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.01 A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so in the Specifications or elsewhere in the Bidding Documents. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should not submit a Bid.
- 11.02 The apparent Successful Bidder, and any other Bidder so requested by Owner or Engineer, must submit to Owner (with a copy to Engineer) a list of the Subcontractors and Suppliers proposed for the following portions of the Work within five days after the bid opening:
- A. Stormwater controls, erosion control, seeding.
- 11.03 If requested by Owner or Engineer, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and awarding the Contract.
- 11.04 If apparent Successful Bidder declines to make a requested substitution, Owner may award the Contract to another Bidder, consistent with the basis for evaluating the Bids for award as set forth in these Instructions to Bidders, that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to issuance of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

ARTICLE 12—PREPARATION OF BID

- 12.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
 - B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”
- 12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8.5inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.
- 12.03 A Bid by a corporation must be signed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.
- 12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.
- 12.05 A Bid by a limited liability company must be signed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.
- 12.06 A Bid by an individual must show the Bidder’s name and official address.
- 12.07 A Bid by a joint venture must be signed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.
- 12.08 All names must be printed in ink below the signatures.
- 12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.
- 12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be indicated on the Bid Form.
- 12.11 The Bid must contain evidence of Bidder’s authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.
- 12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder’s licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such

certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Base Bid with Alternates*

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

13.02 *Unit Price*

- A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The "Bid Price" (sometimes referred to as the extended price) for each item of Unit Price Work 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 final Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

13.03 *Cash Allowances*

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

ARTICLE 14—SUBMITTAL OF BID

- 14.01 The Bidding Documents include one separate, unbound copy of the Bid Form, and, where required, the Bid Bond Form and other supplements to the Bid Form. The unbound copy of the Bid Form and supplements (if any) is to be completed and submitted with the Bid security and the other documents required with the Bid by Article 2 of the Bid Form.
- 14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be 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, and the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery method, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside

with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement or invitation to bid.

- 14.03 Bids received after the date and time prescribed for the opening of Bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened. Owner accepts no responsibility for delays in returning Bids submitted or delivered to the incorrect location.

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An unopened Bid may be withdrawn by an appropriate document duly signed in the same manner that a Bid must be signed and delivered to the place where Bids are to be submitted, prior to the date and time established in the Bidding Documents for the receipt of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 of this Article and submit a new Bid prior to the date and time for established in the Bidding Documents the receipt of Bids.
- 15.03 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, the Bidder may withdraw its Bid, and the bid security will be returned.

ARTICLE 16—OPENING OF BIDS

- 16.01 Bids will be opened at the time and place indicated in the Advertisement or invitation to bid and, unless obviously non-responsive, will be 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.
- 16.02 Bids will be opened privately.

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. Owner may reject the Bid of any Bidder that fails to demonstrate appropriate qualifications, experience, and resources for the Work, in accordance with Article 3 of these Instructions to Bidders.
- 18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of

the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.

18.04 *Basis for Award of Contract*

- A. If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest-priced, responsive Bid that has not otherwise been disqualified.

18.05 *Evaluation of Bids*

- A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or elsewhere in the Bidding Documents, or prior to the Notice of Award.
- B. *Based Bid with Alternates:* In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form. To determine the Bid prices for purposes of comparison, Owner will announce to all Bidders, present at the opening of Bids, a “Base Bid plus alternates” budget after receiving all Bids, but prior to opening the Bids; Bidders not present for the opening of Bids may obtain the announced budget amount from Owner or Engineer. For comparison purposes, alternates will be accepted, following the order of priority established in the Bid Form, until doing so would cause the budget to be exceeded. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions to Bidders, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate bid prices for which Owner determines funds will be available at the time of award.
- C. *Unit Price Work:* For the determination of the apparent low-price Bid 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 amount(s) of lump sum items (if any).

18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications, experience, and resources of the Bidder and may consider the qualifications, experience, and resources of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

18.07 Owner, with or without Engineer’s assistance, 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 19—BONDS AND INSURANCE

19.01 Paragraph 2.01 and Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, set forth Owner’s requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the signed Agreement

to Owner (or Owner's representative), it must be accompanied by required bonds and insurance documentation.

- 19.02 Article 8 ("Bid Security") of these Instructions to Bidders addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

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

ARTICLE 21—SALES AND USE TAXES

- 21.01 Owner is exempt from Iowa state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes must not be included in the Bid. Refer to Paragraph SC-7.10 of the Supplementary Conditions for additional information.

BID FORM

FOR CONSTRUCTION CONTRACT

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

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

Cedar Rapids Linn County Solid Waste Agency
1954 County Home Road
Marion, Iowa 52302

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

ARTICLE 2—ATTACHMENTS TO THIS BID

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

- A. Required Bid security;
- B. List of Proposed Subcontractors;
- C. List of Proposed Suppliers;
- D. Gantt style schedule showing proposed project dates and key milestones;
- E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;
- F. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids; and
- G. Required Bidder Qualification Statement with supporting data.

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

3.01 *Unit Price Bids*

- A. Bidder will perform the following Work at the indicated unit and lump sum prices:

Item No.	Description	Units	Estimated Quantity	Bid Unit Price	Bid Amount
1	Mobilization & Demobilization	LS	1		\$ -
2	Erosion and Sediment Control	LS	1		\$ -
3	Construction and As-built Surveying	LS	1		\$ -
4	Vertical Well - Abandonment of Existing Gas Wells	EA	8		\$ -
5	Vertical Well - Abandonment of Wells in Cap Area	EA	2		\$ -
6	Vertical Well - Drilling of 36" Boring and Completion of Vertical Well	LF	1,000		\$ -
7	Vertical Well - New Vertical Wellhead Assembly	EA	5		\$ -
8	Vertical Well - Remote Well Tie-in	EA	3		\$ -
9	Road Crossing - 18" CMP Pipe	LF	250		\$ -
10	Landfill Gas Pipeline - 12" SDR-17 HDPE Pipe	LF	1,350		\$ -
11	Landfill Gas Pipeline - 10" SDR-17 HDPE Pipe	LF	1,700		\$ -
12	Landfill Gas Pipeline - 6" SDR-17 HDPE Pipe	LF	2,700		\$ -
13	Condensate Forcemain Pipeline - 4" SDR-11 HDPE Pipe	LF	4,990		\$ -
14	Condensate Forcemain Pipeline - 4" SDR-11 x 8" SDR-17 HDPE Pipe	LF	760		\$ -
15	Air Supply Pipeline - 2" SDR-9 HDPE Pipe	LF	5,750		\$ -
16	Leachate Recirculation Line - 3" SDR-11 HDPE Pipe	LF	1,725		\$ -
17	Leachate Recirculation Line - 3" SDR-11 x 6" SDR-17 HDPE Pipe	LF	30		\$ -
18	Tie-in at Access Riser (East)	LS	1		\$ -
19	Supply and Install Condensate Station with pump	LS	1		\$ -
20	Phase 5 Leachate Lean-to Modifications	LS	1		\$ -
21	Seeding and Fertilizing	AC	5		\$ -

Total Base Bid \$

Alternatives					
22	Additional Trench Depth - 4' - 8'	LF	200		\$ -
23	Additional Trench Depth - 8' - 12'	LF	100		\$ -
24	Additional Trench Depth - 12' - 16'	LF	50		\$ -

B. 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. the estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

3.02 Total Bid Price (Lump Sum and Unit Prices)

Total Bid Price (Total of all Lump Sum and Unit Price Bids)	\$
---	----

ARTICLE 4—TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of days indicated in the Agreement.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

EJCDC® C-410, Bid Form for Construction Contract.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies,
and American Society of Civil Engineers. All rights reserved.

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

5.01 *Bid Acceptance Period*

- A. 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.

5.02 *Instructions to Bidders*

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

5.03 *Receipt of Addenda*

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

Addendum Number	Addendum Date

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder’s Representations*

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

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

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
 - d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

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

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

Bidder's Address for giving notices:

Bidder's Contact Person:

Name:

(typed or printed)

Title:

(typed or printed)

Phone:

Email:

Address:

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

BID BOND (DAMAGES FORM)

Bidder Name: _____ Address <i>(principal place of business)</i> : _____	Surety Name: _____ Address <i>(principal place of business)</i> : _____
Owner Name: _____ Address <i>(principal place of business)</i> : _____	Bid Project <i>(name and location)</i> : _____ Bid Due Date: _____
Bond Bond Amount: _____ Date of Bond: _____	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder	Surety
_____ <i>(Full formal name of Bidder)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <div style="text-align: center;"><i>(Signature)</i></div>	By: _____ <div style="text-align: center;"><i>(Signature) (Attach Power of Attorney)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
Notes: (1) Note: Addresses are to be used for giving any required notice. (2) 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 any difference between the total amount of Bidder's Bid and the total amount of the Bid of the next lowest, responsible Bidder that submitted a responsive Bid, as determined by Owner, for the work required by the Contract Documents, provided that:
 - 1.1. If there is no such next Bidder, and Owner does not abandon the Project, then Bidder and Surety shall pay to Owner the bond amount set forth on the face of this Bond, and
 - 1.2. In no event will Bidder's and Surety's obligation hereunder exceed the bond amount set forth on the face of this Bond.
 - 1.3. Recovery under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs 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 will 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 will not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action will 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 must be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must 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 Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will 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 will 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 governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

Bidder Status Form

To be completed by all bidders

Part A

Please answer "Yes" or "No" for each of the following:

- ☐ Yes ☐ No My company is authorized to transact business in Iowa.
(To help you determine if your company is authorized, please review the worksheet on the next page).
- ☐ Yes ☐ No My company has an office to transact business in Iowa.
- ☐ Yes ☐ No My company's office in Iowa is suitable for more than receiving mail, telephone calls, and e-mail.
- ☐ Yes ☐ No My company has been conducting business in Iowa for at least 3 years prior to the first request for bids on this project.
- ☐ Yes ☐ No My company is not a subsidiary of another business entity or my company is a subsidiary of another business entity that would qualify as a resident bidder in Iowa.
- If you answered "Yes" for each question above, your company qualifies as a resident bidder. Please complete Parts B and D of this form.
- If you answered "No" to one or more questions above, your company is a non-resident bidder. Please complete Parts C and D of this form.

To be completed by resident bidders

Part B

My company has maintained offices in Iowa during the past 3 years at the following addresses:

Dates: _____ to _____ Address: _____
(mm/dd/yyyy) City, State, Zip: _____

Dates: _____ to _____ Address: _____
(mm/dd/yyyy) City, State, Zip: _____

Dates: _____ to _____ Address: _____
(mm/dd/yyyy) City, State, Zip: _____

You may attach additional sheet(s) if needed.

To be completed by non-resident bidders

Part C

- Name of home state or foreign country reported to the Iowa Secretary of State:

- Does your company's home state or foreign country offer preferences to bidders who are residents? ☐ Yes ☐ No
- If you answered "Yes" to question 2, identify each preference offered by your company's home state or foreign country and the appropriate legal citation.

You may attach additional sheet(s) if needed.

To be completed by all bidders

Part D

I certify that the statements made on this document are true and complete to the best of my knowledge and I know that my failure to provide accurate and truthful information may be a reason to reject my bid.

Firm Name: _____

Signature: _____ Date: _____

SECTION 00 45 48

WORKSHEET REGARDING AUTHORIZATION TO TRANSACT BUSINESS

This worksheet may be used to help complete Part A of the Resident Bidder Status form. If at least one of the following describes your business, you are authorized to transact business in Iowa.

- ☐ Yes ☐ No My business is currently registered as a contractor with the Iowa Division of Labor.
- ☐ Yes ☐ No My business is a sole proprietorship and I am an Iowa resident for Iowa income tax purposes.
- ☐ Yes ☐ No My business is a general partnership or joint venture. More than 50 percent of the general partners or joint venture parties are residents of Iowa for Iowa income tax purposes.
- ☐ Yes ☐ No My business is an active corporation with the Iowa Secretary of State and has paid all fees required by the Secretary of State, has filed its most recent biennial report, and has not filed articles of dissolution.
- ☐ Yes ☐ No My business is a corporation whose articles of incorporation are filed in a state other than Iowa, the corporation has received a certificate of authority from the Iowa Secretary of State, has filed its most recent biennial report with the Secretary of State, and has neither received a certificate of withdrawal from the Secretary of state nor had its authority revoked.
- ☐ Yes ☐ No My business is a limited liability partnership which has filed a statement of qualification in this state and the statement has not been canceled.
- ☐ Yes ☐ No My business is a limited liability partnership which has filed a statement of qualification in a state other than Iowa, has filed a statement of foreign qualification in Iowa and a statement of cancellation has not been filed.
- ☐ Yes ☐ No My business is a limited partnership or limited liability limited partnership which has filed a certificate of limited partnership in this state, and has not filed a statement of termination.
- ☐ Yes ☐ No My business is a limited partnership or a limited liability limited partnership whose certificate of limited partnership is filed in a state other than Iowa, the limited partnership or limited liability limited partnership has received notification from the Iowa Secretary of state that the application for certificate of authority has been approved and no notice of cancellation has been filed by the limited partnership or the limited liability limited partnership.
- ☐ Yes ☐ No My business is a limited liability company whose certificate of organization is filed in Iowa and has not filed a statement of termination.
- ☐ Yes ☐ No My business is a limited liability company whose certificate of organization is filed in a state other than Iowa, has received a certificate of authority to transact business in Iowa and the certificate has not been revoked or canceled.

AGREEMENT

BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between Cedar Rapids Linn County Solid Waste Agency (“Owner”) and _____ (“Contractor”).

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

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: gas collection and control system construction, including vertical and horizontal gas wells, header and lateral lines, a condensate sump, air and forcemain, and appurtenances.

ARTICLE 2—THE PROJECT

- 2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: CRLCSWA Site 2 – 2024 Landfill Gas System Improvements.

ARTICLE 3—ENGINEER

HDR Guidance Note3.01 The Owner has retained HDR Engineering, Inc. (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

- 3.02 The part of the Project that pertains to the Work has been designed by Engineer.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

- A. The Work will be substantially complete on or before October 18, 2024, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before October 31, 2024.

4.05 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time.

Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner \$500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
 2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$1,000 for each day that expires after such time until the Work is completed and ready for final payment.
 3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive, and will not be imposed concurrently.
- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.
- C. Owner reserves the right to withhold from payments due Contractor under the Contract amounts for liquidated damages in accordance with the Contract.

ARTICLE 5—CONTRACT PRICE

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

- A. For all 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.

For all Bid Alternate 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).

- B. Total of Lump Sum Amount and Unit Price Work + Bid Alternate, if selected (subject to final Unit Price adjustment) \$_____.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

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

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on the basis of Contractor's Applications for Payment 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. Ninety five (95) percent of the value of the Work completed (with the balance being retainage).
 - b. Ninety five (95) percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

6.03 *Final Payment*

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

6.04 *Consent of Surety*

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

6.05 *Interest*

- A. All amounts not paid when due will bear interest at the rate in effect under Iowa Code section 12C.6, as of the day interest begins to accrue.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

- A. The Contract Documents consist of all of the following:
 - 1. This Agreement.
 - 2. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 - 3. General Conditions.
 - 4. Supplementary Conditions.
 - 5. Specifications as listed in the table of contents of the project manual (copy of list attached).

6. Drawings (not attached but incorporated by reference) consisting of ____ sheets with each sheet bearing the following general title: 2024 Landfill Gas System Improvements.
7. Addenda (numbers ____ to ____, inclusive).
11. Exhibits to this Agreement (enumerated as follows):
 - a. Contract's bid, pages ____ to ____, inclusive.
12. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
 - e. Warranty Bond, if any.
- B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 Contractor's Representations

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

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

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

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

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

Contractor:

(typed or printed name of organization)
By: _____
(individual's signature)
Date: _____
(date signed)
Name: _____
(typed or printed)
Title: _____
(typed or printed)
Attest: _____
(individual's signature)
Title: _____
(typed or printed)
Address for giving notices:

Designated Representative:
Name: _____
(typed or printed)
Title: _____
(typed or printed)
Address: _____

Phone: _____
Email: _____
(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.)

(typed or printed name of organization)
By: _____
(individual's signature)
Date: _____
(date signed)
Name: _____
(typed or printed)
Title: _____
(typed or printed)
(If **Contractor** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____
(individual's signature)
Title: _____
(typed or printed)
Address for giving notices:

Designated Representative:
Name: _____
(typed or printed)
Title: _____
(typed or printed)
Address: _____

Phone: _____
Email: _____
License No.: _____
(where applicable)
State: _____

PERFORMANCE BOND

Contractor Name: Address <i>(principal place of business)</i> :	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: Mailing address <i>(principal place of business)</i> :	Contract Description <i>(name and location)</i> : Contract Price: Effective Date of Contract:
Bond Bond Amount: Date of Bond: <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <div style="text-align: center;"><i>(Signature)</i></div>	By: _____ <div style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

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

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

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

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

PAYMENT BOND

Contractor Name: Address <i>(principal place of business)</i> :	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: Mailing address <i>(principal place of business)</i> :	Contract Description <i>(name and location)</i> : Contract Price: Effective Date of Contract:
Bond Bond Amount: Date of Bond: <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <div style="text-align: center;"><i>(Signature)</i></div>	By: _____ <div style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

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

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

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

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:

Engineer:

Contractor:

Project:

Contract Name:

Owner's Project No.:

Engineer's Project No.:

Contractor's Project No.:

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

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

Date of Substantial Completion:

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

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

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

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

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

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

The following documents are attached to and made a part of this Certificate:

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

Engineer

By (*signature*):

Name (*printed*):

Title:

NOTICE OF ACCEPTABILITY OF WORK

Owner:

Engineer:

Contractor:

Project:

Contract Name:

Notice Date:

Owner's Project No.:

Engineer's Project No.:

Contractor's Project No.:

Effective Date of the Construction Contract:

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

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

Engineer

By (*signature*): _____

Name (*printed*): _____

Title: _____

STANDARD GENERAL CONDITIONS

OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1—Definitions and Terminology.....	1
1.01 Defined Terms.....	1
1.02 Terminology	6
Article 2—Preliminary Matters	7
2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance.....	7
2.02 Copies of Documents	7
2.03 Before Starting Construction	7
2.04 Preconstruction Conference; Designation of Authorized Representatives	8
2.05 Acceptance of Schedules	8
2.06 Electronic Transmittals	8
Article 3—Contract Documents: Intent, Requirements, Reuse.....	9
3.01 Intent.....	9
3.02 Reference Standards	9
3.03 Reporting and Resolving Discrepancies	10
3.04 Requirements of the Contract Documents	10
3.05 Reuse of Documents	11
Article 4—Commencement and Progress of the Work	11
4.01 Commencement of Contract Times; Notice to Proceed.....	11
4.02 Starting the Work.....	11
4.03 Reference Points	11
4.04 Progress Schedule	12
4.05 Delays in Contractor’s Progress	12
Article 5—Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions	13
5.01 Availability of Lands	13
5.02 Use of Site and Other Areas.....	14
5.03 Subsurface and Physical Conditions.....	15
5.04 Differing Subsurface or Physical Conditions	16
5.05 Underground Facilities	17

5.06	Hazardous Environmental Conditions at Site	19
Article 6—Bonds and Insurance.....		21
6.01	Performance, Payment, and Other Bonds	21
6.02	Insurance—General Provisions	22
6.03	Contractor’s Insurance	24
6.04	Builder’s Risk and Other Property Insurance	25
6.05	Property Losses; Subrogation	25
6.06	Receipt and Application of Property Insurance Proceeds	27
Article 7—Contractor’s Responsibilities		27
7.01	Contractor’s Means and Methods of Construction	27
7.02	Supervision and Superintendence	27
7.03	Labor; Working Hours	27
7.04	Services, Materials, and Equipment	28
7.05	“Or Equals”	28
7.06	Substitutes	29
7.07	Concerning Subcontractors and Suppliers.....	31
7.08	Patent Fees and Royalties.....	32
7.09	Permits	33
7.10	Taxes	33
7.11	Laws and Regulations.....	33
7.12	Record Documents.....	33
7.13	Safety and Protection.....	34
7.14	Hazard Communication Programs	35
7.15	Emergencies	35
7.16	Submittals	35
7.17	Contractor’s General Warranty and Guarantee	38
7.18	Indemnification	39
7.19	Delegation of Professional Design Services	39
Article 8—Other Work at the Site.....		40
8.01	Other Work	40
8.02	Coordination	41
8.03	Legal Relationships.....	41
Article 9—Owner’s Responsibilities		42

9.01	Communications to Contractor	42
9.02	Replacement of Engineer	42
9.03	Furnish Data	42
9.04	Pay When Due	42
9.05	Lands and Easements; Reports, Tests, and Drawings	43
9.06	Insurance	43
9.07	Change Orders	43
9.08	Inspections, Tests, and Approvals	43
9.09	Limitations on Owner's Responsibilities	43
9.10	Undisclosed Hazardous Environmental Condition	43
9.11	Evidence of Financial Arrangements	43
9.12	Safety Programs	43
Article 10—Engineer's Status During Construction		44
10.01	Owner's Representative	44
10.02	Visits to Site	44
10.03	Resident Project Representative	44
10.04	Engineer's Authority	44
10.05	Determinations for Unit Price Work	45
10.06	Decisions on Requirements of Contract Documents and Acceptability of Work	45
10.07	Limitations on Engineer's Authority and Responsibilities	45
10.08	Compliance with Safety Program	45
Article 11—Changes to the Contract		46
11.01	Amending and Supplementing the Contract	46
11.02	Change Orders	46
11.03	Work Change Directives	46
11.04	Field Orders	47
11.05	Owner-Authorized Changes in the Work	47
11.06	Unauthorized Changes in the Work	47
11.07	Change of Contract Price	47
11.08	Change of Contract Times	49
11.09	Change Proposals	49
11.10	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	55
13.03	Unit Price Work	55
Article 14—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work		56
14.01	Access to Work.....	56
14.02	Tests, Inspections, and Approvals.....	56
14.03	Defective Work	57
14.04	Acceptance of Defective Work.....	58
14.05	Uncovering Work	58
14.06	Owner May Stop the Work	58
14.07	Owner May Correct Defective Work.....	59
Article 15—Payments to Contractor; Set-Offs; Completion; Correction Period		59
15.01	Progress Payments	59
15.02	Contractor’s Warranty of Title	62
15.03	Substantial Completion.....	62
15.04	Partial Use or Occupancy	63
15.05	Final Inspection	64
15.06	Final Payment.....	64
15.07	Waiver of Claims	65
15.08	Correction Period	66
Article 16—Suspension of Work and Termination		67
16.01	Owner May Suspend Work	67
16.02	Owner May Terminate for Cause.....	67
16.03	Owner May Terminate for Convenience.....	68
16.04	Contractor May Stop Work or Terminate	68
Article 17—Final Resolution of Disputes		69
17.01	Methods and Procedures.....	69
Article 18—Miscellaneous		69
18.01	Giving Notice	69
18.02	Computation of Times	69
18.03	Cumulative Remedies	70

18.04	Limitation of Damages	70
18.05	No Waiver	70
18.06	Survival of Obligations	70
18.07	Controlling Law	70
18.08	Assignment of Contract	70
18.09	Successors and Assigns	70
18.10	Headings.....	70

STANDARD GENERAL CONDITIONS

OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
- 11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 - 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 - 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 - 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 - 15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 - 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 - 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 - 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 - 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 - 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 - 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

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

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

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

2.05 *Acceptance of Schedules*

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

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

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

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

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

B. *Resolving Discrepancies*

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

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

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

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

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

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

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

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

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

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

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

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

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

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

7.03 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

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

7.09 *Permits*

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

7.10 *Taxes*

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

7.11 *Laws and Regulations*

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

7.12 *Record Documents*

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

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

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

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

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

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
- 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 - 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 - 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
 - 1. Observations by Engineer;
 - 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. Use or occupancy of the Work or any part thereof by Owner;
 - 5. Any review and approval of a Shop Drawing or Sample submittal;
 - 6. The issuance of a notice of acceptability by Engineer;
 - 7. The end of the correction period established in Paragraph 15.08;
 - 8. Any inspection, test, or approval by others; or

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

7.18 Indemnification

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

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

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

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

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

9.06 *Insurance*

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

9.07 *Change Orders*

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

9.08 *Inspections, Tests, and Approvals*

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

9.09 *Limitations on Owner's Responsibilities*

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

9.10 *Undisclosed Hazardous Environmental Condition*

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

9.11 *Evidence of Financial Arrangements*

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

9.12 *Safety Programs*

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

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

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

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

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

10.07 *Limitations on Engineer's Authority and Responsibilities*

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

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

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

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

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

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.
- B. *Change Proposal Procedures*
 - 1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
 - 2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

- 3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
- 4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

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

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:
 - 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
 - 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
 - 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 - 6. Expenses incurred in preparing and advancing Claims.
 - 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee*
 - 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
 - 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

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

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

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

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

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

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

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

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

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

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
- 3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

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

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

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

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

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 - 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
 - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

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

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

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

18.09 *Successors and Assigns*

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

18.10 *Headings*

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

SUPPLEMENTARY CONDITIONS

OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1— Definitions and Terminology.....	1
Article 2— Preliminary Matters	1
Article 3— Contract Documents: Intent, Requirements, Reuse	2
Article 4— Commencement and Progress of the Work	2
Article 5— Site, Subsurface and Physical Conditions, Hazardous Environmental Conditions.....	2
Article 6— Bonds and Insurance	3
Article 7— Contractor’s Responsibilities	7
Article 8— Other Work at the Site	Error! Bookmark not defined.
Article 9— Owner’s Responsibilities	Error! Bookmark not defined.
Article 10— Engineer’s Status During Construction	Error! Bookmark not defined.
Article 11— Changes to the Contract	11
Article 12— Claims	11
Article 13— Cost of Work; Allowances, Unit Price Work.....	11
Article 14— Tests and Inspections; Correction, Removal, or Acceptance of Defective Work.....	12
Article 15— Payments to Contractor, Set Offs; Completions; Correction Period	12
Article 16— Suspension of Work and Termination	12
Article 17— Final Resolutions of Disputes	12
Article 18— Miscellaneous	14
Exhibit A— Software Requirements for Electronic Document Exchange	Error! Bookmark not defined.
Exhibit B— Foreseeable Bad Weather Days	Error! Bookmark not defined.
Exhibit C— Geotechnical Baseline Report Supplement to the Supplementary Conditions	Error! Bookmark not defined.

SUPPLEMENTARY CONDITIONS

OF THE CONSTRUCTION CONTRACT

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

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

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

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

SC-1.01.A.16 Add the following to Paragraph 1.01.A.16:

When the Project is to be constructed under multiple direct Contracts awarded by the Owner, the term "Contractor" shall mean the appropriate prime contractor. Whenever a specific prime Contractor is referred to, terms such as "General Contractor", "Electrical Contractor", "Plumbing Contractor", "HVAC Contractor", or other appropriate Contract-indicating term will be used.

SC-1.01.A.40 Add the following to Paragraph 1.01.A.40:

Trucking, shipping, delivery firms, consultants, and entities performing testing or inspection retained by Contractor or any Subcontractor are considered to be Subcontractors.

SC-1.01.A.45 Add the following to Paragraph 1.01.A.45:

Entities that rent construction equipment or machinery, but are not incorporated into the Work, are considered to be Suppliers. If such rental entity furnishes both equipment and one or more personnel to operate and maintain the equipment, such entity is a Subcontractor.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

SC-2.01 Delete Paragraphs 2.01.B. and C. in their entirety and insert the following in their place:

- B. *Evidence of Contractor's Insurance:* When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies (including all endorsements, and identification of applicable self-insured retentions and deductibles) of insurance required to be provided by Contractor in this Contract. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

2.06 *Electronic Transmittals*

SC-2.06 Delete in its entirety Paragraph 2.06.B and replace with the following new paragraph:

- B. *Electronic Document Protocol*: Comply with Specifications Section 01 31 26 – Electronic Communication Protocols.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

SC-3.01 Delete Paragraph 3.01.C in its entirety.

SC-3.01 Add the following new paragraphs immediately after Paragraph 3.01.E:

- F. The Specifications and other verbal components of the Contract Documents may vary in form, format, and style. Some Specification sections are written in varying degrees of streamlined or declarative style and some Specifications sections may, in comparison, employ a more-narrative style. Omissions of such words and phrases as "Contractor shall," "in conformity with," "as shown," or "as specified" are intentional in streamlined language in the Contract Documents. Omitted words and phrases are incorporated by inference. Similar types of provisions may appear in various parts of a Specifications section or elsewhere in the Contract Documents. Contractor shall not attempt to take advantage of any variation of form, format or style in Change Proposal(s) and Claim(s).
- G. Cross referencing of Specification sections in a Specifications section's heading "Related Sections includes, but are not necessarily limited to: "and elsewhere within each Specifications section is provided as an aid and convenience to Contractor. Contractor shall not rely on cross referencing indicated and is responsible for coordinating the entire Work and providing a complete Project whether or not cross referencing is provided in each Specifications section or whether or not cross referencing is complete.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.05 *Delays in Contractor's Progress*

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

5. *Weather-Related Delays*

- a. No extension of the Contract Time will be allowed for additional Work or for claimed delay unless the additional Work contemplated or claimed delay is shown to be on the critical path of the Project's schedule of construction or Contractor can show by critical path method analysis how the additional Work on claimed delay adversely affects the critical path.

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

5.03 *Subsurface and Physical Conditions*

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

- E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report	Technical Data
CRLCSWA Site 2 – Phase 5 Bulk Excavation Technical Memo – Geotechnical Investigation	3.13.2020	Geotechnical Investigation performed in the area of the Phase 5 Bulk Excavation project.

- G. Contractor may examine copies of reports and drawings identified in SC-5.03.E and SC-5.03.F that were not included with the Bidding Documents at the HDR Cedar Rapids office during regular business hours, or may request copies from Engineer.

SC-5.04.A Add the following new paragraph immediately after Paragraph 5.04.A.4:

5. Contractor encounters human remains, recognizes the existence of burial markers, archaeological sites, historical sites, artifacts of potential archaeological or historical interest, or wetlands not shown or indicated in the Contract Documents, Contractor shall immediately cease operations that may disturb such area(s) and secure the adjacent Work; and Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations (Contractor shall continue to suspend such operations until otherwise instructed by Owner but shall continue with all other operations that do not affect those remains or features);

5.06 *Hazardous Environmental Conditions*

SC-5.06 Add the following new paragraphs immediately after Paragraph 5.06.A.3:

4. Reports and other drawings that were not included with the Bidding Documents are available for examination at the HDR office at 5815 Council Street NE, Suite B, Cedar Rapids, IA 52402 during regular business hours. Those not furnished with the Bidding Documents are available upon request for the cost of reproduction of \$0.20 per page plus express shipping.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.A:

1. *Required Performance Bond Form:* The performance bond that Contractor furnishes will be in the form of EJCDC® C-610, Performance Bond (2010, 2013, or 2018 edition).
2. *Required Payment Bond Form:* The payment bond that Contractor furnishes will be in the form of EJCDC® C-615, Payment Bond (2010, 2013, or 2018 edition).

6.02 *Insurance—General Provisions*

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the Project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

6.03 *Contractor's Insurance*

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

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

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	\$NA
Bodily injury by disease—aggregate	\$NA
Employer's Liability	
Each accident	\$500,000
Each employee	\$500,000
Policy limit	\$500,000
Stop-gap Liability Coverage	
For work performed in monopolistic states, stop-gap liability coverage must be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	\$NA

- F. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:
 1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,

2. damages insured by reasonably available personal injury liability coverage, and
 3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage.
 - a. Such insurance must be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
 4. Underground, explosion, and collapse coverage.
 5. Personal injury coverage.
 6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
 7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:
1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
 2. Any exclusion for water intrusion or water damage.
 3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
 4. Any exclusion of coverage relating to earth subsidence or movement.
 5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
 6. Any limitation or exclusion based on the nature of Contractor's work.

7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

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

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

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

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

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	\$5,000,000
General Aggregate	\$5,000,000

- M. *Contractor's Pollution Liability Insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance must be maintained for no less than three years after final completion.

Contractor's Pollution Liability	Policy limits of not less than:
Each Occurrence/Claim	\$1,000,000
General Aggregate	\$3,000,000

- N. *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 must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

Contractor's Professional Liability	Policy limits of not less than:
Each Claim	\$1,000,000
Annual Aggregate	\$1,000,000

O.

6.04 *Builder's Risk and Other Property Insurance*

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provision:

- G. *Coverage for Completion Delays:* The builder's risk policy will include, for the benefit of Owner, loss of revenue and soft cost coverage for losses arising from delays in completion that result from covered physical losses or damage. Such coverage will include, without limitation, fixed expenses and debt service for a minimum of 12 months with a maximum deductible of 30 days, compensation for loss of net revenues, rental costs, and attorneys' fees and engineering or other consultants' fees, if not otherwise covered.

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

- H. *Builder's Risk and Other Property Insurance Deductibles:* The purchaser of any required builder's risk, installation floater, or other property insurance will be responsible for costs not covered because of the application of a policy deductible.
1. The builder's risk policy (or if applicable the installation floater) will be subject to a deductible amount of not more than \$25,000 for direct physical loss in any one occurrence.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.02 *Supervision and Superintendence*

SC-7.02 Add the following to Paragraph 7.02, following Paragraph 7.02.B:

- C. Unless Owner otherwise agrees in writing, the superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

7.03 *Labor; Working Hours*

- SC-7.03 Delete Paragraph 7.03.C in its entirety, and insert the following:
- C. In the absence of any Laws or Regulations to the contrary, Contractor may perform the Work on holidays, during any or all hours of the day, and on any or all days of the week, at Contractor's sole discretion.

SC-7.03 Add the following new paragraph immediately after Paragraph 7.03.C:

- D. Contractor shall be responsible for the cost of overtime (premium) pay and other expense incurred by Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-7.03 Add the following new subparagraph immediately after Paragraph SC-7.03.D:

1. For purposes of administering the foregoing requirement, additional overtime costs are defined as exceeding sixty (60) hours of active Work during any given week of construction. The hourly cost of the Resident Project Representative is \$125 per hour.

7.10 *Taxes*

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

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

7.13 *Safety and Protection*

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

The following Owner safety programs are applicable to the Work:

1. Cedar Rapids Linn County Solid Waste Agency Safety and Health Rules for Outside Contractors.
2. Cedar Rapids Linn County Solid Waste Agency Contractor Orientation Written Program.
3. Cedar Rapids Linn County Solid Waste Agency Contractor Safety Declaration.
4. Cedar Rapids Linn County Solid Waste Agency Vendor/Contractor Safety Briefing (Exhibit A).
5. Cedar Rapids Linn County Solid Waste Agency Vendor Liability Agreement (Exhibit B).

7.14 *Hazard Communication Programs*

SC-7.14 Add the following new paragraph immediately after Paragraph 7.14.A:

- B *Single Prime Contract:* Contractor shall be responsible for coordinating exchange of 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 and Regulations. Contractor shall provide a centralized location for the maintenance of the safety data sheets or other hazard communication information required to be made available by any employer on the Site. Location of the material safety data sheets or other hazard communication information shall be readily accessible to the employees of employers on the Site.

ARTICLE 8—OTHER WORK AT THE SITE

8.02 Coordination

SC-8.02 Add the following new Paragraph 8.02.C immediately after Paragraph 8.02.B:

- C. Owner intends to contract with others for the performance of other work at or adjacent to the Site, which is indicated in Specifications Section 01 11 00 – Summary of Work

ARTICLE 9—OWNER’S RESPONSIBILITIES

ARTICLE 10—ENGINEER’S STATUS DURING CONSTRUCTION

10.03 Resident Project Representative

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

1. On this Project, by agreement with Owner, the Engineer will not furnish a Resident Project Representative to represent Engineer at the Site or assist Engineer in observing the progress and quality of the Work.

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

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

- a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.
4. *Review of Work; Defective Work*
- a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Observe whether any Work in place appears to be defective. This does not impose on either RPR or Engineer any obligation to find all, or any specific element of, defective Work, for which Contractor remains solely responsible.
 - b. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.
5. *Inspections and Tests*
- a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to (1) code-required tests and special inspections, and (2) those performed by public or other agencies having jurisdiction over the Work.
 - b. Observe specific tests, inspections, and other field quality control required by the Contract Documents and performed by Contractor, Subcontractor, Supplier, or by testing or laboratories retained by any of them, .
 - c. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.
6. *Payment Requests:* Review Applications for Payment with Contractor and advise Contractor regarding quantities or extent of the Work eligible for payment.
7. *Completion*
- a. Participate in Engineer's visits regarding inspection for Substantial Completion.
 - b. Assist in the augmenting or amending the punch list of items to be completed or corrected prior to final inspection.
 - c. *Final Inspection:* Participate in Engineer's visit to the Site, in the company of Owner and Contractor, regarding completion of the Work, and prepare a final punch list (if any) of items to be completed or corrected by Contractor.
 - d. Observe whether items on the final punch list have been completed or corrected.
 - d. *Record Documents:* Periodically during the Work, review with Contractor the status of Contractor's record documents required by the Contract Documents and advise Contractor on whether such record documents appear to comply with the Contract's requirements for record documents. Review final record documents submitted by Contractor.

D. The RPR will not:

1. Authorize any deviation from the Contract Documents or substitution of materials, equipment (including “or-equal” items), or procedures or sequences indicated in the Contract Documents.
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 or responsibility over any aspect of the means, methods, techniques, sequences or procedures of construction.
5. Advise on, issue directions regarding, or assume control over security protection, or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11—CHANGES TO THE CONTRACT

No Supplementary Conditions in this Article.

ARTICLE 12—CLAIMS

No Supplementary Conditions in this Article.

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

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

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the extended price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 20 percent from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor’s unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor’s costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

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

No Supplementary Conditions in this Article.

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

15.01 *Progress Payments*

SC-15.01 Add the following new Paragraph 15.01.F:

- F. For contracts in which the Contract Price is based on the Cost of Work plus a fee, if Owner determines that progress payments made to date substantially exceed the actual progress of the Work (as measured by reference to the Schedule of Values), or present a potential conflict with the Guaranteed Maximum Price, then Owner may require that Contractor prepare and submit a plan for the remaining anticipated Applications for Payment that will bring payments and progress into closer alignment and take into account the Guaranteed Maximum Price (if any), through reductions in billings, increases in retainage, or other equitable measures. Owner will review the plan, discuss any necessary modifications, and implement the plan as modified for all remaining Applications for Payment.

15.03 *Substantial Completion*

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

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

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No Supplementary Conditions in this Article.

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

17.02 *Arbitration*

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 settled by arbitration. This agreement to arbitrate 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 arbitration administrator, and a copy will be concurrently sent to Engineer for information. The demand for arbitration will be made within the specific time required in Article 17, or, if no specified time is applicable, within a reasonable time after the matter in question has arisen, and in no event will 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.

- C. The arbitration will be held in the same locality as the site.
- D. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrator(s) will have no authority to award punitive or other damages not measured by the prevailing party's actual damages, except as may be required by statute or the Contract. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.
- E. The Arbitrator(s) will have the authority to allocate the costs of the arbitration process among the parties, but will only have the authority to allocate attorneys' fees if a specific Law or Regulation or this Contract permits them to do so.
- F. The award of the arbitrator(s) must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.
- G. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witness. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided for above.
- H. No arbitration arising out of or relating to the Contract will 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 will allow complete relief to be afforded among those who are already parties to the arbitration;
 - 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;
 - 3. such other individual or entity is subject to arbitration under a contract with either Owner or Contractor, or consents to being joined in the arbitration; and
 - 4. the consolidation or joinder is in compliance with the arbitration administrator's procedural rules.
- I. 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.
- J. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract. To the extent any disclosure is allowed pursuant to the

exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

17.03 *Attorneys' Fees*

SC-17.03 Add the following new paragraph immediately after Paragraph 17.02.

SC-17.03 *Attorneys' Fees*

- A. 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.

ARTICLE 18—MISCELLANEOUS

SC-18.12 Add a new paragraph immediately after Paragraph 18.11, to read as follows:

SC-18.12 *Publicity*

- A. Contractor shall not disclose to any third party the nature of its Work on the Project, nor engage in publicity or public media disclosures with respect to the Project without the prior written consent of Owner.

SC-19 Add new article immediately after Article 18, to read as follows:

SECTION 01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Location and description of Work.
2. Construction Contracts for this Project.
3. Others retained by Owner for the Project.
4. Work by others under Owner's control on other projects.
5. Work by others not under Owner's control.
6. Work by Owner.
7. Sequence and progress of Work.
8. Contractor's use of the Site.
9. Easements and rights-of-way.
10. Partial utilization by Owner.
11. Utility owners.

1.2 LOCATION AND DESCRIPTION OF WORK

- A. The Work is located at the CRLCSWA Site 2 Landfill, 1954 County Home Road, Marion, Iowa.
- B. The Work to be performed under this Contract includes constructing the Work broadly described below, in accordance with the Contract Documents, with all related appurtenances. Work shown on the Drawings, or indicated in the Specifications, or indicated elsewhere in the Contract Documents is part of the Work, regardless of whether indicated below. The Work includes, but is not limited to, the following:
1. Landfill Gas Collection and Control System (GCCS) Expansion.
 - a. Site preparation.
 - b. Waste excavation.
 - c. General earthwork including bulk soil excavation and processing, trenching, backfilling, embankment, and compacting.
 - d. Processing on-site borrow soils.
 - e. Construction of vertical gas extraction wells.
 - f. Redrilling of existing vertical gas extraction wells.
 - g. Abandonment of existing vertical gas extraction wells.
 - h. Construction of gas conveyance piping (laterals and header).
 - i. Construction of tie-ins to existing gas infrastructure.
 - j. Construction of air supply and liquid conveyance piping.
 - k. Construction of condensate pump station.
 - l. Erosion controls and storm water pollution prevention.
 - m. Miscellaneous structures and appurtenances.
 - n. Contractor's Health and Safety Plan development and implementation.
 - o. Traffic and access controls.
 - p. Closeout documentation.
 - q. Others: See Drawings and Specifications.
 2. Improvements to Leachate Recirculation Infrastructure.

- a. Site preparation.
- b. Waste excavation.
- c. General earthwork including bulk soil excavation and processing, trenching, backfilling, embankment, and compacting.
- d. Processing on-site borrow soils.
- e. Removal and replacement of leachate conveyance piping and valves at leachate extraction pad.
- f. Installation of pipe insulation.
- g. Tie-in to existing dual-contained leachate forcemain.
- h. Installation of leachate conveyance piping and discharge stickups.

1.3 CONSTRUCTION CONTRACTS FOR THIS PROJECT

- A. The Project will be constructed under a single prime construction contract.

1.4 HAZARDOUS ENVIRONMENTAL CONDITIONS

- A. Site is an active landfill with heavy equipment, cell and cap construction by other contractor, and landfill traffic.
- B. A Hazardous Environmental Condition, described in reports referenced in the Supplementary Conditions, will affect the Work.

1.5 SEQUENCE AND PROGRESS OF WORK

- A. Work Plan:
 - 1. Contractor shall submit a Work Plan including project schedules, sequencing, and other conditions and procedures to the Owner and Engineer and obtain such approvals a minimum of two weeks prior to beginning to undertake the Work.
- B. Work will require sequencing priorities to include, but not necessarily limited to:
 - 1. GCCS Development shall be first priority.
 - 2. Installation of grassing and erosion stabilization materials shall be established based on specified timeframes for seeding.
- C. Roadways:
 - 1. Owner's "Main Access Road" shall remain a two-lane, unobstructed road at all times except between the hours of 5:30 P.M. on Saturday and 6:00 A.M. on Monday.
 - a. During these hours the site is closed to landfill activities and work may be conducted without restriction.
 - b. Under no circumstances shall work on or adjacent to the Main Access Road result in less than a two-lane unobstructed (full access) roadway when it is reopened to traffic at 6:00 A.M. on Monday.
 - c. If construction adjacent to the Main Access Road is necessary and Contractor has provided written requests to conduct Work that may impact traffic or temporarily obstruct roadway, Owner may grant approval of obstruction based upon Owner's and Engineer's concurrence with Contractor's work plan, schedule of activities, and traffic control plan, as described below.
 - 2. Where work is completed during active site hours on other Access Roads and has the potential to restrict traffic flow, plan Work to ensure a minimum of one (1) lane of roadway shall remain open to traffic at all times.
 - 3. Maintain a minimum of one (1) lane of access at all times for Owner soil haul roads.
 - 4. Where Work has the potential to restrict or obstruct roadways:
 - a. Submit a traffic control plan where crossing or excavation of existing roads is anticipated.

- 1) The plan shall show how the disruption to the road will be minimized, and how the duration of the disruption will be minimized.
- 2) Obtain Owner and Engineer approval of the plan prior to commencing this work.
- b. Provide services of flagmen and barricades at all one-lane access roadway locations, or as necessary during Owner's ongoing operating hours, designed as open for public use below.
 - 1) Flagmen, signage, and appropriate barricades will be a necessary part of any impacts or temporary obstructions of the Main Access Roads during the hours stipulated above.
- c. Owner has electrical controls critical to other operations on the site. Schedule power outages, excavations, equipment installation, cutting, and connections to ensure that critical operations are not interrupted.
 - 1) Meet with the Owner and Engineer at least 1-week prior to any power interruptions to review the timing and extent of interruptions.
 - 2) Schedule electrical interruptions to minimize time when existing power is not available to other Owner operations.
- D. See Section 01 35 05 on leachate handling.

1.6 CONTRACTOR'S USE OF SITE

- A. Contractor shall have use of the Owner's premises within the designated limits of construction for construction operations, including use of the Project Site, as allowed by law, ordinances, permits, easement agreements and the Contract Documents, except as noted herein.
- B. Contractor's use of premises is limited by Owner's ongoing operations, right to perform work or to retain other Contractors on portions of the Project.
 1. Owner also anticipates using existing soil borrow operations south of the Phase 5 liner area. As such, Contractor should anticipate coordination of traffic with Owner's earthwork equipment for safe operation.
- C. Contractors' use of the Site shall be confined to the areas shown on the Drawings.
- D. Construction traffic to yield to all landfill traffic.
- E. Move stored materials and equipment that interfere with operations of Owner, other contractors, and others performing work for Owner.
- F. Hours of Site Access:
 1. The Site is open for public use as follows:
 - a. Monday - Friday: 7:00 AM to 4:00 PM.
 - b. Saturday: 7:00 AM to 12:00 PM by appointment.
 - c. Sunday: Closed.
 2. The Site is closed on the following holidays:
 - a. New Year's Day.
 - b. Memorial Day.
 - c. 4th of July.
 - d. Labor Day.
 - e. Thanksgiving Day.
 - f. Christmas Day.
 3. Contractor and all subcontractors and suppliers shall enter and exit through the facility's back gate and stop at the scale office to notify attendant upon entering.
 4. If access is required beyond the public use hours, Contractor must inform the Owner's designated representative of the required hours of access and must make arrangements with the Owner to obtain such access. Contractor shall obtain prior written permission from the Owner for performing construction activities between the hours of 9:00 P.M. and 5:00

- A.M. Monday - Saturday, Sunday operations, and holiday operations. Permission for site access beyond the public use hours will be at the Owner's option.
5. If Contractor is present on-site during non-public use hours, the site must be continually maintained secure from unauthorized access.
 6. Contractor shall maintain a daily employee roster for all employees on-site and the daily roster shall be posted at the field office.
- G. The Project Site is limited to boundaries indicated in the Contract Documents.
- H. Provide protection and safekeeping of material and products stored on or off the premises.
- I. Move and stored material or products that interfere with operations of Owner or other Contractors.

1.7 WORK BY OTHERS

- A. Owner may perform certain construction operations will be conducted at the Project Site simultaneously with Work under the Contract. The construction operations performed by the Owner and others include the following:
1. Earthwork and excavation for ongoing soil needed to undertake the operation of the landfill.
 2. Ongoing operation of the existing landfill gas collection and control system, landfill gas to energy plant, groundwater control system, leachate collection system, and leachate pond.
- B. Cooperate fully with separate contractors and/or the Owner so work by others may be carried out smoothly, without interfering with or delaying work under the Contract.
1. Owner will endeavor to dictate construction sequences that minimize impacts to Work under this Contract.
 2. Cooperate with other contractors or consultants, hired by the Owner, to allow access to areas required for their performance of work.
 - a. Communicate with others performing work to avoid conflicts and identify areas of access.
 - b. If conflicts are anticipated or identified immediately bring these to the attention of the Owner and Engineer.

1.8 EASEMENTS AND RIGHTS-OF-WAY

- A. Easements and Rights-of-Way - General:
1. Easements and rights-of-way required for the permanent improvements included in the Work will be provided by Owner in accordance with the General Conditions and Supplementary Conditions.
 2. Confine construction operations within Owner's property, public rights-of-way, easements obtained by Owner, and limits shown, and property for which Contractor has made arrangements directly with property owner(s).
 3. Use care in placing construction tools, machinery and equipment, excavated materials, and materials and equipment to be incorporated into the Work to avoid damaging property and interfering with traffic.
 4. Do not enter private property outside the construction limits without permission from the owner of the property.

1.9 UTILITY OWNERS

- A. Utilities known to Engineer and that may have Underground Facilities or other facilities in the vicinity of the Work are as follows:
1. Electrical: Linn County Rural Electric Cooperative and Alliant Energy - Interstate Power and Light Co.
 2. Water: Private Well.

- B. Utilities and their owners indicated in the Contract Documents are for Contractor's convenience. Neither Owner nor Engineer will be liable to Contractor or any utility owner for failure to indicate utility, its owner, or complete and correct contact information in the Contract Documents where Contractor's reasonable and ordinarily-exercised diligence would reveal the presence of the utility and its owner. Nothing in the Contract mitigates Contractor's responsibilities under the General Conditions, and Laws and Regulations, including "call before you dig" regulations.

1.10 MISCELLANEOUS PROVISIONS

- A. Contractor shall be responsible for negotiations of any waivers or alternate arrangements required to enable transportation of materials to the site.
- B. Maintain conditions of existing access and haul roads on the site and adjacent facilities such that access is not hindered as the result of construction related activities or deterioration.
- C. Contractor shall remove all wind or weather-related litter (solid waste) that enters the project area at no additional cost to the Owner and shall ensure such materials are not incorporated into the work.
- D. The Contractor should anticipate up to ten days when the volume of wind or weather-related litter will prevent construction. Such days are defined in this paragraph. No extension of the number of calendar days for completion will be granted for the first five such events. Such events must be documented and reported to the Engineer and the Owner immediately following the event. If the volume of windblown litter is such that a five person crew of the Contractor's employ cannot remove such material from the Work area in 3 HRS the Owner will, upon the Contractor's request, remove such material and grant an extension of the number of calendar days for completion provided that such days exceed the five days state above and provided these events and level of clean-up and properly documented and reported.
- E. Contractor shall remove and replace existing fences within or adjacent to the Limits of Construction as construction needs dictate. If necessary, Contractor shall provide temporary lockable gate or other means to allow the site to be secured when Contractor is not present on site. Minimize time when litter fence is removed to minimize potential off-site litter problems. Restore or replace all removed fence to like new condition if removed or damaged during construction. Assist with clean-up of off-site litter to satisfaction of Owner when litter fence is removed.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 11 20

JOB CONDITIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Project phasing requirements.
 - 2. Job conditions.

1.2 SUBMITTALS

- A. Miscellaneous Submittals:
 - 1. Project Schedule

1.3 ORDER OF CONSTRUCTION AND CONSTRUCTION SCHEDULE

- A. The project will consist of one phase with substantial and final completion dates.
- B. Construction operations will be scheduled to allow the Owner uninterrupted operation of existing adjacent facilities.
 - 1. Coordinate connections with existing work to ensure timely completion of interfaced items.
- C. At no time shall Contractor or his employees modify operation of the existing facilities or start construction modifications without approval of the Owner except in emergency to prevent or minimize damage.
- D. Within 15 days after award of Contract, submit for approval an updated Gantt Bar chart baseline schedule.
 - 1. Account for schedule of Subcontractors and Suppliers.
 - 2. Include proper phasing and sequence of construction, various crafts, purchasing time, Shop Drawing approval, material delivery, equipment fabrication, and similar time-consuming factors.
 - a. Application software: Microsoft Project, or equal.
 - 3. Show the order and interdependence of activities.
 - a. The start of an activity shall be dependent on the completion of a preceding activity (ies), with Notice to Proceed being the initial activity.
 - b. Divide activities if necessary, such that the maximum duration of any list activity is 20 days.
- E. Evaluate schedule no less than monthly and as required elsewhere in Contract Documents:
 - 1. Update, correct, and submit to Engineer with pay application to show rescheduling necessary to reflect true job conditions.
 - 2. When shortening of various time intervals is necessary to correct for behind schedule conditions, indicate actions to implement to accomplish work in shorter duration.
 - 3. Information shall be submitted to Engineer in writing with revised schedule.
- F. If Contractor does not take necessary action to accomplish work according to schedule, Contractor may be ordered by Owner in writing to take necessary and timely action to improve work progress.
 - 1. Owner may require increase work forces, extra equipment, extra shifts or other action as necessary.

2. Should Contractor refuse or neglect to take such action authorized, under provisions of this contract, Owner may take necessary actions including, but not necessarily limited to, withholding of payment and termination of Contract.
- G. Provide two-week look-ahead schedules every two weeks and at each construction progress meeting or pre-installation conference.

1.4 PROJECT CONDITIONS

- A. Prior to installation of material, equipment and other work, verify with subcontractors, material or equipment manufacturers, and installers that the substrate or surface to which those materials attach is acceptable for installation of those materials or equipment (Substrate is defined as building surfaces to which materials or equipment is attached to i.e., floors, walls, ceilings, etc.).
- B. Correct unacceptable substrate until acceptable for installation of equipment or materials.
- C. The project site is adjacent to, and on top of, active solid waste disposal areas regulated by the State of Iowa.
 1. Contractor shall take appropriate measures and employ the use of appropriate equipment to conduct construction operations in a safe manner that considers the types of waste and the by-products thereof that could be present.
 - a. By-products may include, but are not necessarily limited to: solid waste, landfill gases, and leachates.
 2. Remove solid waste encountered in excavation and grading and as a result of design grades or weather events and dispose of at the landfill active face, and as directed by Owner or Engineer, no later than 1 HR prior to site closure for public use each workday, unless otherwise approved by Owner.
 - a. Waste that is exposed due to excavation activity or as a result of other related events, must be covered with at least 6 IN of soil at the end of each workday.
 - b. A waterproof tarp may be substituted with Owner or Engineer approval.
 - c. Contractor will not be paid for removal of weather-related solid waste.
 - d. Contractor may dispose of existing solid waste encountered by construction activities within the existing waste footprint at the landfill active face at no charge to the Contractor.
 3. When existing solid waste is exposed by Contractor's construction activity, area shall be covered by the end of each working day with a minimum of 6 IN of soil or in a manner acceptable to the Owner and the Iowa Department of Natural Resources.
- D. Designated Soil Borrow Areas:
 1. Soil borrow areas are designated on the Drawings and include a stockpile located south of the existing landfill.
 - a. The landfill soil borrow area is anticipated to be used for Owner soil requirements for landfill operations.
- E. Special Considerations:
 1. Smoking shall not be permitted at any time within the Property Limit lines.
 2. Equipment decontamination:
 - a. All vehicles and equipment entering the limits of construction and contacting potentially hazardous materials shall be cleaned and/or decontaminated prior to leaving the Site. The Contractor shall be responsible for monitoring all vehicle equipment decontamination and activity.
 - b. The decontamination area and fluid management shall be identified in the Contractor's Work Plan.
 3. Possible presence of harmful or dangerous substances:
 - a. Construction of this Project will require special precautions because of the conditions that exist in a landfill environment. These conditions include but are not limited to: The

possible presence of potentially explosive and harmful gases resulting from decomposition of organic and other substances; the presence of leachate, which is a liquid that emanates from a landfill, and which contains dissolved, suspended, and or microbial contaminants from the solid waste deposits. Contact with this liquid may be harmful to human life.

- b. The Contractor is advised that landfill gases including varying concentrations of methane and hydrogen sulfide gas are known to be present within the landfill.
 - 1) Such gases are explosive in certain concentrations and also represent a hazard to life under certain conditions including but not limited to confined areas such as leachate lines and landfill gas lines, manholes, trenches, and buildings.
 - 2) Because of the gaseous conditions, the Contractor shall provide any monitoring required to determine the presence, composition, and concentration of gases.
- c. The Contractor is also advised that leachate may be present in unknown quantities within the limits of the Project.
 - 1) Laboratory analysis of leachate samples indicates the presence of low concentrations of volatile organic compounds. pH of the leachate generally ranges from 6 to 7 units.
 - 2) The Contractor shall be responsible for determining the presence of potential hazards of any leachate encountered and shall be responsible for implementing safety measures as are appropriate.

F. Unfavorable Construction Conditions:

- 1. During unfavorable weather, wet ground, or other unsuitable construction conditions, Contractor shall confine his operations to work which will not be adversely affected by such conditions.
 - a. No portion of the Work shall be constructed under conditions that would adversely affect the quality or efficiency thereof, unless special means or precautions are taken by Contractor to perform the Work in a safe, proper, and satisfactory manner.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 22 00
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements applicable to all bid/pay items.
2. General provisions on unit prices and quantities.
3. General provisions on lump sums.
4. Listing of the various bid/pay items in the Project, together with criteria for measuring Unit Price Work for payment.

B. Related Requirements:

1. Include but are not necessarily limited to:
 - a. Section 01 11 00 – Summary of Work.

1.2 REQUIREMENTS APPLICABLE TO ALL BID/PAY ITEMS

A. In this Section and elsewhere in the Contract Documents, the terms “bid item”, “pay item”, “bid/pay item,” “Item” followed by a number designation, “this item,” and the like all have the same meaning, and refer to one or more specific elements of the Contract, established for pricing and payment, as indicated in the Bid Form and in the Agreement (or exhibit to the Agreement) at the time the Contract was signed by the parties.

B. This Article applies to all bid/pay items in the Contract.

C. Prices – General:

1. The bid/pay items listed starting with Article 1.5 of this Section refer to and are the same bid items listed in the Bid Form and included in the Contract and constitute all bid/pay items for the Work at the time the Contract was signed by the parties.
2. No direct or separate payment will be made, outside of the bid/pay items in the Contract, for the following: providing miscellaneous temporary or accessory materials or equipment, temporary works, temporary construction facilities, Contractor's project management, superintendence, and similar costs for Subcontractors or Suppliers; bonds and insurance; schedules and schedule updates; coordination (with: Owner's operations (including, but not limited to, lockout/tag-out procedures), other contractors, utility owners, owners of transportation facilities, adjacent property owners and occupants, authorities having jurisdiction, Subcontractors and Suppliers, and others with whom Contractor is to coordinate the Work); Submittals; photographic documentation; Project meetings; Contractor's hazard communication program; Contractor's compliance with environmental procedures for Constituents of Concern (including spill control and countermeasures plans and implementation); professional services (required for Contractor's means and methods of construction, and for delegated designs required by the Contract Documents); obtaining and complying with permits and licenses; temporary utilities (including electric power, water supply and disposal, fuel, and communications); temporary lighting; temporary fire protection; temporary enclosures and HVAC; temporary sanitary facilities; temporary first-aid facilities and services; ; Contractor's field offices and sheds, temporary vehicular access and parking (including access to the Site, temporary access roads and parking, onsite traffic controls for construction traffic, and offsite haul routes); traffic control of non-construction vehicular and pedestrian traffic; dust control, pest and rodent controls, odor controls, and other temporary controls required by the Contract Documents); temporary security for the Work; temporary barriers; Project signage (when required elsewhere in the Contract Documents); delivering, handling, and storing materials and equipment to be incorporated into the Work; layouts and surveys for the Work; construction equipment, machinery, tools, and vehicles; safety and protection; Site maintenance during construction; cleaning and

removal and disposal of waste and debris; checkout and startup; testing and other quality control activities required by the Contract Documents; record documents, operation and maintenance data; warranties; spare parts and extra materials required by the Contract Documents; instruction of facility personnel as required by the Contract Documents; commissioning (when required elsewhere in the Contract Documents); Contractor's correction period, Contractor's general warranty and guarantee; Contractor's indemnification obligations; other labor, cost, or effort required by the General Conditions and Supplementary Conditions, Division 01 Specifications, and other requirements of the Contract Documents.

3. Price Escalation:

- a. Unless expressly indicated otherwise in the Contract Documents, Owner is not obligated to change the stipulated prices (including lump sums, unit prices, and allowances) that are all or part of the Contract Price because of escalation of costs when there is no corresponding change in the Contract Times.
 - b. Changes in the Contract Times do not necessarily entitle Contractor to a change in Contract Price due to escalation.
 - c. Should Contractor claim a change in Contract Price for one or more stipulated price pay items without a corresponding change in scope, extent, or quality in the associated Work, prior to receiving any such change in Contract Price, Contractor shall submit with Contractor's associated Change Proposal, documentation satisfactory to Owner or Engineer supporting and documenting that Contractor's costs have increased because of delays beyond Contractor's control within the associated change in Contract Times included in such Change Proposal.
4. Compensation for all services, labor, materials, and equipment shall be included in prices stipulated for the lump sum and unit price bid/pay items in the Contract.
 5. Each lump sum and unit price in the Contract shall include an amount considered by Contractor as sufficient for all overhead and profit for each separately identified bid/pay item.

D. Contract Price, Payment Procedures, and Related Matters:

1. Contract Price: The Contract Price, as apportioned among bid/pay items in the Contract, is indicated in the Agreement and any associated exhibits thereto and may be modified by Change Order.
2. Payments to Contractor: Refer to the General Conditions, the Agreement (including provisions on retainage, if any), and other applicable Contract Documents.
3. Schedule of Values: Refer to the General Conditions.
4. Procedures for Changes in Contract Price: Refer to the General Conditions.
5. Defective Work is not eligible for payment.

1.3 GENERAL PROVISIONS ON UNIT PRICES AND QUANTITIES

A. Quantities:

1. Quantities of Unit Price Work indicated in the Bid Form and in the Contract (at the time the Agreement was signed by the parties) are estimates for purposes of pricing and comparison of Bids.
2. Owner does not represent, either expressly or by implication, or agree that the nature of materials encountered below ground surface or in concealed areas, or actual quantities of Unit Price Work required, will correspond with the quantities in the Contract at the time the Agreement was signed by the parties. Owner reserves the right to increase or decrease quantities, and to eliminate quantities, as Owner may deem necessary or as may be necessary due to Site conditions encountered.
3. Adjustment of Unit Prices Due to Variation in Quantities:
 - a. Provisions, if any, regarding adjustment of unit prices due to variations in actual quantities (eligible for payment) from the estimated quantities in the Contract (including quantities at the time the Agreement was signed by the parties and as subsequently

modified by Change Order) are in the General Conditions, as may be modified by the Supplementary Conditions.

- 1) Owner or Engineer's review for possible unit price adjustment, when provision for such adjustment is expressly indicated in the Contract, will be at a time Owner or Engineer deems reasonable and proper.
 - 2) When the Supplementary Conditions establish that, to be eligible for an adjustment in the unit price, a pay item of Unit Price Work must have a total computed, extended price (at the time the Agreement was signed by the parties) equal to or greater than a specified percentage (stipulated in the Supplementary Conditions) of the total Contract Price (at the time the Agreement was signed by the parties), and the total extended price of such pay item does not exceed the stipulated percentage of the Contract Price, then the associated pay item will be paid at the unit price in the Contract without adjustment for variations in actual quantity.
 4. Quantities eligible for payment will be actual quantities furnished and installed (as applicable) in accordance with the Contract Documents, within the pay limits shown or indicated, as measured by Contractor, and recommended for payment by Owner or Engineer.
 5. Quantity Overruns:
 - a. When the quantity of a pay item of Unit Price Work eligible for payment exceeds the pay item's quantity included in the Contract, Owner will pay for quantities that exceed those in the Contract only while the estimated total payments to Contractor under the Contract will not exceed the Contract Price. Otherwise, a Change Order is required to modify the associated quantity in the Contract, thus changing the Contract Price.
 6. Except as may be established elsewhere in the Contract Documents, make no claim for anticipated profit, loss of profit, damages, or additional compensation arising from difference between quantities of Unit Price Work eligible for payment and the estimated quantities in the Contract.
- B. Measuring for Payment:
1. Unless expressly indicated otherwise in the Contract Documents, measurements will be in United States standard measurements.
 2. Unless indicated otherwise elsewhere in the Contract Documents, quantities of Unit Price Work eligible for payment will be rounded to the nearest whole number.
 3. Assistance with Measurements:
 - a. Assist Owner or Engineer by providing measuring equipment, labor, and survey personnel necessary to measure quantities eligible for payment.
 4. Quantities eligible for payment can be adjusted by Engineer to correct quantities included in Contractor's prior payment requests, and for incomplete or defective Unit Price Work. Such corrections are at Owner or Engineer's sole discretion.

1.4 GENERAL PROVISIONS ON LUMP SUM ITEMS

- A. Progress payments for Work paid on a lump sum basis will be based on Owner or Engineer's estimate of the Work (in accordance with the Contract Documents) performed through the end of the associated pay period, based on the Schedule of Values accepted by Owner or Engineer in accordance with the Contract Documents.
- B. At its sole discretion, Owner or Engineer may correct amounts of lump sum Work included in prior payment requests based on improved data or information available to Owner or Engineer, or Owner or Engineer's knowledge or reasonable belief that Work is incomplete or defective.

1.5 BID/PAY ITEMS – GENERAL CONTRACT

- A. Please see item descriptions corresponding to the bid form with measurement and payment information below:
 1. Item 1 –Mobilization and Demobilization:
 - a. This item will include all mobilization and demobilization costs for the project.

- b. This Work shall consist of securing the appropriate bonds and insurance policies for the Project.
 - c. Payment for this item will be made on a lump sum basis based on project percent complete, wherein no measurement will be made. The amount of this item shall be limited to a maximum of 4% of Base bid.
 - d. Include in this item all costs and work not included in items 2 through 25.
2. Item 2 – Erosion and Sediment Control:
- a. This Work shall consist of furnishing all equipment, materials, labor, and appurtenances required for sedimentation and erosion control at the site as required by the Contract Documents, applicable laws and regulations, permits, and standards of practice. This Work includes but is not limited to furnishing, installing, and maintaining silt fence, temporary or intermediate seeding and mulching, temporary stormwater channels and diversions, sediment traps, and temporary construction entrances of work including stockpile areas, and borrow area. This Work also includes removal of sediment from roads, stormwater channels, and any other point of accumulation resulting from Contractor's Work and depositing it at the landfill.
 - b. The lump sum price proposed shall be full compensation for performing sedimentation and erosion control work required. Payment for this bid item will be on a lump sum basis based on project percent completion, wherein no measurement will be made. Payments for this lump sum item will be made based on the value of materials furnished or services and work completed using estimates provided by Contractor and approved by Engineer.
3. Item 3 – Site Construction Survey and As-Built Surveying:
- a. This Work shall consist of all surveying and quality control work required by the Contract Documents. This includes establishment of appropriate local site benchmarks, baseline surveys, location of utilities, stakeout of elevation and positional information required to complete the construction and obtaining all survey information required to compile Record (As-Built) Drawings sealed by a surveyor licensed in Iowa. The As-Built Drawings shall include the location of all piping and structures installed as part of the Work. This also includes all pipe, materials, pipe pressure, pipe slope, depths or other measures required by the project specifications.
 - b. This lump sum bid item shall be full compensation for performing the surveying work required. Payment for this bid item will be on a lump sum basis, wherein no measurement will be made. Payments for this lump sum item will be made based on the value of materials furnished or services and work completed using estimates provided by Contractor and approved by Engineer.
4. Item 4 – Abandonment of Existing Wells:
- a. This Work shall include furnishing all necessary materials, equipment, and labor to abandon existing wells below grade as indicated on the drawings at re-drill locations, and as shown in the details.
 - b. Payment will be on a per abandoned well basis.
5. Item 5 – Abandonment of Existing Wells in Cap Area:
- a. This Work shall include furnishing all necessary materials, equipment, and labor to abandon existing wells in the cap area below grade as indicated on the drawings at re-drill locations, and as shown in the details.
 - b. Include in this item supply and installation of all materials needed to repair the cap for the landfill, including bentonite, clay, GCL, geomembrane, geotextile and boots for wells and piping, protective cover, and vegetative cover. Seam testing for liner certification is incidental to this item.
 - c. Seeding and fertilizing for the disturbed cap area is incidental to this item and not included in Bid Item 22.
 - d. Payment will be on a per abandoned well basis.
6. Item 6 – Vertical LFG Extraction Well – Boring and Completion:

- a. This Work shall include furnishing all necessary materials, equipment, and labor to drill and install the 36 IN DIA borehole for total well depths per Project Drawings and Project Specifications. Work shall include boring, stone/bentonite/soil backfill, geocomposite ring, health and safety requirements, rebar well grate, 6 IN PVC piping (solid and perforated), connections, fittings, disposal of drilling spoils at Owner's landfill (no fee for tipping), and all other work required for a complete and accepted installation.
 - b. Well drilling with wet and dry buckets is included as incidental to this bid item.
 - c. Payment will be on a unit price basis determined from total well length installed. Measurement for installing vertical well will be based on vertical (linear) foot installed, as measured in the field, and agreed to by the Engineer and Owner.
7. Item 7 – New Wellhead Assembly:
 - a. This Work shall include furnishing all labor, materials and equipment necessary to furnish and install the QED Wellheads per project specifications, including couplings, HDPE reducers, hose, steel clamps, connections, identification, and other incidentals. Wellheads shall be suitable for dual extraction (LFG and liquids pumping).
 - b. Measurement and payment for installing wellhead assembly will be based on number installed, completed, and accepted by the Owner or Engineer.
8. Item 8 – Remote Wellhead Tie-ins:
 - a. This Work shall include furnishing all labor, materials and equipment necessary to tie-in below grade with tee and cap, run new piping, and re-install existing QED Wellheads per project specifications, including couplings, HDPE reducers, hose, steel clamps, connections, identification, and other incidentals. Remote wellheads shall be suitable for gas extraction.
 - b. This item is for existing wells being converted to remote wellheads due to the new header line being replaced upslope of the previous header line.
 - c. Measurement and payment for installing remote wellhead assembly will be based on number installed, completed, and accepted by the Owner or Engineer.
9. Item 9 – 18" CMP Road Crossing:
 - a. This Work shall consist of furnishing and installing all necessary materials, labor, equipment, and appurtenances necessary to install CMP pipe casings for the gas, leachate, air, and forcemain at road crossings. This Work shall include excavation, disposal of excavated refuse and soils, pipe bedding, backfilling, soil compaction, fittings, piping, connections, pipe location markings, testing, incidentals and all other work required for a complete and acceptable system according to the Drawings and Specifications for this project.
 - b. Payment for this proposal item shall be made on a linear foot basis wherein measurement shall be made.
10. Item 10 – 12-IN SDR-17 HDPE Header Pipe Installation:
 - a. This Work shall consist of furnishing and installing all necessary materials, labor, equipment, and appurtenances necessary to install the HDPE header pipe including excavation, disposal of excavated refuse, leachate, and soils, pipe bedding, backfilling, soil compaction, fittings, piping, connections, pipe location markings, access points, safe working conditions and trench/gas safety protocols, incidentals and all other work required for a complete and acceptable system according to the Drawings and Specifications for this project. Project estimates do not include stick up lengths for access points, wells, or other pipe features – these are considered incidental to this item. Header shall be 12 IN SDR 17.
 - b. Included in this item is supply and installation of 2, ASAHI type 57 butterfly valves with stem extensions or approved equal.
 - c. Payment will be on a unit price basis determined from total project length installed. Measurement for this item shall be on installed linear foot.
11. Item 11 – 10-IN SDR-17 HDPE Header Pipe Installation:

- a. This Work shall consist of furnishing and installing all necessary materials, labor, equipment, and appurtenances necessary to install the HDPE header pipe including excavation, disposal of excavated refuse, leachate, and soils, pipe bedding, backfilling, soil compaction, fittings, piping, connections, pipe location markings, access points, safe working conditions and trench/gas safety protocols, incidentals and all other work required for a complete and acceptable system according to the Drawings and Specifications for this project. Project estimates do not include stick up lengths for access points, wells, or other pipe features – these are considered incidental to this item. Header shall be 10 IN SDR 17.
 - b. Included in this item is supply and installation of 4, ASAHI type 57 butterfly valves with stem extensions or approved equal.
 - c. Payment will be on a unit price basis determined from total project length installed. Measurement for this item shall be on installed linear foot.
12. Item 12 – 6 IN SDR 17 HDPE Lateral Pipe Installation:
- a. This Work shall consist of furnishing all necessary materials, labor, equipment, and appurtenances necessary to install LFG laterals from the header to all existing and new standard LFG wells. This Work shall include excavation, disposal of excavated refuse, leachate, and soils, pipe bedding, backfilling, soil compaction, fittings, piping, connections, and stick-ups (incidental). Lateral pipe shall be 6 IN diameter SDR 17.
 - b. Payment for this proposal item shall be made on a per unit basis determined from total project length installed. Measurement for this item shall be on installed linear foot.
13. Item 13 – 4 IN SDR 11 HDPE Condensate Forcemain Installation (co-located in header trench):
- a. This Work shall consist of furnishing and installing all necessary materials, equipment, and labor and services to construct the 4 IN HDPE SDR 11 condensate Forcemain piping, co-buried with the main LFG header and the 2 IN HDPE SDR 9 air piping. This Work shall include excavation, disposal of excavated refuse and soils, pipe bedding, backfilling, soil compaction, fittings & stick-ups, piping, connections, pipe location markings, testing, incidentals and all other work required for a complete and acceptable system according to the Drawings and Specifications for this project.
 - b. Payment for this proposal item shall be made on a linear foot basis wherein measurement shall be made.
14. Item 14 – 4 IN SDR 11 x 8 IN SDR 17 HDPE Condensate Forcemain Installation (co-located in header trench):
- a. This Work shall consist of furnishing and installing all necessary materials, equipment, and labor and services to construct the 4 IN HDPE SDR 11 x 8 IN SDR 17 condensate Forcemain piping, co-buried with the main LFG header and the 2 IN HDPE SDR 9 air piping. This Work shall include excavation, disposal of excavated refuse and soils, pipe bedding, backfilling, soil compaction, fittings & stick-ups, piping, connections, pipe location markings, testing, incidentals and all other work required for a complete and acceptable system according to the Drawings and Specifications for this project.
 - b. Payment for this proposal item shall be made on a linear foot basis wherein measurement shall be made.
15. Item 15 – 2 IN SDR 9 HDPE Air Line (co-located in header trench):
- a. This Work shall consist of furnishing and installing all necessary materials, equipment, and labor and services to construct the 2 IN HDPE SDR 9 air supply piping, co-buried with the main LFG header and the 4 IN HDPE SDR 11 condensate forcemain. This Work shall include excavation, disposal of excavated refuse and soils, pipe bedding, backfilling, soil compaction, fittings & stick-ups, piping, connections, pipe location markings, testing, incidentals and all other work required for a complete and acceptable system according to the Drawings and Specifications for this project.
 - b. Payment for this proposal item shall be determined from total project length installed. Measurement for this item shall be on installed linear foot.
16. Item 16 – 3" HDPE Forcemain Installation (co-located in header trench):

- a. This Work shall consist of furnishing and installing all necessary materials, equipment, and labor and services to construct the 3 IN HDPE SDR 11 forcemain piping, collocated with the LFG header trench. This Work shall include excavation, disposal of excavated refuse and soils, pipe bedding, backfilling, soil compaction, fittings, piping, connections, pipe location markings, testing, incidentals and all other work required for a complete and acceptable system according to the Drawings and Specifications for this project.
 - b. Included in this item is the supply and installation of access risers with fittings, quick connects, and full port stainless steel ball valves per the drawings.
 - c. Payment for this proposal item shall be determined from total project length installed. Measurement for this item shall be on installed linear foot.
17. Item 17 – 3 IN x 6 IN Dual Contained HDPE Forcemain Installation:
- a. This Work shall consist of furnishing and installing all necessary materials, equipment, and labor and services to construct the 3 IN HDPE SDR 11 x 6 IN HDPE 17 dual contained forcemain piping. This Work shall include excavation, disposal of excavated refuse and soils, pipe bedding, backfilling, soil compaction, fittings, piping, connections, pipe location markings, testing, incidentals and all other work required for a complete and acceptable system according to the Drawings and Specifications for this project.
 - b. Included in this item is the supply and installation of 2, full port, dual contained ball valves and a tee tie-in on the existing leachate forcemain line. Submit shop drawing from ISCO or approved similar for dual containment housing.
 - c. Payment for this proposal item shall be determined from total project length installed. Measurement for this item shall be on installed linear foot.
18. Item 18 – Access Riser Tie-In East:
- a. This Work shall consist of furnishing all necessary materials, labor, equipment and appurtenances necessary to connect to the existing access riser on the east side of the header loop including excavation, disposal of excavated refuse, leachate, and soils, pipe bedding, backfilling, soil compaction, fittings, piping, connections, pipe location markings, valves, incidentals and all other work required for a complete and acceptable system according to the Drawings and Specifications for this project.
 - b. Payment for this proposal item shall be made on a lump sum basis wherein no measurement shall be made.
19. Item 19 –Condensate Sump (including pneumatic pump):
- a. This Work shall consist of furnishing and installing all necessary materials, equipment, and labor and services to construct the HDPE condensate sump outside of waste including pneumatic pump, HDPE manhole, valves, pipe, backfill, concrete ballast, soil compaction, fitting, reducers, air/forcemain stick ups, connections, testing, incidentals and all other work required to complete and acceptable system according to the Contract Drawings and Specifications for this project.
 - b. Measurement for installing dual contained sump will be based on number installed, completed, and accepted by the Engineer and Owner.
20. Item 20 – Phase 5 Lean-to Modifications:
- a. This Work shall consist of furnishing and installing all necessary materials, labor, equipment, and appurtenances necessary to install the modification as shown on the drawings at the Phase 5 Lean-to.
 - b. This item includes supply and installation of insulation, 3" SDR-11 HDPE with fittings to connect to the sump risers (2), 3" SDR-11 HDPE line down the sump riser to the leachate pump, and installation of reducer at the pump. After reducer at the pump, Supply and install all fittings needed to maintain 3" HDPE from pump to 3" forcemain.
 - c. Measurement and payment for this item will be by lump sum upon completion.
21. Item 21 –Seeding and Fertilizing:
- a. This Work shall consist of furnishing all necessary materials, labor, equipment, and appurtenances necessary to seed and fertilize 5 acres in coordination with the Owner and per the Specifications.

- b. Areas disturbed by the Contractor outside of 20-ft from wells drilled and laterals installed shall be considered incidental to the project and not included in this item.
- c. Measurement and payment for this line item will be on the area installed as measured by survey.

1.6 ALTERNATE BID/PAY ITEMS – GENERAL CONTRACT

A. Item 22 – Addition for Trench Depth 4 FT – 8 FT:

- 1. This compensation shall be added on a per linear foot basis ONLY to Items 12 and 13. This Work shall consist of furnishing all necessary materials, labor, equipment, and appurtenances necessary to provide additional depth of trenching to a total trench depth between 4 FT and 8 FT below existing grade as required by the Drawings and Specifications. This unit cost adder shall only be used in the event that additional trenching depth between 4 FT and 8 FT is required. Payment for this adder will be on a linear foot basis for each linear foot in which the total trench depth required is between 4 FT and 8 FT below existing grade.
- 2. Tie-ins are incidental to their associated piping bid item and shall not be paid under this item.
- 3. Measurement of trench depth shall be from bottom of trench to existing grade (to determine applicability of this adder). Measurement for this payment will be on a linear foot under this condition, as measured in the field.

B. Item 23 – Addition for Trench Depth 8 FT – 12 FT:

- 1. This compensation shall be added on a per linear foot basis ONLY to Items 12 and 13. This Work shall consist of furnishing all necessary materials, labor, equipment, and appurtenances necessary to provide additional depth of trenching to a total trench depth between 8 FT and 12 FT below existing grade as required by the Drawings and Specifications. This unit cost adder shall only be used in the event that additional trenching depth between 8 FT and 12 FT is required.
- 2. Tie-ins are incidental to their associated piping bid item and shall not be paid under this item.
- 3. Payment for this adder will be on a linear foot basis for each linear foot in which the total trench depth required is between 8 FT and 12 FT below existing grade. Measurement of trench depth shall be from bottom of trench to existing grade (to determine applicability of this adder). Measurement for this payment will be on a linear foot under this condition, as measured in the field.

C. Item 24 – Addition for Trench Depth 12 FT – 16 FT :

- 1. This compensation shall be added on a per linear foot basis ONLY to Items 12 and 13. This Work shall consist of furnishing all necessary materials, labor, equipment, and appurtenances necessary to provide additional depth of trenching to a total trench depth greater than 12 FT below existing grade as required by the Drawings and Specifications. This unit cost adder shall only be used in the event that additional trenching depth greater than 12 FT is required.
- 2. Tie-ins are incidental to their associated piping bid item and shall not be paid under this item.
- 3. Payment for this adder will be on a linear foot basis for each linear foot in which the total trench depth required is greater than 12 FT below existing grade. Measurement of trench depth shall be from bottom of trench to existing grade (to determine applicability of this adder). Measurement for this payment will be on a linear foot under this condition, as measured in the field.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 25 13

PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. The procedure for requesting the approval of substitution of a product that is not equivalent to a product which is specified by descriptive or performance criteria or defined by reference to one or more of the following:
 - a. Name of manufacturer.
 - b. Name of vendor.
 - c. Trade name.
 - d. Catalog number.
2. Substitutions are not "or-equals."
3. This Specification Section does not address substitutions for major equipment.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Procurement and Contracting Requirements.
2. Division 01 - General Requirements.

C. Request for Substitution - General:

1. Base all bids on materials, equipment, and procedures specified.
2. Certain types of equipment and kinds of material are described in specifications by means of references to names of manufacturers and vendors, trade names, or catalog numbers.
 - a. When this method of specifying is used, it is not intended to exclude from consideration other products bearing other manufacturer's or vendor's names, trade names, or catalog numbers, provided said products are "or-equals," as determined by Engineer.
3. Other types of equipment and kinds of material may be acceptable substitutions under the following conditions:
 - a. Or-equals are unavailable due to strike, discontinued production of products meeting specified requirements, or other factors beyond control of Contractor; or,
 - b. Contractor proposes a cost and/or time reduction incentive to the Owner after Award of Bid.

1.2 QUALITY ASSURANCE

A. In making request for substitution or in using an approved product, Contractor represents they:

1. Have investigated proposed product, and have determined that it is adequate or superior in all respects to that specified, and that it will perform function for which it is intended.
2. Will provide same guarantee for substitute item as for product specified.

3. Will coordinate installation of accepted substitution into Work, to include building modifications if necessary, making such changes as may be required for Work to be complete in all respects.
4. Waives all claims for additional costs related to substitution which subsequently arise.
5. Any exceptions to the above shall be clearly stated at the time a request is submitted to consider a substitution.

1.3 DEFINITIONS

- A. Product: Manufactured material or equipment.

1.4 PROCEDURE FOR REQUESTING SUBSTITUTION AFTER AWARD OF CONTRACT

- A. Substitution will only be considered under the conditions stated herein.
- B. Written request through Contractor only.
- C. Transmittal Mechanics:
1. Follow the transmittal mechanics prescribed for Shop Drawings in Specification Section 01 33 00.
 - a. Product substitution will be treated in a manner similar to "deviations," as described in Specification Section 01 33 00.
 - b. List the letter describing the deviation and justifications on the transmittal form in the space provided under the column with the heading DESCRIPTION.
 - 1) Include in the transmittal letter, either directly or as a clearly marked attachment, the items listed in Paragraph D below.
- D. Transmittal Contents:
1. Product identification:
 - a. Manufacturer's name.
 - b. Telephone number and representative contact name.
 - c. Specification Section or Drawing reference of originally specified product, including discrete name or tag number assigned to original product in the Contract Documents.
 2. Manufacturer's literature clearly marked to show compliance of proposed product with Contract Documents.
 3. Itemized comparison of original and proposed product addressing product characteristics including but not necessarily limited to:
 - a. Size.
 - b. Composition or materials of construction.
 - c. Weight.
 - d. Electrical or mechanical requirements.
 4. Product experience:
 - a. Location of past projects utilizing product.
 - b. Name and telephone number of persons associated with referenced projects knowledgeable concerning proposed product.
 - c. Available field data and reports associated with proposed product.
 5. Data relating to changes in construction schedule.
 6. Data relating to changes in cost.
 7. Samples:

- a. At request of Engineer.
- b. Full size if requested by Engineer.
- c. Held until substantial completion.
- d. Engineer not responsible for loss or damage to samples.

1.5 APPROVAL OR REJECTION

- A. Written approval or rejection of substitution given by the Engineer.
- B. Engineer reserves the right to require proposed product to comply with color and pattern of specified product if necessary to secure design intent.
- C. In the event the substitution is approved, the resulting cost and/or time reduction will be documented by Change Order in accordance with the General Conditions.
- D. Substitution will be rejected if:
 - 1. Submittal is not through the Contractor with his stamp of approval.
 - 2. Request is not made in accordance with this Specification Section.
 - 3. In the Engineer's opinion, acceptance will require substantial revision of the original design.
 - 4. In the Engineer's opinion, substitution will not perform adequately the function consistent with the design intent.
- E. Reimburse Owner for the cost of Engineer's evaluation whether or not substitution is approved.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK



EXHIBIT A

Substitution Request Form

(One Item per each Form)

Project:		Date:
Substitution Requestor:		
Contractor:		
Specification Section No:	Paragraph No. (i.e. 2.1.A.1.c):	Specified Item:
Proposed Substitution:		
Provide Product Data Sheets, Manufacturer's written installation instructions, drawings, diagrams, or any other information as an attached to this Form that will demonstrate the proposed substitution is an Approved Equal.		
In the lines provided state differences between proposed substitutions and specified item. Differences include but are not limited to interrelationship with other items; materials, equipment, function, utility, life cycle costs, applied finished, appearances, and quality. <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div>		
In the lines provided demonstrate how the proposed substitution is compatible with or modifies other systems, parts, equipment or components of the Project and Work under the Contract : <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div>		
In the lines provided, describe what effect the proposed substitution has on dimensions indicated on the Drawings and previously reviewed Shop Drawings? <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div>		
In the lines provided, describe what effect the proposed substitution has on the Construction Schedule and Contract Time. <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div>		
In the lines provided, describe what effect the proposed substitution has on the Contract Price. This includes all direct, indirect, impact and delay costs. <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-top: 5px;"></div>		
Manufacturer's guarantees of the proposed and specified items are: <div style="display: flex; justify-content: space-between; align-items: center;"><div><input type="checkbox"/> Same</div><div><input type="checkbox"/> Different (explain on attachment)</div></div>		
The undersigned state that the function, utility, life cycle costs, applied finishes, appearance and quality of the proposed substitution are equal or superior to those of the specified item.		
For use by Project Representative: <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 10px;"><div style="width: 40%;"><div style="display: flex; justify-content: space-between; margin-bottom: 10px;"><div><input type="checkbox"/> Accepted</div><div><input type="checkbox"/> Accepted as Noted</div></div><div style="display: flex; justify-content: space-between;"><div><input type="checkbox"/> Not Accepted</div><div><input type="checkbox"/> Received Too Late</div></div><div style="border-bottom: 1px solid black; width: 100%; margin-top: 10px;"></div><div style="text-align: center; font-size: small; margin-top: 5px;">(Date)</div><div style="border-bottom: 1px solid black; width: 100%; margin-top: 10px;"></div><div style="text-align: center; font-size: small; margin-top: 5px;">(Telephone)</div></div><div style="width: 55%;"><div style="border-bottom: 1px solid black; width: 100%; margin-top: 10px;"></div><div style="text-align: center; font-size: small; margin-top: 5px;">(Contractor's Signature)</div><div style="border-bottom: 1px solid black; width: 100%; margin-top: 10px;"></div><div style="text-align: center; font-size: small; margin-top: 5px;">(Contractor's Firm)</div><div style="border-bottom: 1px solid black; width: 100%; margin-top: 10px;"></div><div style="text-align: center; font-size: small; margin-top: 5px;">(Firms Address)</div><div style="border-bottom: 1px solid black; width: 100%; margin-top: 10px;"></div></div></div>		

Comments:

Copyright 2014 HDR Engineering, Inc.

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01 29 76
PROGRESS PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for Contractor's progress payments.

B. Scope:

1. Contractor's requests for payment shall be in accordance with the Agreement, General Conditions and Supplementary Conditions, and the Specifications.
2. Form: Applications for Payment shall be the Engineers Joint Contract Documents Committee (EJCDC) document EJCDC C-620, "Contractor's Application for Payment" (2018 edition or later) or other form acceptable to the Owner and Engineer.

1.2 CONTENT AND PROCEDURE FOR REQUESTING PROGRESS PAYMENTS

A. Procedure:

1. Review with Resident Project Representative (RPR) quantities and the Work proposed for inclusion in each progress payment request. Application for Payment shall cover only the Work and quantities recommended by the RPR.
2. Contractor will review with Engineer or RPR the status of Project record documents, in connection with Engineer's review of each Application for Payment. Failure to maintain record document current will be cause for Engineer to recommend a reduction in payment for record documents, and will entitle Owner to set-offs in accordance with the Contract Documents.
3. Submit to Engineer electronic copies, each with Contractor's signature, of each complete Application for Payment and other documents to accompany the Application for Payment.
4. Engineer will act on request for payment in accordance with the General Conditions and Supplementary Conditions.

B. Content: Each request for payment shall include:

1. Completed Application for Payment form, including summary/signature page, progress estimate sheets, and stored materials summary. Progress estimate sheets shall have the same level of detail as the Schedule of Values.
2. Documentation for Stored Materials and Equipment:
 - a. For materials and equipment not incorporated in the Work but suitably stored, submit documentation in accordance with the General Conditions and Supplementary Conditions.
 - b. Submit photographs sufficient to clearly indicate each stored item, clearly showing marking of Owner's property in accordance with Paragraph 1.2.C.1 of this section. For each month that such item(s) are stored, take and submit monthly new photographs of each stored item, with date-stamp on each photograph.
 - c. Legibly indicate on invoice or bill of sale the specified stored materials or equipment included in the payment request and corresponding bid/payment item number for each and the Supplier price for each item.

3. Listing of Subcontractors and Suppliers:
 - a. In accordance with the General Conditions, submit not less than monthly updated listing of all Subcontractors and Suppliers known to Contractor, whether or not such entities have a contract directly with Contractor.
 - b. Submit complete information using the form attached to this Specification section.
4. Partial Release or Reduction of Retainage:
 - a. For each Application of Payment where Contractor requests partial release or reduction of retainage in any amount (other than request for final payment), submit with associated progress payment request consent of surety to partial release or reduction of retainage, duly completed by Contractor and surety.
 - b. Acceptable form includes AIA G707A, "Consent of Surety to Reduction in or Partial Release of Retainage" (1994 or later edition), or other form acceptable to Owner.
 - c. For payment requests that include reduction in or payment of retainage in an amount greater than that required by the Contract Documents, obtain Owner's concurrence for partial release or reduction in retainage prior to submitting such Application for Payment.

C. Final Payment:

1. Requirements for request for final payment are in the General Conditions, as may be modified by the Supplementary Conditions, and Section 01 77 19 - Closeout Requirements.

1.3 ADDITIONAL PROCEDURES FOR PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Observation of Stored Materials and Equipment as Condition Precedent to Eligibility for Payment:
 1. General:
 - a. Prior to materials or equipment suitably stored but not yet incorporated into the Work can be eligible for payment, Engineer or Resident Project Representative (RPR) shall visit the storage location and verify the extent, condition, and storage environment of the stored items.
 - b. When the same material or equipment item is stored for more than two months, such visits to storage location shall be not less than once every two months.
 2. Cost Responsibility for Observations:
 - a. When storage location is less than 20 miles from the Site or less than 20 miles from Engineer's office, Contractor is not responsible for reimbursing Owner for cost of Engineer's time and expenses for observing stored materials and equipment.
 - b. When storage location is more than 20 miles from the Site and more than 20 miles from Engineer's office, Contractor shall reimburse Owner, via a set-off under the Contract Documents, for reasonable cost of Engineer's time and expenses, including travel time, to visit the storage location and observe the stored materials and equipment.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

Contractor's Application for Payment

Owner: _____ Engineer: _____ Contractor: _____ Project: _____ Contract: _____	Owner's Project No.: _____ Engineer's Project No.: _____ Contractor's Project No.: _____
Application No.: _____ Application Date: _____	
Application Period: From _____ to _____	

1. Original Contract Price	\$	-
2. Net change by Change Orders	\$	-
3. Current Contract Price (Line 1 + Line 2)	\$	-
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)	\$	-
5. Retainage		
a. _____ X \$ _____ Work Completed	\$	-
b. _____ X \$ _____ Stored Materials	\$	-
c. Total Retainage (Line 5.a + Line 5.b)	\$	-
6. Amount eligible to date (Line 4 - Line 5.c)	\$	-
7. Less previous payments (Line 6 from prior application)		
8. Amount due this application	\$	-
9. Balance to finish, including retainage (Line 3 - Line 4)	\$	-

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:

(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;

(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and

(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor: _____	
Signature: _____	Date: _____

Recommended by Engineer By: _____ Title: _____ Date: _____	Approved by Owner By: _____ Title: _____ Date: _____
Approved by Funding Agency By: _____ Title: _____ Date: _____	By: _____ Title: _____ Date: _____

SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Preconstruction, progress meetings, pre-installation conferences, and other project meetings.
- B. Related Sections include but are not necessarily limited to:
 - 1. Division 00 - Procurement and Contracting Requirements.
 - 2. Division 01 - General Requirements.

1.2 PRECONSTRUCTION MEETING

- A. Meet with the Owner and Engineer for a pre-construction conference at a time mutually agreed upon after the contract is awarded, but before any work is performed,
- B. The Engineer will schedule a meeting of the Owner, Contractor, Contractor's Subcontractors, and their respective representatives.
 - 1. The purpose of the meeting will be to clarify construction contract administration procedures, to establish lines of authority and communication and identify duties and responsibilities of the parties.
- C. The Engineer will schedule the pre-construction conference after receipt of the Contractor's draft proposed schedule.
- D. The Engineer will compile meeting minutes from the transcribed record of the meeting and electronically distribute copies to all participants.
- E. Pre-Construction Conference Submittals:
 - 1. The names and telephone numbers of Contractor's Superintendent and Office Manager.
 - 2. List of personnel authorized to sign change orders and receive progress payments.
 - 3. The name, address and telephone numbers of two or more persons employed by the Contractor who can be reached at any time of the day or night to handle emergency matters.
 - 4. A list of all subcontractors that will work on the project, a description of work they will perform, and a contact list for each subcontractor with phone numbers and address.
 - 5. A draft proposed Construction Schedule.
 - 6. Material Safety Data Sheets for all hazardous chemical products to be used by the Contractor on this project.
 - 7. Temporary Erosion and Sediment Controls Plan.
 - 8. Traffic Control Plan.

1.3 PROGRESS MEETINGS

- A. Progress meetings will be held a location determined by the Engineer at regular intervals, currently anticipated to be monthly, unless otherwise arranged.
 - 1. During the placement of the liner system, it is anticipated that more frequent meetings will be held at the request of the Owner or Engineer.
- B. Attendees will include the Owner, Engineer, Contractor, subcontractors, and suppliers' representatives as may be needed, other Contractors working at the site, and other interested or affected parties.

- C. Preliminary Agenda: Be prepared to discuss in detail the topics indicated below. Revised agenda, if any, will be furnished to Contractor prior to associated progress meeting(s). Progress meeting agenda may be modified by Engineer during the Project as necessary.
1. Review, comment, and amendment (if necessary) of minutes of previous progress meeting.
 2. Review of progress since the previous progress meeting.
 3. Planned progress through next progress meeting.
 4. Review of Progress Schedule:
 - a. Review of the Contract Times; Contractor's ability to comply with Contract Times.
 - b. Identification of critical path activities.
 - c. Schedules for fabrication and delivery of materials and equipment.
 - d. Corrective measures, if necessary, including recovery schedule(s).
 5. Submittals:
 - a. Review status of critical Submittals.
 - b. Review revisions to Schedule of Submittals.
 6. Contract Modifications:
 - a. Requests for interpretation.
 - b. Written clarifications.
 - c. Field Orders.
 - d. Proposal Requests.
 - e. Change Proposals.
 - f. Work Change Directives.
 - g. Change Orders.
 - h. Claims.
 7. Applications for progress payments:
 - a. Status and deadline for submittal.
 - b. Stored materials and equipment; observation by Engineer or RPR; documents required.
 - c. Set-offs to which Owner is entitled (as applicable).
 - d. Other matters related to progress payments.
 8. Problems, conflicts, and observations.
 9. Quality standards, testing, and inspections.
 10. Coordination between Project participants.
 11. Site management issues, including vehicular access and parking, traffic control, security, status of temporary controls and temporary utilities, site maintenance and cleaning, and other Site matters.
 12. Safety and protection.
 13. Permits.
 14. Construction photographic documentation.
 15. Record documents status.
 16. Completion matters (as appropriate):
 - a. Status of checkout, startup, field quality control activities.
 - b. Status of training of facility O&M personnel and O&M manuals.
 - c. Partial utilization; inspection for Substantial Completion.
 - d. Punch list status (as applicable).
 - e. Other closeout matters (if any).
 17. Other business.
- D. Bring a two-week look ahead schedule to each meeting, including the following items:

1. Work completed last week.
 2. Work anticipated for the next two weeks ("Look Ahead").
 3. Subcontractors on site the prior week.
 4. Subcontractors scheduled on site for the next two weeks.
 5. Contract document deficiencies or questions noted during prior week.
 6. Anything that could impede the progress of the work or affect the critical path on the project schedule.
 7. Corrective measures and procedures planned to regain planned schedule, cost or quality assurance, if necessary.
 8. Report of any accidents, and any site safety issues that need to be addressed.
- E. Other Agenda items to be discussed:
1. Review and revise as necessary and approve minutes of previous meetings.
 2. Status of submittals of equipment and Shop Drawings.
 3. Identify problems that impede planned progress.
 4. Other current business.
- F. Revision of Minutes:
1. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
 2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
 3. Challenge to minutes shall be settled as priority item of "old business" at the next regularly scheduled meeting.
- G. Minutes of Meeting:
1. The Engineer will compile minutes of each project meeting and will furnish electronic copies to the Contractor.

1.4 OTHER MEETINGS

- A. Other meetings will be required to facilitate progress of the Work. These include, but are not limited to the following:
1. Pre-Installation Conferences:
 - a. Coordinate and schedule with Engineer for each material, product or system specified.
 - 1) Conferences to be held prior to initiating installation, but not more than two weeks before scheduled initiation of installation.
 - 2) Conferences may be combined if installation schedule of multiple components occurs within the same two week interval.
 - 3) Review manufacturers recommendations and Contract Documents Specification Sections.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 31 26

ELECTRONIC COMMUNICATION PROTOCOLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Procedures with which Users will comply regarding transmission or exchange of Electronic Documents for the Project.

B. Related Requirements:

1. Refer to the General Conditions, as may be modified by the Supplementary Conditions, regarding transmitting Electronic Documents by Electronic Means.
2. In addition to the requirements of this Specifications Section, comply with the requirements for Electronic Documents in the following Specifications:
 - a. Section 01 33 00 - Submittals.

1.2 DEFINITIONS

A. The following terms are defined for use in this Specifications Section and are indicated herein using initial capital letters. The terms have the associated meaning regardless of whether indicated in singular or plural.

1. Electronic Documents Protocol (abbreviated as "EDP"): Procedures and requirements set forth in this Specifications Section for the exchange of Electronic Documents by Electronic Means.
2. Project Website: An internet-based software platform, such as a website or other project management information system (PMIS) designated by Contract or mutual consent of Users as the means of exchanging Electronic Documents during the Project.
3. System Infrastructure: Hardware, operating system(s) software, internet access, e-mail service and software, security software, and large-file transfer functions.
4. Users: Owner, Contractor, Engineer, and others exchanging Electronic Documents on the Project in accordance with the EDP.

1.3 ADMINISTRATIVE REQUIREMENTS.

A. Coordination:

1. Contractor shall require all Subcontractors and Suppliers to comply with the EDP established in the Contract Documents.

1.4 GENERAL PROVISIONS OF ELECTRONIC DOCUMENT PROTOCOL

A. EDP – General:

1. To the fullest extent practical, Users agree to and will transmit and accept Electronic Documents transmitted by Electronic Means in accordance with the requirements of this Specifications Section. Use of the Electronic Documents and any information contained therein is subject to requirements of this Specifications Section and other provisions of the Contract Documents governing transmittal of Electronic Documents.
2. Content of Electronic Documents will be the responsibility of transmitting User.
3. Unless otherwise provided in: (1) the EDP, (2) elsewhere in the Contract Documents, or (3) or other agreement between two or more Users governing use of Electronic Documents, Electronic Documents exchanged in accordance with the Contract Documents may be used in the same manner as paper or other printed versions of the same documents exchanged using other than Electronic Means, subject to the same governing requirements, limitations, and restrictions set forth in the Contract Documents.

4. Except as otherwise explicitly indicated in the EDP, the terms of this EDP will be incorporated into any other agreement or subcontract between a party and a third party for a portion of the Work or Project-related services, where such third party is, either directly or indirectly, required to exchange Electronic Documents with Owner, Contractor, or Engineer. Nothing in this EDP modifies the requirements of the Contract Documents regarding communications between and among Owner, Contractor, and Engineer Subcontractors, Suppliers, consultants, and others for which each is responsible.
 5. When transmitting Electronic Documents, transmitting User makes no representations regarding long-term compatibility, usability, or readability of the items resulting from the receiving User's use of software applications or System Infrastructure differing from those established in this EDP.
 6. This EDP does not negate or mitigate any obligation: (1) in the Contract Documents to create, provide, or maintain an original paper record version of Drawings and Specifications, signed and sealed in accordance with Laws or Regulations; (2) to comply with Laws and Regulations governing signing and sealing of design documents or signing and electronic transmission of other documents; or (3) to comply with notice requirements of the General Conditions (as. May be modified by the Supplementary Conditions).
 7. Modifications to EDP:
 - a. When modifications to the EDP are necessary to address issues affecting System Infrastructure, Users shall cooperatively resolve the issues.
 - b. If resolution within a reasonable time is not achieved, Owner is empowered to require reasonable and necessary changes to the EDP consistent with the original intent of the EDP.
 - c. If such changes result in additional cost or delay to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in the Contract Price, Contract Times, or both in accordance with the Contract Documents.
- B. System Infrastructure and Systems for Exchanging Electronic Document:
1. Each User will provide System Infrastructure (as defined in this EDP) at its own cost and sufficient for complying with EDP requirements. Except for minimum standards set forth in this EDP, it is the obligation of each User to determine, for itself, such User's own System Infrastructure.
 - a. Maximum size of e-mail file attachment for under this EDP is 5 megabytes (MB). Attachments larger than the maximum size indicated in this paragraph may be exchanged using large-file transfer functions (such as file exchange websites or FTP sites mutually acceptable to the Users) or physical media such as USB flash drive/thumb drive or other physical media mutually acceptable to the Users.
 - b. Each entity transmitting or receiving Electronic Documents has full responsibility for its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, and otherwise enabling its System Infrastructure for use in accordance with this EDP.
 - c. Each User will provide its own printing facilities and will be responsible for its own costs of printing Electronic Documents.
 2. Each User is responsible for its own system operations, security, back-up, archiving, audits, and other technology and resources for operations of its System Infrastructure during the Project, including coordination with the User's individual(s) or subcontractor(s) responsible for managing its System Infrastructure and capable of addressing communications and other technology issues affecting exchange of Electronic Documents.

3. Security:
 - a. Each User will operate and maintain industry-standard, industry-accepted, ISO standard, commercial-grade security software and systems to protect against threats including software viruses and other malicious software including worms, trojans, adware; data breaches; loss of confidentiality; and other threats in transmission to, or storage of, Electronic Documents from other Users, including transmission of Electronic Documents by physical media including flash drives/thumb drives, hard drives, compact discs (CD), digital video discs (DVD), and other portable devices, whether connected physically or wirelessly.
 - b. To the extent that a User maintains and operates such security software and appropriate System Infrastructure, such User will not be liable to other Users participating in the Project for breach of system security.
 4. Archiving and Electronic Document Backup:
 - a. Each User is responsible for its own back-up and archive of Electronic Documents and data transmitted and received during the Project, unless this EDP establishes a Project Electronic Document archive, either as a mandatory Project Website or other communications protocol, upon which Users may rely for Electronic Document archiving for the duration of the Project Website or archiving system established in this EDP.
 - b. Each User is solely responsible for its own post-Project back-up and archive of Electronic Documents after the Project is complete or after termination of the Project Website or other Project archive (as applicable), for the longer of: (1) required by the Contract Documents, (2) required by Laws and Regulations, and (3) as each User deems necessary for its purposes.
 5. Receipt of Damaged, Incomplete, or Corrupt Electronic Documents: When a receiving User receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving User will advise the transmitting User of the incomplete transmission and transmitting User will retransmit the Electronic Document.
 6. Completion of Transmittals: Users will bring non-conforming Electronic Documents into compliance with the EDP. Users will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the transfer of the Electronic Documents.
 7. Principal means of exchanging Electronic Documents will be e-mail and files attached to e-mail, in accordance with the EDP.
 8. Project Website:
 - a. Owner will establish, operate, and maintain a Project Website (as defined in this EDP) for use of Owner, Engineer, Contractor, and other Users as appropriate during the Project, for exchanging and storing Project Electronic Documents.
 - b. Unless otherwise provided in the Contract Documents, use of Project Website by Owner, Contractor, and Engineer is mandatory for exchanging Project documents as set forth in the EDP.
 - c. Project Website Conditions and Standards:
 - 1) Software Platform: Microsoft SharePoint.
 - 2) Duration of Project Website Availability and Reliance by Users: The date final payment is due Contractor under the Contract.
 - 3) Services and Functions Available on Project Website: Large-file transfer, submittal transfer, Electronic Document archiving.
 - d. Address of Project Website will be furnished to Contractor, and Project Website will be available to Contractor, within 10 days following the Effective Date of the Contract.
- C. General Requirements and Limitations for Software for Electronic Document Exchange:
1. Software and file formats for exchange of Electronic Documents shall be as indicated in Article 1.5 of this Specifications Section.

2. Software Versions:
 - a. Each User will acquire the software and associated licenses necessary to create, transmit, receive, read, and use Electronic Documents for the Project, using the software and file formats indicated in Article 1.5 of this Specifications Section.
 - b. Prior to using any updated version of the software required in the EDP for Electronic Document(s) transmitted to other User(s), the originating User will first notify and either (1) receive concurrence from receiving User(s) for use of the updated version, or (2) adjust its transmission to comply with the EDP.
 3. Preservation of Intellectual Property and Confidentiality of Electronic Documents:
 - a. Users agree to not intentionally edit, reverse-engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes Electronic Documents, and information and data contained therein, transmitted in a file format, including portable document format (PDF), intended by transmitting User to not be modified, unless the receiving User (1) obtains permission from owner of the Electronic Document and intellectual property contained therein, or (2) is expressly allowed by the EDP to edit or modify the Electronic Document.
 - b. Where modifying, editing, decryption, or reverse-engineering is allowed by the EDP, such use is conferred only for the Project.
 - c. The EDP does not transfer any ownership or rights of any sort regarding use outside of the Project of Electronic Documents.
 - d. Users shall not cite or quote excerpts of Electronic Documents for purposes outside of the Project unless required to do so by Laws and Regulations.
- D. Contractor's Requests for Electronic Documents in Other Formats:
1. Release of Electronic Documents in format(s) other than those indicated in Article 1.5 of this Specifications Section and elsewhere in the Contract Documents will be at the discretion of Owner and subject to terms and conditions required by the owner of such files and documents, and the provisions indicated below.
 2. To extent determined by Owner, in its sole discretion, to be appropriate, release of Electronic Documents in alternative format(s) requested by Contractor ("Request") are subject to provisions of Owner's response to the Request and to the following:
 - a. Contractor's Request shall be in writing. Owner and others, as appropriate, will consider and respond to Request promptly, but neither Owner nor Engineer will be responsible for any time or cost impacts on Contractor associated with timing of the Request, or with Owner's decision associated therewith.
 - b. When Engineer is the owner of the Electronic Documents requested by Contractor in native format, prior to Engineer transmitting such Electronic Documents to Contractor, Contractor shall sign and deliver to Engineer, without modifying or amending, Engineer's "Electronic Media Release" agreement.
 - c. Content included in Electronic Documents created by Engineer and furnished in response to the Request was prepared by Engineer as an internal working document for Engineer's purposes solely and, when provided to Contractor, is on an "as-is" basis without warranties of any kind, including, but not limited to any implied warranties of fitness for purpose. Contractor acknowledges that content of Electronic Documents furnished in response to the Request may not be suitable for Contractor's purpose(s), or may require substantial modification and independent verification by Contractor. Content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other shown or indicated information that may affect subsequent use by Contractor or others for whom Contractor is responsible.

- d. Electronic Documents containing text, graphics, metadata, or other types of data furnished by Engineer in response to the Request are only for Contractor's convenience and any and all conclusions or information obtained or derived from such Electronic Documents will be at Contractor's sole risk and expense. Contractor waives any and all claims against Engineer, Owner, or both arising from Contractor's use of Electronic Documents furnished in response to the Request.
 - e. Contractor shall indemnify and hold harmless Owner, Engineer, and their respective consultants and subconsultants from any and all claims, damages, losses, and expenses, including attorneys' fees and defense costs, fees and costs of engineers, architects, geologists, accountants, and other professionals, and any and all other costs, direct and indirect, resulting from Contractor's use, adaptation, or distribution of Electronic Document(s) furnished in response to the Request.
 - f. Contractor shall not sell, copy, transfer, forward, give away or otherwise distribute the Electronic Documents (in source format or modified file format) to any third party without direct written authorization of Engineer or other entity that owns the Electronic document(s), unless such distribution is specifically indicated in the Request and is limited to Subcontractors and Suppliers. Contractor warrants that subsequent use by Subcontractors and Suppliers complies with terms and conditions of the Contract Documents, Owner's response to the Request, and release agreement(s) (if any) by owner of the Electronic Documents (including Engineer, where applicable).
3. When the Request is for Electronic Documents in a format not other than that indicated in the Contract Documents, and Owner (and others, as applicable) decide to comply with the Request, and when the requested Electronic Documents are not easily available in the format(s) requested, Contractor shall reimburse Owner for costs incurred by Owner, either directly or indirectly, to furnish Electronic Documents in accordance with the Request at a price agreed upon between the Contractor and Owner to furnish the requested format(s). In compensation, Owner may retain such amount(s) as set-off(s) under the Contract Documents.

1.5 EXCHANGE OF ELECTRONIC DOCUMENTS

- A. Comply with the Electronic Document formats, transmission methods, and permitted uses set forth in Table 01 31 26-A, Exchange of Electronic Documents, below, when transmitting or using Electronic Documents on the Project. Where a row in the table has no indicated means of transmitting Electronic Documents, use for such documents only paper copies transmitted to the receiving party via appropriate delivery method.

TABLE 01 31 26-A – EXCHANGE OF ELECTRONIC DOCUMENTS

Electronic Document Type	Format	Transmitting User	Transmission Method	Receiving User	Allowed Uses	Notes
1.5.A.1. Project communications						
General communications & correspondence	EM, PDF	O, E, C	EM, EMA	O, E, C	R	
Meeting notices and agendas	EM, PDF	E	EM, EMA	O, C	R	
Meeting minutes	PDF	E	EM, EMA	O, C	R	
1.5.A.2. Contractor's Submittals to Engineer						
Shop Drawings	PDF	C	EM, EMA	E	M (1)	(1)
Product data Submittals, delegated design Submittals, and other action Submittals (except Samples)	PDF	C	EM, EMA	E	M (1)	(1)
Informational and closeout Submittals:	PDF	C	EM, EMA	E	M (1)	(1) (6)

Electronic Document Type	Format	Transmitting User	Transmission Method	Receiving User	Allowed Uses	Notes
Documentation of delivery of maintenance materials Submittals	PDF	C	EM, EMA	E	M (1)	
1.5.A.3. Engineer's return of reviewed Submittals to Contractor						
Shop Drawings	PDF	E	EM, EMA	O., C	R	
Product data Submittals, delegated design Submittals, and other action Submittals	PDF	E	EM, EMA	O., C	R	
Informational and closeout submittals:	PDF	E	EM, EMA	O., C	R	(6)
Documentation of delivery of maintenance materials submittals	PDF	E	EM, EMA	O. C	R	
1.5.A.4. Contract Modifications Documents						
Requests for interpretation to Engineer	PDF	C., O	EM, EMA	E	M (1)	(1)
Engineer's interpretations (RFI responses)	PDF	E	EM, EMA	C, O	R	
Engineer's clarifications to Contractor	EM, PDF	E	EM, EMA	C, O	R	
Engineer's issuance of Field Orders	PDF	E	EM, EMA	C, O	R	
Proposal Requests	PDF	E, O	EM, EMA	C	R	
Change Proposals – submitted to Engineer	PDF	C	EM, EMA	O, E	S	
Change Proposals – Engineer's response	PDF	E	EM, EMA	C. O		
Work Change Directives (for Contractor signature)	PDF	E	EM, EMA	C	R	(2)
Change Orders (for Contractor signature)	PDF	E	EM, EMA	C	R	(2)
1.5.A.5. Applications for Payment						(3)
1.5.A.6. Claims and other notices						(4)
1.4.A.7. Closeout Documents						
Record drawings	DWG and PDF	C	EM, EMA	E, O	M (5)	(5)
Other record documents	PDF	C	EM, EMA	E. O	M (5)	(5)
Contract closeout documents						

1. Key to Table 01 31 26-A:

a. Data Format:

- 1) EM: .msg, .htm, .txt, .rtf, e-mail text.
- 2) W: .docx, Microsoft Word 2013 or later.
- 3) EX: .xlsx, Microsoft Excel 2013 or later.
- 4) PDF: .pdf. portable document format.
- 5) DWG: .dwg. Autodesk AutoCAD 2014 Drawing.

- b. Transmitting User:
 - 1) O: Owner.
 - 2) C: Contractor.
 - 3) E: Engineer.
- c. Transmission Method:
 - 1) EM: Via e-mail.
 - 2) EMA: Attachment to e-mail transmission.
 - 3) PORT: Delivered via portable media such as flash drive/thumb drive, CD, or DVD.
 - 4) PW: Posted to Project Website.
 - 5) FTP: FTP transfer to receiving FTP server.
- d. Receiving User:
 - 1) O: Owner.
 - 2) C: Contractor.
 - 3) E: Engineer.
- e. Permitted Uses:
 - 1) S: Store and view only.
 - 2) R: Reproduce and distribute.
 - 3) I: Integrate (incorporate additional electronic data without modifying data received).
 - 4) M: Modify as required to fulfill obligations for the Project.
- f. Notes:
 - 1) Modifications by Engineer to Contractor's Submittals and requests for interpretations are limited to printing, marking-up, and adding comment sheets.
 - 2) May be distributed only to affected Subcontractors and Suppliers. Print, sign document, and return signed paper originals to Engineer.
 - 3) Submit printed Applications for Payment with original ("wet") signatures.
 - 4) Submit notices, including Claims, in accordance with the notice provisions of the General Conditions, as may be modified by the Supplementary Conditions.
 - 5) Submit Record Drawings in native CAD format indicated when Contractor has signed Engineer's standard agreement for release of electronic media. In addition, always submit Record Drawings as PDF files. Comply with Contract Documents requirements for Project Record Documents.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Mechanics and administration of the submittal process for:
 - a. Shop Drawings.
 - b. Samples.
 - c. Informational submittals.
 - 2. General content requirements for Shop Drawings.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 - Procurement and Contracting Requirements.
 - 2. Division 01 - General Requirements.
 - 3. Technical Specification Sections identifying required submittals.

1.2 DEFINITIONS

- A. Action Submittals:
 - 1. Action Submittals require an explicit, written approval or other appropriate action by Engineer before Contractor may release the associated item(s) for raw materials procurement, fabrication, production, and shipment.
 - 2. Unless otherwise indicated in the Contract Documents, Action Submittals include the following:
 - a. Shop Drawings.
 - b. Product data.
 - c. Samples.
 - d. Testing plans for quality control activities required by the Contract Documents.
 - e. Delegated Designs: Design drawings, design specifications, calculations, reports, and other instruments of service sealed and signed by design professional retained by Contractor, Subcontractor, or Supplier for a portion of the completed Work as part of the completed Project. Engineer's approval or other appropriate action on such delegated design Submittals will be only for the limited purposes set forth in the General Conditions.
- B. Informational Submittals:
 - 1. Representative types of informational submittal items include but are not limited to:
 - a. Manufacturer's installation certification letters.
 - b. Warranties.
 - c. Service agreements.
 - d. Construction photographs.
 - e. Survey data.
 - f. Work plans.

- g. Shop Drawings, product data, Samples, and testing plans, submitted as a requirement of for delegated designs, bearing the Submittal approval stamp of associated design professional retained by Contractor, Subcontractor, or Supplier.
2. For-Information-Only submittals upon which the Engineer is not expected to conduct review or take responsive action may be so identified in the Contract Documents.

1.3 SUBMITTAL SCHEDULE

- A. Schedule of Shop Drawings:
 1. Submitted and approved within 10 days of receipt of Notice to Proceed.
 2. Account for multiple transmittals under any specification section where partial submittals will be transmitted.
- B. Shop Drawings: Submittal and approval prior to 30 PCT completion of project.
- C. Informational Submittals:
 1. Reports and installation certifications submitted within seven days of conducting testing, installation, or examination.
 2. Submittals showing compliance with required qualifications submitted 20 days prior to any work beginning using the subject qualifications.
- D. The submittal schedule shall include the following columns as a minimum:

Submittal Section	Submittal Name	Submittal Description	Planned Submittal Date	Submittal Need Date	Actual Submittal Date	Actual Return Date	Disposition

1.4 PREPARATION OF SUBMITTALS

- A. General:
 1. All submittals and all pages of all copies of a submittal shall be completely legible.
 2. Submittals which, in the Engineer's sole opinion, are illegible will be returned without review.
 3. Minimize extraneous information for equipment and products not relevant to the submittal.
 4. Contractors or vendors written comments on the submittal drawings shall not be made in red as that color is designated for Engineer review comments..
- B. Shop Drawings, Product Data, and Samples:
 1. Scope of any submittal and letter of transmittal:
 - a. Limited to one Specification Section.
 - b. Submittals with more than one Specification section included will be rejected.
 - c. Do not submit under any Specification Section entitled (in part) "Basic Requirements" unless the product or material submitted is specified, in total, in a "Basic Requirements" Specification Section.
 2. Numbering letter of transmittal:

- a. Include as prefix the Specification Section number followed by a series number, "-xx", beginning with "01" and increasing sequentially with each additional transmittal for that Specification Section.
- b. If more than one submittal under any Specification Section, assign consecutive series numbers to subsequent transmittal letters.
3. Describing transmittal contents:
 - a. Provide listing of each component or item in submittal capable of receiving an independent review action.
 - b. Identify for each item:
 - 1) Manufacturer and Manufacturer's Drawing or data number.
 - 2) Contract Document tag number(s).
 - 3) Unique page numbers for each page of each separate item.
 - c. When submitting "or-equal" items that are not the products of named manufacturers, include the words "or-equal" in the item description.
4. Contractor certification of review and approval:

OR

- a. Execute Exhibit AA, Contractor's Submittal Certification form, to indicate Contractor has reviewed and approved the submittal contents.
 - 1) Clearly identify the person who reviewed the submittal and the date it was reviewed."
- b. Submittals containing multiple independent items shall be prepared with each item listed on the letter of transmittal or on an index sheet for all items listing the discrete page numbers for each page of each item, which shall be stamped with the Contractor's review and approval stamp.
 - 1) Each independent item shall have a cover sheet with the transmittal number and item number recorded.
 - a) Provide clear space of 3 IN SQ for Engineer stamping.
 - 2) Individual pages or sheets of independent items shall be numbered in a manner that permits the entire contents of a particular item to be readily recognized and associated with Contractor's certification.
5. Resubmittals:
 - a. Number with original Specification Section and series number with a suffix letter starting with "A" on a (new) duplicate transmittal form.
 - b. Do not increase the scope of any prior transmittal.
 - c. Provide cover letter indicating how each "B", "C", or "D" Action from previous submittal was addressed and where the correction is found in the resubmittal.
 - d. Account for all components of prior transmittal.
 - 1) If items in prior transmittal received "A" or "B" Action code, list them and indicate "A" or "B" as appropriate.
 - a) Do not include submittal information for items listed with prior "A" or "B" Action in resubmittal.
 - 2) Indicate "Outstanding-To Be Resubmitted At a Later Date" for any prior "C" or "D" Action item not included in resubmittal.
 - a) Obtain Engineer's approval to exclude items.
6. Do not use red color for marks on transmittals.
 - a. Duplicate all marks on all copies transmitted, and ensure marks are photocopy reproducible.

- b. Engineer will use red marks or enclose marks in a cloud.
- 7. Transmittal contents:
 - a. Coordinate and identify Shop Drawing contents so that all items can be easily verified by the Engineer.
 - b. Provide submittal information or marks defining specific equipment or materials utilized on the Project.
 - 1) Generalized product information, not clearly defining specific equipment or materials to be provided, will be rejected.
 - c. Identify equipment or material project use, tag number, Drawing detail reference, weight, and other Project specific information.
 - d. Provide sufficient information together with technical cuts and technical data to allow an evaluation to be made to determine that the item submitted is in compliance with the Contract Documents.
 - e. Do not modify the manufacturer's documentation or data except as specified herein.
 - f. Submit items such as equipment brochures, cuts of fixtures, product data sheets or catalog sheets not exceeding 11 x 17 IN pages.
 - 1) Indicate exact item or model and all options proposed by arrow and leader.
 - g. When a Shop Drawing submittal is called for in any Specification Section, include as appropriate, scaled details, sizes, dimensions, performance characteristics, capacities, test data, anchoring details, installation instructions, storage and handling instructions, color charts, layout Drawings, rough-in diagrams, wiring diagrams, controls, weights and other pertinent data in addition to information specifically stipulated in the Specification Section.
 - 1) Arrange data and performance information in format similar to that provided in Contract Documents.
 - 2) Provide, at minimum, the detail specified in the Contract Documents.
 - h. If proposed equipment or materials deviate from the Contract Drawings or Specifications in any way, clearly note the deviation and justify the said deviation in detail in a separate letter immediately following transmittal sheet. Any deviation from plans or specifications not depicted in the submittal or included but not clearly noted by the Contractor may not have been reviewed. Review by the Engineer shall not serve to relieve the Contractor of the contractual responsibility for any error or deviation from contract requirements.
- 8. Samples:
 - a. Identification:
 - 1) Identify sample as to transmittal number, manufacturer, item, use, type, project designation, tag number, Specification Section or Drawing detail reference, color, range, texture, finish and other pertinent data.
 - 2) If identifying information cannot be marked directly on sample without defacing or adversely altering samples, provide a durable tag with identifying information securely attached to the sample.
 - b. Include application specific brochures, and installation instructions.
 - c. Provide Contractor's review and approval certification stamp or Contractor's Submittal Certification form as indication of Contractor's checking and verification of dimensions and coordination with interrelated work.
 - d. Resubmit revised samples of rejected items.

C. Informational Submittals:

1. Prepare in the format and detail specified in Specification requiring the informational submittal.

1.5 TRANSMITTAL OF SUBMITTALS

A. Shop Drawings and Samples:

1. Electronically transmit all submittals to:

HDR
5815 Council Street NE, Suite B
Cedar Rapids, IA 52402
Attn: Morgan Mays
Morgan.Mays@hdrinc.com

HDR
1917 S 67th St
Omaha, NE 68106
Attn: Katie Kinley
Katie.Kinley@hdrinc.com

2. Utilize two copies of attached Exhibit A to transmit all Shop Drawings and samples.
3. All submittals must be from Contractor.
 - a. Submittals will not be received from or returned to subcontractors.

B. Informational Submittals:

1. Transmit under Contractor's standard letter of transmittal or letterhead.
2. Submit in triplicate or as specified in individual Specification Section.
3. Transmit to:
- 4.

HDR
5815 Council Street NE, Suite B
Cedar Rapids, IA 52402
Attn: Morgan Mays
Morgan.Mays@hdrinc.com

HDR
1917 S 67th St
Omaha, NE 68106
Attn: Katie Kinley
Katie.Kinley@hdrinc.com

C. Electronic Transmission of Submittals:

1. Transmittals shall be made electronically.
 - a. Protocols and processes will be determined at the Pre-Construction Conference.
2. Provide documents in Adobe Acrobat Portable Document Format (PDF), latest version.
3. Do not password protect or lock the PDF document.
4. Drawings or other graphics must be converted to PDF file format from the original drawing file format and made part of the PDF document.

- a. Scanning of drawings is to be used only where actual file conversion is not possible and drawings must be scanned at a resolution of 300 DPI or greater.
 - b. Required signatures may be applied prior to scanning for transmittal.
5. Electronic Drawings shall be formatted to be at full-scale (or half-scale when printed to 11x17 IN).
 - a. Do not reduce Drawings by more than 50 PCT in size.
 - b. Reduced Drawings shall be clearly marked "HALF-SIZE" and shall scale accurately at that size.
6. Rotate sheets that are normally viewed in landscape mode so that when the PDF file is opened the sheet is in the appropriate position for viewing.
7. Create bookmarks in the bookmarks panel for the cover, the Table of Contents, and each major section of the document.
8. Using Adobe Acrobat Standard or Adobe Acrobat Professional, set the PDF document properties, initial view as follows:
 - a. Select File → Properties → Initial View.
 - b. Select the Navigation tab: Bookmarks Panel and Page.
 - c. Select the Page layout: Single Page.
 - d. Select the Magnification: Fit Page.
 - e. Select Open to page: 1.
 - f. Set the file to open to the cover page with bookmarks to the left, and the first bookmark linked to the cover page.
9. Set the PDF file "Fast Web View" option to open the first several pages of the document while the rest of the document continues to load.
 - a. To do this:
 - 1) Select Edit → Preferences → Documents → Save Settings.
 - 2) Check the Save As optimizes for Fast Web View box.
10. File naming conventions:
 - a. File names shall use the convention (XXXXXX-YY-Z.PDF) where XXXXXX is the Specification Section number, YY is the Shop Drawing Root number and Z is an ID number used to designate the associated volume.
11. Labeling:
 - a. As a minimum, include the following labeling on all electronic media:
 - 1) Project Name.
 - 2) Equipment Name and Project Tag Number.
 - 3) Project Specification Section.
 - 4) Manufacturer Name.
 - 5) Vendor Name.
12. Binding:
 - a. Include labeled electronic media in a protective case.
 - 1) Bind protective case in three-ring binder, inserted at the front of the Final paper copy submittal.
 - 2) Protective case(s) to have means for securing electronic media to prevent loss (e.g., zip case, flap and strap, or equivalent).

1.6 ENGINEER'S REVIEW ACTION

A. Shop Drawings and Samples:

1. Items within transmittals will be reviewed for overall design intent and will receive one of the following actions:
 - a. A - FURNISH AS SUBMITTED.
 - b. B - FURNISH AS NOTED (BY ENGINEER).
 - c. C - REVISE AND RESUBMIT.
 - d. D - REJECTED.
 - e. E - ENGINEER'S REVIEW NOT REQUIRED.
2. Submittals received will be initially reviewed to ascertain inclusion of Contractor's approval stamp.
 - a. Submittals not stamped by the Contractor or stamped with a stamp containing language other than that specified herein will not be reviewed for technical content and will be returned rejected.
3. In relying on the representation on the Contractor's review and approval stamp, Owner and Engineer reserve the right to review and process poorly organized and poorly described submittals as follows:
 - a. Submittals transmitted with a description identifying a single item and found to contain multiple independent items:
 - 1) Review and approval will be limited to the single item described on the transmittal letter.
 - 2) Other items identified in the submittal will:
 - a) Not be logged as received by the Engineer.
 - b) Be removed from the submittal package and returned without review and comment to the Contractor for coordination, description and stamping.
 - c) Be submitted by the Contractor as a new series number, not as a re-submittal number.
 - b. Engineer, at Engineer's discretion, may revise the transmittal letter item list and descriptions, and conduct review.
 - 1) Unless Contractor notifies Engineer in writing that the Engineer's revision of the transmittal letter item list and descriptions was in error, Contractor's review and approval stamp will be deemed to have applied to the entire contents of the submittal package.
4. Submittals returned with Action "A" or "B" are considered ready for fabrication and installation.
 - a. If for any reason a submittal that has an "A" or "B" Action is resubmitted, it must be accompanied by a letter defining the changes that have been made and the reason for the resubmittal.
 - b. Destroy or conspicuously mark "SUPERSEDED" all documents having previously received "A" or "B" Action that are superseded by a resubmittal.
5. Submittals with Action "A" or "B" combined with Action "C" (Revise and Resubmit) or "D" (Rejected) will be individually analyzed giving consideration as follows:
 - a. The portion of the submittal given "C" or "D" will not be distributed (unless previously agreed to otherwise at the Preconstruction Conference).
 - 1) One copy or the one transparency of the "C" or "D" Drawings will be marked up and returned to the Contractor.
 - a) Correct and resubmit items so marked.
 - b. Items marked "A" or "B" will be fully distributed.

- c. If a portion of the items or system proposed are acceptable, however, the major part of the individual Drawings or documents are incomplete or require revision, the entire submittal may be given "C" or "D" Action.
 - 1) This is at the sole discretion of the Engineer.
 - 2) In this case, some Drawings may contain relatively few or no comments or the statement, "Resubmit to maintain a complete package."
 - 3) Distribution to the Owner and field will not be made (unless previously agreed to otherwise).
- 6. Failure to include any specific information specified under the submittal paragraphs of the Specifications will result in the submittal being returned to the Contractor with "C" or "D" Action.
- 7. Calculations required in individual Specification Sections will be received for information purposes only, as evidence calculations have been stamped by the professional as defined in the specifications and for limited purpose of checking conformance with given performance and design criteria. The Engineer is not responsible for checking the accuracy of the calculations and the calculations will be returned stamped "E. Engineer's Review Not Required" to acknowledge receipt.
- 8. 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.
- 9. Transmittals of submittals which the Engineer considers as "Not Required" submittal information, which is supplemental to but not essential to prior submitted information, or items of information in a transmittal which have been reviewed and received "A" or "B" action in a prior submittal, will be returned with action "E. Engineer's Review Not Required."
- 10. Samples may be retained for comparison purposes.
 - a. Remove samples when directed.
 - b. Include in bid all costs of furnishing and removing samples.
- 11. Approved samples submitted or constructed, constitute criteria for judging completed work.
 - a. Finished work or items not equal to samples will be rejected.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

EXHIBIT A

Shop Drawing Transmittal

No. _____ - _____

(Spec Section) (Series)

Project Name:		Date Received:
Project Owner:		Checked By:
Contractor:	HDR Engineering, Inc.	Log Page:
Address:	Address:	HDR No.:
		Spec Section:
		Drawing/Detail No.:
Attn:	Attn:	1st. Sub ReSub.
Date Transmitted:	Previous Transmittal Date:	

Item No.	No. Copies	Description	Manufacturer	Mfr/Vendor Dwg or Data No.	Action Taken*

Remarks:

* The Action designated above is in accordance with the following legend:

A - Furnish as Submitted B - Furnish as Noted C - Revise and Submit 1. Not enough information for review. 2. No reproduces submitted. 3. Copies illegible. 4. Not enough copies submitted. 5. Wrong sequence number. 6. Wrong resubmittal number. 7. Wrong spec. section. 8. Wrong form used. 9. See comments. D - Rejected	E - Engineer's review not required 1. Submittal not required. 2. Supplemental Information. Submittal retained for informational purposes only. 3. Information reviewed and approved on prior submittal. 4. See comments. 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. Any deviation from plans or specifications not depicted in the submittal or included but not clearly noted by the Contractor may not have been reviewed. Review by the Engineer shall not serve to relieve the Contractor of the contractual responsibility for any error or deviation from contract requirements.
---	--

Comments:

By _____		Date _____
Distribution: Contractor	File	Field
Owner	Other	

Copyright 1991-2013 HDR Engineering, Inc. - Revised July 2014

THIS PAGE INTENTIONALLY LEFT BLANK

Contractor's Submittal Certification

Shop Drawing Transmittal No.:

Contract/Project Name:

Company Name:

has

1. reviewed and coordinated this Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
2. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
3. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
4. 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.

☐ This Submittal **does not** contain any variations from the requirements of the Contract Documents.

☐ This Submittal **does** contain variations from the requirements of the Contract Documents. A separate description of said variations and a justification for them is provided in an attachment hereto identified as:

"Shop Drawing Transmittal No. _____ Variation and Justification
Documentation"

Insert picture file or electronic signature of Authorized
Representative

Authorized Representative

Date

Copyright 1991-2013 HDR Engineering, Inc. - Revised Oct 2011

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01 33 04
OPERATION AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Administration of the submittal process for Operation and Maintenance Manuals.
 - 2. Content requirements for Operation and Maintenance Manuals.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 - Procurement and Contracting Requirements.
 - 2. Division 01 - General Requirements.
 - 3. General submittal requirements are specified in Specification Section 01 33 00 - Submittals.
 - 4. Technical Specification Sections identifying required Operation and Maintenance Manual submittals.

1.2 DEFINITIONS

- A. Equipment Operation and Maintenance Manuals:
 - 1. Contain the technical information required for proper installation, operation and maintenance of process, electrical and mechanical equipment and systems.
- B. Building Materials and Finishes Operation and Maintenance Manuals:
 - 1. Contain the information required for proper installation and maintenance of building materials and finishes.

1.3 SUBMITTALS

- A. List of all the Operation and Maintenance Manuals required by the Contract as identified in the Technical Specification Sections. These may be referred to as "Operation and Maintenance Data" submittals.
- B. Operation and Maintenance Manuals:
 - 1. Draft and final electronic copies.
 - 2. Final paper copies: One.

1.4 SUBMITTAL SCHEDULE

- A. List of Required Operation and Maintenance Manuals:
 - 1. Submit list with Specification Section number and title within 90 days after Notice to Proceed.
- B. Draft Operation and Maintenance Manuals:
 - 1. Submit approvable draft manuals in electronic format (PDF) within 30 days following approval of the respective Shop Drawing.
 - a. Include placeholders or fly sheet pages where information is not final or is missing from the draft manual.
 - 2. All Draft Operation and Maintenance Manuals shall be received by no later than 50 PCT project completion.

C. Final Operation and Maintenance Manuals:

1. Final approval of Operation and Maintenance Manuals in electronic format (PDF) must be obtained 45 days prior to equipment start-up.
2. Provide paper copies and Electronic Documents (in portable document format, PDF files) by Electronic Means in accordance with Section 01 31 26 – Electronic Communication Protocols of approved final Operation and Maintenance Manuals in electronic format (PDF), a minimum of 30 days prior to equipment start-up.
3. Issue addenda to Final Approved Operation and Maintenance Manual to include:
 - a. Equipment data that requires collection after start-up, for example but not limited to HVAC balancing reports, electrical switchgear, automatic transfer switch and circuit breaker settings.
 - b. Equipment field testing data.
 - c. Equipment start-up reports.

1.5 PREPARATION OF SUBMITTALS

A. General:

1. All pages of the Operation and Maintenance Manual submittal shall be legible.
 - a. Submittals which, in the Engineer's sole opinion, are illegible will be rejected without review.
2. Identify each equipment item in a manner consistent with names and identification numbers used in the Contract Documents, not the manufacturer's catalog numbers.
3. Neatly type any data not furnished in printed form.
4. Operation and Maintenance Manuals are provided for Owner's use, to be reproduced and distributed as training and reference materials within Owner's organization.
 - a. This requirement is:
 - 1) Applicable to both paper copy and electronic files.
 - 2) Applicable to materials containing copyright notice as well as those with no copyright notice.
5. Notify supplier and/or manufacturer of the intended use of Operations and Maintenance Manuals provided under the Contract.

B. Operation and Maintenance Manual Format and Delivery:

1. Draft electronic submittals:
 - a. Provide manual in Adobe Acrobat Portable Document Format (PDF), latest version.
 - b. Create one (1) PDF file for each equipment Operation and Maintenance Manual.
 - c. Do not password protect or lock the PDF document.
 - d. Scanned images of paper documents are not acceptable. Create the Operation and Maintenance Manual PDF file from the original source document.
 - e. Drawings or other graphics must be converted to PDF file format from the original drawing file format and made part of the PDF document.
 - f. Scanning of drawings is to be used only where actual file conversion is not possible and drawings must be scanned at a resolution of 300 DPI or greater.
 - g. Rotate sheets that are normally viewed in landscape mode so that when the PDF file is opened the sheet is in the appropriate position for viewing.

- h. Create bookmarks in the bookmarks panel for the Operation and Maintenance Manual cover, the Table of Contents and each major section of the Table of Contents.
 - i. Using Adobe Acrobat Standard or Adobe Acrobat Professional, set the PDF document properties, initial view as follows:
 - 1) Select File → Properties → Initial View.
 - 2) Select the Navigation tab: Bookmarks Panel and Page.
 - 3) Select the Page layout: Single Page Continuous.
 - 4) Select the Magnification: Fit Page.
 - 5) Select Open to page: 1.
 - 6) Set the file to open to the cover page of the manual with bookmarks to the left, and the first bookmark linked to the cover page.
 - 7) Window Options: Check the "Resize window to initial page" box.
 - j. Set the PDF file "Fast Web View" option to open the first several pages of the document while the rest of the document continues to load.
 - 1) To do this:
 - a) Select Edit → Preferences → Documents → Save Settings.
 - b) Check the "Save As optimizes for Fast Web View" box.
 - k. PDF file naming convention:
 - 1) Use the Specification Section number, the manufacturer's name and the equipment description, separated by underscores.
 - 2) Example: 46 51 21_Sanitaire_Coarse_Bubble_Diffusers.pdf.
 - 3) Do not put spaces in the file name.
2. Final electronic submittals:
- a. Submit two copies as Electronic Documents (in portable document format, PDF files) by Electronic Means in accordance with Section 01 31 26 – Electronic Communication Protocols (one copy per electronic media), each secured in a protective case.
 - b. Labeling:
 - 1) Provide the following printed labeling on all electronic media:
 - a) Project name.
 - b) Specification Section.
 - c) Equipment names and summary of tag(s) covered.
 - d) Manufacturer name.
 - e) Date (month, year).
 - c. Binding:
 - 1) Include labeled electronic media in a protective case.
 - a) Bind protective case in three-ring binder, inserted at the front of the Final paper copy submittal.
 - b) Protective case(s) to have means for securing electronic media to prevent loss (e.g., zip case, flap and strap, or equivalent).
3. Final paper copy submittals:
- a. Quantity: Provide two copies.
 - b. Paper: 8.5 x 11 IN or 11 x 17 IN bright white, 20 LB paper with standard three-hole punching.

- c. 3-Ring Binder:
 - 1) Provide D-ring binder with clear vinyl sleeves (i.e. view binder) on front and spine.
 - 2) Insert binder title sheet with the following information under the front and spine sleeves:
 - a) Project name.
 - b) Specification Section.
 - c) Equipment names and summary of tag(s) covered.
 - d) Manufacturer name.
 - e) Date (month, year).
 - 3) Provide plastic sheet lifters prior to first page and following last page.
- d. Drawings:
 - 1) Provide all drawings at 11 x 17 IN size, triple folded and three-hole punched for insertion into manual.
 - 2) Where reduction is not practical to ensure readability, fold larger drawings separately and place in three-hole punched vinyl envelopes inserted into the binder.
 - 3) Identify vinyl envelopes with drawing numbers.
- e. Use plastic coated dividers to tab each section of each manual in accordance with the Table of Contents.

C. Equipment Operation and Maintenance Manual Content:

- 1. Provide a cover page as the first page of each manual with the following information:
 - a. Manufacturer(s) Name and Contact Information.
 - b. Vendor's Name and Contact Information.
 - c. Date (month, year).
 - d. Project Owner and Project Name.
 - e. Specification Section.
 - f. Project Equipment Tag Numbers.
 - g. Model Numbers.
 - h. Engineer's Name.
 - i. Contractor's Name.
- 2. Provide a Table of Contents for each manual.
- 3. Provide Equipment Record sheets as follows:
 - a. Printed copies of the Equipment Record (Exhibits B1, B2 and B3), as the first tab following the Table of Contents.
 - 1) For Instrumentation and Control equipment, International Society of Automation (ISA) Data Sheets will be acceptable in lieu of the Equipment Record sheets.
 - b. Exhibits B1-B3 are available as Fillable PDF Form documents from the Engineer.
 - c. Each section of the Equipment Record must be completed in detail; simply referencing the related equipment Operation and Maintenance Manual sections for nameplate, maintenance, spare parts or lubricant information is not acceptable.

- d. For equipment involving separate components (for example, a motor and gearbox), a fully completed Equipment Record is required for each component.
 - e. Submittals that do not include the Equipment Record(s) will be rejected without further content review.
- 4. Provide a printed copy of the Manufacturer's Field Services report following the Equipment Record sheets.
- 5. Provide the following detailed information, as applicable:
 - a. Use equipment tag numbers from the Contract Documents to identify equipment and system components.
 - b. Equipment function, normal and limiting operating characteristics.
 - c. Instructions for assembly, disassembly, installation, alignment, adjustment, and inspection.
 - d. Operating instructions for start-up, normal operation, control, shutdown, and emergency conditions.
 - e. Maintenance instructions, including lubrication instructions if applicable
 - f. Troubleshooting guide.
 - g. Mark each sheet to clearly identify specific products and component parts and data applicable to the installation for the Project; delete or cross out information that does not specifically apply to the Project.
 - h. Parts lists:
 - 1) A parts list and identification number of each component part of the equipment.
 - 2) Exploded view or plan and section views of the equipment with a detailed parts callout matching the parts list.
 - 3) A list of recommended spare parts.
 - 4) List of spare parts provided as specified in the associated Specification Section.
 - 5) A list of any special storage precautions which may be required for all spare parts.
 - i. General arrangement, cross-section, and assembly drawings.
 - j. Electrical diagrams, including elementary diagrams, wiring diagrams, connection diagrams, and interconnection diagrams.
 - k. Factory and field test data and performance curves (if applicable).
 - l. As-constructed fabrication or layout drawings and wiring diagrams.
 - m. Copy of the equipment manufacturer's warranty meeting the requirements of the Contract.
 - n. Copy of any service contracts provided for the specific piece of equipment as part of the Contract.
- 6. Additional information as required in the associated equipment or system Specification Section.
- 7. Include in Submittal the final, configured control setpoints and similar configurable parameters provided in the equipment.
- D. Building Materials and Finishes Operation and Maintenance Manual Content:
 - 1. Provide a cover page as the first page of each manual with the following information:
 - a. Manufacturer(s) Name and Contact Information.

- b. Vendor's Name and Contact Information.
 - c. Date (month, year).
 - d. Project Owner and Project Name.
 - e. Specification Section.
 - f. Model Numbers.
 - g. Engineer's Name.
 - h. Contractor's Name.
- 2. Provide a Table of Contents for each manual.
- 3. Building products, applied materials and finishes:
 - a. Include product data, with catalog number, size, composition and color and texture designations.
 - b. Provide information for ordering custom manufactured products.
- 4. Necessary precautions:
 - a. Include product MSDS for each approved product.
 - b. Include any precautionary application and storage guidelines.
- 5. Instructions for care and maintenance:
 - a. Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods and recommended schedule for cleaning and maintenance.
- 6. Moisture protection and weather exposed products:
 - a. Include product data listing, applicable reference standards, chemical composition, and details of installation.
 - b. Provide recommendations for inspections, maintenance and repair.
- 7. Additional requirements as specified in individual product specifications.
- E. National Fire Protection Association 70 (National Electrical Code) Documentation:
 - 1. Assemble documented calculations of Arc-Fault Current, Equipment Available Fault Current and Short Circuit Current Rating (SCCR) provided as part of equipment submittals into one O&M manual volume.

1.6 TRANSMITTAL OF SUBMITTALS

- A. Operation and Maintenance Manuals.
 - 1. Transmit all submittals to:
 - a. The address specified in Specification Section 01 33 00 - SUBMITTALS.
 - 2. Transmittal form: Use Operation and Maintenance Manual Transmittal, Exhibit A.
 - 3. Transmittal numbering:
 - a. Number each submittal with the Specification Section number followed by a series number beginning with "-01" and increasing sequentially with each additional transmittal, followed by "-OM" (for example: 43 23 14-01-OM).
 - 4. Submit draft and final Operation and Maintenance Manual in electronic format (PDF) to Engineer, until manual is approved.

1.7 ENGINEER'S REVIEW ACTION

- A. Draft Electronic (PDF) Submittals:
 - 1. Engineer will review and indicate one of the following review actions:
 - a. A - ACCEPTABLE

- b. B - FURNISH AS NOTED
 - c. C - REVISE AND RESUBMIT
 - d. D - REJECTED
- 2. Submittals marked as Acceptable or Furnish As Noted will be retained; however, the transmittal form will be returned with a request for the final paper and electronic documents to be submitted.
- 3. Copies of submittals marked as Revise and Resubmit or Rejected will be returned with the transmittal form marked to indicate deficient areas.
- 4. Resubmit until approved.
- B. Final Paper Copy Submittals:
 - 1. Engineer will review and indicate one of the following review actions:
 - a. A - ACCEPTABLE
 - b. D - REJECTED
 - 2. Submittals marked as Acceptable will be retained with the transmittal form returned as noted.
 - 3. Submittals marked as Rejected will be returned with the transmittal form marked to indicate deficient areas.
 - 4. Resubmit until approved.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION



EXHIBIT A **Operation and Maintenance Manual
Transmittal** _____ - _____ - OM
(Spec Section) (Series)

Project Name:		Date Received:
Project Owner:		Checked By:
Contractor:	Owner:	Log Page:
Address:	Address:	HDR No.:
Attn:	Attn:	1st. Sub. ReSub.

Date Transmitted:	Previous Transmittal Date:
-------------------	----------------------------

No. Copies	Description of Item	Manufacturer	Dwg. or Data No.	Action Taken*

Remarks:

To:	From: <i>HDR Engineering, Inc.</i>
-----	---------------------------------------

Date:

- * The Action designated above is in accordance with the following legend:
- | | |
|--|---|
| A - Acceptable, provide one (1) additional paper copy and two (2) Electronic Documents (in portable document format, PDF files) by Electronic Means in accordance with Section 01 31 26 – Electronic Communication Protocols for final review. | 5. Lubrication & maintenance instructions. |
| B - Furnish as Noted | 6. Troubleshooting guide. |
| C - Revise and Resubmit | 7. Parts list and ordering instructions. |
| This Operation and Maintenance Manual Submittal is deficient in the following area: | 8. Organization (binder, binder titles, index & tabbing). |
| 1. Equipment Records. | 9. Wiring diagrams & schematics specific to installation. |
| 2. Functional description. | 10. Outline, cross section & assembly diagrams. |
| 3. Assembly, disassembly, installation, alignment, adjustment & checkout instructions. | 11. Test data & performance curves. |
| 4. Operating instructions. | 12. Tag or equipment identification numbers. |
| | 13. Inclusion of all components & subcomponents. |
| | 14. Other - see comments. |

D - Rejected

Comments:

By		Date			
Distribution:	Contractor	File	Field	Owner	Other

(Jun 1990; Revised Oct 2001, Revised Nov 2007, Revised 2013) Copyright 1991-2014 HDR Engineering, Inc.

THIS PAGE INTENTIONALLY LEFT BLANK

Equipment Data and Spare Parts Summary

Project Name			Specification
			Section:
Equipment Name			Year
			Installed:
Project Equipment Tag No(s).			
Equipment Manufacturer			Project/ Order No.
Address			Phone
Fax	Web Site	E-mail	
Local Vendor/Service Center			
Address			Phone
Fax	Web Site	E-mail	

MECHANICAL NAMEPLATE DATA

Equip.			Serial No.	
Make			Model No.	
ID No.	Frame No.	HP	RPM	Cap.
Size	TDH	Imp. Sz.	CFM	PSI
Other:				

ELECTRICAL NAMEPLATE DATA

Equip.					Serial No.			
Make					Model No.			
ID No.	Frame No.	HP	V.	Amp.	HZ	PH	RPM	SF
Duty	Code	Ins. Cl.	Type	NEMA	C Amb.	Temp. Rise	Rating	
Other:								

SPARE PARTS PROVIDED PER CONTRACT

[illegible]

RECOMMENDED SPARE PARTS

[illegible]

(Jun 1990; Revised Oct 2001, Revised Nov 2007, Revised 2013) Copyright 1991-2014 HDR Engineering, Inc.

THIS PAGE INTENTIONALLY LEFT BLANK

Recommended Maintenance Summary

Equipment Description	Project Equip. Tag No(s).	

[illegible]

* D = Daily W = Weekly M = Monthly Q = Quarterly S = Semiannual A = Annual Hours = Run Time Interval

(Jun 1990; Revised Oct 2001, Revised Nov 2007, Revised 2013) Copyright 1991-2014 HDR Engineering, Inc.

THIS PAGE INTENTIONALLY LEFT BLANK



Lubrication Summary

Equipment Description	Project Equip. Tag No(s).
-----------------------	---------------------------

Lubricant Point						
Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					

(Jun 1990; Revised Oct 2001, Revised Nov 2007, Revised 2013) Copyright 1991-2014 HDR Engineering, Inc.

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01 35 05
ENVIRONMENTAL PROTECTION AND SPECIAL CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Minimizing the pollution of air, water, or land; control of noise, the disposal of solid waste materials, and protection of deposits of historical or archaeological interest.
2. Sequencing site controls using a work schedule that balances the timing of land disturbance activities and the installation of measures to control erosion and sedimentation in order to reduce on-site erosion, off-site sedimentation and maintain water quality in a receiving stream.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Procurement and Contracting Requirements.
2. Division 01 - General Requirements.
3. Iowa SUDAS Division 1.

1.2 SUBMITTALS

A. Contractor shall prepare all required compliance plans necessary for alternate management strategies. Such plans include those listed as Shop Drawings below.

B. Shop Drawings:

1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
2. Prior to the start of any construction activities submit:
 - a. A detailed proposal of all methods of control and preventive measures to be utilized for environmental protection.
 - b. A drawing of the work area, haul routes, storage areas, access routes and current land conditions including trees and vegetation, stockpile areas, areas of planned disturbance beyond those designated, and any soil erosion and sediment control features (silt fence, or other best management practices) that will be disturbed and/or relocated.
 - c. Modifications required by the construction activities to the Owner's approved stormwater pollution prevention plan including the following provisions, if required.
3. Contractor is required to develop a project specific plan identifying spill prevention, containment and countermeasures addressing fuel storage and re-fueling operations and other chemical handling activities, if any.
 - a. If the Contractor does not comply with the Owner's Stormwater Pollution Prevention Plan (SWPPP), the Contractor shall prepare and submit for Owner's approval a Project-specific SWPPP. Such a Project-specific SWPPP shall include the following:
 - 1) Erosion Protection:
 - a) Code of Federal Regulations, 40 CFR 122.26, and the Iowa Administrative Code, 567-60. The Contractor shall comply with soil erosion control requirements of the Iowa Code, the Iowa Department of Natural Resources (IDNR) NPDES Permit and local ordinances. The Contractor shall take all necessary measurements to protect against erosion and dust pollution on this site.

- b) **Damage Claims:** The Contractor will hold the Owner harmless from any and all claims of any type whatsoever resulting from damages to adjoining public or private property, including reasonable attorney's fees incurred to Owner. Further, if the Contractor fails to take necessary steps to promptly remove earth sedimentation or debris which comes onto adjoining public or private property, the Owner may, but need not, remove such items and deduct the cost thereof from amounts due to the Contractor.
- 2) **Stormwater Discharge Permit:**
 - a) The Owner has obtained a NPDES General Permit No. 1 for stormwater discharge associated with industrial activity from the IDNR. The Contractor and all subcontractors shall be responsible for compliance and fulfilling all requirements of the NPDES General Permit No. 1, including the Stormwater Pollution Prevention Plan/Erosion Control Plan.
 - b) All documents related to the stormwater discharge permit shall be kept on site at all times and must be presented to IDNR upon request. The on-site documents will include the Notice of Intent, Proof of Publication, Pollution Prevention Plan, Project Inspection Records, and other items.
- 3) **Pollution Prevention Plan:**
 - a) **Site Description:** Excavation and filling, trenching, and grading activities in this project will be required.
 - b) Potential sources of pollution as a result of this project relate to silts, clays, and sediment and other materials which may be transported as a result of a storm event from the construction site.
 - c) **Responsibility:** The Pollution Prevention Plan illustrates general measures to be taken for compliance with the permit. All mitigation measures required as a result of activities are the responsibility of the Contractor. The Contractor shall take all actions necessary for installation of control measures for compliance with permit and SWPPP requirements.
 - d) **Controls:** The Contractor shall be responsible for compliance and fulfilling all the requirements of the general permit, including, but not limited to, the following:
 - (1) The Contractor shall protect adjoining property, including public utilities, sanitary and storm drainage systems and streets from and damage resulting from movement of earth or other debris from project site. Repair any damage immediately at no additional cost.
 - (2) The Contractor shall prevent accumulation of earth, siltation or debris on adjoining public or private property from project site. Remove any accumulation of earth or debris immediately and take remedial actions for prevention.
 - (3) Prior to site clearing and grading operation, Contractor shall install silt fence and sediment controls downstream of disturbing activities as required and as shown on the Drawings. Contractor will then proceed with the project.
 - (4) The Contractor shall route existing storm water flows away from the construction area without disruption of existing flow paths in areas surrounding the Limits of Construction.
 - (5) The Contractor shall preserve existing vegetation in areas not needed for construction.
 - (6) Erosion control methods to be used on this project are shown on the Erosion Control Plan.
 - (7) As areas reach their final grade and upon the completion of the storm drainage system, provide additional siltation fence, temporary silt basins and earth dikes, silt fence ditch checks and silt fence enclosures around all storm inlets. The Contractor shall provide additional siltation fence and

earth dikes as may be required on all embankments, earth stockpiles and other areas to provide control.

- (8) The Contractor shall provide temporary and/or permanent seeding of areas as soon as practical upon completion of grading.
- (9) If construction activity is not planned to occur in a disturbed area for at least 21 days, the area shall be stabilized by temporary erosion controls within 14 days of ceasing construction activities. The Contractor is required to maintain all temporary and permanent erosion control measures in working order, including cleaning, repairing, replacement and sediment removal throughout the permit period. Cleaning of sediment control devices shall begin before the features have lost 50 PCT of their capacity.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The project area and control devices will be inspected by the Owner. The findings and actions taken of this inspection will be provided to the Contractor during the project. This plan may be revised based upon findings of the inspection. The Contractor shall implement all revisions.
- B. Direct all stormwater to the existing stormwater sedimentation basins where possible.
- C. Contractor shall develop localized stormwater controls to comply with requirements of approved SWPPP.
- D. Employ and utilize environmental protection methods, obtain all necessary permits, and fully observe all local, state, and federal regulations.
- E. Land Protection:
 1. Except for any work or storage area and access routes specifically assigned for the use of the Contractor, the land areas outside the limits of construction shall be preserved in their present condition.
 - a. Confine construction activities to areas defined for work within the Contract Documents.
 - b. Alternate access routes which will result in land disturbance shall be submitted for approval as part of the work plan.
 2. Manage and control all borrow areas, work or storage areas, access routes and embankments to prevent sediment from entering nearby water or land adjacent to the work site.
 3. Restore all disturbed areas including borrow and haul areas and establish permanent type of locally adaptable vegetative cover.
 4. Unless earthwork is immediately paved or surfaced, protect all side slopes and backslopes immediately upon completion of final grading.
 5. Plan and execute earthwork in a manner to minimize duration of exposure of unprotected soils.
 6. Except for areas designated by the Contract Documents to be cleared and grubbed, do not deface, injure or destroy trees and vegetation, nor remove, cut, or disturb them without approval of the Engineer.
 - a. Any damage caused by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at no additional cost to the Owner.
 7. Grade all borrow areas to drain and prevent on-site ponding of water.

F. Surface Water Protection:

1. Utilize, as necessary, erosion control methods to protect side and backslopes, minimize and the discharge of sediment to the surface water leaving the construction site as soon as rough grading is complete.
 - a. These controls shall be maintained until the site is ready for final grading and landscaping or until they are no longer warranted and concurrence is received from the Engineer.
 - b. Physically retard the rate and volume of run-on and runoff by:
 - 1) Implementing structural practices such as diversion swales, terraces, straw bales, silt fences, berms, storm drain inlet protection, rocked outlet protection, sediment traps and temporary basins.
 - 2) Implementing vegetative practices such as temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffers, hydroseeding, anchored erosion control blankets, sodding, vegetated swales or a combination of these methods.
 - 3) Providing Construction sites with graveled or rocked access entrance and exit drives and parking areas to reduce the tracking of sediment onto public or private roads.
2. Discharges from the construction site shall not contain pollutants at concentrations that produce objectionable films, colors, turbidity, deposits or noxious odors in the receiving stream or waterway.

G. Solid Waste Disposal:

1. Collect solid waste on a daily basis. Contractor shall maintain the working area in a reasonably clear and orderly condition and collect solid waste on a daily basis or as directed by Engineer. Contractor is responsible for maintaining a refuse bin and/or receptacle at the field office.
2. Contractor is responsible for proper disposal of all solid waste generated.
3. Degradable, non-hazardous solid waste generated on-site is approved for disposal at the active face of the landfill on-site, at no cost to Contractor.
4. Solid waste generated off-site will not be brought onto or accepted at the site without payment of appropriate fees.
5. Provide disposal of nondegradable solid waste to an approved solid waste disposal site or in an alternate manner approved by Engineer and regulatory agencies.
6. Building materials wastes or unused building materials shall be buried, dumped, or disposed of on the site at no cost to the Contractor if delivered directly to the active face of the landfill by the Contractor during normal operational hours.

H. Fuel and Chemical Handling:

1. Store and dispose of chemical wastes in a manner approved by regulatory agencies.
 - a. Fuel tanks stored on site are required to be dual containment tanks.
2. Take special measures to prevent chemicals, fuels, oils, oil filters, greases, herbicides, and insecticides from entering drainage way(s) or stream.
3. Do not allow water used in onsite material processing, concrete curing, cleanup, and other waste waters to enter a drainage way(s) or stream.
4. Provide containment around fueling and chemical storage areas to ensure that spills in these areas do not reach waters of the state.
5. Spilled material and resulting contaminated soils shall be removed and disposed of in accordance with applicable regulations.
6. Contractor to pay all regulatory and Owner incurred costs resulting from improper discharges and corrective actions.

I. Control of Dust:

1. The control of dust shall mean that no construction activity shall take place without applying all such reasonable measures as may be required to prevent particulate matter from becoming airborne so that it remains visible beyond the limits of construction.
 - a. Reasonable measures may include paving, frequent road cleaning, planting vegetative groundcover, application of water or application of chemical dust suppressants.
 - b. The use of chemical agents such as calcium chloride must be approved by the State of IOWA DOT and Owner.
 2. Water shall be applied by means of pressurized water truck or similar equipment, equipped with a spray system or hoses with nozzles that will ensure a uniform application of water.
 - a. A daily log shall be maintained and provided to Cedar Rapids Linn County Solid Waste Agency each month. The log shall identify the amount of water applied, which roads applied to, and dust additive included, if any.
 3. Utilize methods and practices of construction to eliminate dust in full observance of agency regulations.
 4. The Engineer will determine the effectiveness of the dust control program and may request the Contractor to provide additional measures, at no additional cost to Owner.
- J. Burning: Do not burn material on the site.
- K. Control of Noise:
1. Control noise by fitting equipment with appropriate and properly functioning mufflers.
- L. Equipment Maintenance and Decontamination:
1. Waste oils, fuels, lubricants and filters shall be contained and removed from site. Disposal at the landfill is not allowed.
 2. Open oil containers exposed to rain shall not be permitted and all spills shall be reported to the Owner immediately.
 3. All vehicles and equipment entering the limits of construction and contacting potentially hazardous materials shall be cleaned and/or decontaminated prior to leaving the site. The Contractor shall be responsible for monitoring all vehicle equipment decontamination activity.
- M. Traffic Controls:
1. Provide all necessary controls, flagmen, signage and warning necessary to prevent impacts to landfill site users and off-site roadways, if utilized.
 2. Traffic control plan is subject to Owner's approval.
 3. Implement all necessary control measures.
 4. Minimize number and frequency of crossing of access road to landfill.
 5. Repair all damage as a result of traffic crossing.
 6. Maintain conditions of existing access and haul roads on the site and adjacent facilities such that access is not hindered as the result of construction related activities or deterioration.
 - a. Submit traffic control plan where crossing or excavation of existing roads is anticipated, and include services of flagmen as required to coordinate crossings.
- N. Leachate Management:
1. When the work involves or disturbs areas containing leachate or pipelines for the conveyance of leachate, the Contractor shall be required to manage leachate generated from the site and the site leachate conveyance system until the leachate conveyance system is complete and accepted by the Owner.
 2. Proper management is considered an important aspect of Project and Contractor's responsibility.
 - a. Management shall include collection, pumping, handling, and transfer to the on-site leachate pond.

- 1) Contractor shall identify construction operations that may encounter leachate and employ adequate means ahead of time to control and collect the flow of leachate such as plastic lined sumps and berms, pipe plugs, and absorbent booms.
 - 2) Coordinate transfer with the Owner.
 - 3) Management may also include temporary on-site storage in an environmentally acceptable manner (e.g. tank(s)) prior to transfer to the on-site leachate pond.
3. Provide control measures to ensure that leachate is not discharged to any surface waters.
 4. Leachate generation can be highly variable.
 - a. Contractor should anticipate and plan for peaks in generation.
 - b. Management activities are a seven day per week, 24-HR per day requirement.
 - c. Contractor shall grade and maintain access to leachate collection points to allow for access at all times.
 - d. Periods of high precipitation and snow melt also tend to be periods of high leachate generation.
 5. Any leachate spillage resulting from Contractor management activities shall be cleaned up immediately. Clean-up may include soil excavation and ground restoration. All costs of clean-up shall be at Contractor's expense without additional compensation or time extension.
 6. Non-compliance with these requirements will result in Owner hiring a third-party to complete leachate management during construction at Contractor's sole cost.
- O. Completion of Work:
1. Upon completion of work, leave area in a clean, natural looking condition.
 2. Ensure all signs of temporary construction and activities incidental to construction of required permanent work are removed.
- P. Historical Protection: If during the course of construction, evidence of deposits of historical or archeological interest is found, the Contractor shall cease operations affecting the find and shall notify the Owner.
1. No further disturbance of the deposits shall ensue until the Contractor has been notified by the Owner the Contractor may proceed.
 2. The Owner will issue a notice to proceed after appropriate authorities have surveyed the find and made a determination to the Owner.
 3. Compensation to the Contractor, if any, for lost time or changes in construction resulting from the find, shall be determined in accordance with changed or extra work provisions of the Contract Documents.
 4. The site has been previously investigated and no known history of historical or archeological finds were present in the Work areas.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Temporary utilities including:
 - a. Temporary sanitary facilities, including drinking water.
 - 2. Support facilities including:
 - a. Project identification and other temporary signs.
 - b. Waste disposal services.
 - c. Other construction aids and miscellaneous services and facilities.
 - 3. Protection including:
 - a. Barricades, warning signs, and lights.
 - b. Environmental protection.
- B. Provide temporary facilities and controls required for construction activities except, if any, for facilities and controls indicated as provided by the Owner.

1.2 UTILITY USE CHARGES

- A. Include cost or use charges for temporary facilities in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
 - 1. Owner's construction forces.
 - 2. Occupants of Project.
 - 3. Engineer.
 - 4. Testing agencies.
- B. Pay sewer service use charges for sewer usage (portable toilet), by all parties engaged in construction, at Project site.

1.3 QUALITY ASSURANCE

- A. Comply with industry standards and with applicable laws and regulations of authorities having jurisdiction, including but not limited to the following:
 - 1. Health and safety regulations.
 - 2. Utility company regulations.
 - 3. Police, fire department and rescue squad rules.
 - 4. Environmental protection regulations.
 - 5. NFPA 241 "Standards for Safeguarding Construction, Alterations and Demolition Operations".
 - 6. ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition".
 - 7. NECA Electrical Design Library "Temporary Electrical Facilities", NFPA 70, and NEMA, NECA and UL standards and regulations for temporary electric service.
- B. Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.4 PROJECT CONDITIONS

- A. At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.

- B. The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
 - 1. Keep temporary services and facilities clean and neat.
 - 2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide undamaged materials in serviceable conditions and suitable for use intended.

2.2 EQUIPMENT

- A. Provide undamaged equipment in serviceable conditions and suitable for use intended.
- B. Provide temporary self-contained toilet units of temporary single-occupant toilet units of the chemical, aerated recirculation, or combustion type for use by all construction personnel.
 - 1. Units shall be properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
 - 2. Units shall be fully secured to avoid tipping or otherwise causing release to the environment.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work.
 - 1. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay.
 - 1. Maintain and modify as required.
 - 2. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- C. Temporary Sanitary Facilities:
 - 1. Provide for toilets, wash facilities and drinking water fixtures in compliance with regulations and health codes for type, number, location, operation and maintenance of fixtures and facilities.
 - 2. Provide toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility, and provide covered waste containers for used materials.
 - 3. Install separate self-contained toilet units for male and female personnel shielded to ensure privacy.
 - 4. Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition.
 - a. Dispose of drainage properly.
 - b. Supply cleaning compounds appropriate for each condition.
 - 5. Provide drinking water fountains or containerized tap-dispenser bottled-drinking water units, complete with paper cup supplies.
- D. Storm Water Controls:
 - 1. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.
 - 2. Provide erosion control facilities required to prevent eroded soil from leaving the Site.

- a. See Drawings for erosion control features provided by Contractor and existing features provided by Owner.
- 3. Prevent storm water runoff from construction areas and other designated areas from entering the leachate collection systems of the existing landfill cells and becoming leachate until Final Completion is achieved.
 - a. Protect exposed edge of existing cell liners to prevent storm water infiltration and run-on. Protection shall be as described, but not limited to, those measures identified in Drawings.
 - b. Provide and maintain full time stand-by pumping equipment to remove storm water accumulation at the temporary excavations, riser pipes, trenches or other approved systems.
 - c. Reimburse the Owner for leachate handling and treatment costs incurred as a result of storm water run-on entering existing landfill cells via areas where existing liner and leachate collection systems are exposed by the Contractor.
- 4. All costs involved with installation of storm water control systems and damages caused by storm water are the responsibility of the contractor. Stormwater controls must allow project to meet the site's SWP3 requirements.

3.2 TEMPORARY SUPPORT FACILITIES

- A. Locate field offices, sanitary facilities and other temporary construction and support facilities for easy access.
- B. Dewatering Facilities and Drains:
 - 1. Comply with dewatering requirements of applicable Specification Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities.
 - 2. Where feasible, use same facilities provided for the construction activities.
 - 3. Maintain site, excavation and construction free of standing water.
- C. Temporary Enclosures:
 - 1. Provide temporary enclosures when appropriate for protection of construction, in progress or completed, from exposure, inclement weather, other construction operations and similar conditions.
- D. Project Identification and Other Temporary Signs:
 - 1. Locate signs where best to inform public and instruct persons seeking entrance to the project.
 - 2. Support signs on posts or framing of steel or preservative-treated wood.
 - 3. Engage an experienced sign painter to apply graphics.
 - 4. Prepare and install signs to provide directional information to construction personnel, deliveries, and visitors.
 - 5. Do not permit installation of unauthorized signs.
 - 6. Fabricate and erect within 10 days following the Notice To Proceed.
 - 7. Maintained in clean and neat condition throughout construction.
 - 8. Remove and appropriately disposed of the sign when directed by Owner.
- E. Contractor's Superintendent's Field Office:
 - 1. Establish at site of Project.
 - a. Location subject to Owner's approval.
 - 2. Assure attendance at this office during the working times.
 - 3. At this office, maintain complete field file of Shop Drawings, posted Contract Drawings and Specifications, and other files of field operations including provisions for maintaining "As Recorded Drawings."

4. Remove field office from site upon acceptance of the entire work by the Owner.

3.3 TEMPORARY PROTECTION FACILITIES

A. Temporary Fire Protection:

1. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations".
2. Store combustible materials in containers in fire-safe locations.
3. Provide supervision of welding operations, combustion-type temporary heating units and other sources of fire ignition.

B. Barricades, Warning Signs, and Lights:

1. Comply with standards and code requirements for erecting structurally adequate barricades.
2. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard involved.
3. Where appropriate and needed, provide lighting, including flashing red or amber lights.

C. Security Enclosure and Lockup:

1. Install substantial temporary enclosure of partially completed areas of construction.
2. Create and install all enclosures, barricades and structures necessary to prevent access to trenches, fall hazards, excavations, pooled water or similar areas.
3. Provide a secure lockup for valuable stored materials and equipment.
4. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

3.4 OPERATION, TERMINATION, AND REMOVAL

A. Supervision:

1. Enforce strict discipline in use of temporary facilities.
2. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance:

1. Maintain facilities in good operating condition until removal.
2. Protect from damage by freezing temperatures and other elements.
3. Maintain operation of temporary enclosures, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage or accidents.
4. Prevent water-filled piping from freezing.
5. Maintain markers for underground lines.
6. Protect underground lines from damage during excavation operations.

C. Termination and Removal:

1. Unless the Owner requests that a temporary facility be maintained longer, each temporary facility shall be removed when the need for its service has ended.
2. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility.
3. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
4. Materials and facilities that constitute temporary facilities are the property of the Contractor, except the Owner reserves the right to take possession of project identification signs.

END OF SECTION

SECTION 01 65 50
PRODUCT DELIVERY, STORAGE, AND HANDLING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Scheduling of product delivery.
 - 2. Packaging of products for delivery.
 - 3. Protection of products against damage from:
 - a. Handling.
 - b. Exposure to elements or harsh environments.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 00 - Procurement and Contracting Requirements.
 - 2. Division 01 - General Requirements.
- C. Payment:
 - 1. No payment will be made to Contractor for equipment or materials not properly stored and insured or without approved Shop Drawings.
 - a. Previous payments for items will be deducted from subsequent progress estimate(s) if proper storage procedures are not observed.

1.2 DELIVERY

- A. Scheduling: Schedule delivery of products or equipment as required to allow timely installation and to avoid prolonged storage.
- B. Packaging: Deliver products or equipment in manufacturer's original unbroken cartons or other containers designed and constructed to protect the contents from physical or environmental damage.
- C. Identification: Clearly and fully mark and identify as to manufacturer, item, and installation location.
- D. Protection and Handling: Provide manufacturer's instructions for storage and handling.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 PROTECTION, STORAGE AND HANDLING

- A. Manufacturer's Instruction:
 - 1. Protect all products or equipment in accordance with manufacturer's written directions.
 - a. Store products or equipment in location to avoid physical damage to items while in storage.
 - b. Handle products or equipment in accordance with manufacturer's recommendations and instructions.
 - 2. Protect equipment from exposure to elements and keep thoroughly dry.
 - 3. When space heaters are provided in equipment, connect and operate heaters during storage until equipment is placed in service.

3.2 FIELD QUALITY CONTROL

- A. Inspect Deliveries:
 - 1. Inspect all products or equipment delivered to the site prior to unloading.
 - a. Reject all products or equipment that are damaged, used, or in any other way unsatisfactory for use on Project.
- B. Monitor Storage Area: Monitor storage area to ensure suitable temperature and moisture conditions are maintained as required by manufacturer or as appropriate for particular items.

END OF SECTION

SECTION 01 66 00
PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for:
 - a. Payment considerations for stored materials and equipment.
 - b. Handling of materials and equipment.
 - c. Storage of materials and equipment, including:
 - 1) General provisions for storage.
 - 2) Storage locations.
 - 3) Protection of stored items.
 - 4) Storage of items containing Constituents of Concern.
 - 5) Outdoor, uncovered storage.
 - 6) Outdoor, covered storage.
 - 7) Fully-protected storage.
 - 8) Removal of temporary storage facilities and restoration of storage areas.
 - d. Maintenance of storage.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, tools, services, lands, and incidentals necessary and required to store and handle materials and equipment to be incorporated into the Work, and other materials and equipment at the Site, adjacent areas, and offsite storage areas.

C. Related Requirements: Include but are not limited to:

1. Section 01 29 76 - Progress Payment Procedures.

1.2 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment:

1. Materials and equipment delivered but not suitably stored and protected will not be eligible for payment.
2. Engineer may recommend reduction in payment, and Owner may reduce payments to Contractor ("set-offs") by an appropriate amount when stored items are subsequently revealed to be improperly stored or protected.
3. Payment for Suitably Stored Items:
 - a. Requirements for payment for materials and equipment delivered and suitably stored, but not yet incorporated into the Work, are in the General Conditions, as may be modified by the Supplementary Conditions, and Section 01 29 76 - Progress Payment Procedures.
 - b. Materials and equipment delivered and suitably stored, but not yet incorporated into the Work, will not be eligible for payment installation, in accordance with the Contract Documents, and are of the required quality and quantity.

1.3 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Affidavits of Inspection and Maintenance Performed on Mechanical and Electrical Equipment in Long-Term Storage:

- a. Submit in accordance with requirements of Article 3.1 of this Section.
2. Other Records of Inspection and Maintenance of Stored Materials and Equipment:
 - a. Establish and maintain such records as required by this Section.
 - b. Submit to Engineer or Owner (as applicable) within three days of Contractor's receipt of such request.

1.4 HANDLING

A. Handling of Materials and Equipment – General:

1. Handle materials and equipment to be incorporated into the Work in accordance with the Contract Documents and manufacturer's written instructions.
2. During handling and assembling of materials and equipment:
 - a. Maintain validity of manufacturers' warranties.
 - b. Do not drop, drag (without appropriate rollers or skids), or scrape materials and equipment.
 - c. Use proper construction equipment and machinery, and tools, operated by sufficient number of qualified personnel.
 - d. Maintain materials and equipment in neutral position.
 - e. Do not exert undue stress on materials and equipment.
 - f. Do not deform, bend, or damage materials and equipment.
 - g. Do not deform or mar shafts, bearings, or other parts.

B. Additional Requirements for Hoisting and Lifting:

1. When lifting or hoisting, support materials and equipment from appropriate lifting points using proper hooks and suitable nylon lifting straps, chains, and cables. Do not mar or scrape surfaces of materials and equipment during handling.
2. Do not support rigging from building or structure without written approval of Engineer.
3. Contractor is responsible for and shall remedy damage to building, structure, resulting from Contractor's operations.

1.5 STORAGE

A. Storage – General:

1. Contractor shall make all arrangements and provide all measures necessary and required for, and pay all costs associated with, storing materials and equipment.
2. Store materials and equipment in accordance with the Contract Documents and manufacturer's written instructions. In event of conflict between the Contract Documents and manufacturer's written instructions regarding storage and protection, comply with the more-stringent, more-protective requirements.
3. Records:
 - a. Establish and maintain up-to-date account of materials and equipment in storage, to facilitate preparation of progress payment requests, if the Contract Documents provide for payment for materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing.
 - b. Submit affidavits of inspection and maintenance of mechanical and electrical equipment in long-term storage in accordance with this Section's Article 3.1 ("Maintenance of Storage").
4. Arrange stored materials and equipment to allow easy access for observation or inspection by Owner, Engineer, Owner-hired testing and inspection entities, and authorities having jurisdiction.
5. Inspect and maintain stored materials and equipment in accordance with this Section's Article 3.1 ("Maintenance of Storage").

B. Storage Location:

1. Coordinate storage locations with Owner.
 2. When onsite storage is insufficient, Contractor shall provide additional lands for storage facilities as necessary and required for the Work.
 3. Restrictions on Storage Locations:
 - a. Do not store materials or equipment in structures being constructed unless approved by Engineer in writing.
 - b. Do not use lawns, landscaped areas, or private property for storage without written permission of property owner.
- C. Protection of Stored Items – General:
1. Store materials and equipment indicated below to ensure preservation of quality and fitness for intended uses in the Work, including proper protection against damage and deterioration resulting from: water (including precipitation, flood, and other), moisture, humidity, wind, dust, freezing, and outdoor ambient air high temperature as high as 110 degrees F. Temperature and humidity inside crates, containers, storage structures, and packaging may be significantly higher than outdoor ambient air temperature.
 2. Store in indoor, climate-controlled storage all materials and equipment subject to damage or deterioration by water, moisture, humidity, heat, cold, and other elements, unless otherwise acceptable to Owner and Engineer.
 3. Do not open manufacturer's crates, containers, and packaging until time of installation, unless recommended by the manufacturer or otherwise required in the Contract Documents.
 4. Store all materials and equipment off the ground (or floor) on raised supports such as skids or pallets.
 5. Electrical Equipment, Instrumentation and Controls, Items Containing Computer Chips, Solid-State Devices, and Other Electronics:
 - a. Contractor shall obtain, coordinate, and comply with specific temperature, humidity, and environmental limitations on materials and equipment, because temperature inside cabinets and components stored in warm temperatures can approach 200 degrees F.
 - b. Protect from water, moisture, humidity, dust, heat, cold, and other potentially harmful elements and environments. Space heaters provided in equipment shall be connected and operating at all times until equipment is connected to active, permanent, electrical power.
 - c. Provide inside each electrical panel, control panel, and other enclosures with electronic device(s) each of the following: (1) desiccant, (2) volatile corrosion inhibitor (VCI) blocks, (3) moisture indicator, and (4) maximum- and minimum-indicating thermometer.
 - d. Check panels and equipment not less than once per month. Replace desiccant, VCI, and moisture indicator the earlier of: (1) as often as necessary, or (2) every six months.
 - e. Establish and maintain certified record of daily maximum and minimum temperature and humidity in storage facility. Such records shall be available for Engineer's and Owner's inspection upon request. Certified record of monthly inspection, noting maximum and minimum temperature for month, condition of desiccant, VCI, and moisture indicator, shall be available to Engineer and Owner upon request..
 6. Finished Surfaces:
 - a. Protect finished surfaces against impact, abrasion, discoloration, and other damage.
 - b. Remedy, in accordance with requirements of item manufacturer and finishing system manufacturer damaged, marred, or deteriorated finishes, to Engineer's satisfaction.
 7. Contractor is fully responsible for loss, damage, and deterioration, including theft and vandalism, to stored materials and equipment.
- D. Storage of Materials or Equipment Containing Constituents of Concern:
1. Prevent contamination of personnel, storage areas, the Site, and adjacent areas.
 2. Comply with Laws and Regulations.

E. Uncovered Storage:

1. The following materials may be stored outdoors without cover on supports, so there is no contact with the ground:
 - a. Reinforcing steel.
 - b. Precast concrete materials.
 - c. Structural steel.
 - d. Metal stairs.
 - e. Handrails and railings.
 - f. Grating.
 - g. Checker plate.
 - h. Metal access hatches, such as floor doors, roof hatches, and the like.
 - i. Castings.
 - j. Fiberglass items.
 - k. Rigid electrical conduit, except PVC-coated conduit.
 - l. Fencing intended for permanent, outdoor installation.
 - m. Piping, except PVC or chlorinated PVC (CPVC) pipe.

F. Covered Storage:

1. The following materials and equipment may be stored outdoors on supports and completely covered with covering impervious to water:
 - a. Grout and mortar materials.
 - b. Masonry units.
 - c. Metal decking.
 - d. Rough lumber.
 - e. Soil materials and granular materials such as aggregate.
 - f. PVC and CPVC pipe.
 - g. PVC-coated electrical conduit.
 - h. Filter media.
2. Properly and fully secure covers against coming loose in strong winds.
3. Install coverings properly sloped to prevent accumulation of water.
4. Loose Soil Material and Loose Granular Material:
 - a. Store such materials in well-drained areas.
 - b. Prevent mixing of such materials with foreign matter. Provide underlying separation layer or store on solid, impervious surface, where appropriate.
 - c. Provide temporary erosion and sediment controls for stockpiled soil materials.

G. Fully-Protected Storage:

1. Store all materials and equipment not indicated in the provisions above regarding uncovered storage and covered storage on supports, in buildings, trailers, or other suitable temporary storage facility with concrete or wood flooring, solid and impervious roof, and fully closed walls on all sides.
2. Covering with visqueen plastic sheeting or similar material in storage space without floor, roof, and walls is unacceptable.
3. Provide heated storage for materials and equipment that could be damaged or deteriorate by low temperatures or freezing.
4. Provide air-conditioned storage for materials and equipment that could be damaged or deteriorate by high temperature or humidity.
5. Protect mechanical and electrical equipment from being contaminated by dust, dirt, and moisture.

6. Maintain temperature and humidity at levels recommended by materials and equipment manufacturers.
 7. Prevent infestation of stored items by pests and rodents. Promptly and properly remedy such infestation when apparent.
- H. Removal of Temporary Storage Facilities and Restoration of Storage Areas:
1. Completely remove temporary storage facilities when no longer necessary for the Work.
 2. Restore areas used for storage and areas occupied by temporary storage facilities, in accordance with the Contract Documents.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 MAINTENANCE OF STORAGE

- A. On a scheduled basis, periodically inspect stored materials and equipment to ensure that:
1. Condition and status of storage facilities is adequate to provide required storage conditions.
 2. Required environmental conditions are maintained on continuing basis.
 3. Materials and equipment exposed to weather elements or other environment are not adversely affected.
- B. Mechanical and Electrical Equipment in Long-Term Storage:
1. Meaning of the term "long-term storage" is as established in written instructions of manufacturer of associated materials or equipment.
 2. Mechanical and electrical equipment requiring long-term storage shall have complete manufacturer's written instructions for servicing each item, with notice of enclosed instructions shown on exterior of crate, container, or packaging.
 3. Frequency of inspections and maintenance of stored items shall be in accordance with manufacturer's written instructions.
 4. For mechanical equipment with bearings and shafts, manually rotate shaft during inspection and maintenance, as recommended by equipment manufacturer.
 5. Space heaters that are part of electrical equipment shall be connected and operated continuously until equipment is connected to permanent electrical power supply.
 6. Other requirements for maintenance during storage of electrical equipment, instrumentation and controls, items with computer chips, solid-state devices and other electronics are in this Section's provision on general protection during storage.
- C. Affidavits:
1. Submit to Engineer affidavit for each time maintenance and inspection was performed on materials and equipment in long-term storage. Affidavit shall be signed by Contractor and entity performing the inspection and maintenance on the stored items.
 2. Indicate on affidavit:
 - a. Date of inspection.
 - b. Personnel involved and employer of each.
 - c. Condition of storage environment.
 - d. Specific stored items inspected, equipment condition, problems observed, problems corrected, maintenance tasks performed, and other relevant information.
 - e. Signature of Contractor's person responsible for the inspection and maintenance.
 - f. Signed and notarized statement by items' manufacturer indicating whether storage conditions and tasks performed are suitable for continued compliance with manufacturer's warranties.

3. Submit each affidavit, complete, not later than seven days after performing associated inspection and maintenance.

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for Contractor's onsite recordkeeping.
2. Contractor's field engineering.
3. Contractor's surveying and layouts, and associated requirements.
4. This Section supplements the General Conditions' provisions on reference points and other matters.

B. Scope:

1. Contractor shall provide onsite recordkeeping, field engineering (not related to design of the completed Work), surveying and layout services, and professional services of the types indicated for the Project, including:
 - a. Furnishing civil, structural, geotechnical, electrical, and other professional engineering and geology services, whether required by the Contract Documents or necessary in Contractor's judgment, to perform Contractor's means, methods, techniques, sequences, and procedures of construction. Such services do not include professional services associated with delegation of professional design responsibility, which (when required as part of the Work) is addressed elsewhere in the Contract Documents.
 - b. Developing and making all detail surveys and measurements required for construction; including slope stakes, batter boards, and all other working lines, elevations, and cut sheets.
 - c. Providing materials required for Contractor's benchmarks, control points, batter boards, grade stakes, structure and pipeline elevation stakes, and other items.
 - d. Keeping a transit, theodolite, or total station (i.e., theodolite with electronic distance measurement device); leveling instrument; and related implements such as survey rods and other measurement devices, at the Site at all times, and having a skilled instrument person available when necessary for laying out the Work and verifying lines, grades, and elevations.
 - e. Being solely responsible for all locations, dimensions, and levels of the Work. No data other than Change Order, Work Change Directive, or Field Order shall justify departure from dimensions and levels required by the Contract Documents.
 - f. Rectifying all Work improperly installed because of not maintaining, not protecting, or removing without authorization established reference points, stakes, marks, and monuments.
 - g. Providing such facilities and assistance necessary for Engineer and Resident Project Representative (if any) or Owner's Site Representative (if any) to check lines and grade points placed by Contractor.

1.2 PRICE AND PAYMENT PROCEDURES

A. Unit Price Work:

1. Do not perform excavation or embankment work until all surveying necessary for determining payment quantities for Unit Price Work have been completed and accepted by Engineer.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Review requirements of this and other Specifications Sections and coordinate other elements of the Work with field engineering, surveying, and layout Work and recordkeeping obligations set forth in this Specifications Section.

1.4 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Project Information:
 - a. Submit qualifications of surveyor.
 - b. Submit contact information of Land Surveyor prior to beginning of survey work.
2. Certificates:
 - a. When requested by Engineer following completion of the Work or a part thereof, submit certificate signed by Professional Engineer or Professional Surveyor, as applicable, indicating that elevations and locations of the Work comply with the Contract Documents. Explain each discrepancy, if any, from the requirements of the Contract Documents.
3. Contractor's Daily Reports and Field Engineering Records:
 - a. If requested by Engineer, submit daily reports as indicated in this Specification Section.
 - b. If requested by Engineer, submit documentation verifying accuracy of field engineering.
4. Contractor's Surveying Plan and Records:
 - a. Complete plan for performing surveying Work, submitted not less than 10 days prior to beginning surveying Work.
 - b. Example of proposed surveying field books to be maintained by Contractor's surveyor. Example surveying field book shall have sufficient information and detail, including example calculations and notes, to demonstrate that surveying field books will be organized and maintained in a professional manner in accordance with the Contract Documents.
 - c. Submit original surveying field books within two days after completing surveying Work.
 - d. Submit certified survey in accordance with this Specifications' Section.
5. Surveyor and Field Engineer: Name, employer, professional address of firm, and detailed resumes of each professional land surveyor and crew chief that will be engaged in surveying Work.
 - a. Submit no less than 10 days prior to beginning surveying Work. During the Project, submit detailed resume' for each new registered, engineer, licensed land surveyor and crew chief employed by or retained by Contractor not less than 10 days prior to starting on the surveying Work.
6. Contract Closeout Information:
 - a. Submit documentation verifying accuracy of survey work.
 - b. Submit certificate prepared and sign by Land Surveyor, indicating elevations and locations of work in conformance with the Contract Documents.

1.5 CONTRACTOR'S ENGINEERS

A. Qualifications of Contractor's Field Engineer:

1. Employ and retain at the Site a Field Engineer with experience and capability of performing all field engineering tasks required of Contractor, as indicated in this Article and elsewhere in the Contract Documents.
2. Employ Land Surveyor registered in the State of Iowa.
3. Contractor's field engineer may serve as Contractor's Site superintendent, or as the recorder of as-constructed conditions in accordance with Section 01 78 39 - Project Record Documents, or as any combination of these roles as deemed appropriate by Contractor.

B. Responsibilities of Contractor's Field Engineer:

1. Daily Reports:
 - a. Prepare and maintaining daily reports of activity on the Contract. Submit reports to Engineer upon request. Contractor's daily reports shall indicate the following information:
 - 1) Contractor's Employees: Number of Contractor's employees at the Site, apportioned by trade(s).
 - 2) Subcontractors: Separately indicate and identify each Subcontractor and the number of workers onsite for each. Apportion number of workers by trade(s).
 - 3) Equipment and materials installed as part of the Work.
 - 4) Equipment and materials, to be installed in the Work, delivered to the Site or offsite storage location that day. When delivered to offsite storage, indicate the storage location.
 - 5) Major construction equipment utilized by major activity. Indicate for each manufacturer, model number, and year of manufacture.
 - 6) Location of areas in which construction was performed.
 - 7) Work performed, including field quality control activities such as inspections and testing. Indicate field quality control activities witnessed by Engineer, Resident Project Representative (if any), or Owner's Site Representative (if any).
 - 8) Weather conditions, including minimum and maximum ambient air temperatures, relative humidity, conditions of high winds or other extreme weather, and precipitation.
 - 9) Safety concerns, events, and precautions taken.
 - 10) Defective Work observed or believed to exist.
 - 11) Delays encountered, extent of delay incurred, reasons for the delay, and measures that will be taken to rectify delays encountered.
 - 12) Acknowledgement of specific instructions received from Engineer, Resident Project Representative (if any), Owner, or Owner's Site Representative (if any).
 - 13) Visitors to the Site.
 - 14) Other notable events occurring on the Project.
 - b. Daily reports shall be signed and dated by responsible member of Contractor's staff, such as Contractor's field engineer, superintendent, project manager, or foreman designated by Contractor as having authority to sign daily reports.
 - c. Submit Contractor's daily reports in accordance with Section 01 31 26 - Electronic Communication Protocols, by 9:00 a.m. (local time at the Site) the next working day after the day covered in the associated report.
 - d. Submit two copies of Contractor's daily reports at Engineer's field office at the Site by 9:00 a.m. (local time at the Site) the next working day after the day covered in the associated report.
2. Check all formwork, reinforcing materials, inserts, structural steel, masonry, insulation, waterproofing and element protection, doors and windows, finishes, bolts, sleeves, piping, other materials and equipment for compliance with the Contract Documents.
3. Continually inspect the Work to ensure that the quality and quantities required by the Contract Documents are provided.
4. Promptly report defective Work to Contractor, Engineer, Resident Project Representative (if any), and Owner's Site Representative (if any).
5. Cooperate as required with Engineer, Resident Project Representative (if any), and Owner's Site Representative (if any) in observing the Work and performing field inspections and other field quality control activities.

6. Check and coordinate the Work for conflicts and interferences, and immediately advise Engineer and Resident Project Representative (if any) of all discrepancies of which Contractor is aware.
7. Maintain field office files and drawings, record documents, and coordinate field engineering services with Subcontractors and Suppliers as appropriate, and other prime contractors (if any).
8. Supervise or personally prepare and maintain Project record documents in accordance with Section 01 78 39 - Project Record Documents.
9. Prepare layout and coordination drawings for construction operations.
10. Review and coordinate the Work with Shop Drawings approved by Engineer, other Submittals accepted by Engineer, and Contractor's means, methods, techniques, sequences, and procedures of construction and safety programs incident thereto.
11. Coordinate onsite work of Subcontractors and Suppliers, or assist Contractor's Site superintendent in doing so.

1.6 CONTRACTOR'S SURVEYOR

A. Qualifications:

1. Employ or retain the services, as needed, at the Site a surveyor with experience and capability of performing surveying and layout tasks required in the Contract Documents and as required for the Work. Comply with Laws and Regulations governing land surveying.
2. Contractor's surveyor shall possess no less than five years of experience performing duties similar in scope and complexity to those required of Contractor's surveyor on this Project.

B. Responsibilities of Contractor's Surveyor:

1. Providing required surveying equipment, including transit, theodolite, or total station; level; stakes; and surveying accessories.
2. Establishing required lines and grades for constructing all facilities, structures, pipelines, and site improvements, including outdoor electrical equipment and feeders.
3. Preparing and maintaining professional-quality, accurate, well-organized, legible notes of all measurements and calculations made while surveying and laying out the Work.
4. Prior to backfilling operations, survey, locate, and record on a copy of the Drawings accurate representation of buried Work and Underground Facilities provided and encountered.
5. Locating on a site plan of the Site the actual location of above-ground Work to be indicated on Record Documents.
6. Complying with requirements of the Contract Documents relative to surveying and related Work, including requirements of this Specification Section's Articles 1.6 and 3.1.

1.7 RECORDS

A. Records – General:

1. Maintain at the Site:
 - a. Contractor's field engineer's daily reports, with information and submitted in accordance with Article 1.5 of this Specification Section.
 - b. Information and documents required by Section 01 78 39 - Project Record Documents.
 - c. Complete and accurate log of control and survey Work as such Work progresses.
 - d. Other records deemed by Contractor to be necessary or appropriate.

B. Field Books and Records:

1. Survey data and records shall be in accordance with recognized professional surveying standards, Laws and Regulations, and prevailing standard of care in the locality where the Site is located.

2. Original field notes, calculations, and other surveying data shall be recorded by Contractor's surveyor in Contractor-furnished hard-bound field books, and shall be signed and sealed by Contractor's surveyor.
 3. Completeness and accuracy of surveying Work, and completeness and accuracy of surveying records, including field books, shall be responsibility of Contractor.
 4. Unacceptable Records of Contractor's Surveyor:
 - a. Failure to organize and maintain survey records in an appropriate manner that allows reasonable and independent verification of calculations, and to allow identification of elevations, lines, locations, dimensions, and grades of the Work, shall be cause for rejecting the surveying records, including field books.
 - b. Illegible notes or data, and erasures on any page of field books, are unacceptable. Do not submit copied notes or data. Corrections by ruling or lining out errors will be unacceptable unless initialed by the surveyor. Violation of these requirements may require re-surveying the data questioned by Engineer.
 - c. Other provisions of the Contract notwithstanding, Contractor shall have sole responsibility for uncovering, re-surveying, and restoring uncovered Work should survey data be unacceptable to Engineer.
- C. Certified Survey of Surface Structures:
1. Upon completion of major site improvements, prepare a certified survey, signed and sealed by Professional Surveyor, showing or indicating dimensions, locations, angles and elevations of construction and locations and elevations of Underground Facilities installed and encountered during the Work.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Investigate and verify the existence and location of site improvements, utilities, and other existing facilities.
- B. Before construction, verify the location of:
 1. Invert elevations at points of connection of leachate lines, gas collection lines, storm sewer, ground water piping and trenches, and underground electrical services.
 2. Existing liner system at new cell coordinate boundaries as identified on Drawings.
- C. Furnish information to the Engineer and the appropriate utility regarding conflicts that are necessary to adjust, move, or relocate existing utility structures, lines, services, or other utility appurtenances located in or affected by construction.
- D. Provide the Owner's representative two working days advance notification when ready for engineering surveys for construction to be provided by the Owner's Representative or Quality Assurance Consultant.

3.2 ENGINEERING SURVEYS PROVIDED BY THE OWNER'S REPRESENTATIVE

- A. Prior to the start of construction, Owner will be responsible to establish or verify benchmarks for construction, at the locations shown on the Drawings or in the general vicinity of the Work.
- B. Prior to start of construction, Contractor will be responsible to undertake surveys or estimate required to establish basis of Unit Price Work.
- C. Quality Assurance surveys as Owner deems necessary to document compliance.
- D. After the award of the Contract the Owner will, for Contractor's convenience, provide an electronic copy of the proposed Base Grades in AutoCAD (DWG) release 2020.
 1. This will be provided for convenience only and will not be considered a part of the Contract Documents.

2. See General Conditions related to discrepancies between printed and electronic files and reuse of documents.
3. Elevations may require adjustment based on actual construction.

3.3 ENGINEERING SURVEYS TO BE PROVIDED BY THE CONTRACTOR

A. General:

1. Provide, locate, preserve and protect established construction reference stakes, benchmarks and control points.
2. Locate, preserve and protect property corners and section corner monuments.
 - a. If moved or destroyed due to Contractor activities, then replace in accordance with applicable regulations or requirements.
3. Provide additional construction staking as necessary to layout and complete construction.
4. Before beginning construction staking, verify the information shown on the Drawings or provided by the Owner's Representative, in relation to the established construction reference stakes, benchmarks, control points and property corners.
 - a. Notify the Engineer of any discrepancies.
5. Remove Contractor installed construction reference stakes when directed by the Engineer.
6. Owner will provide a survey reference table for Contractor's convenience in establishing a clear and consistent survey point numbering system.
 - a. This table shall not be construed as all-inclusive or as modifying Contractor's contractual survey requirements in any way.

B. Prior to the start of construction, Contractor will be responsible to complete a preconstruction survey in all anticipated work areas and provide to the Owner's Construction Quality Assurance Representative.

C. Gravity and Pressure Pipeline Systems:

1. Provide any intermediate construction reference points required to verify installation at the line and grade established and locate appurtenant structures.
2. Check the line and grade with the construction reference stakes at each pipe length.

D. Cap System: Recompacted Clay Liner, Erosion Layer, and Vegetative Layer:

1. Provide any intermediate construction reference points required to verify installation at the line and grade established and locate appurtenant structures.
2. Tolerances for each layer can be found within their respective Specification Section.

E. Structural Fill, Controlled Fill, and Embankments:

1. Provide any intermediate construction reference points required to verify installation at the line and grade established and locate appurtenant structures.

F. Site Improvements:

1. Provide construction reference stakes for site improvements including pavements, (roadways, aggregate surfacing, grading, fill and topsoil placement, sediment basin cleaning, terraces, diversion berms, and utility lines, equipment racks, and grades.
2. Provide construction reference stakes for location and elevations of structures.

3.4 PROFILE AND TOPOGRAPHY SHOWN ON THE DRAWINGS

A. Contours, profiles, or points of the ground are shown on the Drawings.

1. These profiles and contours are reasonably correct, but are not guaranteed to be absolutely so, and together with any schedule of quantities are presented only as an approximation.
2. See also notes on Drawings for features not in contours or profiles.

3.5 RECORD MEASUREMENTS AND MARKERS

- A. Provide record survey information of the as-constructed facilities showing the exact horizontal and vertical location of liner components, leachate lines, gas collection lines, groundwater control trenches, drain lines, storm water lines, buried utilities, structures, stabilization measures, and other facilities that are covered when construction is complete.
- B. Contractor shall provide Owner the as-constructed survey contours conforming to the project coordinate system identified on the Contract Drawings in AutoCAD (DWG) release 2020 compatible x, y, z format, as well as DWF format and digital terrain model (DTM).

END OF SECTION

SECTION 01 73 29
DEMOLITION, ABANDONMENT, REMOVAL AND SALVAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Demolition or removal of select structures, equipment, and site features.
 - 2. Removal and salvage of select elements.
- B. Related Sections include but are not necessarily limited to:
 - 1. Division 00 - Procurement and Contracting Requirements.
 - 2. Division 01 - General Requirements.

1.2 DEFINITIONS

- A. Abandon: The decommissioning and abandonment in place of existing elements of construction.
- B. Demolish or Remove:
 - 1. The partial or complete removal and disposal of designated existing elements of construction.
 - 2. When the terms "Demolish", "Demolish and Remove", or "Remove," are used in the Specifications or on the Drawings, they shall grant the Contractor the following options for material management, as stipulated further in this Specification:
 - a. Remove, handle and transport to off-site facilities for reuse or recycling at Contractor's sole discretion and expense.
 - b. Remove, handle, transport and dispose on-site at active landfill area.
 - c. Processing for on-site reuse:
 - 1) This option shall only extend to inorganic material meeting requirements of Section 31 23 00.
 - 2) No wood, plastics or like material designated as demolish or remove may be reused.
- C. Protect: Action or activities required to ensure the integrity of structures affected by removal, demolition, abandonment or relocation activities such that they will remain undamaged and functional in subsequent construction.
- D. Remove and Relocate or Remove and Salvage:
 - 1. The careful and complete removal of a designated existing element of construction.
 - 2. When the terms "Remove and Relocate", "Remove and Salvage" or "Salvage," are used in the Specifications or on the Drawings, they shall obligate the Contractor's best efforts to reclaim material in an undamaged manner and carefully stockpile or reuse it at a location designated by the Owner.
 - a. Damaged material which in the Owner's or Engineer's judgment does not permit salvage or reuse may be disposed of at the active landfill area.

3. Material that has been salvaged may be utilized in subsequent construction provided:
 - a. Material meets the requirements of the Specification Section to which it applies.
 - b. Condition of material is undamaged and all related contaminants have been removed.
 - c. This option shall only extend to inorganic material.
- E. The terms defined above shall convey the same intent whether used in the form of nouns, verbs or various tenses.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 ABANDONMENT

- A. Existing Gas wells:
 1. Abandon gas well by backfilling well casing with a bentonite slurry mixture and cutting and capping the well casing two (2) feet below the existing grade, per the drawings.

3.2 REMOVE AND SALVAGE MATERIALS

- A. Undamaged prior to removal or as a result of removal action and subsequent reuse:
 1. Contractor shall verify functional integrity of elements designated for "remove and salvaged" prior to removal.
 2. If removal represents a risk for damage or in-place material is deemed damaged, Contractor shall notify Engineer and Owner to obtain concurrence that salvage may not be viable without loss of integrity.
 3. If functional integrity of elements scheduled for "remove and salvage" are subsequently compromised, Contractor shall replace elements at Contractor's cost.
- B. Suitable and compatible with new installation.

3.3 SALVAGE MATERIALS AND STOCKPILE

- A. Liquid Extraction Pumps and appurtenances:
 1. Existing liquid extraction pumps located at vertical wells shall be removed and salvaged.
 2. Salvage pumps, wellheads, controls, valves, instrumentation and related appurtenances.
 3. Stockpile salvaged materials at location designated by Owner.
- B. Miscellaneous Materials:
 1. Material removed as a part of relocation of existing structures, which is functionally usable or reusable shall be removed in a manner that will prevent damage.
 2. For material not deemed re-usable:
 - a. Prior to on-site disposal or off-site re-use and recycling, Contractor shall offer the Owner the option of salvage.
- C. Stockpile:
 1. Stockpile salvaged material on-site in areas designated by Owner or Engineer.
 - a. Stockpile in a neat and orderly fashion.

- b. To the extent possible stockpile above ground to avoid degradation.
2. Segregate dissimilar material in separate stockpiles.

3.4 ITEMS FOR REMOVAL OR DEMOLITION

A. General:

1. Items or materials designated for removal or demolition shall be managed or disposed of on-site in accordance with applicable laws.

END OF SECTION

SECTION 01 77 19

CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for:

1. Substantial Completion.
2. Final Completion.
3. Project Record Documents.
4. Warranties.
5. Instruction of Owner's Personnel.
6. Final Cleaning.

1.2 SUBSTANTIAL COMPLETION

A. Substantial Completion – General:

1. Prior to requesting inspection for Substantial Completion, perform the following for the substantially completed Work:
 - a. Materials and equipment for which Substantial Completion is requested shall be fully ready for their intended use, including full operating and monitoring capability in automatic, manual, and other operating modes set forth in the Contract Documents.
 - b. Permanent provisions for safety and protection, shown and indicated in the Contract Documents and associated with the substantially completed Work or for personnel accessing and using the substantially completed Work, shall be in place and ready for their intended use.
 - c. Complete field quality control Work, including inspections and testing at the Site, indicated in Specifications sections for individual materials and equipment items and related Contract Documents. Submit results of, and obtain Engineer's acceptance of, field quality control tests and inspections required by the Contract Documents.
 - d. Spare parts, tools, and extra materials shall be delivered and accepted in accordance with the Contract Documents and documentation of Owner's acceptance thereof has been submitted to Engineer in an acceptable form.
 - e. Training of the facility's operations and maintenance personnel shall be completed in accordance with the Contract Documents.
 - f. Submit and obtain Engineer's acceptance of final operations and maintenance manuals in accordance with Section 01 33 04 - Operation and Maintenance Manuals.
 - g. Obtain and submit to Engineer all required permits, inspections, and approvals of authorities having jurisdiction for the substantially completed Work to be occupied and used by Owner.
 - h. Complete other tasks that the Contract requires be completed prior to Substantial Completion.
 - i. Advise Owner of pending insurance changeover requirements.

- j. Submit specific warranties, workmanship bonds, final certifications, and similar documents, as appropriate.
 - k. Prepare and submit Project Record Documents, Contractor Surveys and Record Measurements and Markers as required by Section 01 71 23, and similar final record information.
 - l. Advise Owner's personnel of changeover in security provisions.
 - m. Terminate and remove temporary facilities from Project site, along with samples and mockups, construction tools, and similar elements not intended to stay as part of the Work.
 - n. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 - o. Complete final cleaning requirements, including a thorough cleaning of all work as appropriate to remove all foreign matter, spots, stains, and soil so as to put all work in a complete and finished condition.
 - p. Cleaning and touch up shall be repeated as necessary until final completion of all punch list items.
 - q. Exterior cleaning shall include washing down and sweeping of all paved areas and removal of all trash and debris related to Contractor's work from the site.
- 2. Procedures for requesting and documenting Substantial Completion are in the General Conditions, and may be modified by the Supplementary Conditions.
 - 3. Sample letter for Contractor's request for inspection for Substantial Completion is attached to this Specifications section. Use the model language of the sample letter, modified to suit the Project and the needs of Contractor's request.
 - 4. Unless decided otherwise by Owner and Engineer, form of certificate of Substantial Completion will be EJCDC C-625, "Certificate of Substantial Completion" (2018 edition or later), prepared by Engineer.
 - 5. Refer to the Agreement and Section 01 29 76 - Progress Payment Procedures, for requirements regarding consent of surety to partial release of or reduction in retainage.
 - 6. Coordinate the article, immediately below, with the General Conditions. The model language and user notes below are coordinated with EJCDC C-700—2018 Paragraph GC-15.05 ("Final Inspection").

1.3 FINAL COMPLETION

A. Preliminary Procedures:

- 1. Before requesting final inspection for certification of final payment, complete the following:
 - a. Submit a list of items identified as requiring correction or completion.
 - 1) List exceptions in the request.
 - b. Instruct Owner's personnel in operation, adjustment and maintenance of products, equipment and systems in accordance with the Contract Document requirements.
 - c. Submit the final payment request with releases and supporting documentation not previously submitted and accepted.
 - 1) Include insurance certificates for products and completed operations where required.
 - d. Submit an updated final statement, accounting for final additional changes to the Contract Sum.

- e. Submit a written notice that the work is complete including a certified copy of the Engineer's final inspection list of items to be completed or corrected, endorsed and dated by the Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Engineer.
 - 1) On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements.
 - f. Submit consent of surety to final payment.
 - g. Submit a final liquidated damages settlement statement.
 - h. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - i. Submit Project Record Documents, Record Measurements and Markers, Drawings, Project Manual, Operation and Maintenance Manuals, product test data and similar final record information.
 - j. Deliver tools, spare parts, extra stock and similar items.
- B. Reinspection Procedure:
- 1. The Engineer will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Owner and Engineer.
 - 2. Upon completion of reinspection, the Engineer will prepare a certificate of final acceptance. If the work is incomplete, the Engineer will advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
 - 3. If necessary, reinspection will be repeated.
 - a. Costs associated with reinspections by the Engineer due to the work not meeting Final Completion requirements, after Contractor notification, shall be charged to the Contractor.

1.4 PROJECT RECORD DOCUMENTS

- 1. See Specification Section 01 78 39 for more information.

1.5 WARRANTIES

- A. Submit written warranties for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Submit properly executed warranties of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8 1/2 by 11 IN (115- by-280-mm) paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty.
 - a. Mark tab to identify the product or installation.
 - b. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General:

1. Conduct final cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning:

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean.
 - c. Remove petrochemical spills, stains, and other foreign deposits.
 - d. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - e. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - f. Remove all sediment from erosion control structures.
 - g. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances.
 - h. Remove debris and surface dust from limited access spaces, including vaults, manholes, pipes, and similar spaces.
 - i. Sweep concrete floors broom clean in unoccupied spaces.
 - j. Remove labels that are not permanent.
 - k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces.
 - 1) Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 2) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - l. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Replace parts subject to unusual operating conditions.
 - n. Leave Project clean and ready for occupancy.

C. Comply with Safety Standards for Cleaning:

1. Do not discharge volatile, harmful, or dangerous materials on the site.
2. Properly and lawfully dispose of waste materials from Project site.

END OF SECTION

**SAMPLE LETTER FOR CONTRACTOR'S USE IN
REQUESTING INSPECTION FOR SUBSTANTIAL COMPLETION**

SENT VIA E-MAIL AND U.S. CERTIFIED MAIL/RETURN RECEIPT REQUESTED

[Date]

[Name of Engineer's contact person]

HDR

[Street address]

[City, state, postal code]

Subject:

[Project name, Contract designation]

Request for Inspection for Substantial Completion

Dear [addressee]:

In our opinion, [all of] [or] [a portion of] the Work under the above-referenced Contract is substantially complete as of [insert month, day, year on which Substantial Completion was achieved]. [The specific portion of the Work that we believe is substantially complete is [insert identification of that portion of the Work that is substantially complete].]

Enclosed is our listing of uncompleted Work items ("punch list"). In accordance with Paragraph 15.03.A of the General Conditions, we hereby request: (1) That the Engineer schedule and perform the inspection for Substantial Completion as soon as possible, and (2) Issuance of the certificate of Substantial Completion.

In accordance with Paragraph 15.03.D of the General Conditions, upon Substantial Completion, we propose the following relative to apportionment of responsibilities between the Owner and the Contractor:

1. Security, Protection, Insurance:
 - a. Site Security: [insert proposal; address whether Owner or Contractor will be responsible for security of the Site].
 - b. Protection of the Substantially Completed Work: [insert proposal; address whether Owner or Contractor will be responsible for protection].
 - c. Property Insurance: [insert proposal; typically Owner assumes responsibility for property insurance upon Substantial Completion]
2. Operation and Maintenance:
 - a. Operation: [insert proposal; address whether Owner or Contractor will be responsible for operating the substantially completed Work].
 - b. Maintenance: [insert proposal; address whether Owner or Contractor will be responsible for maintaining the substantially completed Work].
3. Utilities: [for each of the following, indicate whether Owner or Contractor will be responsible for utilities and services, or whether responsibility will be shared; if shared, indicate proposed cost-sharing]
 - a. Electricity: [insert proposal].

- b. Natural Gas/Fuel/Heating: [insert proposal].
- c. Water Supply: [insert proposal].
- d. Wastewater: [insert proposal].
- e. Communications (Telephone, Internet, Video): [insert proposal].

In accordance with Paragraph 15.08.A of the General Conditions, we understand that the Contract's correction period for the Work covered by the certificate of Substantial Completion commences on the Substantial Completion date documented in said certificate. [Drafter: Also see Paragraph 15.04 ("Partial Utilization") of the General Conditions and, where necessary, edit this paragraph of the letter accordingly.]

Should you have questions or comments regarding this notice, please contact [the undersigned] [or] [insert other contact person's name], at [insert telephone number and e-mail address].

Sincerely,

[Contractor's company name]

[Signatory name]

[Signatory's title]

Attachments:

Preliminary list of uncompleted Work items ("punch list"; [##] pages)

Copies:

[Owner's project manager]

SAMPLE PARTIAL CHECKLIST TO IDENTIFY READINESS FOR FINAL INSPECTION

Project: _____

Contract: _____

Contractor: _____

Item No./Description	Completed/Date	In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
1. All Submittals, including all Shop Drawings and Samples, approved or accepted by Engineer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
1. Final Work completed by Subcontractors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
2. Permits closed out and regulatory compliance transitioned from construction to operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
3. All outstanding change issues are addressed and all Change Proposals submitted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
4. All Change Proposals and Claims are resolved	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
5. All defective Work of which Contractor is aware has been	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Item No./Description	Completed/Date	In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
corrected in accordance with the Contract Documents						
<i>Remarks:</i>						
6. Issues related to Constituents of Concern and potential Hazardous Environmental Condition have been fully addressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
7. All spare parts, tools, and extra materials have been furnished in accordance with the Contract Documents, and documentation thereof submitted to Engineer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
8. All final operations & maintenance manuals have been submitted and accepted by Engineer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
9. Manufacturer warranties and software license(s) furnished	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
10. Instruction and training of operations and maintenance personnel is complete and records of training submitted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						

Item No./Description	Completed/Date	In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
11. MBE/WBE/DBE/VBE compliance report(s) submitted (when applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Remarks:						
12. All field engineering Submittals, including survey data, furnished	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Remarks:						
13. All Work on "punch list" is complete in accordance with the Contract Documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Remarks:						
14. All record documents submitted to and accepted by Engineer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Remarks:						
15. Contractor is fully demobilized from the Site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Remarks:						
16. All Site restoration is complete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Remarks:						
17. Final cleaning of all work areas is complete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Remarks:						
18. Releases of Liens and waivers of Lien rights (or acceptable alternative) obtained from Subcontractors and Suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Item No./Description	Completed/Date	In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
<i>Remarks:</i>						
19. Evidence of Contractor liability insurance furnished for correction period	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
20. All other required Contract closeout documents obtained	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						
<i>Remarks:</i>						
21. All other Work and documentation required prior to final payment is complete and provided in accordance with the Contract Documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Remarks:</i>						

SAMPLE LETTER FOR CONTRACTOR'S USE IN REQUESTING FINAL INSPECTION

SENT VIA E-MAIL AND U.S. CERTIFIED MAIL/RETURN RECEIPT REQUESTED

[Date]

[Name of Engineer's contact person]

HDR

[Street address]

[City, state, postal code]

Subject:

[Project name, Contract designation]

Request for Final Inspection

Dear [addressee]:

The Work under the above-referenced Contract is complete and ready for final payment as of [insert month, day, year on which final completion was achieved]. In accordance with Paragraph 15.05 of the General Conditions, we hereby request that the Engineer schedule and perform the final inspection as soon as possible. Upon successful completion of the final inspection, we will submit our final Application for Payment accompanied by the required Contract closeout documentation in accordance with the Contract Documents.

Should you have questions or comments regarding this notice, please contact [the undersigned] [or] [insert other contact person's name], at [insert telephone number and e-mail address].

Sincerely,

[Contractor's company name]

[Signatory name]

[Signatory's title]

Attachments:

None

Copies:

[Owner's project manager]

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for Project Record Documents, to supplement record documents requirements of the General Conditions, as may be modified by the Supplementary Conditions.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, and services to establish, maintain, continuously update, and submit to Engineer Project Record Documents in accordance with the Contract Documents.

C. Related Sections include but are not necessarily limited to:

1. Section 01 29 76 - Progress Payment Procedures.
2. Section 01 71 23 - Field Engineering.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Obtain necessary field measurements and record all data required for Project record documents before covering up the Work or building on subsequent phases of the Work.
2. Promptly after obtaining measurements and information, record the data and information on Project Record Documents.
3. Where a licensed, registered professional land surveyor is retained on the Project, whether by Contractor or others, to perform field measurements and record other data for as-constructed Project or Site conditions, coordinate with such entity and schedule and perform the Work accordingly. Allow surveyor sufficient time and proper conditions for performing surveyor's work. Assist the surveyor as necessary in performance of surveyor's responsibilities.

B. Monthly Status Evaluation:

1. Not less than once per month, as a condition precedent to submitting Application for Payment, Contractor's site superintendent will meet with either Engineer or Resident Project Representative (RPR) at the Site to review status of Contractor's Project Record Documents.
2. When Engineer or RPR directs corrections to Project Record Documents, promptly make such corrections on the Project Record Documents. Engineer's or RPR's directions or lack thereof do not in any way relieve or mitigate Contractor's sole responsibility for the accuracy, completeness, and clarity of Project Record Documents.
3. Requirements for review of Record Documents status as a condition precedent to progress payments is in Section 01 22 00 - Measurement and Payment, and Section 01 29 76 - Progress Payment Procedures.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Comply with Section 01 71 23 - Field Engineering, regarding personnel and equipment necessary to measure and record field conditions.
2. Recorder of Changes and Field Conditions on Project Record Documents:

- a. Contractor's staff at the Site shall include not less than one person with suitable training and drafting (Drawing) experience to record on the Project Record Documents changes made and field conditions encountered.
- b. Recorder of changes and field conditions on the Project Record Documents shall possess not less than two semesters of drafting (Drawing) training in a classroom, either in high school, college, or bona-fide vocational school.
- c. Upon Engineer's request, submit name of proposed recorder at the Site, resume', or list of relevant experience, and copy of credentials of completion of such drafting (Drawing) course(s).
- d. If original recorder of changes and field conditions is replaced, promptly advise Engineer and RPR in writing and submit to Engineer qualifications of proposed replacement.

B. Samples of Similar Prior Work:

- 1. Submit Samples of the personal work of Contractor's designated recorder of changes and field conditions on the Project Record Documents from not less than two prior projects of similar type(s) of work at the Work. Submit copies of not less than two marked-up drawings from each prior project and copies of two pages of marked-up specifications from each prior project.
- 2. Samples shall be in the same form as proposed for the Project Record Documents. For example, where Contractor intends to submit hand-drawn mark-ups of the Drawings and Specifications, Samples shall be copies of hand-drawn markups. Where Contractor intends to submit Project Record Documents in native (executable) file format (such as CAD files), Samples shall be developed using the same software to be used in preparing the Project Record Documents.
- 3. If original recorder of changes and field conditions is replaced by Contractor, replacement recorder shall provide the same standard of work on Project Record Documents as indicated in the approved Samples.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

- 1. Samples:
 - a. Sample of field-recorded Project Record Documents from prior projects, in accordance with this Specifications Section's "Quality Assurance" Article, to establish quality and style for markups of Project Record Documents. Submit within 15 days of the date the Contract Times commence running.

B. Informational Submittals: Submit the following:

- 1. Qualifications Statements:
 - a. When requested by Engineer, submit qualifications of proposed recorder of changes and field conditions for Project Record Documents at Contractor's field office at the Site. Qualifications shall comply with the "Quality Assurance" Article of this Specifications Section.

C. Closeout Submittals: Submit the following:

- 1. Record Documentation:
 - a. Prior to readiness for final payment, submit to Engineer one copy of Project's final Record Documents and obtain Engineer's acceptance of same. Submit complete Record Documents; do not make partial Submittals without Engineer's concurrence.
 - b. Submit the following Project Record Documents:
 - 1) Record Drawings, including those issued via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

- 2) Record project manual, including Specifications, indicating changes made via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
 - c. Submit Record Documents with transmittal letter on Contractor's letterhead in accordance with requirements in Section 01 33 00 - Submittal Procedures.
 - d. Submit record as-constructed surveys conforming to the project coordinate system identified on the Contract Drawings in AutoCAD (DWG) release 2020 compatible x, y, z format, as well as DWF format and digital terrain model (DTM).
2. Certifications:
 - a. Record Documents Submittal shall include certification, with original signature of official authorized to sign legally-binding contracts on behalf of Contractor, reading as follows:
 - 1) (Contractor's legal/contractual entity name) has maintained, continuously updated, and submitted Project Record Documentation in accordance with the General Conditions and Supplementary Conditions, Section 01 78 39 - Project Record Documents, and other elements of Contract Documents, for the Cedar Rapid Linn County Solid Waste Agency, Linn County, Iowa, Site 2 – Pavement and Maintenance Building Improvements. We certify that each record document submitted is complete, accurate, and legible relative to the Work performed under our Contract, and that the Record Documents comply with the requirements of the Contract Documents.

By: _____ (signature)

Print Name: _____

Title: _____

1.5 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintain in Contractor's field office, in clean, dry, legible condition, complete sets of the following Record Documents:
 1. Drawings, Specifications, and Addenda;
 2. Shop Drawings, Samples, and other Submittals, including records of test results, approved or accepted as applicable, by Engineer;
 3. Change Orders, Work Change Directives, Field Orders, allowance authorizations;
 4. copies of all interpretations and clarifications issued;
 5. photographic documentation;
 6. survey data; and
 7. all other documents pertinent to the Work.
- B. Provide files and racks for proper storage and easy access to Project Record Documents. File Record Documents in accordance with the edition of the Construction Specification Institute's *MasterFormat* used for organizing the project manual, unless otherwise accepted by Engineer or RPR.
- C. Promptly make Project Record Documents available for observation and review upon request of Engineer, RPR, or Owner.
- D. Do not use Project Record Documents for any purpose other than serving as Project record. Do not remove Project Record Documents from Contractor's field office without Engineer's approval.

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- A. Recording Changes, Field Conditions, and Other Information – General:
 1. At the start of the Project, label each Record Documents to be submitted as, "PROJECT RECORD" using legible, printed letters. Letters on record copy of the Drawings shall be 2 IN high.

2. Keep Record Documents current consistent with the progress of the Work. Make entries on Record Documents within two working days of receipt of information required to record the change, field condition, or other pertinent information.
3. Do not permanently conceal the Work until required information has been recorded for Project Record Documents.
4. Accuracy of Record Documents shall be such that future searches for items shown on the record documents may rely reasonably on information obtained from Engineer-accepted Project Record Documents.
5. Marking of Entries:
 - a. Use erasable, colored pencils (not ink or indelible pencil) for marking changes, revisions, additions, and deletions to Project Record Documents.
 - b. Clearly describe the change by graphic line and make notations as required. Use straight-edge to mark straight lines. Writing shall be legible and sufficiently dark to allow scanning of Record Documents into legible electronic files in "portable document format" (.PDF) files.
 - c. Date each entry on Record Documents.
 - d. Indicate changes by drawing a "cloud" around the change(s) indicated.
 - e. Mark initial revisions in red. In the event of overlapping changes, use different colors for subsequent changes.

B. Drawings:

1. Record changes on copy of the Drawings. Submittal of Contractor-originated or -produced Drawings as a substitute for recording changes on a copy of the Drawings is unacceptable.
2. Record changes on plans, sections, elevations, schematics, schedules, and details as required for clarity, accuracy, and completeness, making reference dimensions and elevations (to Project datum) for complete record documentation.
3. Record actual construction including:
 - a. Depths of various elements of foundation relative to Project datum.
 - b. Horizontal and vertical location of Underground Facilities referenced to permanent surface improvements and Project elevation datum. For each Underground Facility, including pipe fittings, show and indicate dimensions to not less than two permanent, visible surface improvements.
 - c. Location of exposed utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure and, where applicable, to Project elevation datum.
 - d. Changes in structural and architectural elements of the Work, including changes in reinforcing.
 - e. Field changes of dimensions, arrangements, and details.
 - f. Changes made in accordance with Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
 - g. Changes in details on the Drawings. Submit additional details prepared by Contractor when required to document such changes.
 - h. Limits of excavation of the subgrade and components.
 - i. Top of pipe elevations.
 - j. Erosion/sedimentation control systems.
 - k. Other improvements related to the Work as shown on the Drawings.
4. Recording Changes for Schematic Layouts:
 - a. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items are shown schematically and are not intended to portray physical layout. For such cases, the final physical arrangement shall be determined by Contractor subject to acceptance by Engineer.

- b. Record on the Project Record Documents all revisions to schematics on the Drawings, including: Piping schematics, ducting schematics, process and instrumentation diagrams, control and circuitry diagrams, electrical one-line diagrams, motor control center layouts, and other schematics when included in the Drawings. Show and indicate actual locations of equipment, lighting fixtures, in-place grounding system, and other pertinent data.
 - c. When dimensioned plans and dimensioned sections or elevations on the Drawings show the Work schematically, indicate on the Project Record Documents, by dimensions accurate to within 1 IN in the field, centerline location of items of Work such as conduit, piping, ducts, and similar items.
 - 1) Clearly identify each item of the Work by accurate notations such as “cast iron drain”, “rigid electrical conduit”, “copper waterline”, and similar descriptions.
 - 2) Show by symbol or by note the vertical location of each item of the Work; for example, “embedded in slab”, “under slab”, “in ceiling plenum”, “exposed”, and similar designations. For piping not embedded, also indicate elevation dimension relative to Project elevation datum.
 - 3) Descriptions shall be sufficiently detailed to be related to the Specifications.
 - d. Engineer may furnish written waiver of requirements relative to schematic layouts shown on plans, sections, and elevations when, in Engineer’s judgment, dimensioned layouts of Work shown schematically will serve no useful purpose. Do not rely on such waiver(s) being issued.
5. Supplemental Drawings:
- a. In some cases, Drawings produced during construction by Engineer or Contractor supplement the Drawings and shall be included with Project Record Documents submitted by Contractor. Supplemental Record Drawings shall include Drawings or sketches that are part of Change Orders, Work Change Directives, Field Orders, and allowance authorizations and that cannot be incorporated into the Drawings because of space limitations.
 - b. Supplemental Drawings submitted with Record Drawings shall be integrated with the Drawings and include necessary cross-references between Drawings. Supplemental Record Drawings shall be on sheets the same size as the Drawings.
 - c. When Supplemental Drawings developed by Contractor using computer-aided drafting/design (CAD), building information models (BIM), or civil information models (CIM) software are to be included in Record Drawings, submit electronic files for such Drawings as part of Record Drawing Submittal. Label such files, “Supplemental Record Drawings”, including with Contractor’s name, Project name, and Contract designation.

C. Specifications and Addenda:

- 1. Mark each Specifications section to record:
 - a. Manufacturer, trade name, catalog number, and Supplier of each material and equipment item actually furnished.
 - b. Changes made by Addendum, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

1.7 ELECTRONIC DOCUMENTS FURNISHED BY ENGINEER

- A. CAD, BIM, or CIM files of the Drawings will be furnished by Engineer upon the following conditions:
 - 1. Contractor shall submit to Engineer a letter on Contractor letterhead requesting CAD, BIM, or CIM files of the Drawings and indicating specific definition(s) or description(s) of how such Electronic Documents will be used by Contractor, and specific description of benefits to Owner (including credit proposal, if applicable) if the request is granted.
 - 2. Engineer does not guarantee that Electronic Documents are available in the format(s) requested by Contractor. Some projects may have Drawings developed using only CAD

software instead of BIM or CIM software. Engineer will not create BIM or CIM files for Contractor if such files do not already exist.

3. Contractor shall sign Engineer's standard agreement with Contractor for release of Electronic Documents and shall abide by the provisions of such agreement for release of Electronic Documents.
4. Layering system incorporated in CAD, BIM, and CIM files shall be maintained as transmitted by Engineer. CADD, BIM, and CIM files transmitted by Engineer containing cross-referenced files shall not be bound by Contractor. Drawing cross-references and paths shall be maintained. If Contractor alters layers or cross-reference files, Contractor shall restore all layers and cross-references prior to submitting Project Record Documents to Engineer.
5. Contractor shall submit Project Record Drawings to Engineer in same CAD, BIM, or CIM format that files were furnished to Contractor.

B. Microsoft Word files of Specifications:

1. Requirements for Engineer's potential release of word processing files of the Specifications or other written documents in native format are the same as those for Drawings.
2. When Specifications are released in native format, Contractor shall submit Record Specifications in the same format, with all changes tracked using Microsoft Word's "track changes" feature.
3. Do not modify the formatting of the native files furnished by Engineer. If formatting changes are made without Engineer's authorization, remedy the formatting to the same condition and status as when the files were first delivered to Contractor. Such remedy shall be at Contractor's expense.
4. Comply with all requirements of this Specifications section regarding Record Specifications.
5. After delivery of Record Specifications Submittal to Engineer, delete from Contractor's files the native word processing files. Contractor may retain a PDF version of such files for Contractor's records.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 10 14 00
IDENTIFICATION DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Tag, tape and stenciling systems for equipment, piping, valves, pumps, and similar items.
 - 2. Hazard and safety signs.
 - 3. Warning flagging.
- B. Related Specification Sections include but are not necessarily limited to:

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. American Society of Mechanical Engineers (ASME):
 - a. A13.1, Scheme for the Identification of Piping Systems.
 - 2. The International Society of Automation (ISA).
 - 3. National Electrical Manufacturers Association/American National Standards Institute (NEMA/ANSI):
 - a. Z535.1, Safety Color Code.
 - b. Z535.2, Environmental and Facility Safety Signs.
 - c. Z535.3, Criteria for Safety Symbols.
 - d. Z535.4, Product Safety Signs and Labels.
 - 4. National Fire Protection Association (NFPA):
 - a. 70, National Electrical Code (NEC).
 - b. 704, Standard System for the Identification of Hazards of Materials for Emergency Response.
 - 5. Occupational Safety and Health Administration (OSHA):
 - a. 29 CFR 1910.145, Specification for Accident Prevention Signs and Tags.

1.3 SUBMITTALS

- A. Shop Drawings:
 - 1. See Specification section 01 33 00 for requirements for the submittal process.
 - 2. Product technical data including:
 - a. Catalog information for all identification systems.
 - b. Acknowledgement that products submitted meet requirements of standards referenced.
 - 3. Identification register, listing all items in PART 3 of this Specification Section to be identified, type of identification system to be used, lettering, location and color.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
 - 1. W.H. Brady Co.
 - 2. Panduit.
 - 3. Seton.
 - 4. National Band and Tag Co.

5. Carlton Industries, Inc.
6. Checkers Industrial Production, Inc.

2.2 MANUFACTURED UNITS

A. Type A1 - Round Metal Tags:

1. Materials:
 - a. Aluminum or stainless steel.
 - b. Stainless steel shall be used in corrosive environments.
2. Size:
 - a. Diameter: 1-1/2 inches minimum.
 - b. Thickness: 0.035 inches (20 GA) minimum.
3. Fabrication:
 - a. 3/16 inches minimum mounting hole.
 - b. Legend: Stamped and filled with black coloring.
4. Color: Natural.

B. Type D - Self-Adhesive Tape Tags and Signs:

1. Materials: Vinyl tape or vinyl cloth.
2. Size:
 - a. Surface: As required by text. Min. 4" height.
 - b. Thickness: 5 mils minimum.
3. Fabrication:
 - a. Indoor/Outdoor grade.
 - b. Weather and UV resistant inks.
 - c. Permanent adhesive.
 - d. Legend: Preprinted.
 - e. Wire markers to be self-laminating.
4. Color: White with black lettering or as specified.
5. Standards for OSHA signs: NEMA/ANSI Z535.1, NEMA/ANSI Z535.2, NEMA/ANSI Z535.3, NEMA/ANSI Z535.4, OSHA 29 CFR 1910.145.

C. Type F - Underground Warning Tape:

1. Materials: Polyethylene.
2. Size:
 - a. 6 inches wide (minimum).
 - b. Thickness: 3.5 mils.
3. Fabrication:
 - a. Legend: Preprinted and permanently imbedded.
 - b. Message continuous printed.
 - c. Tensile strength: 1750 psi.
4. Color: As specified.

D. Warning Flags:

1. Materials:
 - a. Fabric flag with whip.
2. Size:
 - a. Whip to be minimum 4-feet tall.
3. Color: Brightly colored with reflective tape.

2.3 ACCESSORIES

- A. Fasteners:
 - 1. Bead chain: #6 brass, aluminum or stainless steel.
 - 2. Plastic strap: Nylon, urethane or polypropylene.
 - 3. Screws: Self-tapping, stainless steel.
 - 4. Adhesive, solvent activated.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

- A. Install identification devices at specified locations.
 - 1. Warning tape to be installed in all trenches.
 - 2. Tags and adhesive labels on all wellheads.
- B. All identification devices to be printed by mechanical process, hand printing is not acceptable.
- C. Attach tags to equipment with sufficient surface or body area with solvent activated adhesive applied to back of each tag.
- D. Attach tags with 1/8 inches round or flat head screws to equipment without sufficient surface or body area, or porous surfaces.
 - 1. Where attachment with screws should not or cannot penetrate substrate, attach with plastic strap.
- E. Single items of equipment enclosed in a housing or compartment to be tagged on outside of housing.
 - 1. Several items of equipment mounted in housing to be individually tagged inside the compartment.

3.2 SCHEDULES

- A. Process Systems:
 - 1. Valves and access points:
 - a. Tag type:
 - 1) Outdoor locations: A1 - Round Metal Tags.
 - b. Fastener:
 - 1) Type A1: Chain of the same material.
 - 2) Type B1: Stainless steel chain.
 - c. Color: Per ASME A13.1 corresponding to the piping system.
 - d. Legend:
 - 1) Letter height: 1/4 IN minimum.
 - 2) Valve designation as indicated on the Drawings (e.g., "V-xxx").
 - 2. Vertical Well for Landfill Gas:
 - a. Tag type:
 - 1) Type D - Self-Adhesive Tape Tags.
 - b. Color: Per ASME A13.1.
 - c. Legend:
 - 1) Letter height: Manufacturer's standard for the pipe diameter.
 - 2) Mark piping in accordance with ASME A13.1.
 - 3) Use piping designation as indicated on the Drawings.
 - 3. Piping systems:

- a. Tag type:
 - 1) Outdoor locations: Type D - Self-Adhesive Tape Tags .
- b. Fastener: Self.
- c. Color: Per ASME A13.1.
- d. Legend:
 - 1) Letter height: Manufacturers standard for the pipe diameter.
 - 2) Mark piping in accordance with ASME A13.1.
 - 3) Use piping designation as indicated on the Drawings.
 - 4) Arrow: Single arrow.

END OF SECTION

SECTION 31 09 21

EXTRACTION WELLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Drilling, installation and make ready vertical landfill gas extraction wells and wellheads.
2. Vertical extraction well abandonment.
3. Coordination of the configuration of the perforated pipe, bentonite seals, gravel, and soil backfill at depths designated in the field by the Engineer.
4. Installation of horizontal pipe required for system installation.
5. Implementation of required health and safety plan and environmental protection plan and controls.
6. Management and disposal of waste materials.

B. Related Sections include but are not necessarily limited to:

1. Division 00 - Procurement and Contracting Requirements.
2. Division 01 - General Requirements.
3. Section 31 23 00 - Earthwork.
4. Section 31 23 33 - Trenching, Backfilling, and Compaction.
5. Section 40 05 00 - Pipe and Pipe Fittings - Basic Requirements.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
 - a. D1785, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
 - b. D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - c. D2467, Standard Specifications for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
 - d. F480, Standard Specification for Thermoplastic Water Well Casing Pipe and Couplings Made in Standard Dimension Ratio (SDR), SCH 40 and SCH 80.
 - e. F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
2. American Water Works Association (AWWA):
 - a. C900, Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 IN through 60 IN (100 mm through 1,500 mm).

B. Qualifications:

1. The firm undertaking the drilling and installing of the vertical landfill gas extraction wells shall have completed at least one hundred successful vertical landfill gas extraction wells of similar type and depth within the last 2 years.
2. Contractor or its Site Supervisor shall have had previous direct experience in the supervision or installation of at least 20 similar vertical landfill gas extraction wells in the past 2 years.
3. Personnel involved in logging of well installation shall demonstrate similar experienced in installation of landfill gas wells including experience in observing and documenting information related to all installation activities and shall be Occupational Safety and Health

1.3 SUBMITTALS

A. Shop Drawings:

1. See Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
2. Documentation of all qualifications, per Part 1.2.B.
 - a. Include all qualification information in a single submittal.
3. Manufacturer's certificates that raw and fabricated materials comply with required material properties.
4. At least two (2) weeks prior to construction, Contractor shall submit to the Engineer for review and approval, results of the sieve analysis and calcium carbonate content for the filter pack, samples of all well backfill materials (if requested), the name of the vendor(s) and source of materials furnished.
5. Manufacturer's information and instructions pertaining to the storage, handling, installation, and inspection of pipe and appurtenances furnished.
6. Manufacturer's proposed details, if different than shown or specified.
7. Product technical data showing dimensions, materials, and manufacturer's information for pipe slotting, fittings, wellheads, geocomposites, and other components not a part of separate specification section.
8. Aggregate gradation, soundness, and certification of non-calcareous materials.
9. Sample well boring log and construction log.
 - a. The example log shall contain all of the required descriptions and pertinent information required under Part 3.3 of this Section.

B. Miscellaneous Submittals:

1. Pre-Boring survey and layout plan.
2. At the end of each day, submit copies of the handwritten well boring and completion logs for each well drilled on that day.
 - a. Information to be included on the approved well logs form.
3. At the end of each day, submit copies of the handwritten trenching logs and completion logs for each trench excavation on that day.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:

1. Well components, parts and assemblies, whether specified on the Drawings, in this Specification or as necessary for completed construction shall be furnished such that final well will be a fully functional assembly.

B. Well Casing as specified in Section 40 05 00:

1. Provide Schedule 80 PVC pipe with Schedule 80 fittings and appurtenances at locations shown on Drawings.
2. Six (6) IN nominal diameter.

C. Fittings: Provide ASTM D2467 and ASTM F480 PVC socket type fittings having the same pressure and temperature rating as the pipe.

D. Top and Bottom Cap:

1. Schedule 40 PVC.
2. Top cap to be temporarily secured airtight as shown on Drawings.

- E. Slotted Pipe:
1. Schedule 80 PVC.
 2. 3/8 IN wide by 8 IN long slots staggered per the Drawings.
 3. Slots to be factory installed.
 - a. No holes or slots, except for required lag screws, to be installed in the field.
 4. Minimum 20 FT lengths unless shorter sections are required.
 - a. Field cutting will be allowed as long as cuts are clean, perpendicular to the pipe, and do not affect the integrity of the pipe.
- F. Joining Procedures:
1. PVC pipe joints shall be connected on the ground surface prior to installation into the borehole.
 2. Connect PVC sections with solvent cement and secure with lag screws, as noted on the Drawings.
 3. If threaded pipe is used, ensure pipe threads are free from dirt or other debris which may reduce the integrity of the joint.
- G. Filter Pack (Gravel Backfill): Type 1 as specified in Section 31 23 00:
1. Clean washed, non-calcareous gravel.
 - a. Natural Gravels; no crushed stone or crushed concrete.
- H. Bentonite Seal: As specified in Section 31 23 00.
1. Under no circumstances will the use of powdered, flakes or granular bentonite be permitted.
- I. Backfill Material: as specified in Section 31 23 00.
1. Soil backfill material installed inside of well boring shall be non-granular, fine grained (clay and silts) material free of rocks, sticks, roots, and organic material.
 2. Source: On-site borrow area.
- J. Centralizers:
1. Centralizers shall consist of a minimum of four (4) 1/8 IN thick by 3/4 IN wide rigid PVC strips around the well casing.
 2. Centralizers shall be shaped such that they encompass the full diameter of the boring upon installation.
- K. Centralizer ID shall fit the OD of the well casing and be secured to the well casing with duct tape prior to well installation. Wellhead materials:
1. 2 IN DIA vertical QED wellheads.
 - a. Models: QED ORP 215 Wellhead.
 - b. QED 40640 Orifice kit.
 - c. QED stabilizer well cap kit:
 - 1) GWC62 for 6 to 2 IN connection.
 - d. QED adapter kit:
 - 1) AK030-6.
 2. Vertical models shall be used for all wellheads.
 3. Flexhose: QED Solarguard.
- L. Sample ports and port valves: Per Drawings and QED.
- M. Well Identification:
1. Paint the well identification number on the well casing on three (3) sides using 2 IN tall stenciled letters in white or yellow paint.
 - a. See Section 10 14 00.

- b. Lettering by hand or by any other means shall not be permitted.
- N. Geotextile:
 - 1. Subject to compliance with these specification products manufactured by the following firms are acceptable:
 - a. GSE Lining Technology, Inc.
 - b. Tenax Corporation.
 - 2. 16 OZ/SY geotextile.
- O. Wellbore Seal:
 - 1. Subject to compliance with these specification products manufactured by the following firms are acceptable:
 - a. Landtec / QED Environmental
 - 2. Wellbore seal for 6 IN casing with 10 FT by 10 FT skirt.
 - a. Part Number WBS-0610.

PART 3 - EXECUTION

3.1 PREPARATION

- A. All materials necessary to complete the installation of the gas extraction well shall be on-site prior to start of borehole drilling.
- B. Contractor and personnel involved in installation shall review and sign site-specific Health and Safety Plan.
- C. Contactor shall implement site specific asbestos waste control, handling and disposal plan and have all required personnel and equipment on site and adjacent to boring location.
- D. Undertake pre-boring survey and layout plan to confirm the locations, elevations and configuration of all wells, connecting piping systems and related components.
 - 1. Survey and stake the well locations and layout for all connected piping systems and obtain Engineers approval of location or modifications prior to initiating borings or trenching for connected piping.
 - a. Adjust locations as necessary to eliminate site conflicts and obtain the specified pipe slopes.
 - 1) Shallower than designated slopes are subject to Engineer's approval.
 - 2. Survey and stake the well, header, laterals and related piping and system component locations and obtain Engineers approval of location or modifications prior to drilling.
 - 3. Supply surveyed information to Engineer including northing, easting and elevation data at least one week prior to drilling.
 - 4. Well locations and depth of boring must be approved in writing by Engineer prior to beginning drilling.
 - 5. Final well schedule to be used for construction of the vertical extraction wells will be provided by the Engineer after reviewing the survey provided by the Contractor.

3.2 INSTALLATION

- A. General:
 - 1. Wells and related piping shall be constructed in accordance with the details shown on the Project Drawings and as noted in the Specifications.
 - 2. All wells will be installed in the general locations shown in the Contract Drawings.
 - a. See Drawings for pre-installation survey and information required for final component approval.
 - b. The well schedule shown on the Drawings is considered an estimate and is provided for general information purposes only.

- c. All field changes regarding the locations, depth, or dimensions specified in the Drawings shall be approved in writing by the Engineer and documented in the Record Drawings.
 3. Provide at all times a well driller and experienced personnel meeting the requirements of Part 1.2 B, above.
 4. Use dry drilling equipment only; no liquids are to be added during drilling.
 5. All final collection well drilling logs and construction diagrams shall be signed by the Contractor, the observer logging the holes and the individual undertaking the drilling operations.
- B. Well Hole Construction:
1. The drilled boring shall be specified by the Owner or Engineer, and shall extend to approximately no closer than within 15 FT above the top of the liner system elevation.
 - a. The bore for the well shall be straight and vertical.
 - b. In no instance will well bores be advanced and/or completed into the native soils beneath the landfill.
 2. Drill wells using a minimum 36 IN OD barrel or trap-door bucket auger.
 - a. Alternate drilling methods must be pre-approved by the Engineer.
 3. If a layer of sand or the liner is encountered while boring, drilling shall immediately cease and the Engineer shall be contacted immediately.
 4. Under no circumstances, are the boring depths approved by the Engineer to be exceeded.
 5. Wet Borings, if Encountered:
 - a. The Engineer shall be immediately notified if a wet boring conditions is encountered.
 - b. If liquid is encountered in a boring, the Contractor may be directed by the Engineer to drill beyond the point at which it was encountered.
 - c. If wet conditions remain, at the direction of the Engineer, the boring may be terminated and the length of slotted pipe adjusted by the Engineer.
 - d. If wet conditions cease then drilling will continue to the designated depth.
 - e. If liquid is encountered in a boring at a shallow depth, the Engineer may decrease the well boring depth and length of slotted pipe or may relocate the well.
 - f. As soon as drilling is completed, a safety screen shall be placed over the top of the bore.
 - 1) Safety screen shall stay in place until backfilling is within 1 FT of the surface.
 - 2) Safety screen size should be large enough to accommodate all backfill materials and any tools used during backfill yet not large enough for any human to accidentally fall through.
 - g. All bore holes that are not completed at the end of the day they are drilled are to be covered with a metal well cover (plate) capable of preventing any persons from falling into the hole.
 - 1) The hole must then be covered with a piece of plywood to further and substantially cover the entire hole.
 - 2) Soil shall be placed on top of the plywood to completely cover the plywood to further prevent gas emissions.
 - a) Substitute safety measure may be used if approved by the Engineer.
- C. Obstruction:
1. If there is a drilling obstruction encountered in the landfill that, despite the best reasonable efforts of the driller cannot be penetrated, the Contractor shall inform the Engineer and request direction from the Owner or Engineer relative to completion of the well.
 - a. The Owner or Engineer shall be the sole authority for deciding on one of the following:
 - 1) Additional drilling efforts are needed at no additional compensation.

- 2) The hole shall be abandoned.
- 3) The boring shall be accepted at the obstructed depth.
 - a) The well shall be completed at this new depth.
 - b) Compensation shall be for the modified footage of the boring and associated well features.
- b. Abandoned Borings:
 - 1) If the borehole has not reached a sufficient depth and boring equipment is not able to further advance the borehole, the Engineer may direct that the borehole be abandon and no well constructed in this location.
 - a) If a borehole is to be abandoned it must first be backfilled with cuttings removed during drilling.
 - (1) The top 2 FT of the boring shall be backfilled with on-site clay soils and compacted to ground surface.
 - (a) Supply additional soil from on-site source to backfill or refill the boring and to correct any settlement within the abandoned borehole.
 - (2) If cuttings are unsuitable as backfill (for example, box springs, tires, etc.) the Contractor shall use soil backfill material.
 - 2) Compensation for abandoned borings shall be at the unit price for Vertical Extraction Well Abandonment.

D. Well Installation:

1. Fabricate the well casings in accordance with the Drawings and Specifications.
 - a. Well casings shall be capped at the surface connection prior to installation to prevent gas from escaping and to prevent backfill or other material from entering the pipe.
 - b. No pressure tests are required for the well casing.
2. Measure depth of boring.
3. Once the final boring depth has been achieved, install the geotextile at the bottom of the borehole by wrapping a small amount of filter pack material and loosely binding the geotextile. Drop the geotextile and filter pack material into the borehole such that the geotextile will spread out at the bottom of the boring upon impact.
4. Place 24 IN of gravel filter pack in the bottom of the boring prior to installing well casing.
5. The well casing shall be installed in the center of the borehole and shall be plumb.
6. Connect the well screen and a sufficient length of well casing including bottom cap.
7. Install centralizers as needed in accordance with the Drawings.
8. Lower screen/casing into the boring.
 - a. In no instance, drive or force into position.
 - b. Take all necessary precautions to maintain the well screen and casing pipe vertically plumb and centered in boring during the entire backfilling of the borehole.
 - c. If Engineer is not satisfied that screen and casing are properly set and centered the Contractor may be required to re-set at no additional cost.
9. If the pipe is installed out of plumb, as determined by the Engineer, the Contractor shall correct the alignment at no additional cost.
10. Join screen, settlement joint and riser sections for a single interval by solvent welding and lag screws or threaded pipe as shown on Drawings.
11. Fully extend the upper riser section and secure pipe prior to backfilling.
12. Initially extend casing to 4 FT above final cover surface elevation, unless otherwise instructed by Engineer.
13. At the end of each day, cap the ends of all joined pipes longer than 20 FT to prevent materials or animals from entering the pipe.

14. Continue placement of gravel filter pack into the annulus between the well screen/casing and the borehole wall until the gravel filter pack is 24 IN minimum above the top of the well screen.
 - a. All filter pack materials shall be placed by methods approved by Engineer and designed to minimize disturbance of bore hole or impact to pipe during placement.
 15. Take periodic depth readings/soundings to monitor the elevation of the gravel filter pack and detect any bridging.
 - a. Soundings shall be taken at no more than 5 FT intervals.
 - b. If bridging is detected use approved vibratory or rodding methods to remove bridging.
 - c. No other compaction should be undertaken.
 16. Place a 2 FT minimum soil plug (backfill soil) on top of the filter pack.
 17. After ensuring that the casing is centered in the borehole, place 2 FT minimum bentonite seal on the soil plug in maximum 12 IN lifts.
 - a. Measure depth of bentonite seal after tamping each lift.
 - b. Hydrate bentonite chips/pellet or granulated bentonite in the bore hole per supplier's recommendations after placement and prior to installing clean backfill.
 - c. Measure depth of bentonite seal after wetting each lift.
 18. Fill borehole with 8 FT of clean backfill and install second bentonite seal as specified above and shown on the Drawings.
 19. Fill the remainder of the bore hole to grade with clean backfill in maximum 12 IN lifts.
 - a. Soil backfill in the upper portion of the boring shall be rodded or otherwise compacted in the boring to provide even distribution and firm compaction to ground surface.
 20. The grate over the borehole shall not be removed until the borehole is backfilled to within 1 FT of ground surface and backfill is sufficiently compacted.
 21. Install wellbore seal around vertical extraction well casing in accordance with the drawings and manufacturer's recommendations.
 22. Collect and clean up drilling debris and cuttings around the work areas as required by Section 01 35 05 and Section 01 11 20.
 - a. Dispose in active landfill as required by Section 01 35 05 and Section 01 11 20.
 23. Mound soil around the well riser to drain storm water away from the well.
- E. Drill Rig and Other Equipment Movements:
1. Undertake ground leveling, benching, towing and/or restoration that may be necessary for movement of the drill rig on the landfill property.
 2. Ensure that movement of equipment does not damage vertical wells, horizontal collectors, piping or other components installed during this project or previous installations.
 3. Sequence movement to avoid impacts to existing landfill operations and to ensure access for required construction.
- F. Installation of Connected Piping:
1. Excavate trench to width and at the locations shown in the Drawings or otherwise approved.
 2. See Section 31 23 00 and Section 31 23 33 on trench construction.
 3. Engineer shall inspect completed trench to determine if additional excavation and stabilization of subgrade are required.
 4. All horizontal and interconnected piping shall extend to the minimum depth indicated in the Contract Drawings.
 - a. Trenches shall be reasonably straight.
 - b. In no instance will trenches be advanced and/or completed to depths greater than those shown on the Contract Drawings or approved as part of the pre-excavation survey, unless approved by the Engineer in advance.

- c. See Section 31 23 00 and Section 31 23 33 for adjustment and backfill requirements where deeper trenching is required to achieve designed slopes, design intent or to stabilize subgrade.
- G. Solid Waste Disposal:
 - 1. See Section 01 35 05.
 - 2. Dispose of cuttings at the working face of the landfill or locations designated by the Owner.
 - a. Disposal shall occur prior to the end of each working day.
 - 1) See Section 01 35 05 and Section 01 11 20 for requirements to contain waste materials until disposal is complete.
 - b. The Owner will not charge Contractor a tipping fee for waste material originating on site.
 - c. Excavated solid waste must be covered during any precipitation event to prevent storm water generated runoff (leachate) from leaving the waste disposal area.
- H. Temporary Cap:
 - 1. Temporarily cap the riser pipe of the vertical extraction well immediately after well pipe installation to prevent objects from entering the well and venting of landfill gases into the atmosphere.
 - 2. Provide lag screws as necessary to secure the cap against the internal gas pressure within the well.
 - 3. Remove this cap during the installation of the wellheads.
- I. Wellhead Installation:
 - 1. Wellheads shall be installed in accordance with manufacturer's recommendations.
 - a. Pipe sections of the wellhead shall be air-tight.
 - b. Any leaks shall be repaired at no additional cost to the Owner.
 - 2. Install flexible hose so that hose has no sags, as show on the Drawings.
 - a. Flexible hose shall not be taut.
 - b. Provide enough slack, as approved by the Engineer, to accommodate minor pipe settlement, while not allowing looping or dipping.
 - 3. Wellhead to lateral connection shall be made with a 2 IN flexible hose fastened with stainless steel pipe clamps (or approved alternatives).
- J. Settlement:
 - 1. Any settlement around the completed wells, over abandoned boreholes or at wellheads, shall be backfilled within three (3) weeks after placement of backfill from the level of the subsidence to 6 IN above existing grade with the on-site clay soil materials.

3.3 FIELD QUALITY CONTROL

- A. Submit the following records to the Engineer after each day's work.
 - 1. Daily driller's report: During the drilling of the vertical extraction wells, prepare daily driller's report that includes:
 - a. Date.
 - b. Location (x, y coordinates).
 - c. Boring Identification Number.
 - d. Weather Conditions.
 - e. Daily Activities Undertaken.
 - f. Equipment Used.
 - g. All Types and Quantities of Materials Used.
 - h. Well Construction (materials used, type, quantity, etc.).
 - i. Number of Feet Drilled at Each Location.

- j. Number of Hours on the Project Site (rig time, down time, stand-by, etc.).
 - k. Names of All Personnel Involved With or Observing Drilling Activities, including Their Duties.
 - l. The Footage of Well Screen and Casing Set.
 - m. Other Pertinent Data as May Be Requested by the Engineer.
2. Driller's log: During the drilling of the wells, prepare and maintain a complete log that includes the following for each Boring:
- a. Logger's Name.
 - b. Date.
 - c. Location (x, y coordinates).
 - d. Boring Identification Number.
 - e. Equipment Used.
 - f. Drill Crew.
 - g. Time of Day Associated with Each Boring.
 - h. The Reference Point for All Depth Measurements.
 - i. The Depth at which Each Soil to Solid Waste Change Occurs.
 - j. The Thickness of Each Soil or Solid Waste Stratum.
 - k. The Depth at which Liquid/Leachate is encountered, if applicable.
 - l. Visual description of Solid Waste at a minimum of 10 FT Intervals:
 - 1) Type of waste encountered including the estimated percentage of the following components (by volume) on visual inspection:
 - a) Paper/Cardboard Fibers.
 - b) Plastic.
 - c) Yard waste or vegetation.
 - d) Construction debris.
 - e) Textiles.
 - f) Tires.
 - g) Sludge.
 - h) Soils.
 - i) Others of significance.
 - 2) Temperature of excavated refuse.
 - m. Depth and Location of Any Lost Drilling Material, Tools, or Any Other Unusual Occurrences.
 - n. The Total Depth of Completed Extraction Well.
 - 1) The total depth of boring.
 - 2) Well screen interval.
 - 3) Solid pipe casing interval.
 - 4) Location of centralizers.
 - 5) Length of above ground riser stick-up pipe.
 - 6) Gravel filter pack depth interval.
 - 7) Bentonite seal depth intervals.
3. Daily trencher's report: During the trenching of the piping systems, prepare daily trenchers report.
- B. Typed final copies of the well logs and trenchers reports shall be submitted with the Record Drawings.
- 1. Handwritten logs will not be acceptable for submittal with the Record Drawings.

END OF SECTION

SECTION 31 23 00

EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Earthwork - excavation, backfilling, grading, compaction, disposal of waste and surplus materials, and other Earthwork related work.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Section 31 23 33 – Trenching, Backfilling and Compacting for Utilities.
 - 2. Section 40 05 00 – Pipe and Pipe Fittings – Basic Requirements.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. ASTM International (ASTM):
 - a. C33/C33M, Standard Specification for Concrete Aggregates.
 - b. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 FT-LBF/FT³).
 - c. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 FT-LBF/FT³(2,700 kN-M/M³)).
 - d. D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - e. D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - f. D4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
 - g. D4632, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
 - 2. Occupational Safety and Health Administration (OSHA):
 - a. 29 CFR Part 1926.650, Safety and Health Regulations for Construction - Excavations, referred to herein as OSHA Standards.

1.3 DEFINITIONS

- A. Excavation:
 - 1. Consists of removal of material encountered to subgrade elevations required or indicated.
 - 2. Includes excavation of soils; pavements and other obstructions visible on surface; underground structures, utilities, and other items indicated to be demolished and removed; boulders; and rock.
 - 3. Excavation of refuse.
- B. Borrow:
 - 1. Borrow soil available on-site. Contractor responsible for confirming all materials suitable for construction. Contractor to coordinate with Owner for availability and usage requirements.
- C. Materials:
 - 1. Clean Soil:
 - a. Any soil free of organics or deleterious materials with no rocks or lumps greater than 1 IN.

- 2. Unsuitable Soils:
 - a. Excessively wet, soft, loose, high in organic content, solid waste or soils containing solid waste, or granular soil materials located in trenches and excavations, or as otherwise directed by Engineer that are not considered as acceptable subgrade for the support of pipes or other structures.
 - b. In-place (compacted and landfilled) solid waste, as defined by State of Virginia regulations, requiring excavation beyond the depths otherwise required for construction shall be considered as Unsuitable Soils.
- 3. Solid Waste:
 - a. As defined by Iowa Administrative Code, Title 11, Chapter 445B, Subchapter 4.
- D. Non-Structural Fill/Backfill: Soil materials placed and compacted to achieve finish grade elevations that do NOT support foundations, slabs, paving, or other flatwork.
- E. Unauthorized Excavation:
 - 1. Consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer.
 - a. Unauthorized excavation, as well as associated remedial work as directed by Engineer, shall be at Contractor's expense.
 - 2. Unsuitable Soil Materials: Soil materials encountered at or below subgrade elevation of insufficient strength and stiffness to support construction as determined by the Engineer.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
 - 2. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Manufacturer's installation instructions.
- B. Samples:
 - 1. Coordinate samples and testing for approval of off-site materials with the Engineer.

1.5 PROJECT CONDITIONS

- A. Salvageable Items: Carefully remove items to be salvaged, and store on Owner's premises unless otherwise directed.
- B. Dispose of waste materials in the working face prior to site closing daily.
 - 1. Burning, as a means of waste disposal, is not permitted.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Backfill: Excavated refuse backfill allowed in trenches as approved by the Owner, as indicated in the Drawings. Clean borrow soil available on site shall be utilized for a minimum 1 FT below ground surface.
- B. Granular Fill Under Piping:
 - 1. Clean, granular material.
 - 2. Selected material approved by Engineer from off-site borrow area.
- C. Bentonite shall consist of a mixture of high-swelling sodium montmorillonite clay referred to as sodium bentonite and silica sand #20.
 - 1. Hydrate bentonite with the following procedure"

- a. Bring water tank to borehole and open spigot.
- b. Empty bags of bentonite one at a time into the borehole
- c. Place 100-gallons per 12-inches of bentonite.
- d. Estimate 200-gallons per well seal.
- 2. Sodium bentonite shall be in accordance with the following:
 - a. Colloid content in excess of 70 PCT.
 - b. 100 PCT passing #10 sieve.
 - c. 20 PCT maximum passing #200 sieve.
 - d. Pellet or chip form of sodium bentonite consisting of greater than 85 PCT sodium montmorillonite, without additives.
 - 1) Under no circumstances will the use of powdered or flake bentonite be permitted.

PART 3 - EXECUTION

3.1 PROTECTION

- A. Erosion Control:
 - 1. Clean paved roadways daily of any spillage of dirt, rocks or debris from vehicles and equipment entering or leaving site caused by Contractor.
 - 2. Conduct work to minimize erosion of site. Remove eroded material washed off-site.
 - a. If necessary or requested by Engineer, construct stilling areas to settle and detain eroded material.
- B. Protect existing surface and subsurface features on-site and adjacent to site as follows:
 - 1. Provide barricades, coverings, or other types of protection necessary to prevent damage to existing items indicated to remain in place.
 - 2. Protect and maintain benchmarks, monuments or other established reference points and property corners.
 - a. If disturbed or destroyed, replace at own expense to full satisfaction of Owner and controlling agency.
 - 3. Verify location of utilities.
 - a. Omission or inclusion of utility items does not constitute nonexistence or definite location.
 - b. Secure and examine local utility records for location data.
 - c. Take necessary precautions to protect existing utilities from damage due to any construction activity.
 - 1) If utilities are indicated to remain in place, provide adequate means of support and protection during earthwork operations.
 - 2) Do not interrupt existing utilities serving facilities occupied by Owner or others, during occupied hours, except when permitted in writing by Owner and then only after acceptable temporary utility services have been provided.
 - 3) Obtain Owner's approval prior to disconnecting any utility service.
 - d. Repair damages to utility items at Contractor's expense.
 - e. In case of damage, notify Engineer at once so required protective measures may be taken.
 - 4. Maintain free of damage, existing sidewalks, structures, and pavement, not indicated to be removed.
 - a. Protect new and existing structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
 - b. Any item known or unknown or not properly located that is inadvertently damaged shall be repaired to original condition.

- c. All repairs to be made and paid for by Contractor.
- 5. Provide full access to public and private premises, fire hydrants, street crossings, sidewalks and other points as designated by Owner to prevent serious interruption of travel.
- 6. Maintain stockpiles and excavations in such a manner to prevent inconvenience or damage to structures on-site or on adjoining property.
- 7. Avoid surcharge or excavation procedures which can result in heaving, caving, or slides.

3.2 WASTE, STOCKPILES AND EXCESS MATERIALS

- A. Salvageable Items: If required, carefully remove items to be salvaged, and store on Owner's premises at Owner designated locations unless otherwise directed.
- B. Haul excess soil, Unsuitable Soils and granular materials from excavation and place at locations as designated by the Owner.
 - 1. Do not mix soil types unless approved by Engineer.
 - 2. Use Owner haul roads rather than landfill access roads when and where possible.
- C. If required, stockpile excess soil materials at locations designated by Owner.
- D. Remove solid waste encountered in grading and excavation, and as a result of weather events and reuse as allowed and/or take to active face of the landfill for disposal daily, prior to landfill closure.

3.3 SITE EXCAVATION AND GRADING

- A. The work includes all operations in connection with excavation, borrow, construction of soil fills, rough and fine grading, and management of excavated materials in connection with construction of the proposed facilities.
- B. Provide dewatering system where necessary to successfully complete excavation, trenching, compaction, and other construction requirements.
 - 1. Pump accumulated stormwater as required to prevent damage to trenches and other construction and to allow construction access.
 - 2. Liquids removed from areas of waste or having been in contact with waste shall be deemed leachate and shall be either returned to the landfill or placed in the Owners leachate handling and storage system.
- C. Excavation and Grading:
 - 1. Perform as required by the Contract Drawings.
 - 2. Contract Drawings may indicate both existing grade and finished grade required for construction of Project.
 - a. Survey and locate all units, structures, slopes, piping, and grades and establish their elevations prior to initiation of excavations.
 - b. Perform other layout work required.
 - c. Replace property corner markers to original location if disturbed or destroyed.
 - 3. Maintain all soil layers intact in all respects including thickness, moisture content, density, free of waste, free of rill erosion, and free of weather-related damage.
 - a. Do not allow gravel stockpiles or placed material to become contaminated with soils or waste.
 - b. Remove any impacted soil.
 - c. Locate existing landfill gas collection and control structures, where tie-ins are required.
 - d. As part of the subsequent excavation, provide careful excavation in strips to allow separation of soils and waste, where applicable.
 - 1) If waste or leachate is encountered during this work, provide appropriate environmental protection.

- e. Remove Unsuitable Soils including: Wet, soft or loose soil materials encountered below specified excavation depth, structures and where designated by Engineer.
 - 1) Unsuitable Soils shall be hauled to designated portion of the active landfill area.
 - f. Do not excavate below indicated grades or trench depths, unless required to remove Unsuitable Soils or specifically designated to construct structures.
 - 1) No payment will be made for unauthorized excavation below designated grades or trench depths.
 - 2) No payment will be made for excavated quantities for ditches wider than indicated on Drawings.
 - g. Where excavation and grading expose solid waste, ensure that solid waste is covered by at least 6 IN of clean soil at the end of each day on which excavation and grading exposes such waste.
4. Protection of finish grade:
- a. During construction, shape and drain embankment and excavations.
 - b. Maintain ditches and drains to provide drainage at all times.
 - c. Protect graded areas against action of elements prior to acceptance of work.
 - d. Reestablish grade where settlement or erosion occurs.
- D. Borrow:
- 1. Provide necessary amount of approved fill compacted to density equal to that indicated in this Specification.
 - 2. Borrow soil available on-site. Contractor responsible for confirming all materials suitable for construction. Contractor to coordinate with Owner for availability and usage requirements.
- E. Construct Backfill:
- 1. Construct embankments and fills at locations and to lines of grade indicated.
 - a. Completed fill shall correspond to shape of typical cross section or contour indicated regardless of method used to show shape, size, and extent of line and grade of completed work.
 - 2. Excavated refuse backfill allowed as approved by the Owner, as indicated on the Drawings. Clean on site borrow soil shall be utilized for a minimum 1 FT below ground surface.
 - 3. Take care not to disturb underlying geosynthetics, gravel soils and piping.
 - 4. If subsidence or damage occurs, repair to the details shown on the Drawings or tolerance listed above.
 - 5. Compact soils as required to obtain specified density. Selection of appropriate equipment is the Contractor's responsibility.
 - a. In general, compact cohesive soils by sheepfoot, and granular soils by pneumatic rollers, vibrators, or by other equipment as required to obtain specified density.
 - b. Control moisture for each layer as necessary to meet requirements of compaction.

3.4 USE OF EXPLOSIVES

- A. Blasting with any type of explosive is prohibited.

3.5 COMPACTION DENSITY REQUIREMENTS

- A. Obtain approval from Engineer with regard to suitability of soils and acceptable subgrade prior to subsequent operations.
- B. Provide dewatering system necessary to successfully complete compaction and construction requirements.
- C. Remove frozen, loose, wet, or soft material and replace with approved material as directed by Engineer.
- D. Stabilize subgrade with well graded granular materials as directed by Engineer.

- E. Soil shall be placed in the following required lift thickness, unless otherwise noted for a specific application:
 - 1. Backfill:
 - a. Cohesive Soils: 8 IN maximum loose, 6 IN maximum compacted.
 - 2. Sands and Gravel: 8 IN maximum loose.
 - 3. All other areas of compacted soil including structural fill: 8 IN maximum loose.
- F. Place lifts horizontally and compact each layer, when required, to the required thickness, density, and moisture content prior to placing additional soil fill.
- G. Compaction densities of the various materials and layers shall comply with the more stringent of pipe manufacturer's recommendations and the following requirements:
 - 1. Trench Backfill (outside limits of waste):
 - a. Cohesive Soils: 90%, ASTM D698.
 - b. Sands and Gravels: 85% ASTM D698.
 - c. Backfill with Solid Waste: Tamp to a firm and unyielding condition.
 - d. All other areas: 85%, ASTM D698.

3.6 FIELD QUALITY CONTROL

- A. All excavation, trenching, and related sheeting, bracing, etc. shall comply with the requirements of OSHA Standards, and state requirements. Where conflict between OSHA and state regulations exists, the more stringent requirements shall apply.

END OF SECTION

SECTION 31 23 33

TRENCHING, BACKFILLING, AND COMPACTING FOR UTILITIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavation, trenching, backfilling, and compacting for all underground utilities, landfill gas lines, and condensate discharge piping.
- B. Work under this Section includes trenching and grading activities inside the limits of an active municipal solid waste landfill system. It is expected that combustible, asphyxiant, and hazardous gases will be venting from trenches and excavation inside and outside the limits of MSW. The Contractor's bid price shall include provision for all equipment and procedures necessary to safely install piping under this condition. All work shall be performed by qualified workers in accordance with the best standards and practices available.
- C. No classification of type of excavated materials will be made for piping excavation and trenching.
 - 1. Excavation includes all soil and solid waste regardless of type, character, composition, moisture, or condition thereof.
- D. Related Specification Sections include but are not necessarily limited to:
 - 1. Section 31 23 00 – Earthwork.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. ASTM International (ASTM):
 - a. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 FT-LBF/FT³ (600 kN-M/M³)).
 - b. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 FT-LBF/FT³ (2,700 kN-M/M³)).
 - c. D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - d. D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - e. D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - f. D4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
 - 2. Occupational Safety and Health Administration (OSHA):
 - a. 29 CFR Part 1926.650, Safety and Health Regulations for Construction - Excavations, referred to herein as OSHA Standards.
- B. Safety:
 - 1. All work shall be performed in strict accordance with all local, State, U.S. Occupational Safety and Health Administration (OSHA) and other applicable Federal regulations regarding trenching operations and trench safety.
 - 2. All Work shall be performed in strict accordance with the Health and Safety requirements set forth in the General Conditions of the Contract Documents.

3. Excavation may be made without sheeting and bracing within the limitations and requirements of the governmental agencies having jurisdiction. Failure of the Engineer to order the use of bracing or sheeting and shoring or direct changes to systems in place, shall not in any way or to any extent relieve the Contractor of any responsibility concerning the condition of excavations or of his obligations under the Contract. The Contractor shall be responsible for the condition of all excavations. All slides and caves shall be removed without extra compensation, at whatever time and under whatever circumstances that they may occur.
4. All excavation shall comply with the applicable requirements as stated in the following:
 - a. OSHA excavation safety standards 29 CFR, 1926-650, subpart P.
 - b. Trench safety guidelines as specified by the Landfill Gas Division of the Solid Waste Association of North America (SWANA).
5. Contractor shall monitor the ambient air concentrations within and around excavations and take appropriate safety measures as needed.
6. Tests may be conducted and recorded by the Engineer in accordance with this Section.
7. Use adequate numbers of skilled workers who are trained and experienced in the necessary crafts and who are familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
8. Use equipment adequate in size, capacity, and numbers to accomplish the work of this Section in a timely manner.
9. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the Owner and Engineer.

1.3 DEFINITIONS

A. Excavation:

1. Consists of removal of material encountered to subgrade elevations required or indicated.
2. Includes excavation of soils; pavements and other obstructions visible on surface; underground structures, utilities, and other items indicated to be demolished and removed; boulders; and rock.
3. All excavation will be defined as unclassified.

B. Borrow:

1. Borrow soil available on-site. Contractor responsible for confirming all materials suitable for construction. Contractor to coordinate with Owner for availability and usage requirements.

C. Materials:

1. Clean Soil:

- a. Any soil free of organics or deleterious materials with no rocks or lumps greater than 1 IN.

2. Unsuitable Soils:

- a. Excessively wet, soft, loose, high in organic content, solid waste or soils containing solid waste, or granular soil materials located in trenches and excavations, or as otherwise directed by Engineer that are not considered as acceptable subgrade for the support of pipes or other structures.
- b. In-place (compacted and landfilled) solid waste, as defined by State of Virginia regulations, requiring excavation beyond the depths otherwise required for construction shall be considered as Unsuitable Soils.

3. Solid Waste:

- a. As defined by Iowa Administrative Code, Title 11, Chapter 445B, Subchapter 4.

1.4 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
 2. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Manufacturer's installation instructions.
 3. Submit respective pipe or conduit manufacturer's data regarding bedding methods of installation and general recommendations.
 4. Proposed earthwork moving, placement, processing and compaction equipment, sequence of material movement, and procedure for review before starting construction.
- B. Pipe slope determinations and survey notes for pre-construction layout, see Part 3.11 Field Quality Control.
- C. Layout Drawing showing how the header and laterals will be marked with stations for the conformance surveys.
1. The example layout and stations must be consistent with the requirements of Section 40 05 00.
- D. Informational Submittals:
1. Trench shield (trench box) certification if employed:
 - a. Specific to Project conditions.
 - b. Re-certified if members become distressed.
 - c. Certification by registered Professional Structural Engineer, registered in the State of Iowa.
 - d. Engineer is not responsible to, and will not, review and approve.

1.5 SITE CONDITIONS

- A. Avoid overloading or surcharge a sufficient distance back from edge of excavation to prevent slides or caving.
1. Maintain and trim excavated materials in such manner to be as little inconvenience as possible to public and adjoining property owners.
- B. Provide full access to landfill, as designated by Owner, to prevent serious interruption of travel or landfill operations.
- C. Marks, monuments or other established points and reference points and if disturbed or destroyed, replace items to full satisfaction of Owner and controlling agency.
- D. Verify location of existing underground utilities prior to excavation.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Backfill Material:
1. See Section 31 23 00.
 2. Excavated refuse backfill allowed as approved by Owner and as shown on the Drawings.
 3. Clean borrow soil only shall be utilized minimum 1 FT below ground surface, as shown on the Drawings.
 4. Borrow soil available on-site. Contractor responsible for confirming all materials suitable for construction. Contractor to coordinate with Owner for availability and usage requirements.
- B. Bedding Materials:
1. As approved by the Engineer.
 2. Pipe bedding material shall be appropriate for spreading with hand tools and compaction with a bucket to provide a level and stable surface for pipe placement.

- a. Clean dry coarse-grained sand shall be used for pipe bedding and backfill to midway to the top of the installed pipe.
3. Contractor responsible for importing pipe bedding material from off-site borrow.

PART 3 - EXECUTION

3.1 GENERAL

- A. Remove solid waste encountered in trenching, grading and excavation and as a result of weather events and reuse as allowed and/or dispose of at the active face of the landfill or as otherwise directed by the Owner.
 1. Weather related solid waste will not be paid for as Unsuitable Soils.
- B. Remove and dispose of Unsuitable Soils as directed by Engineer.
- C. No payment for Unsuitable Soils encountered in trench excavations above the design elevation for bottom and outside the neat excavation lines of the trench.

3.2 PROTECTION

- A. Protection of Persons and Property:
 1. Barricade open holes and depressions occurring as part of the Work, and post warning lights on property adjacent to or with public access.
 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
 3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.
- B. Provide full access to public and private premises, the landfill, leachate collection system, leachate riser pipes, road crossings, landfill gas flare station, monitoring wells and piezometers, gas wells and components of the active gas collection system, and other points as designated by Owner to prevent serious interruption of travel.
- C. Protect existing surface and subsurface features on-site and adjacent to site as follows:
 1. Provide barricades, coverings, or other types of protection necessary to prevent damage to existing items indicated to remain in place.
 2. Protect and maintain benchmarks, monuments or other established reference points and property corners.
 - a. If disturbed or destroyed, replace to the full satisfaction of Owner and controlling agency at no additional cost to Owner.
 3. Verify location of utilities. Omission or inclusion of utility items does not constitute non-existence or definite location.
 - a. Secure and examine local utility records for location data.
 - b. Take necessary precautions to protect existing utilities from damage due to any construction activity.
 - c. Repair damages to utility items at Contractor's own expense.
 - d. In case of damage, notify Owner and utility company at once so required protective measures may be taken.
 4. Maintain free of damage existing vegetation, culverts, roadways, fence, structures, and pavement, not indicated to be removed.
 - a. Any item known or unknown or not properly located that is inadvertently damaged shall be repaired to original condition.
 - b. All repairs to be made and paid for by Contractor.
 5. Maintain stockpiles and excavations in such a manner to prevent inconvenience or damage to structures on the Owner's property or on adjoining property.

6. Avoid surcharge or excavation procedures that can result in heaving, caving, or slides.

3.3 PREPARATION

- A. Install and provide all required features for protection of human health and safety and to protect the environment.
- B. Provide full access to public and private premises, the landfill, leachate collection system, leachate riser pipes, road crossings, landfill gas flare station, monitoring wells and piezometers, gas wells and components of the active gas collection system, and other points as designated by the Owner to prevent serious interruption of travel.
- C. Identify required lines, levels, contours, and datum locations.
 1. Prior to trenching and pipe installation, Contractor shall stake out the entire proposed trench alignment.
 - a. See Section 01 71 23 on pre-construction surveying and requirements to confirm grades and pipe slopes prior to trenching.
 2. The proposed alignment must be approved by the Engineer prior to the Contractor beginning excavation activities.
 3. Routes for all pipes must meet the minimum pipe slopes listed on the Drawings or otherwise approved by the Engineer.
 4. Survey notes with proposed pipe slope calculations shall identify conflicts between the proposed Work and existing features.

3.4 PROCEDURES

- A. Protection of Existing Utilities:
 1. Maintain a minimum 12 IN horizontal and vertical separation from existing utilities and the landfill gas transmission pipe, unless otherwise specified or approved by Engineer.
 2. Exposed utilities shall be properly supported at all times if undermined.

3.5 EXCAVATION

- A. Unclassified Excavation: Remove rock excavation, clay, silt, gravel, hard pan, loose shale, and loose stone as directed by Engineer.
- B. Trench Excavation:
 1. Excavate trenches by open cut method to depth shown on Drawings and based on pre-construction survey as necessary to accommodate work.
 - a. Trench width shown on details.
 2. Avoid overloading or surcharge a sufficient distance back from edge of excavation to prevent slides or caving.
 3. Trenches across roads and ditches shall be excavated and backfilled in the same day.
 - a. Trenching shall occur during non-public access hours (unless otherwise approved by Owner) and once started shall proceed expeditiously and without interruption until completed.
 - b. Trenching for access road crossings shall not in any manner interrupt traffic flow on landfill access roads.
 4. Support existing utility lines where proposed work crosses at a lower elevation.
 - 1) Stabilize excavation to prevent undermining of existing utility.
 5. The maximum allowable length of open trench that can be left overnight is 40 FT, unless otherwise approved by Owner.
 - a. In no case shall waste be exposed overnight in an excavation or trench.
 - b. Field adjust limitations as weather conditions dictate.

6. Any trench or portion of trench, which is opened and remains idle for 3 calendar days, or longer, may be directed to be immediately refilled, without completion of work, at no additional cost to Owner.
 - a. Said trench may not be reopened until Owner is satisfied that work associated with trench will be complete with haste in accordance with the project specifications.
- C. Excavation for Appurtenances:
 1. 12 IN (minimum) clear distance between outer surface and embankment, unless otherwise notated on Drawings.
 2. Excavate as shown on the Contract Drawings and details.
 3. Trench width as shown on details.
 4. Provide gas monitoring in trench as required by Health and Safety Plan.
 5. Dispose of excavated refuse at the active face of the landfill daily, prior to landfill closure.
- D. Unauthorized Excavation:
 1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or trench width dimensions without specific instruction from the Engineer.
 2. Backfill and compact unauthorized excavations as directed by the Engineer.
- E. Shoring, Bracing and Stability of Excavation:
 1. Shore and brace excavations where slope cutbacks exceed criteria in accordance with 29 CFR 1926.
 2. Maintain shoring and bracing in excavations regardless of the time period excavations will be open.
 3. Remove shoring and bracing as excavation progresses.

3.6 PREPARATION OF FOUNDATION FOR PIPE LAYING

- A. Over-Excavation:
 1. Backfill and compact to maximum attainable density.
 2. Backfill with granular bedding material.
- B. Subgrade Stabilization:
 1. Stabilize the subgrade when directed by the Owner.
 2. Observe the following requirements when unstable trench bottom materials are encountered.
 - a. Notify Owner when unstable materials are encountered.
 - 1) Define by drawing station locations and limits.
 - b. Remove unstable trench bottom caused by Contractor failure to dewater, rainfall, or Contractor operations.
 - 1) Replace with subgrade stabilization with no additional compensation.
- C. In-Place Cover Soils:
 1. Soils placed above waste for daily cover requirements or as the final layer in the trench backfill over compacted waste shall be compacted to maximum attainable density.

3.7 BACKFILLING METHODS

- A. Place gravel or bedding material in trench to the lines and slopes established in the pre-construction survey and design assessment, as necessary.
 1. Comply with the following:
 - a. Ensure bottom of excavation is firm.
 - 1) Tamp solid waste to establish a firm foundation.
 - b. Place initial lift of backfill so as to achieve a minimum compacted lift thickness of 6 IN.

- 1) See Section 31 23 00 on maximum lift thicknesses.
- 2) A compacted layer of sand and gravel may be used as a leveling course at the Contractors option.
- 3) A compacted layer of sand and gravel may be used to help provide uniform support and leveling to tees, risers and similar joints.
- c. After placing pipe or appurtenances install primary, initial lift of bedding material adjacent to pipe (or appurtenance) in maximum 8 IN lift thickness.
- d. Hand place, shovel slice, and pneumatically tamp in the haunch area.
- e. Place subsequent soils in lifts not exceeding 8 IN and carefully compact adjacent to pipe.
- f. Observe specific manufacturer's recommendations regarding backfilling and compaction adjacent to piping and other appurtenances.
- g. Avoid displacing joints and appurtenances or causing any horizontal or vertical misalignment, separation, or distortion.
- h. Carefully compacted backfill shall continue in lifts until bedding is 6 IN above the top of the pipe or appurtenance.
 - 1) Bring lifts up uniformly on both sides of pipe or appurtenance.
 - 2) Carefully compacted backfill shall include hand tampers, suitable power compactors that will not cause movement of the pipe or appurtenance during compaction.
 - 3) Carefully compacted backfill shall not utilize impact tampers directly above the pipe or appurtenance.
- i. Once carefully compacted fill extends a minimum of 6 IN above top of crown of pipe, standard backfill and compaction methods may be used, provided such methods don't damage or cause movement of the pipe.

B. Water flushing for consolidation is not permitted.

3.8 COMPACTION

A. General:

1. Place and assure bedding, backfill, and fill materials achieve an equal or higher degree of compaction than undisturbed materials adjacent to the work.
2. In no case shall degree of compaction below minimum compactions specified be accepted.
3. Compact soils around and on top of pipe using handheld or handheld-pneumatic tampers in areas designated as Carefully Compacted Backfill.
 - a. Take necessary precautions to prevent damage to both horizontal and vertical components of the piping.

B. Compaction Requirements:

1. Unless noted otherwise on Drawings or more stringently by other Specification Sections, comply with following minimum trench compaction criteria.
 - a. Solid Waste below bottom of trench:
 - a) Prior to installation of bedding or stabilization material, if required, tamp solid waste to consolidate solid waste to unyielding condition or as otherwise approved by Engineer.
 - b) Subject to demonstration of effectiveness tamping may be accomplished with excavator bucket.
 - b. Gas Header/Lateral, or Liquid Conveyance Pipes over waste:
 - 1) Backfill:
 - a) From minimum 6 IN below pipe to minimum cover over crown of pipe as shown on Drawings.
 - b) Top 6 IN of cover over waste to be firm packed; no density requirement.
 - 2) Solid Waste: Firm, unyielding and free of significant voids.

- a) Firm, unyielding and free of significant voids shall be defined as similar in condition to the waste at the time of excavation.
- c. Gas Extraction System Appurtenances:
 - 1) Same as Lateral Pipes, above.

3.9 FINISH GRADING

- A. Grade all areas disturbed by construction operations.
 - 1. Grade to smooth, uniformly sloping surfaces to match existing grade elevations or to finish elevations as shown on the Drawings.
 - 2. Grading shall be to a tolerance of minus 0.0 to plus 0.2 FT.
 - 3. Evenly slope finished grade away from structures as shown on the Drawings to provide drainage.
- B. Ensure a surface free of debris, roots, or angular stones.
- C. Ensure rutting or raveling is not caused by installation equipment or weather.

3.10 DEWATERING

- A. Water that enters excavations into refuse shall be considered landfill leachate and shall not be discharged to the ground or other means that are typical for stormwater. Water in trench excavations that comes in contact with refuse shall be pumped into sealed tanks, hauled to the leachate collection system, and discharged appropriately as directed by the Owner.
- B. Plan and undertake necessary activities to prevent liquids from entering excavations.
 - 1. Cease all excavation during times of precipitation or when precipitation is anticipated.
 - 2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rainwater.
 - a. Do not use trench excavations as temporary drainage ditches.
- C. Provide dewatering system where necessary to successfully complete excavation, compaction, and other construction requirements.
 - 1. Liquids removed from areas of waste shall be deemed leachate and shall be either returned to the landfill or placed in the Owner's leachate handling and storage system.
 - 2. Pump accumulated storm water as required to prevent damage to trenches and other construction and to allow construction access.
- D. Provide and maintain at all times during construction proper equipment and facilities to remove water entering excavations.
 - 1. Keep excavations dry so as to obtain a satisfactory foundation condition for all work and minimize generation of leachate.
- E. If the trench fills with water after placement of pipe, but before backfilling, Contractor shall dewater the trench, demonstrate that the pipe slope remains satisfactory, and upon approval by the Engineer, backfill the trench as shown on the Drawings.

3.11 FIELD QUALITY CONTROL

- A. Pipe Survey:
 - 1. Contractor shall verify by survey techniques that the pipe slope meets the requirements specification in this Section and on the Drawings at 50 FT intervals along all laterals and record such information in the project notes.
 - a. See Section 01 71 23 for surveying requirements.
 - b. The surveyed elevations and calculated change in elevation and slope for each 50 FT section shall be recorded in the Contractor's project notes.
 - c. A trench laser will not be considered acceptable survey equipment for the purpose of verifying pipe slope.

- B. The project notes detailing the required pipe slope confirmation shall be provided daily to the Engineer and shall be checked by the Engineer prior to proceeding with backfilling.
- C. A conformance survey shall be conducted on all installed pipe prior to backfilling the trench.
 - 1. Contractor may utilize survey tubes if backfilling the LFG piping before a conformance survey is performed. If conformance survey after LFG piping is buried demonstrates that LFG piping slopes do not meet specified requirements, the Contractor shall uncover buried pipe so that it may be properly installed at the required slopes. This shall be done at no additional cost to the Owner.
 - 2. Contractor shall be responsible for minimizing landfill gas emissions from survey tubes (e.g., seal top of survey tubes).
 - 3. The survey shall document the horizontal and vertical location of the top of the landfill gas header and laterals at minimum 50 FT intervals and at each change in pipe direction, grade break, change in pipe grade, fitting, connection, pipe crossover, and tie-in along the entire pipeline routes.
 - 4. If a run of pipe is 100 FT or less in length, at least 3 survey shots of the top of the pipe must be used to document the pipe as-built conditions.
 - 5. The survey shall also document the type of pipe, location (horizontal and vertical coordinate) of structures and appurtenances such as, but not limited to, valves, pipe crossing, and tie-ins.
 - 6. This conformance surveying shall be sealed by a licensed Professional Land Surveyor in the State of Iowa.

3.12 MAINTENANCE

- A. Protection of Newly Graded Areas:
 - 1. Protect newly graded areas from traffic and erosion and keep free from trash.
 - 2. Repair and re-establish grades in settled, eroded, and rutted areas to the specified tolerances.
- B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape, and compact to the required density prior to further construction.

END OF SECTION

SECTION 32 92 00
SEEDING, SODDING AND LANDSCAPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Seeding and planting:
 - a. Soil Preparation.
 - b. Seeding.
 - c. Soil Amendments.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 01 - General Requirements.
 - 2. Section 31 23 00 - Earthwork.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. Iowa Statewide Urban Design and Specifications – SUDAS Standard Specifications.
 - 2. Iowa DOT Standard Specifications.
 - 3. American Nursery and Landscape Association/American National Standards Institute (ANLA/ANSI):
 - a. Z60.1, American Standard for Nursery Stock.
 - 4. AOAC International (AOAC).
 - 5. ASTM International (ASTM):
 - a. D2028, Standard Specification for Cutback Asphalt (Rapid-Curing Type).
 - b. D5276, Standard Test Method for Drop Test of Loaded Containers by Free Fall.
 - 6. United States Department of Agriculture (USDA):
 - a. Federal Seed Act.
- B. Quality Control:
 - 1. Fertilizer:
 - a. If Engineer determines fertilizer requires sampling and testing to verify quality, testing will be done at Contractor's expense, in accordance with current methods of the AOAC.
 - b. Upon completion of Project, a final check of total quantities of fertilizer used will be made against total area seeded.
 - c. If minimum rates of application have not been met, Contractor will be required to distribute additional quantities to make up minimum application specified.

1.3 SUBMITTALS

- A. Shop Drawings:
 - 1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
 - 2. Equipment list and methods to be utilized for execution of seeding.
 - 3. Installation Schedule:
 - a. Show schedule of when areas are anticipated to be planted.
 - b. Indicate planting schedules in relation to schedule for intermittent and final grading activities.

4. SUDAS Standard Specifications 2020, Section 9060.1.03 – Submittals.
 - a. 9010.1.03.A.1 – Seed: Submit a laboratory analysis for all seeds, specifying the purity and germination. Provide a lot number on all submittals and labeling. Ensure lot number is the same on all records pertaining to a particular seed. Provide 48 HRS notice prior to mixing the seed and give the Engineer an opportunity to witness the seed mixing. Submit a mechanically printed seed tag from an Iowa Crop Improvement Association-approved seed conditioner or grower.
 - b. 9010.1.03.A.2 – Fertilizer: Submit certification of the fertilizer analysis with scale weight and statement of guaranteed analysis. Submit from a certified fertilizer dealer, a mechanically printed commercial fertilizer label, or bill of lading. Comply with the inspection and acceptance requirements of Iowa DOT Materials I.M. 469.03.
 - c. 9010.1.03.B – Submit written instructions recommending procedures for maintenance of seeded areas.
5. Application rate of fertilizer.
6. Copies of invoices for fertilizer used on Project showing grade furnished, along with certification of quality and warranty.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Seed and Fertilizer:

1. Per SUDAS Standard Specifications 2020, Section 9010.1.05 – Delivery, Storage, and Handling.
2. Furnish seed in sealed standard containers labeled with producer's name and seed analysis.
3. Remove from the site seed which has become wet, moldy, or otherwise damaged in transit.
4. Furnish fertilizer uniform in composition, free flowing and suitable for application with approved equipment, delivered to site in bags or other containers, each fully labeled and bearing the name, and warranty of the producer.

B. Plant Materials: Per SUDAS Standard Specifications 2020, Section 9030.1.05.

1.5 SEQUENCING AND SCHEDULING

A. Installation Schedule:

1. Show schedule of when perennial grasses are anticipated to be planted.
2. For seeding, follow requirements of SUDAS Standard Specifications 2020, Section 9010.1.06.
 - a. Coordinate the seeding schedule with all other work on the project. Notify the Engineer at least three calendar days prior to the start of seeding operations.
 - b. After all land-disturbing activities are complete and the seedbed has been approved by the Engineer, perform seeding operations.
3. Indicate planting schedules in relation to schedule for intermittent grading, finish grading, and soil amendments/topsoiling.
4. Indicate anticipated dates Owner will be required to review installation for initial acceptance and final acceptance.

B. Pre-installation Meeting:

1. Meet with Owner and other parties as necessary to discuss schedule and methods, unless otherwise indicated by Owner.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS AND SUPPLIERS

- A. Submit request for substitutions in accordance with SUDAS Standard Specifications 2020, Section 9010.1.04 for seeding and Section 9030.1.04 for plant materials and in accordance with Specification Section 01 25 13.

2.2 MATERIALS

A. Topsoil:

1. Topsoil shall either consist of on-site stripped and stockpiled topsoil available for reuse within the construction limits or amended topsoil utilizing owner-provided compost. Coordinate location of topsoil and amended topsoil with Owner.

B. Seed Quality:

1. Fresh, clean, new-crop seed labeled in accordance with USDA Rules and Regulations under the Federal Seed Act in effect on date of bidding.
2. Provide seed of species, proportions, and minimum percentages of purity, germination and maximum percentage of weed seed as specified.
3. Approval of all seed for use shall be based on the accumulative total of PLS specified for each phase of work.

C. Perennial Grass Seeding:

1. Per Iowa DOT Standard Specifications, Article 2601.03, C, 3, b – Rural Seeding Mixture.
2. For all areas:

GRASSES	LBS PLS PER ACRE
Fescue, Tall (Fawn)	100
Ryegrass, Perennial (Linn)	75
Bluegrass, Kentucky	20

D. Existing Topsoil:

1. Natural soil capable of sustaining rigorous plant growth, not in frozen or muddy condition.
2. Free from subsoil, slag, clay, stones, lumps, live plants, roots, sticks, crabgrass, noxious weeds, and foreign matter.
3. Maximize re-use of existing topsoil from excavation or disturbance areas, unless otherwise noted in the Drawings.

E. Mulch:

1. Perennial grass seeded areas, top of slope, sideslope and ditch seeded areas:
 - a. Clean, seed-free, threshed straw of oats, wheat, barley, rye, beans, peanuts, or other locally available mulch material which does not contain an excessive quantity of matured seeds of noxious weeds or other species that will grow or be detrimental to seeding, or provide a menace to surrounding land.
 - b. Do not use material which is fresh or excessively brittle, or which is decomposed and will smother or retard growth of grass.
 - 1) SUDAS Standard Specifications 2020, Section 9012.2.05.

F. Fertilizer:

1. Commercial fertilizer meeting applicable requirements of State and Federal law.
2. Cyanic compound or hydrated lime not permitted in mixed fertilizers.
3. For Conventional seeding:
 - a. Iowa DOT Standard Specifications, Article 2601, 01, C, 3, c.

PART 3 - EXECUTION

3.1 SOIL PREPARATION

A. General:

1. Limit preparation to areas which will be planted soon after.
 2. Provide facilities to protect and safeguard all persons on or about premises.
 3. Protect existing trees designated to remain.
 4. Verify location and existence of all underground utilities.
 - a. Take necessary precaution to protect existing utilities from damage due to construction activity.
 - b. Repair all damages to utility items at sole expense.
- B. Preparation for Seeding:
1. Spread topsoil a minimum of 4 IN thick.
 2. Amended topsoil, utilizing owner provided compost, shall be used in lieu of topsoil in other disturbed areas that are to be vegetated as indicated within the Drawings.
 - a. Compost to be loaded, hauled and dumped on areas to be vegetated.
 - b. Spread compost to a depth of approximately 2 IN evenly over all areas to be seeded using stockpiled compost, and incorporate into the ground surface by disking to a depth of 6 to 8 IN.
 3. Loosen surface to minimum depth of 4 IN.
 4. Remove stones over 1 IN in any dimension and sticks, roots, rubbish, and other extraneous matter.
 5. Prior to applying fertilizer, loosen areas to be seeded with a double disc or other suitable device if the soil has become hard or compacted.
 6. Correct any surface irregularities in order to prevent pocket or low areas which will allow water to stand.
 7. Distribute fertilizer uniformly over areas to be seeded.
 8. Incorporate fertilizer into soil to a depth of at least 2 IN by disking, harrowing, or other approved methods.
 9. Restore areas to specified condition if eroded or otherwise disturbed after fine grading and before planting.

3.2 INSTALLATION

- A. General:
1. Do not use seed which is wet, moldy or otherwise damaged.
 2. Perform seeding work from March 1 to May 31 for spring planting, and August 10 to September 30 for fall planting, unless otherwise approved by Owner.
 3. Employ satisfactory methods of sowing using mechanical power-driven drills or seeders, or mechanical hand seeders, or other approved equipment.
 4. Distribute seed evenly over entire area at rate of application.
 - a. Install to depth recommended by seed manufacturer.
 5. Stop work when work extends beyond most favorable planting season for species designated, or when satisfactory results cannot be obtained because of drought, high winds, excessive moisture or other factors.
 - a. Resume work only when favorable conditions develop.
 6. Lightly rake seed into soil followed by light rolling or cultipacking.
 7. Immediately protect seeded areas against erosion by mulching.
 8. Protect seeded slopes against erosion with erosion netting as specified in the Drawings or other methods approved by Engineer.
 - a. Protect seeded areas against traffic or other use by erecting barricades and placing warning signs.

9. Immediately following spreading mulch, anchor mulch using a rolling coultter or a wheatland land packer having wheels with V-shaped edges to force mulch into soil surface, or other suitable equipment which will secure the mulch firmly.

3.3 MAINTENANCE AND REPLACEMENT

A. General:

1. Protection of new materials:
 - a. Provide protection necessary to prevent damage to improvements.
 - 1) Repair and pay for all damaged items.
2. Replace unacceptable materials with materials and methods identical to the original Specifications unless otherwise approved by the Owner.

B. Warranty:

1. A warranty is required for this Project to guarantee completed seeding areas for a period of twelve months beyond substantial completion. This warranty will be at no additional cost to the Owner and shall be considered incidental to the seeding unit price.

END OF SECTION

SECTION 40 05 00
PIPE AND PIPE FITTINGS - BASIC REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Landfill gas conveyance piping system.
 2. High density polyethylene (HDPE) pipe, fittings, and appurtenances.
 3. Polyvinyl Chloride (PVC) fittings and appurtenances.
 4. Testing of solid wall piping systems.
- B. Related Specification Sections include but are not necessarily limited to:
1. Section 10 14 00 - Identification Devices.
 2. Section 31 09 21 - Extraction Wells.
 3. Section 31 23 33 - Trenching, Backfilling, and Compacting for Utilities.
 4. Section 40 05 51 - Valves - Basic Requirements.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
1. American Iron and Steel Institute (AISI).
 2. American Society of Mechanical Engineers (ASME):
 - a. B16.5, Pipe Flanges and Flanged Fittings.
 - b. B31.8, Gas Transmission and Distribution Piping Systems.
 3. ASTM International (ASTM):
 - a. A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - b. A197, Standard Specification for Cupola Malleable Iron.
 - c. D638, Standard Test Method for Tensile Properties of Plastics.
 - d. D1248, Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.
 - e. D1693, Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics.
 - f. D1784, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
 - g. D1785, Standard Specification for Poly(Vinyl Chloride) PVC Plastic Pipe, Schedules 40, 80 and 120.
 - h. D2240, Standard Test Method for Rubber Property-Durometer Hardness.
 - i. D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - j. D2467, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
 - k. D2513, Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings.
 - l. D2683, Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing.
 - m. D3034, Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 - n. D3139, Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.

- o. D3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
 - p. D3261, Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
 - q. D3350, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
 - r. D4101, Standard Specification for Polypropylene Plastic Injection and Extrusion Materials.
 - s. F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
 - t. F679, Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.
 - u. F714, Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter.
 - v. F794, Standard Specification for Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.
 - w. F949, Standard Specification for Poly(Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings.
4. American Water Works Association (AWWA):
- a. C800, Standard for Underground Service Line Valves and Fittings.
 - b. C900, Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 IN Through 12 IN, for Water Distribution.
 - c. C901, Standard for Polyethylene (PE) Pressure Pipe and Tubing, 1/2 IN through 3 IN, for Water Service.
 - d. C905, Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 IN through 48 IN, for Water Transmission and Distribution.
 - e. C906, Polyethylene (PE) Pressure Pipe and Fittings, 4 IN through 65 IN (100 mm through 1,650 mm), or Waterworks.
- B. Coordinate flange dimensions and drillings between piping, valves, and equipment.
- C. Qualifications:
- 1. Each individual performing fusion joining shall have at least one (1) year of continuous experience in the use of the same fusion procedure being employed.
 - 2. All fusion equipment must be approved by the manufacturer and operated by qualified and certified operators.
 - 3. Cost of testing and certifying personnel and equipment shall be borne by the Contractor.

1.3 DEFINITIONS

- A. Hazardous Gas Systems: Digester gas, chlorine gas, sulfur dioxide gas, carbon dioxide gas, lab gases.
- B. HPIC: High performance industrial coating.
- C. PVDF: Polyvinylidene fluoride.
- D. ESCR: Environmental Stress Crack Resistance.
- E. HDPE: High Density Polyethylene.
- F. LFG: Landfill Gas.
- G. PVC: Polyvinyl Chloride.
- H. SDR: Standard Dimension Ratio.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. Product technical data including:

- a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Copies of manufacturer's written directions regarding material handling, delivery, storage and installation.
 - c. Separate schedule sheet for each piping system scheduled in this Specification Section showing compliance of all system components.
 - 1) Attach technical product data on gaskets, pipe, fittings, and other components.
- B. Contract Closeout Information:
 - 1. Operation and Maintenance Data:
 - a. See Specification Section 01 33 00 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.
 - 2. As-Built Drawings:
 - a. As work progresses and again when work is complete, submit "As-Recorded" Drawings of piping systems including project items and pre-existing items. Identify complete location, elevation, and description of piping systems. Relate piping systems to identified structures and appurtenances.
- C. Informational Submittals:
 - 1. Installer qualifications and certificates.
 - 2. Test reports:
 - a. Copies of pressure test results on all piping systems.
 - b. Notification of time and date of piping pressure tests.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect pipe coating during handling using methods recommended by manufacturer.
 - 1. Use of bare cables, chains, hooks, metal bars or narrow skids in contact with coated pipe is not permitted.
- B. Prevent damage to pipe during transit.
 - 1. Repair abrasions, scars, and blemishes.
 - 2. If repair of satisfactory quality cannot be achieved, replace damaged material immediately.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
 - 1. HDPE Pipe:
 - a. Performance Pipe.
 - b. Polypipe.
 - c. ISCO.
 - d. Lee Supply Co.
 - e. U.S. Plastics Corp.
 - f. North American Pipe Corp.
 - g. Ferguson Industrial Plastics.
 - h. JM Eagle.
 - i. High Country Fusion.
 - j. NyPipe.
 - k. Phillips Driscopipe.
 - 2. Plexco.PVC Pipe:

- a. Lee Supply Co.

2.2 HIGH DENSITY POLYETHYLENE (HDPE) PIPING AND FITTINGS

A. General:

1. Provide PE 3408/3608 piping with fittings and appurtenances to locations shown on the Drawings.
2. Furnish materials in accordance with ASTM F714 and full compliance to the following material specifications:
 - a. Material description: ASTM D1248, Type III, Class C, Category 5, Grade P34.
 - b. Cell Classification: ASTM D3350, PE 345464C.
 - c. ESCR: ASTM D1693, condition C, Fo > 5,000 HRS.
 - d. ESCR: ASTM D1693, condition A, B, C, Fo > 5,000 HRS.
3. Modulus of elasticity: ASTM D638, 130,000 PSI.
4. Hardness: ASTM D2240, 65 Shore D.
5. IPS for line sizes greater than 1 IN.
6. SDR: as shown on Drawings.
7. Ensure that kinking or excessive bend diameters of the pipe do not occur during the installation process.
8. Ensure that the pipe installed in the trench is firmly supported.
9. Cap all open pipe ends at the end of the workday.
10. All installed valves shall be tested in the presence of the Engineer.
 - a. All repairs deemed necessary by the Engineer shall be made by the Contractor.
11. HDPE pipe and fittings shall be by the same manufacturer.
 - a. The minimum strength of the fittings shall not be less than that of the pipe.
12. Remove cutting and threading burrs.
13. Joints for polyethylene pipe shall be fusion type in accordance with AWWA C901.

B. Pipe shall be extruded from a Type III, Class C, Category 5, Grade P34 compound as described in ASTM D1248.

1. Cell Classification 345464C according to ASTM D3350 and have the material designation of PE 3408/3608.
2. ESCR: ASTM D1693, condition C, Fo>5,000 HRS.
3. ESCR: ASTM D1693, condition A, B, C, Fo>5,000 HRS.

C. Pipe Marking: During extrusion production, the HDPE pipe shall be continuously marked in accordance with AWWA C906 with durable printing including the following information:

1. Nominal size.
2. SDR value.
3. ASTM designations.
4. Pressure class.
5. Manufacturer name or trademark and product series.
6. Standard material code designation.
7. Plant identification.
8. Production date.

D. HDPE Fittings:

1. Fittings shall be manufactured from polyethylene compound having cell classification equal to or exceeding the compound used in the pipe.
 - a. ASTM D2513.
2. HDPE pipe and fittings shall be by the same manufacturer.

- a. The minimum strength of the fittings shall not be less than that of the pipe.
3. All fittings 12 IN and smaller shall be molded (excluding gas pipe), unless approved by the Engineer.
4. 1/2 to 3 IN: ASTM D2683.
5. 4 to 12 IN: ASTM D3261.
6. End connections:
 - a. Socket fused ends for fittings 1 IN and under.
 - b. Butt-fused ends for fittings 1-1/2 IN and larger.
7. IPS reducers on all laterals.
8. Mitered or field fabricated fittings are not allowed.
9. Extrusion welds on fittings will not be allowed, except for addition of gussets or external bracing.
10. The ends of the fabricated fittings shall not be trimmed to match the pipe section to which they are going to be joined.
11. All polyethylene fittings shall have the same or higher pressure rating as the pipe when installed in accordance with the latest technical Specifications.
12. All tie-ins to the landfill gas header shall be molded tees or shop fabricated branch saddle fittings.
 - a. Field fabricated branch saddle fittings will not be accepted.
13. Reducers:
 - a. Furnish appropriate size reducers and reducing fittings to mate pipe connections.
 - b. Connection size requirements may change from those shown on the Drawings depending on final system configuration.
14. Flanges for HDPE Pipe:
 - a. Flanges for HDPE pipe shall be convoluted ductile iron back-up rings with a minimum thickness of 1 IN.
 - b. The studs, nuts and washers for the flanges shall be Zinc-plated steel hardware. Below grade flanges shall be wrapped in 5 MIL polyethylene sheeting just after installation and prior to backfilling to help prevent corrosion.
 - c. Flange gaskets shall be full-face Neoprene or approved equal.
 - d. Flanges and bolt patterns consistent with ASME B16.5, AWWA C207, ASTM A536, or as recommended by the manufacturer.

2.3 PVC PRESSURE PIPING (EXPOSED)

A. General:

1. Install pipe as indicated on Drawings.
2. Provide Schedule 80 pipe with Schedule 80 fittings and appurtenances to locations shown on Drawings.
3. Furnish materials in full compliance to following material specifications:
 - a. Manufacture pipe, fittings, and appurtenances from polyvinyl chloride (PVC) compound which meets the requirements of Type 1, Grade 1 (12454-B) Polyvinyl Chloride as outlined in ASTM D1784.
 - b. Manufacture pipe, fittings and valves from materials that have been tested and approved for conveying potable water by the NSF.

B. Pipe:

1. Furnish pipe meeting requirements of ASTM D1785.
2. Pipe 2 IN and less to be solvent welded.
3. Pipe larger than 2 IN may be either flanged or solvent welded unless shown otherwise on Drawings.

- C. Fittings: Provide ASTM D2467 PVC socket type fittings having the same pressure and temperature rating as the pipe.
- D. Flanges/Unions:
 - 1. Furnish flanges and unions at locations shown on Drawings.
 - 2. Provide either flanges or unions at valves, penetrations through structures and equipment connections.
 - 3. For pipe larger than 2 IN, provide 150 LB socket type PVC flange.
 - 4. For pipe 2 IN and less, provide socket type PVC union with Buna O-rings.
 - 5. Use flat, full faced natural rubber gaskets at flanged connections.
 - a. Furnish heavy hex head bolts, each with one heavy hex nut, ASTM F593 Type 316 stainless steel.
 - 6. Use spacers supplied by pipe manufacturer when mating raised-faced flanges to other flanges.

2.4 PRESSURE PIPING (UNDERGROUND)

- A. Materials: Furnish materials in full compliance with the following requirements:
 - 1. Materials and workmanship in accordance with ASTM F714.
 - 2. Pipe type and size as shown on the Drawings.
 - 3. Joints for polyethylene pipe shall be fusion type in accordance with AWWA C901.
 - 4. Installation: Perform installation procedures, handling, connections, and other appurtenant operations in full compliance with the manufacturer's printed recommendations and in full observance to plan details, when more stringent.
- B. Uniformity: Ensure that all piping and fittings are integrated into components of the finished system. Utilize products of single manufacturer.

2.5 PERFORATED PIPE

- A. HDPE pipe requiring perforations shall conform to the specified pattern size and spacing shown on the Drawings. The Contractor may not alter the hole patterns or spacing shown on the Drawings.
- B. Perforations are not authorized to be performed in the field.

2.6 PIPE MARKING

- A. During extrusion production, the HDPE pipe shall be continuously marked in accordance with AWWA 906 with durable printing including the following information:
 - 1. Nominal size.
 - 2. Dimension ratio.
 - 3. Pressure class.
 - 4. Manufacturer name or trademark and product series.
 - 5. Standard material code designation (i.e., PE 3408).
 - 6. Plant identification.
 - 7. Production date.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Identification:
 - 1. Identify each length of pipe clearly at intervals of five (5) FT or less.
 - a. Include manufacturer's name and trademark.

- b. Nominal size of pipe, appurtenant information regarding polymer cell classification and critical identifications regarding performance specifications, and “NSF” approvals when applicable.
- B. Pipe Placement:
 - 1. Clean each pipe segment thoroughly and inspect for compliance to Specifications.
 - 2. Install gasket or joint material, where applicable, according to manufacturer’s directions after joints have been thoroughly cleaned and examined.
 - 3. Ensure that pipe installed on side slopes are firmly supported.
 - 4. Ensure all burrs, cuttings, grindings, and deleterious material is removed from inside of pipe prior to installation and after installation.
 - a. Cuttings and shavings shall not be left on the ground.
- C. Perform trenching, backfilling, and compaction in accordance with Section 31 23 33.
- D. Utilize flanged end adaptors where shown on Drawings.
- E. Service taps to be installed as shown on Drawings, unless otherwise approved.
- F. Provide flanges or caps to seal all terminations as shown on Drawings.
 - 1. Removable caps where indicated on Drawings.
 - 2. Caps to be installed as soon as possible, but no later than end of working day.
- G. Pipe may be rejected for failure to conform to Specifications, or for:
 - 1. Fractures or cracks passing through pipe wall, except single crack not exceeding 2 IN in length at either end of pipe which could be cut off and discarded.
 - a. Pipes within 1 shipment will be rejected if defects exist in more than 5% of shipment or delivery.
 - 2. Cracks sufficient to impair strength, durability, or serviceability of pipe.
 - 3. Defects indicating improper proportioning, mixing, and molding.
 - 4. Damaged ends, where such damage would prevent making satisfactory joints.
- H. Acceptance of fittings, stubs, or other specifically fabricated pipe sections shall be based on visual observation by the Owner or Engineer at the Site and documentation that they conform to these Specifications.

3.2 PVC PIPE INSTALLATION

- A. Install pipe as indicated on the Drawings.

3.3 HDPE PIPE INSTALLATION

- A. Install pipe as indicated on the Drawings.
 - 1. See Section 31 23 33 on trenching and installation.
 - 2. Pipe and fitting installation shall comply with the requirements of ASTM D2321 and the manufacturer’s recommendations.
 - a. Provide for a maximum deflection in accordance with manufacturers recommendation.
 - b. HDPE pipe shall not be field threaded and such threaded joints shall not be used in gas collection systems.
 - c. Uniformity: Ensure that all piping and fittings are integrated into components of the finished system.
- B. Remove standing liquid in trench before installation; see Section 31 23 33.
- C. Lengths of pipe to be handled as 1 segment shall not exceed 400 FT.
- D. The Engineer shall be notified prior to any pipe being installed in a trench and provided an opportunity to inspect the following items:
 - 1. All butt and saddle fusions.

2. Pipe integrity.
 3. Trench excavation and bedding material.
 4. Trench slope.
 5. Trench contour and support.
- E. Any irregularities are to be corrected before lowering the pipe into the trench.
1. Pipe shall be allow sufficient time to adjust to trench temperature prior to any testing, segment tie-ins, and/or backfilling.
- F. Pipe and fittings shall be carefully lowered into trench to limit stress to pipes, fittings, and joints.
- G. Pipe and fittings shall be installed so that there will be no deviation at the joints and so that inverts present a smooth surface.
1. Pipe and fittings must fit together to form a tight fitting joint.
- H. Tie-ins shall be made outside of trenches whenever possible.
1. When tie-ins are to be made in trenches, a bell hole shall be excavated large enough to ensure an adequate and safe working area.
- I. Ensure that kinking or excessive bend diameters of the pipe do not occur during the installation process.
- J. Ensure that the pipe installed in trenches is firmly supported.
1. Follow the minimum length and type of backfill shown on the Drawings.
- K. Cap pipe sections longer than single joint on both ends during placement, except during fusing operations.
- L. Changes in direction of HDPE Pipe:
1. Pipes to have welded transitions where noted on Drawings.
 2. Do not bend pipe to greater degree than minimum radius recommended by manufacturer for type and grade.
 - a. Pipes may be cold bent to minimum radius recommended by manufacturer but not greater than 20 times the pipe diameter as it is installed.
 - b. If fittings or fusions are present in the bend, the minimum cold bending radius is 125 times the outside diameter of the pipe.
- M. Except as indicated on the Drawings, landfill gas pipe fittings shall be butt fusion type, meeting the requirements of ASTM D3261 and this Specification.
1. All fittings shall be pressure rated to match the system piping to which they are fused.
 2. Joints shall be fused on the surface prior to installation into the trench.
 - a. Alternative methods of fusing shall be approved by the Engineer.
 - 1) PE pipe 1 IN and under shall be socket fused.
 3. Fusion joiner must be qualified by type of fusion (i.e., butt fusion, socket fusion, or sidewall fusion) and fuse pipe only as qualified.
- N. Workmanship:
1. Exterior and interior surfaces shall be smooth with no sharp projections.
 2. The surfaces shall be free of foreign inclusions and major surface defects.
 3. Pipes shall be as uniform as commercially practical in color, opacity, density, and other physical properties.
 4. The product function shall be considered when judging external defects.
- O. All installed HDPE pipe shall be marked in 50 FT intervals for slope confirmation and conformance surveying.
1. Each joint shall be marked.

2. For horizontal piping, station numbering shall be continuous and sequential.
 - a. Station numbering shall be referenced in daily logs to document pipe installation progress.
 - b. Top of pipe and cover soil elevation shall be included for all points unless piping is designed to be above grade.

3.4 HEAT FUSION OF HDPE PIPING

- A. HDPE pipe shall be joined by butt-fusion methods, having a uniform and monolithic pipe interior according to the manufacturer fusion joining procedures, except as shown on the Drawings.
- B. See required qualifications for personnel performing fusion welding.
- C. Join pipe sections at ground level to a maximum length of 400 FT, or a length recommended by the manufacturer, such that maximum allowable stress is not exceeded.
- D. Use appropriate materials and equipment, as recommended by the pipe manufacturer, when pulling butt-fused pipe sections into position, to prevent pipe damage.
- E. During installations when temperature exceeds 90 DEGF, it may be necessary to provide a slightly longer length of HDPE pipe when connections are to be made between two fixed points or structures to compensate for contraction of the pipe in a cooler trench bottom.
 1. The additional pipe length requirements shall be in accordance with HDPE pipe manufacturer's instructions.
- F. For cleaning pipe ends, solutions such as detergents and solvents, when required, shall be used in accordance with manufacturer's recommendations.
- G. Do not subject pipe to strains that will overstress or buckle pipe or impose excessive stress on joints.
- H. Branch saddle fusions shall be joined in accordance with manufacturer's recommendations and procedures.
 1. Branch saddle fusion equipment will be of the size to facilitate saddle fusion within the trench.
- I. Before butt fusing pipe, each length shall be observed for presence of dirt, sand, mud, shavings, and other debris or animals.
 1. Remove all materials from inside of the pipe prior to welding.
- J. At the end of each working day, cover open ends of fused pipe.
 1. Cap to prevent entry by animals or debris.
- K. Use compatible fusion techniques when polyethylene pipes of different melt indexes are fused together.
 1. Refer to manufacturer's specifications for compatible fusion.

3.5 FLANGED CONNECTIONS

- A. Flanges shall be joined with Zink-plated studs and nuts or approved equal. Stud lengths shall accommodate the required distanced between flanges including spacers, if necessary.
- B. Tighten flange bolts at a uniform rate which will result in a uniform gasket compression over the entire area of joint. Provide tightening torque in accordance with manufacturer's recommendations. CAUTION: Do not over-torque bolts.
- C. All non stainless steel hardware: back-up rings, studs, nuts, washers, etc. shall be thoroughly coated with:
 1. Polyken Technologies 1027 Primer, or
 2. Rubberized emulsion undercoating spray, or
 3. Red oxide primer, or

4. Approved equal.
- D. The Contractor shall wrap and tape flanges and bolts in 5 MIL polyethylene sheeting prior to backfilling.

3.6 CONNECTIONS WITH EXISTING PIPING

- A. Notify Engineer at least 2 weeks prior to when connections to existing piping, valves and gas collection system components will occur to allow the Owner to shut down or otherwise modify the existing gas system operation.
- B. Once tie-in to each existing system is initiated, work continuously until tie-in is complete, tested and the existing system can be made operational.
- C. Undertake connections in fashion which will result in as little disturbance as possible to the existing gas system.
 1. Prevent to the greatest extent possible intrusion of air into the existing gas collection system including pulling air into gas collection wells.
- D. Where connection between new work and existing work is made, use suitable and proper fittings for conditions encountered.
- E. Provide suitable equipment and facilities to dewater, drain, and dispose of liquid removed without damage to existing gas system.

3.7 SEGMENT TESTING

- A. Contractor's proposed Testing Plan shall be approved a minimum of 2 weeks prior to when testing is scheduled to occur.
 1. Testing Plan shall identify the following:
 - a. Testing equipment, including connections, caps, gauges (pressure and temperature), valving, regulators, testing gas(es), and compressor equipment.
 - b. Methods of attachment to piping systems for testing.
 - 1) Methods should be specific to each component system to be tested.
 - c. Maximum length of pipe to be tested.
 - 1) This shall not exceed 1,000 FT without Engineer's approval.
 - d. Methods of correction for temperature.
 - 1) The segment to be tested shall be allowed time to reach constant and/or ambient temperature before initiating the test.
 - 2) The test must be performed during a period when the pipe segment will be out of direct sunlight i.e., early morning, late evening, or cloudy days. This will minimize the pressure changes which will occur during temperature fluctuations.
 - e. Methods to prevent temperature change during testing.
 - f. Duration of each phase including initial pressurization, equalization, testing.
 - g. Safety precautions applicable to the testing and personnel working in the area of the test.
 2. Adhere to requirements listed below, unless otherwise approved as part of the Contractor's Testing Plan.
- B. The installed piping shall be subjected to pneumatic pressure tests as described herein to detect any leaks in the piping.
 1. Testing shall only be performed below grade (inside the trench).
 - a. The Contractor shall be responsible for locating, uncovering (if previously backfilled), and repairing any leaks detected during testing.
- C. Polyethylene piping shall be butt welded together into testing segments.
 1. Segments shall be connected to a testing apparatus on one end and fitted with fusion-welded caps on all openings.

- D. The segment to be tested shall be allowed time to reach constant and/or ambient temperature before initiating the test.
- E. The test must be performed during a period when the pipe segment will be out of direct sunlight (i.e., early morning, late evening, or on cloudy days).
 - 1. Take precautions to minimize the pressure changes resulting from temperature fluctuations.
- F. The pneumatic test pressure for all pipes shall be 10 PSIG.
 - 1. A passing test shall be defined as less than 5% pressure loss over a 1 HR period, after adjustments for temperature or other pre-defined variables.
 - 2. Failing pipe sections will be inspected for any visible leaks and re-tested.
 - 3. Engineer will determine protocol for any additional failures.
- G. The pressure drop shall be corrected for temperature changes before determining pass or failure.
- H. The Engineer shall be notified 1 week prior to commencement of the testing procedure and shall be present during the test.
- I. All equipment for this testing procedure, including an air compressor, gauges, fittings, caps/pipe plugs, etc. shall be furnished by the Contractor and adequately sized.
 - 1. Pressure gauge shall span the test pressure range with increments equal to 0.1% of the test pressure.
 - a. Select each gauge so that the specified test pressure falls within the upper half of the gauges range.
 - b. Gauges shall be certified for accuracy by factory testing or a certified testing laboratory within 6 months prior to use.
 - 2. Provide an appropriate valve to facilitate the air compressor hose, and a ball valve to release pipe pressure at completion of testing.
 - a. Pipe reducers shall be utilized to adapt test flange to size of pipe being tested.
- J. Do not test against isolation valves.

3.8 TEST FAILURE

- A. The following steps shall be performed when a pipe segment fails the 1 HR test criteria described above.
 - 1. The pipe and all fusions or joints shall be inspected for cracks, pinholes, or perforations.
 - 2. All blocked risers and capped ends shall be inspected for leaks.
 - 3. Leaks shall be located and/or verified by applying a soapy water solution and observing soap bubble formation.
- B. All pipe and fused joint leaks shall be repaired by cutting out the leaking area and re-fusing the pipe.
- C. After all leaks are repaired, a retest shall be performed using the above acceptance criteria.

3.9 REPORTING

- A. See Section 01 71 23 on surveying requirements.
- B. Each test (pass or failure) shall be reported in writing on a form approved by the Engineer.
 - 1. Test report to include date, size of pipe, length, description, location and stationing.
- C. If test failure occurs, Contractor shall note the following:
 - 1. Location of failed segment.
 - 2. Nature of leak(s).
 - 3. Repairs performed.
 - 4. Results of retest.

END OF SECTION

SECTION 40 05 51
VALVES - BASIC REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Valving, actuators, and valving appurtenances.
- B. Related Sections include but are not necessarily limited to:
 - 1. Section 40 05 00 – Pipe and Pipe Fittings – Basic Requirements.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. American Society of Mechanical Engineers (ASME):
 - a. B1.20.1, Pipe Threads, General Purpose.
 - b. B16.1, Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
 - c. B16.18, Cast Copper Alloy Solder Joint Pressure Fittings.
 - 2. ASTM International (ASTM):
 - a. A126, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
 - b. D256, Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
 - c. D638, Standard Test Method for Tensile Properties of Plastics.
 - d. D648, Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
 - e. D695, Standard Test Method for Compressive Properties of Rigid Plastics.
 - f. D2240, Standard Test Method for Rubber Property-Durometer Hardness.
 - 3. American Water Works Association (AWWA):
 - a. C207, Standard for Steel Pipe Flanges for Waterworks Service - Sizes 4 IN through 144 IN.
 - b. C500, Standard for Metal-Seated Gate Valves for Water Supply Service.
 - c. C504, Standard for Rubber-Seated Butterfly Valves.
 - d. C507, Standard for Ball Valves, 6 IN through 48 IN (150 MM through 1200 MM).
 - e. C509, Standard for Resilient-Seated Gate Valves for Water Supply Service.
 - f. C550, Standard for Protective Coatings for Valves and Hydrants.
 - g. C606, Standard for Grooved and Shouldered Joints.
 - 4. American Water Works Association/American National Standards Institute (AWWA/ANSI):
 - a. C111/A21.11, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - 5. National Electrical Manufacturers Association (NEMA):
 - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
 - b. MG 1, Motors and Generators.
 - 6. National Fire Protection Association (NFPA):
 - a. 70, National Electrical Code (NEC).

1.3 SUBMITTALS

- A. Shop Drawings:
 - 1. Product technical data including:

- a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Manufacturer's installation instructions.
 - c. Valve pressure and temperature rating.
 - d. Valve material of construction.
 - e. Special linings.
 - f. Valve dimensions and weight.
 - g. Valve flow coefficient.
- 2. Test reports.
- B. Contract Closeout Information:
 - 1. Operation and Maintenance Data:
 - a. See Section 01 33 00 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.
- C. Informational Submittals:
 - 1. Verification from valve actuator manufacturer that actuators have been installed properly, that all limit switches and position potentiometers have been properly adjusted, and that the valve actuator responds correctly to the valve position command.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
 - 1. Plastic body valves:
 - a. Asahi/American.
 - b. Chemtrol/Nibco.
 - c. Spears.
 - d. Approved equal.
 - 2. Stainless steel valves:
 - a. Apollo.
 - b. Jamesbury.
 - c. Watts.
 - d. Stockham.
 - e. Nibco.
 - f. Approved equal.

2.2 EQUIPMENT

- A. GENERAL
 - 1. All valves shall be complete with all necessary operators, actuators, handwheels, extension stems, worm gear operators, operating nuts, wrenches, spacers, and other accessories or appurtenances which are required for the proper completion of the work.
 - 2. Operators and other accessories shall be sized and furnished by the valve supplier and be factory mounted.
 - 3. Renewable parts including discs, packing, and seats shall be of types recommended by valve manufacturer for intended service, but not of a lower quality than specified herein.
 - 4. Valves and operators shall be suitable for burial within a landfill.
- B. BUTTERFLY VALVES

1. Type: bubble tight, wafer design, with a PVC body, polypropylene disc, nitrile seats and seals, 316 stainless steel valve stem, or 403 stainless steel valve stem if 14 IN valve or larger, and compatible with a flat face flange.
2. Valves shall be Asahi/America, Type 57 or 75, as appropriate.
3. Materials:
 - a. Stem extensions shall be stainless steel in an epoxy coated carbon steel outer housing
 - b. Die-cast aluminum alloy gear box assembly mounted on top
 - c. Equipped with a removable manual operating wheel.

C. METALLIC BALL VALVES

1. Comply with MSS SP-110.
2. Materials:
 - a. Body: Three-part or flanged, stainless steel, ASTM A351 CF8M.
 - b. Ball: Stainless steel ASTM A276.
 - c. Seats: RPTFE.
3. Design Requirements:
 - a. Rated for a minimum of:
 - 1) 500 PSI CWP.
 - 2) 150 PSI of saturated steam.
 - 3) 29 IN vacuum.
 - b. Two-position lockable handle.
 - c. Stem with blowout-proof design.
 - d. Full port.
 - e. Balancing stop for all applications.
 - f. Bodies with mounting pad for applications requiring actuators.

D. MONITORING SAMPLE PORTS

1. Sample ports shall be installed on both sides of each header pipe isolation valve and shall include the following items, or approved substitutes:
 - a. The sampling port shall have a 1/4 IN NPT by 1/8 IN hose polypropylene monitoring quick disconnect port by Ryan Herco (800-848-1141).

2.3 MATERIALS

A. Coatings:

1. All metallic, non stainless steel, valves shall be coated.
2. All exterior surfaces shall be clean, dry, and free from rust and grease before coating.
3. Factory primed with one coat, minimum dry film thickness 1.5 MILS, of a primer with rust-inhibitive pigments and synthetic resins.
4. All non stainless steel hardware: back-up rings, studs, nuts, washers, etc. shall be thoroughly coated with:
 - a. Polyken Technologies 1027 Primer, or
 - b. Rubberized emulsion undercoating spray, or
 - c. Red oxide primer, or
 - d. Approved equal.
5. There shall be no "holidays", or areas where the coating is not completely applied.

B. Identification Tags:

1. Tags shall be in accordance with Section 10 14 00.

2. Supply and affix to each header pipe isolation valve monitoring port an identification tag marked with pre-printed letters designating the valve number followed by the letters "A" or "B" (e.g., V-1A, V-1B, V-2A, etc.).
3. The tags imprinted with an "A" shall be placed on the monitoring port closest to the blower/flare station.
4. Those marked with a "B" shall be affixed to the other valve monitoring port.
5. Tags shall not be marked with pen or marker.
6. The VALVE ACTUATORS Article is used to specify items provided in conjunction with valves specified.

2.4 GENERAL USE LANDFILL GAS VALVES

A. General

1. All valves shall be complete with all necessary operators, actuators, handwheels, extension stems, worm gear operators, operating nuts, wrenches, spacers, and other accessories or appurtenances which are required for the proper completion of the work.
2. Operators and other accessories shall be sized and furnished by the valve supplier and be factory mounted.
3. Valves shall be suitable for the intended service. Renewable parts including discs, packing, and seats shall be of types recommended by valve manufacturer for intended service, but not of a lower quality than specified herein.
4. Valves and operators shall be suitable for burial within a landfill.
5. Unless otherwise shown, valves shall be the same size as the adjoining pipe.
6. Valves and operators shall be suitable for the intended use (i.e., buried within a landfill, and subjected to landfill gas, condensate, and leachate).
7. Valve position indicators shall be installed correctly to properly identify the valve position.

B. Butterfly Valves

1. Type: bubble tight, wafer design, with a PVC body, polypropylene disc, nitrile seats and seals, 316 stainless steel valve stem, or 403 stainless steel valve stem if 14 IN valve or larger, and compatible with a flat face flange.
2. Valves shall be Asahi/America, Type 57 or 75, as appropriate.
3. Materials:
 - a. Stem extensions shall be stainless steel in an epoxy coated carbon steel outer housing.
 - b. Die-cast aluminum alloy gear box assembly mounted on top.
 - c. Equipped with a removable manual operating wheel.

2.5 ACCESSORIES

A. Refer to Drawings and/or valve schedule for type of actuators.

1. Furnish actuator integral with valve.

2.6 VALVE ACTUATORS

A. Valve Actuators - General:

1. Provide actuators as shown on Drawings or specified.
2. Counterclockwise opening as viewed from the top.
3. Direction of opening and the word OPEN to be cast in handwheel or valve bonnet.
4. Size actuator to produce required torque with a maximum pull of 80 LB at the maximum pressure rating of the valve provided and withstand without damage a pull of 200 LBS on handwheel or chainwheel or 300 FT/LBS torque on the operating nut.
5. Unless otherwise specified, actuators for valves to be buried, submerged, or installed in vaults or manholes shall be sealed to withstand at least 20 FT of submergence.
6. Extension stem:

- a. Install where shown or specified.
 - b. Solid steel with actuator key and nut, diameter not less than stem of valve actuator shaft.
 - c. Pin all stem connections.
 - d. Center in valve box or grating opening band with guide bushing.
- B. Exposed Valve Manual Actuators:
- 1. Provide for all exposed valves not having electric or cylinder actuators.
 - 2. Provide handwheels for gate and globe valves.
 - a. Size handwheels for valves in accordance with AWWA C500.
 - 3. Provide lever actuators for plug valves, butterfly valves and ball valves 3 IN DIA and smaller.
 - a. Lever actuators for butterfly valves shall have a minimum of 5 intermediate lock positions between full open and full close.
 - b. Provide at least 2 levers for each type and size of valve furnished.
 - 4. Gear actuators required for plug valves, butterfly valves, and ball valves 4 IN DIA and larger.
 - 5. Provide gearing for gate valves 20 IN and larger in accordance with AWWA C500.
 - 6. Gear actuators to be totally enclosed, permanently lubricated and with sealed bearings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install valves in accordance with the manufacturer's recommendations and the following:
- 1. Butterfly valves shall be installed between 2 flanges as shown on the Plans; care shall be taken to avoid stripping bolts when tightening.
 - 2. Flanges shall be joined with Zinc plated steel studs, nuts, and washers.
 - 3. Stud lengths shall accommodate the required distance between flanges including spacers, if necessary. Stainless steel studs and nuts are acceptable substitutes.
 - 4. The Contractor shall wrap and tape the valve, flanges, and bolts in 5 MIL polyethylene sheeting prior to backfilling.
- B. Flanged butterfly valves require spacers between the flange adapters and the valve body in order to allow full travel of the internal disk.
- C. Valve position indicators shall be installed correctly to properly identify the valve position.
- D. The Contractor shall install valve spacers for all isolation valves and with the approval by the Engineer.
- E. Setting Buried Valves:
- 1. Locate valves where indicated on Drawings, unless alternate location is approved by the Engineer.
 - 2. Set valves and valve boxes plumb.
 - 3. Place valve boxes directly over valves with top of box being brought to surface of finished grade.
 - 4. Install valves in closed position.
 - 5. Place valve on firm support in trench to prevent settling and excessive strain on connection to pipe.
 - 6. After installation, backfill up to top of box for a minimum distance of 4 FT on each side of box.
- F. Support exposed valves and piping adjacent to valves independently to eliminate pipe loads being transferred to valve and valve loads being transferred to the piping.

- G. Install actuators above or horizontally adjacent to valve and gear box to optimize access to controls and external hand wheel.
- H. Install valves accessible for operation, inspection, and maintenance.

3.2 ADJUSTMENT

- A. Operate valve, open and close at system pressures to verify functionality.
- B. Demonstrate by pressure reading on both sides of the valve that when open the valve does not significantly reduce pressure and when closed the valve is effective in isolation of the portion of the pipeline.

3.3 FIELD QUALITY CONTROL

- A. Record Drawings shall show exact location and description of valve system components.
 - 1. Include such information as tag number, location, elevation, supports and additional pertinent information.

END OF SECTION

SECTION 43 25 52

PNEUMATIC PUMP

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pneumatic pumps and accessories for Condensate Sumps.
 - 2. Pneumatic pumps and accessories for Landfill Gas Wells.
- B. Related Sections include but are not necessarily limited to:
 - 1. Section 40 05 00 - Pipe and Pipe Fittings - Basic Requirements.

1.2 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Pump manufacturer must be active in the standard supply of pneumatic pumps, as specified, for a minimum of five years.
 - 2. Pump manufacturer must have factory or manufacturer's service representative located within 8 HR travel time to project site. Service representative must be licensed to work in the same jurisdiction as the project.
- B. Referenced Standards:
 - 1. American National Standards Institute (ANSI).
 - a. NFPA 70, National Electric Code (NEC).

1.3 SUBMITTALS

- A. Action Submittals:
 - 1. Shop Drawings:
 - a. Plans and elevations showing location and dimension of components.
 - b. Details of connections, design elements, and relation to adjacent items.
 - 2. Product Data:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Manufacturer's installation instructions.
 - c. Fabrication and/or Layout Drawings.
- B. Informational Submittals:
 - 1. Certifications.
 - 2. Test reports.
 - 3. Contract Closeout Information:
 - a. Operation and Maintenance Data:
 - 1) Provide three original manuals in three ring binders and one electronic copy.
 - b. Warranty.

1.4 WARRANTY

- A. Standard Warranty: The special warranty specified in this Article shall not deprive Owner of other rights or remedies Owner may otherwise have under the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under the Contract Documents. The obligations of Contractor under the Contract Documents shall not be limited in any way by the provisions of the specified standard warranty and special warranty.

B. Special Warranty on Pneumatic Pumps:

1. Furnish manufacturer's written warranty, running to benefit of Owner, agreeing to correct, or at option of warranty beneficiary, replace materials and equipment indicated in this Specifications Section found to be defective during a period of five years after the date of Substantial Completion certified by Engineer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Pneumatic Pumps:

1. QED Environmental Systems.
2. Or approved equal.

2.2 COMPONENTS

- A. Pump Body: Stainless Steel, FRP or other approved equal.
- B. O-rings: Teflon or Viton.
- C. Bolts and nuts: Stainless steel.
- D. Fittings: Stainless steel.

2.3 EQUIPMENT

A. Pneumatic Pumps for LFG Wells:

1. Suitable for use in hazardous locations as defined by NEC Class 1 Div 1.
2. Short Bottom Loading Auto Pump:
 - a. QED Model AP-4 (Part No. 303211P).
 - b. Or approved equal.
3. Controllerless pneumatic operation.
4. Bottom loading intake.
5. 3 IN extended stainless steel fluid intake screen.
6. Stainless steel discharge check valve.
7. FRP pump casing.
8. Stainless steel support harness.
9. Stainless steel hose barb fittings for nylon tubing with clamps and exhaust deflector (Part No. 301198).
 - a. 1/2 IN OD air supply.
 - b. 5/8 IN OD pump exhaust.
 - c. 1-1/4 IN OD fluid discharge.
10. Capable of minimum 2 GPM at 120 FT Total Dynamic Head (TDH).

B. Pneumatic Pumps for Condensate Pump Stations:

1. Suitable for use in hazardous locations as defined by NEC Class 1 Div 1.
2. Short Bottom Loading Auto Pump:
 - a. QED Model AP-4 (Part No. 303211P).
 - b. Or approved equal.
3. Controllerless pneumatic operation.
4. Bottom loading intake.
5. 3 IN extended 316-stainless steel fluid intake screen.
6. Stainless steel discharge check valve.
7. FRP pump casing.

8. Stainless steel support harness.
9. Stainless steel hose barb fittings for nylon tubing with clamps and exhaust deflector (Part No. 301198).
 - a. 1/2 IN OD air supply.
 - b. 5/8 IN OD pump exhaust.
 - c. 1-1/4 IN OD fluid discharge.
10. Capable of minimum 2 GPM at 120 FT Total Dynamic Head (TDH).

2.4 ACCESSORIES

- A. LFG Well Pump Accessories, QED or Approved Equal.
 1. Downwell Jacketed Nylon 12 Tubing Bundle, QED Part No. 38883 (1/2 IN OD air supply tubing, 5/8 IN OD exhaust tubing, 1-1/4 IN OD fluid discharge tubing).
 2. 6 IN Machined Blind Flange Cap Assembly to include:
 - a. Pass through compression fittings for Air Supply and Air Exhaust.
 - b. Pass through port for 2 IN gas line, flexible coupling.
 - c. Pump support rope eyelet.
 - d. Galvanized bolt kit, QED Part No. 40175, including eight, 3/4 IN 10x4 bolts, sixteen, 3/4 IN flat washers, and eight, 3/4 IN hex nuts.
- B. LFG Condensate Pump accessories, QED or approved equal.
 1. Downwell Jacketed Nylon 12 Tubing Bundle, QED Part No. 38883 (1/2 IN OD air supply tubing, 5/8 IN OD exhaust tubing, 1-1/4 IN OD fluid discharge tubing).
 2. 6 IN Machined Blind Flange Cap Assembly to include:
 - a. Pass through compression fittings for Air Supply and Air Exhaust.
 - b. Pass through port for 2 IN gas line, flexible coupling.
 - c. Pump support rope eyelet.
 - d. Galvanized bolt kit, QED Part No. 40175, including eight, 3/4 IN 10x4 bolts, sixteen, 3/4 IN flat washers, and eight, 3/4 IN hex nuts.
- C. Downwell Support Rope, yellow braided, QED Part No. 205103.
- D. Discharge Header and Valve Kit:
 1. Discharge hose assembly, QED Part No. 40074, including 1 IN x 5 FT long hose terminating in a stainless steel female cam-lok fitting on both ends.
 2. Discharge header valve kit, QED Part No. 40071, including SS ball valve assembly and one-way flowing check valve that connects to the liquid force main. Also includes nylon male cam-lok fitting to mate with discharge hose on one end and 1 IN FPT for connection to the liquid header at other end.
- E. Air Line Header and Valve Kit:
 1. Brass ball valve assembly, QED Part No. 40070, which connects to the air header assembly.
 2. Includes brass female quick-connect to mate with filter/regulator hose on one end, and stainless steel reducing coupling ending in a 1 IN FPT for connection to the air supply header at the other end.
- F. Filter/Regulator:
 1. QED Part No. 40006, including 5 FT blue air hose with brass quick connect to mate to air-line header ball valve, and 3 FT green hose pigtail with 1/2 IN PrestoLok for flange cap connection.
 2. Designed for maximum supply pressure of 125 PSI.
 3. Designed to regulate air pressure per pump supplier's recommendations.

- 4. Shall include single stage 5 micron air filter with metal bowl and screw-fit drain plug.
- G. Pump Cycle Counter, QED Model 39196, with brass quick-connects.

2.5 SOURCE QUALITY CONTROL

- A. Pump Manufacturer shall supply test results or certification illustrating relationship of head (FT) versus flow (GPM) for the supplied pump.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install pumps in condensate pump stations and vertical LFG wells at locations shown on the Drawings per the pump manufacturer's recommendations.
- B. Connect Air Supply Line to "Air Line Header and Valve Kit".
- C. Connect "Discharge Header and Valve Kit" to forcemain line.
- D. Air and Condensate Forcemain discharge hose lengths outside the sump shall be field determined and approved by the Engineer.

3.2 FIELD QUALITY CONTROL

- A. Provide a written statement from the manufacturer that manufacturer's equipment has been installed properly, started up and is ready for operation by Owner's personnel.

3.3 SYSTEMS STARTUP

- A. Provide services of equipment manufacturer's field service representative(s) for a minimum of two, 8 HR days to:
 - 1. Inspect equipment covered by these Specifications.
 - 2. Supervise pre-start adjustments and installation checks.
 - 3. Conduct initial startup of equipment and perform operational checks.
 - 4. Instruct Owner's representative for a minimum of 4 HRS on operation and maintenance procedures.

END OF SECTION