



# Cedar Rapids Linn County Solid Waste Agency

## Site 2 Scale Improvements Project

### Construction Documents Project Manual

**Issued to Bid**

**September 15, 2022**

**HDR Project No. 10347064**



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## DIVISION 00

PROCUREMENT AND CONTRACTING  
REQUIREMENTS



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**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 a duly registered Professional Engineer under the laws of the State of Iowa.</p>  <table style="width: 100%; border: none;"><tr><td style="border-top: 1px solid black; width: 60%; text-align: center;">KATHRYN KINLEY</td><td style="border-top: 1px solid black; width: 40%; text-align: center;">DATE</td></tr></table> <p>All pages or Specifications divisions or sections covered by this seal:</p> <p>Divisions 01 through 43; excluding Division 00 and 26</p>	KATHRYN KINLEY	DATE
KATHRYN KINLEY	DATE		

**END OF SEALS AND SIGNATURES**

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# ADVERTISEMENT FOR BIDS

CEDAR RAPIDS LINN COUNTY SOLID WASTE AGENCY  
MARION, IOWA  
SITE 2 – SCALE IMPROVEMENTS PROJECT

## General Notice

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

Site 2 – Scale Improvements Project  
10347064

Bids for the construction of the Project will be received at the Owner's Office located at **1954 County Home Road, Marion, Iowa 52302**, until **November 3, 2022 at 1:00 PM local time**. At that time the Bids received will be publicly opened and read.

A public meeting for this project will be held on Tuesday October 18, 2022 during the monthly board meeting.

The Project includes the following Work:

Full removal and replacement of the inbound scale; removal and replacement of the outbound scale pivots, bearings, and suspension kit; removal and replacement of the scale guide rails; installation of heat trace on all scales.

Bids are requested for the following Contract: CRLCSWA Site 2 – Scale Improvements Project

## 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](mailto:info@rapidsrepro.com)

On <https://rapidsrepro.com/planroom>, search The Public Plan Room for CRLCSWA Site 2 – Scale Improvements Project.

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. Nikki Dietze  
Phone: 319-373-2536  
Email: [Nikki.Dietze@hdrinc.com](mailto:Nikki.Dietze@hdrinc.com)

Prospective Bidders may examine the Bidding Documents at the Issuing Office on Monday through Friday between the hours of **9:00 AM** and **4:00 PM local time**. 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.

### **Project Schedule**

Schedule requirements for this project include the following:

Earliest Mobilization Date: **Upon approval of the contract**

Latest Mobilization Date: **Friday, December 9, 2022**

Milestone 1 - Submittal Receipt deadline: **Friday, December 9, 2022**

Milestone 2 – Submittal approvals & scale order deadline: **Friday, December 16, 2022**

Substantial Completion: **Saturday December 31, 2022**

Final Completion: **30 days from receipt of the new inbound scale**

For the remaining scales, the scale repairs, guide rail replacements, and heat trace installation items listed in Section 00 41 13 – Bid Form will be completed by the Substantial Completion date. The new scale with associated guide rails and heat trace shall be completed by the final completion date.

The final completion date will be dependent on the receipt date of the inbound scale. Downtime of the inbound scale shall be limited to one week or less. Contractor shall coordinate with the site to schedule replacement window. Replacement shall not take place during inclement or cold weather (shall not take place from January to March, unless approved by the Owner). Site personnel will be present at commercial scale during scale replacement.

All work impacting Owner's operations shall be completed outside of the normal operating hours unless otherwise approved by the Owner.

### **Questions**

All questions in regard to this project will need to be submitted by **Tuesday October 25, 2022, at 5:00 PM local time**. Bidders shall contact HDR ([Katie.Kinley@hdrinc.com](mailto:Katie.Kinley@hdrinc.com) and [Morgan.Mays@hdrinc.com](mailto:Morgan.Mays@hdrinc.com)) for all questions directed towards this project.

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: September 21, 2022

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# INSTRUCTIONS TO BIDDERS

FOR CONSTRUCTION CONTRACT

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## 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 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.
- 2.04 *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 Version 2017 or later. 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 2.04.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. Electronic copies of AutoCAD 2020 (.DWG) model files of existing and proposed surfaces.
  - 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 Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:
  - A. 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.
  - B. Bidder's state (or other) contractor license number, if applicable.
  - C. Other required information regarding qualifications.
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.04 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.

- 3.05 The Iowa Statutory Bidder Status Form is required by the Iowa Labor Commissioner, pursuant to the Iowa Administrative Code rule 875-156.2(1). The Bidder must complete and submit the Bidder Status Form, signed by an authorized representative of the Bidder, with their bid proposal. Under Iowa Administrative Code rule 875-156.2(1), failure to provide the Iowa Statutory Bidder Status Form with the bid may result in the bid being deemed non-responsive and may result in the bid being rejected. The Worksheet: Authorized to Transact Business from the Labor Commissioner is included within Specification Section 00 45 48 and can be used to assist Bidders in completing the Iowa Statutory Bidder Status Form.

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

##### **4.01 *Site and Other Areas***

- A. The Site is identified in the Bidding Documents, 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.

##### **4.02 *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.

#### 4.03 *Other Site-Related Documents*

- A. No other Site-related documents are available.

#### 4.04 *Site Visit and Testing by Bidders*

- A. 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: Morgan Mays, HDR. Bidder must conduct the required Site visit during normal working hours, Mondays through Fridays.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder 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.
- D. 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.
- E. 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.

#### 4.05 *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.

#### 4.06 *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 5—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS**

### **5.01 *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 6—INTERPRETATIONS AND ADDENDA**

- 6.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.
- 6.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:
  - A. HDR Engineering, Inc., 5815 Council Street NE, Suite B, Cedar Rapids, IA 52402;
  - B. ATTN: Morgan Mays, 319-373-2536, Morgan.Mays@hdrinc.com
- 6.03 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 or Plan Room. Questions received after October 25, 2022 may not be answered.
- 6.04 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.
- 6.05 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 to the deadline for receipt of Bids.

## **ARTICLE 7—BID SECURITY**

### **7.01 *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.

7.02 *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.

7.03 *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 8—CONTRACT TIMES**

- 8.01 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.
- 8.02 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 9—SUBSTITUTE AND "OR EQUAL" ITEMS**

- 9.01 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.

- 9.02 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 10—SUBCONTRACTORS, SUPPLIERS, AND OTHERS**

- 10.01 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.
- 10.02 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. Storm water controls, erosion control, seeding, stabilization, etc..
- 10.03 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.
- 10.04 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 11—PREPARATION OF BID**

- 11.01 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.”
- 11.02 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 8.5-inch 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.
- 11.03 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.
- 11.04 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.
- 11.05 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.
- 11.06 A Bid by an individual must show the Bidder’s name and official address.
- 11.07 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.
- 11.08 All names must be printed in ink below the signatures.
- 11.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.
- 11.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be indicated on the Bid Form.
- 11.11 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.
- 11.12 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 12—BASIS OF BID**

### **12.01 *Base Bid with Alternates***

- A. Bidders must submit a Bid on a unit price 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.

#### 12.02 *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.

#### 12.03 *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 13—SUBMITTAL OF BID**

- 13.01 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.
- 13.02 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.
- 13.03 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 14—MODIFICATION AND WITHDRAWAL OF BID**

- 14.01 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.

- 14.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 14.01 of this Article and submit a new Bid prior to the date and time for established in the Bidding Documents the receipt of Bids.
- 14.03 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. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.

#### **ARTICLE 15—OPENING OF BIDS**

- 15.01 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.

#### **ARTICLE 16—BIDS TO REMAIN SUBJECT TO ACCEPTANCE**

- 16.01 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 17—EVALUATION OF BIDS AND AWARD OF CONTRACT**

- 17.01 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.
- 17.02 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.
- 17.03 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.
- 17.04 *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.
- 17.05 *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).
- 17.06 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.
- 17.07 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 18—BONDS AND INSURANCE**

- 18.01 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.
- 18.02 Article 8 (“Bid Security”) of these Instructions to Bidders addresses any requirements for providing bid bonds as part of the bidding process.

#### **ARTICLE 19—SIGNING OF AGREEMENT**

- 19.01 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 20—SALES AND USE TAXES**

- 20.01 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.

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# **BID FORM**

FOR CONSTRUCTION CONTRACT

## **CEDAR RAPIDS LINN COUNTY SOLID WASTE AGENCY SITE 2 – SCALE IMPROVEMENTS PROJECT**

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 Chart Schedule identifying proposed dates for key project 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;
- 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 lump sum and unit prices:

Item No.	Description	Units	Estimated Quantity	Bid Unit Price	Bid Amount
1	Mobilization / Demobilization	LS	1		\$
2	Inbound Scale Replacement	LS	1		\$
3	Outbound Scale Repairs	LS	1		\$
4	Guide Rail Replacement	LS	1		\$

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.

C. Alternate Bid Items:

Item No.	Description	Units	Estimated Quantity	Bid Unit Price	Bid Amount
5	Heat Trace Installation	LS	1		\$

3.02 *Total Bid Price (Lump Sum and Unit Prices)*

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

#### 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)

\_\_\_\_\_



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## BID BOND (DAMAGES FORM)

<b>Bidder</b> Name: _____ Address <i>(principal place of business)</i> : _____	<b>Surety</b> Name: _____ Address <i>(principal place of business)</i> : _____
<b>Owner</b> Name: _____ Address <i>(principal place of business)</i> : _____	<b>Bid</b> Project <i>(name and location)</i> : _____  Bid Due Date: _____
<b>Bond</b> 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: _____
<i>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.</i>	

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: \_\_\_\_\_

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## 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.

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# **AGREEMENT**

BETWEEN OWNER AND CONTRACTOR  
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

CEDAR RAPIDS LINN COUNTY SOLID WASTE AGENCY  
SITE 2 – SCALE IMPROVEMENTS PROJECT

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:

Full removal and replacement of the inbound scale; removal and replacement of the outbound scale pivots, bearings, and suspension kit; removal and replacement of the scale guide rails; installation of heat trace on all scales.

## **ARTICLE 2—THE PROJECT**

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Site 2 – Scale Improvements Project.

## **ARTICLE 3—ENGINEER**

3.01 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 completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 30-days of the receipt of the inbound scale. See 00 11 13 Advertisement for Bids for milestone dates.

B. All work impacting the Owner’s operations shall be completed outside of normal operating hours unless otherwise approved by Owner.



- C. All work required to remove and replace the existing inbound scale shall be limited to one (1) week.

#### 4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the 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. *Milestone 2 – Submittal Approvals and Scale Order:* Contractor shall pay Owner \$500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in 00 11 13 – Advertisement for Bids for Milestone 2, until the Work is substantially complete.
  - 2. *Scale downtime:* Contractor shall pay Owner \$500.00 for each day that expires after 1-week of downtime for the inbound scale replacement, and 1-week of downtime for the scale repairs with rails and heat trace installation (as duly adjusted pursuant to the Contract) until scales are rendered operational. Only one scale may be out of service at any given time and must be coordinated with the Site.
  - 3. *Substantial Completion:* Contractor shall pay Owner \$500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in 00 11 13 – Advertisement for Bids for Substantial Completion, until the Work is substantially complete.
  - 4. *Final Completion:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$500.00 for each day that expires after such time until the Work is completed and ready for final payment.
  - 5. Liquidated damages for failing to timely attain Milestones, 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.

- 4.04 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: Site #2 – Scale Improvements Project.
  - 7. Addenda (numbers \_\_\_\_ to \_\_\_\_, inclusive).
  - 8. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bid (Pages \_\_\_\_ to \_\_\_\_), inclusive.)
  - 9. 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: \_\_\_\_\_

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## PERFORMANCE BOND

<b>Contractor</b> Name: Address <i>(principal place of business)</i> :	<b>Surety</b> Name: Address <i>(principal place of business)</i> :
<b>Owner</b> Name: Mailing address <i>(principal place of business)</i> :	<b>Contract</b> Description <i>(name and location)</i> :  Contract Price: Effective Date of Contract:
<b>Bond</b> 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: _____	By: _____
<i>(Signature)</i>	<i>(Signature)(Attach Power of Attorney)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____	Attest: _____
<i>(Signature)</i>	<i>(Signature)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
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

<b>Contractor</b> Name: Address <i>(principal place of business)</i> :	<b>Surety</b> Name: Address <i>(principal place of business)</i> :
<b>Owner</b> Name: Mailing address <i>(principal place of business)</i> :	<b>Contract</b> Description <i>(name and location)</i> :  Contract Price: Effective Date of Contract:
<b>Bond</b> 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:

Owner's Project No.:

Engineer:

Engineer's Project No.:

Contractor:

Contractor's Project No.:

Project:

Contract Name:

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

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

Date of Substantial Completion:

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

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



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# 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: \_\_\_\_\_

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# STANDARD GENERAL CONDITIONS

OF THE CONSTRUCTION CONTRACT

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# 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.

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# **SUPPLEMENTARY CONDITIONS**

OF THE CONSTRUCTION CONTRACT

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# 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.44 Add the following to Paragraph 1.01.A.44:

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.
- H. The Construction Documents, and the Project to be constructed in accordance with the Construction Documents, are subject to the provisions and requirements of Iowa Code Chapter 573.

## **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.
- b. Time extensions will not be granted for rain, wind, flood, or other natural phenomena of normal intensity for the locality where Work is performed. For

purpose of determining extent of delay attributable to unusual weather phenomena, a determination shall be made by comparing the weather for a minimum continuous period of at least one-fourth of the Contract Time involved with the average of the preceding 5-year climatic range during the same time interval based on U.S. Weather Bureau statistics for the locality where the Work is performed.

## **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. Contractor may examine copies of reports and drawings identified in SC-5.03.E that were not included with the Bidding Documents at HDR office at 5815 Council Street NE, Suite B, Cedar Rapids, IA 52402 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:

- D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following: None.
- 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).

<b>Workers' Compensation and Related Policies</b>	<b>Policy limits of not less than:</b>
<b>Workers' Compensation</b>	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
<b>Jones Act (if applicable)</b>	
Bodily injury by accident—each accident	\$N/A
Bodily injury by disease—aggregate	\$N/A
<b>Employer's Liability</b>	
Each accident	\$500,000
Each employee	\$500,000
Policy limit	\$500,000
<b>Stop-gap Liability Coverage</b>	
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:	\$N/A

- 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*

<b>Commercial General Liability</b>	<b>Policy limits of not less than:</b>
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.

<b>Automobile Liability</b>	<b>Policy limits of not less than:</b>
<b>Combined Single Limit</b>	
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.

<b>Excess or Umbrella Liability</b>	<b>Policy limits of not less than:</b>
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.

<b>Contractor's Pollution Liability</b>	<b>Policy limits of not less than:</b>
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.

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

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 7.01, 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: "The following Owner safety programs are applicable to the Site:

- 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.

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:

- 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.
- e. *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 five (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 twenty (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**

SC-15.01.D.1. Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

1. Thirty (30) 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.

### **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.

### **SC-15.06 Final Payment**

SC 15.06E. Delete Paragraph 15.06.E in its entirety and insert the following in its place:

- E. Final Payment Becomes Due: The Engineer shall present to Owner the final Application for Payment and accompanying documentation. Subject to the provisions of Iowa Code Chapter 573 and as hereinafter provided in this Paragraph 15.06.E, thirty (30) days after the last to occur of (i) the completion of the Work and (ii) final acceptance of the Work by Owner, the amount recommended by Engineer in the final Application for Payment (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages, set-offs allowed under the provisions above with respect to progress payments, set-offs for claims on file with Owner for material and/or labor in accordance with Iowa Code Chapter 573, as more specifically addressed in Paragraph 15.06.E.1 below) will become due and shall be paid by Owner to Contractor.
  1. Claims for Materials and/or Labor: In accordance with Iowa Code Chapter 573, if at the end of the above referenced thirty (30) day period claims are on file with the Owner for materials and/or labor, Owner shall continue to retain from the unpaid funds a sum equal to double the total amount of all claims on file. The remaining balance of the unpaid funds shall be released and paid to Contractor.
  2. Interest.
    - a. In accordance with Iowa Code Chapter 573 and subject to the provisions therein, failure to make payment of any amount due to Contractor within fifty (50) days after the last to occur of (i) the completion of the Work and (ii) final acceptance of the Work by Owner, shall cause interest to accrue on the amount unpaid to the benefit of the unpaid party.

- b. Interest shall accrue during the period commencing the 31<sup>st</sup> day following the last to occur of (i) the completion of the Work and (ii) final acceptance of the Work by Owner, and ending on the date of payment.
  - c. The rate of interest shall be determined by the period of time during which interest accrues, and shall be the same as the rate of interest that is in effect under Iowa Code Section 12C.6, as of the day interest begins to accrue, for a deposit of public funds for a comparable period of time. Except as provided in Iowa Code Sections 573.12 and 573.16, interest shall not accrue on funds retained by Owner to satisfy claims for material and/or labor on file with Owner
3. Exception: In accordance with Iowa Code Chapter 573, no part of the unpaid fund due to Contractor shall be retained, as provided in Iowa Code Chapter 573, on claims for materials furnished, other than materials ordered by the Contractor or Contractor's authorized agent, unless such claims are supported by a certified statement that the Contractor has been notified within thirty (30) days after the materials were furnished or by itemized invoices rendered to Contractor during the progress of the Work, of the amount, kind and value of the material furnished.

## **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 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.

- D. 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.
- E. 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.
- F. 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.
- G. 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.
- H. 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.
- I. 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.



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# DIVISION 01

## GENERAL REQUIREMENTS



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## **SECTION 01 11 00 SUMMARY OF WORK**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Location and Description of Work.
  - 2. Contracts for this Project.
  - 3. Work by Owner.
  - 4. Sequence and Progress of Work.
  - 5. Contractor's Use of Site.
  - 6. Work by Others
  - 7. Easements and Rights-of-Way.
  - 8. Partial Utilization by Owner.
  - 9. Utility Owners.

#### **1.2 LOCATION AND DESCRIPTION OF WORK**

- A. The Work is located at the CRLCSWA Site 2 Landfill, 1954 County Home Rd. 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. Scale Project.
    - a. Removal and replacement of inbound scale.
    - b. Removal and replacement of outbound scale pivots, bearings, and suspension kit.
    - c. Removal and replacement of guide rails.
    - d. Installation of heat trace on all scales.
    - e. Coordination with site, other contractors, subcontractors.
    - f. Others: See Drawings and Specifications.
- C. Contracting Method: The Project will be constructed under a single prime construction contract.
- D. Hazardous Environmental Conditions:
  - 1. Site is an active landfill with heavy equipment and landfill traffic.
  - 2. A Hazardous Environmental Condition, described in reports referenced in the Supplementary Conditions, will affect the Work.

#### **1.3 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:
  - a. Coordination with other contractor's work in the same area.
  - b. Installation of new inbound scale shall be completed when the site is closed to landfill activities as discussed below in Section 1.4.F. below.
- C. Roadways:

1. Owner's "Main Access Road" shall remain a two-lane, unobstructed road at all times except between the hours of 5:00 PM and 6:00 AM on weekdays and from 12:00 PM on Saturday to 6:00 AM 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 AM 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 lane of roadway shall remain open to traffic at all times.
3. Maintain a minimum of one 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) Flagman, 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.

#### **1.4 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.
- 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.
    - c. Sunday: Closed.
  2. The Site is closed on the following holidays:

- a. New Year's Day.
    - b. Memorial Day.
    - c. 4<sup>th</sup> 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 front gate and stop at the scale office to notify attendant upon entering.
  4. For access 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.
  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 any stored material or products that interfere with operations of Owner or other Contractors.

## **1.5 WORK BY OTHERS**

- A. 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.

## **1.6 EASEMENTS AND RIGHTS-OF-WAY**

- A. Easements and Rights-of-Way - General:
  1. 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).
  2. 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.
  3. Do not enter private property outside the construction limits without permission from the owner of the property.

## **1.7 PARTIAL UTILIZATION BY OWNER**

- A. Prior to Substantial Completion of the entire Work under [the] [each prime] Contract, substantially complete the Work as follows on or before December 31, 2022:
  1. Work indicted for Milestones (if any).
    - a. Outbound scale repairs including removal and replacement of the pivots, bearings, and suspension kit.
    - b. Removal and replacement of guide rails.
    - c. Installation of heat trace on all scales.

## **1.8 UTILITY OWNERS**

- A. Utilities known to Engineer who may have facilities (Underground Facilities or otherwise) in the vicinity of the Work are as follows:
  - 1. Electrical: Alliant Energy – Interstate Power and Light Co. and Private.
  - 2. Wastewater: Private sanitary sewer.
  - 3. Communications: Private fiber optic.

## **1.9 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.

## **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 milestones and substantial and final completion dates.
- B. Construction operations will be scheduled to allow the Owner uninterrupted operation of existing adjacent facilities.
  - 1. All work impacting the Owner's operations shall be completed outside of normal operating hours unless otherwise approved by Owner.
  - 2. All work required to remove and replace the existing inbound scale shall be limited to one (1) week to minimize downtime.
  - 3. 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**

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**SECTION 01 22 00**  
**MEASUREMENT AND PAYMENT (UNIT PRICE CONTRACTS)**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Defines how work items are measured and paid for on Unit Price Contracts. These items include unit price, lump sum price, and allowance payment items.
  - 2. In the case of conflict between this Section and the measurement methods specified in the individual Technical Specification Sections, the measurement methods in Technical Specification Sections shall govern.
  - 3. Receive payment for work after it is installed. Payment for material on hand can only be paid for if allowed by the Agreement, the General and/or Special Conditions.
  - 4. Partial payment may be requested for items partially installed when agreed to by the Owner.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.
  - 3. Applications for Payment requirements are included in Specification Section 01 29 76 - Progress Payment Procedures.

**1.2 UNIT PRICE ITEMS**

- A. Quantity and measurement estimates stated in the Bid Form are estimates for bidding purposes only. Actual payments shall be based on actual quantities installed, in-place, as measured and/or verified by the Engineer within approved design boundaries.
- B. Unless otherwise stated in the Contract Documents, the bid unit prices shall be in effect throughout the contract duration. When the variance between the estimated quantities and the actual installed quantities is more than 25 percent, the Contractor or the Owner may negotiate a change to the Unit Price. That change will be made in accordance with the Change Order process as defined in the Contract Documents.
- C. Except as defined above, make no claim, nor receive any compensation, for anticipated profits, loss of profit, damages, or any extra payment due to any difference between the amounts of work actually completed, or materials or equipment furnished, and the estimated quantities.
- D. The Owner can only pay for quantities that exceed the estimated quantities so long as the total payments to the Contractor do not exceed the Contract Price. If the added quantities will result in payments that exceed the Contract Price, a Change Order will need to be executed before payment can be made for the added quantities.
- E. Assist Engineer by providing necessary equipment, workers, and survey personnel as required to measure quantities.
- F. Unless stated in the Contract Documents, measured quantities shall be rounded to the nearest whole integer.
- G. Measurement:
  - 1. Measurement for progress payment shall be made by, or approved by, the Engineer based on the actual quantities installed. The actual quantities installed can be adjusted for corrections to previous calculations, incomplete elements or components if agreed to in advance and in writing by the Engineer.
  - 2. Unless otherwise provided for in the Contract Documents, unit price items are all inclusive of all related work, direct and indirect costs, to provide a complete and functional item.

3. The final measurement shall be based on actual installed quantities, jointly measured and agreed to by the Contractor and the Engineer. Quantities can be adjusted (increased or decreased) based on a final calculation of quantities by the Engineer and Contractor.

H. Payment:

1. Progress payments shall be in accordance with the Contract Documents based on estimated quantities installed paid at the bid unit price.
2. The final payment shall be based on actual quantities, fully installed, tested and placed into service, paid at the bid unit price.

### **1.3 LUMP SUM ITEMS**

- A. Progress payments for Lump Sum items in the Bid Schedule will be based on the breakdown prepared by the Contractor and approved by the Engineer and Owner before acceptance of the Application for Payment for the Lump Sum item.
- B. Lump Sum payment will be for the entire item as specified and as indicated in the Contract Documents. Payment for all bid items indicated as Lump Sums shall include the cost of all labor, materials, equipment and incidentals necessary to furnish, install, clean, test, and place each bid item into operation; including permitting, general conditions, overhead and profit.

### **1.4 APPLICATION FOR PAYMENT**

- A. Provide a Summary Sheets and breakdown sheets equivalent to those of EJCDC document C-620, Contractor's Application for Payment forms.

## **PART 2 - PRODUCTS - (NOT USED)**

## **PART 3 - EXECUTION**

### **3.1 LUMP SUM BID ITEMS - GENERAL**

- A. Measurement of lump sum bid items will be based on an estimated percent complete of the various components of the lump sum item established by the Contractor's Schedule of Values and approved by the Engineer.

### **3.2 UNIT PRICE ITEMS - GENERAL**

- A. Measurement of unit price bid items will be based on measured values of the various components of the unit item established by the Contractor's Schedule of Values and approved by the Engineer.

### **3.3 ITEM DESCRIPTIONS**

A. Bid Items include:

**1. Bid Item 1 – Mobilization/Demobilization**

- a. Measurement and Payment:
  - 1) Lump sum to be paid based on estimated percent complete, up to 60% after mobilization and 40% after demobilization.
- b. Includes, but is not limited to:
  - 1) All costs to mobilize to site and demobilize from site for the duration of the project.
  - 2) All costs to complete the project not included in bid item 2 through bid item 5.

**2. Bid Item 2 – Inbound Scale Replacement**

- a. Measurement and Payment:
  - 1) Lump sum to be paid based on estimated percent complete.
- b. Includes, but is not limited to:
  - 1) Labor, equipment, and materials needed to remove existing scale and appurtenances, construct and/or modify footings, and install and calibrate new scale, and render operational.

- 2) Labor, equipment, and materials needed to install traffic lighting and speaker with new scale system.
  - 3) Purchase and transportation of new scale. Disposal offsite of old scale.
    - a) New scale must be submitted to site prior to purchase, shall be a 10x80 Rice Lake Steel top truck scale or approved similar. CONTRACTOR to verify proposed scale will fit in existing scale pit.
- 3. **Bid Item 3 – Outbound Scale Repairs**
  - a. Measurement and Payment:
    - 1) Lump sum to be paid based on estimated percent complete.
  - b. Includes, but is not limited to:
    - 1) Labor, equipment, and materials needed to remove and replace the pivots, bearings, and suspension kit, and render operational.
- 4. **Bid Item 4 – Guide Rail Replacement**
  - a. Measurement and Payment:
    - 1) Lump sum to be paid based on estimated percent complete.
  - b. Includes, but is not limited to:
    - 1) Labor, equipment, and materials needed to remove and replace guide rails on all scales as shown in the plans.
- 5. **Bid Item 5 – Heat Trace**
  - a. Measurement and Payment:
    - 1) Lump sum to be paid based on estimated percent complete.
  - b. Includes, but is not limited to:
    - 1) Labor, equipment, and materials needed to install heat trace on all scales as shown on the plans. Electrical work shall be completed by a qualified electrician and per the specifications.

**END OF SECTION**

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## **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**

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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.		
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		
In the lines provided, describe what effect the proposed substitution has on dimensions indicated on the Drawings and previously reviewed Shop Drawings?		
In the lines provided, describe what effect the proposed substitution has on the Construction Schedule and Contract Time.		
In the lines provided, describe what effect the proposed substitution has on the Contract Price. This includes all direct, indirect, impact and delay costs.		
Manufacturer's guarantees of the proposed and specified items are:		
<input type="checkbox"/> Same <span style="margin-left: 100px;"><input type="checkbox"/> Different (explain on attachment)</span>		
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:		
<input type="checkbox"/> Accepted <input type="checkbox"/> Not Accepted  <div style="text-align: center; margin-top: 10px;">_____ (Date)  _____ (Telephone)</div>	<input type="checkbox"/> Accepted as Noted <input type="checkbox"/> Received Too Late  <div style="text-align: center; margin-top: 10px;">_____ (Contractor's Signature)  _____ (Contractor's Firm)  _____ (Firms Address)</div>	

Comments:

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## **SECTION 01 29 73**

### **SCHEDULE OF VALUES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Administrative and procedural requirements for the Schedule of values.
- B. Scope:
  - 1. Contractor shall prepare and submit to Engineer for acceptance a Schedule of Values that allocates cost to each item of the Work. Schedule of Value list of line items shall correspond to each aspect of the Work, establishing in detail the portion of the Contract Price allocated to each component of the Work.
  - 2. Upon request of Engineer, promptly furnish data and information that substantiates and supports the amounts indicated in the Schedule of Values.
  - 3. Submit preliminary Schedule of Values to Engineer for initial review. Contractor shall incorporate Engineer's comments into the Schedule of Values and resubmit to Engineer. Engineer may require corrections and re-submittals until Schedule of Values is acceptable.
  - 4. Schedule of Values may be used as a basis for negotiating price of changes, if any, in the Work.

##### **1.2 SUBMITTALS**

- A. Informational Submittals: Submit the following:
  - 1. Submit to Engineer the Schedule of Values in the form and quantity required in Section 01 33 00 - Submittals, and in accordance with Section 01 31 26 - Electronic Communication Protocols.
  - 2. Content of Schedule of Values Submittals shall be in accordance with Article 1.3 of this Specifications Section.
  - 3. Timing of Submittals:
    - a. Submit preliminary Schedule of Values within 10 days following the effective date of the agreement.
    - c. Submittal of the Schedule of Values for acceptance by Engineer shall be in accordance with the General Conditions. Engineer will not accept Applications for Payment without an acceptable Schedule of Values.
    - d. When required by Engineer, promptly submit updated Schedule of Values to include cost breakdowns for changes in the Contract Price.

##### **1.3 SCHEDULE OF VALUES FORMAT AND CONTENT**

- A. Organization and Major Elements of Schedule of Values.
  - 1. Prepare Schedule of Values on the "progress estimate" or "continuation sheets", as applicable, of the Application for Payment form indicated in Section 01 29 76 - Progress Payment Procedures.
  - 2. Include in Schedule of Values itemized list of Work for each major work area included in the Work, for each lump sum payment item included in the Contract.
  - 3. Organization in Accordance with Specification Sections:
    - a. Within each work area, organize the Schedule of Values by the various Specifications section numbers and titles included in the Contract Documents.
    - b. Label each row in the Schedule of Values with the appropriate Specifications section number. Include an amount for each row in the Schedule of Values.
    - c. List sub-items of major materials, equipment, or systems, as appropriate or when requested by Engineer.

- B. Requirements for preliminary Schedule of Values Submittal and the Schedule of Values Submittal for acceptance by Engineer are:
1. Subcontracted Work:
    - a. Schedule of Values shall indicate division of Work between Contractor and each Subcontractor.
    - b. Line items for Work to be performed by each Subcontractor shall include the word, “(SUBCONTRACTED)” and the name of the Subcontractor once the associated subcontract is signed and effective.
  2. Apportionment between Materials and Equipment, and Installation: Schedule of Values shall include separate apportionment of costs for:
    - a. Cost of materials and equipment to be incorporated into the completed construction.
    - b. Cost of delivery, handling, and storage of materials and equipment to be incorporated into the completed construction.
    - c. Cost of temporary materials (such as excavation supports, scaffolding, and other temporary materials), and their associated delivery, handling, and storage costs, if any.
    - d. Cost of rentals of construction equipment and machinery, whether owned by Contractor or Subcontractor or leased from a third-party equipment rental entity.
    - e. Cost of installing materials and equipment.
    - f. Travel and subsistence costs, if any.
    - g. Other costs used in preparing the Bid by Contractor and each Subcontractor.
  3. Sum of individual line item amounts indicated on the Schedule of Values shall equal the total of associated bid/payment item. Sum of bid/payment item totals in the Schedule of Values shall equal the Contract Price.
  4. Overhead and Profit:
    - a. Include in each line item a directly proportional amount of Contractor’s overhead and profit in the Contract Price.
    - b. Do not include overhead and profit as separate line item(s).
  5. Allowances: Include separate line item for each allowance.
  6. Unit Price Work: Separately indicate items of Unit Price Work in the overall Schedule of Values. Where the required form (in accordance with Section 01 29 76 - Progress Payment Procedures) includes a separate worksheet or page for Unit Price Work, indicate all items of Unit Price Work on such worksheet or page of the form.
  7. Bonds and Insurance Costs:
    - a. Include line item for bonds and insurance in payment item for in amount not exceeding 2.0 PCT of the Contract Price.
    - b. When greater than the amount stipulated immediately above is proposed by Contractor in the Schedule of Values, submit to Engineer documentation substantiating the proposed amounts. Submit to Engineer such documentation when otherwise requested by Engineer.
    - c. When Contractor has furnished bonds and evidence of insurance acceptable to Owner and in accordance with the Contract Documents, entire amount for bonds and insurance may be applied for in the first Application for Payment.
  8. “Site Overhead” and Administrative Cost Elements:
    - a. Include in the Schedule of Values relevant line items and amounts for work and services required by the General Conditions and specific Division 01 Specifications sections, such as:
      - 1) Superintendence and supervision costs and other costs.
      - 2) Itemized list of Work by work area, as applicable, for costs associated with coordination with the Owner’s operations, including required sequencing, as set forth in the Contract Documents.
      - 3) Construction Progress Schedule and scheduling, schedule updates, time impact analyses, and preparation of recovery schedules.
      - 4) Construction photographic documentation.
      - 5) Permits (when applicable).
      - 6) Temporary utilities and temporary facilities.

- 7) Field offices (monthly rental and maintenance) and storage facilities (excluding costs of establishment and removal, which are part of mobilization and demobilization).
- 8) Site maintenance, such as temporary controls (dust, air pollution, water pollution, solid waste control, pest and rodent control, temporary erosion and sediment controls, and others), snow and ice removal, and similar activities.
- 9) Field engineering and surveying.
- 10) Progress cleaning and cleaning for Substantial Completion.
- 11) Record documents (preparation, maintenance, and submittal).
  - a) If adequate record documents are maintained, up to 50 PCT of the value of the Record Documents line item will be eligible for payment, spread evenly over those progress payments in which construction at the Site is performed.
  - b) Remainder of Project Record Documents line item will be eligible for payment when complete Record Documents are submitted in accordance with the Contract Documents. If Record Documents submitted are unsatisfactory to Engineer, amount may be reduced via set-offs in accordance with the Contract Documents.
- 12) Other items required by Engineer.
- b. Include such items in Applications for Payment on payment schedule acceptable to Engineer.
- c. Such line items in the Schedule of Values shall exclude any and all costs associated with Contractor's permanent place(s) of business, personnel stationed at permanent office(s), salaries and bonuses of executive and administrative personnel not directly performing work on the Project, and general business expenses, all of which are part of Contractor's overhead costs.
9. Mobilization and Demobilization:
  - a. Include separate line items under each appropriate lump sum bid/payment item for mobilization and demobilization.
  - b. Document for Engineer the activities included in mobilization and demobilization line items.
  - c. Mobilization includes: Obtaining permits; negotiating, preparing, and signing subcontracts and purchase orders, attending preconstruction conference(s) and initial scheduling conference(s); establishing temporary utilities and temporary facilities; establishing field offices, and staging and laydown areas; establishing major temporary equipment and machinery at the Site; establishing temporary access roads and parking; preparing and initial implementation of spill prevention control and countermeasures plans; initial establishment of temporary environmental controls, including initial temporary erosion and sediment controls; and similar work required for Contractor to mobilize for Work at the Site, not included under other line items of the Schedule of Values. Obtain Engineer's concurrence for other costs included under mobilization.
  - d. Mobilization will be limited to 2.0 PCT of the Contract Price, and will be paid in monthly payments, at an amount agreeable between the Contractor and Engineer for mobilization. Should Contractor propose mobilization in an amount greater than the limit indicate in this paragraph or on an alternative schedule from that indicated in this paragraph, submit to Engineer for acceptance information and documentation sufficient to support and substantiate the proposed amount and payment schedule for mobilization.
  - e. Demobilization includes: Closing out permits obtained by Contractor; final closeout of remaining subcontracts and purchase orders, attending the final inspection; terminating temporary utilities; removing remaining temporary facilities; removing field offices, storage sheds, and staging and laydown areas and performing final restoration of such areas; removing major temporary equipment and machinery from the Site; removing temporary access roads and parking; and similar work required for Contractor to fully demobilize from the Site, not included under other line items of the Schedule of Values.



- f. Demobilization shall be included with the Application for Payment following Substantial Completion, or other schedule acceptable to Engineer.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

## **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 FOR PAYMENTS**

- A. Procedure:
  - 1. Review with Engineer or 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 Engineer/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 in accordance with Section 01 29 73 - Schedule of Values, 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 specific 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 Specifications section.

4. Partial Release or Reduction of Retainage:
  - a. For each Application for 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**

<b>Owner:</b> _____ <b>Engineer:</b> _____ <b>Contractor:</b> _____ <b>Project:</b> _____ <b>Contract:</b> _____	<b>Owner's Project No.:</b> _____ <b>Engineer's Project No.:</b> _____ <b>Contractor's Project No.:</b> _____
<b>Application No.:</b> _____ <b>Application Date:</b> _____	
<b>Application Period:</b> 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.

<b>Contractor:</b> _____	
<b>Signature:</b> _____	<b>Date:</b> _____

<b>Recommended by Engineer</b>  <b>By:</b> _____ <b>Title:</b> _____ <b>Date:</b> _____	<b>Approved by Owner</b>  <b>By:</b> _____ <b>Title:</b> _____ <b>Date:</b> _____
<b>Approved by Funding Agency</b>  <b>By:</b> _____ <b>Title:</b> _____ <b>Date:</b> _____	<b>By:</b> _____ <b>Title:</b> _____ <b>Date:</b> _____

### Progress Estimate - Lump Sum Work

### Contractor's Application for Payment

Owner:						Owner's Project No.:		
Engineer:						Engineer's Project No.:		
Contractor:						Contractor's Project No.:		
Project:								
Contract:								
Application No.: _____ Application Period: From _____ to _____ Application Date: _____								
A	B	C	D	E	F	G	H	I
Item No.	Description	Scheduled Value (\$)	Work Completed		Materials Currently Stored (not in D or E) (\$)	Work Completed and Materials Stored to Date (D + E + F) (\$)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) (\$)
			(D + E) From Previous Application (\$)	This Period (\$)				
Original Contract								
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
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						-		-
						-		-
Original Contract Totals		\$ -	\$ -	\$ -	\$ -	\$ -		\$ -

### Contractor's Application for Payment

<b>Application No.:</b> _____	<b>Application Period:</b>	<b>From</b> _____	<b>to</b> _____	<b>Application Date:</b> _____
-------------------------------	----------------------------	-------------------	-----------------	--------------------------------

Original Contract and Change Orders							
Project Totals	\$ -	\$ -	\$ -	\$ -	\$ -		\$ -

## Contractor's Application for Payment

Owner:	_____	Owner's Project No.:	_____
Engineer:	_____	Engineer's Project No.:	_____
Contractor:	_____	Contractor's Project No.:	_____
Project:	_____		
Contract:	_____		

[illegible]

## Contractor's Application for Payment

Owner:	_____	Owner's Project No.:	_____
Engineer:	_____	Engineer's Project No.:	_____
Contractor:	_____	Contractor's Project No.:	_____
Project:	_____		
Contract:	_____		

<b>Application No.:</b>	<b>Application Period:</b>	<b>From</b>	<b>to</b>	<b>Application Date:</b>
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A	B	C	D	E	F	G	H	I	J	K	L
Bid Item No.	Description	Contract Information				Work Completed		Materials Currently Stored (not in G) (\$)	Work Completed and Materials Stored to Date (H + I) (\$)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) (\$)
		Item Quantity	Units	Unit Price (\$)	Value of Bid Item (C X E) (\$)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) (\$)				
Change Orders											
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
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					-		-		-		-
					-		-		-		-
Change Order Totals					\$ -		\$ -	\$ -	\$ -		\$ -
Original Contract and Change Orders											
Project Totals					\$ -		\$ -	\$ -	\$ -		\$ -



### Contractor's Application for Payment

Owner:		Owner's Project No.:	
Engineer:		Engineer's Project No.:	
Contractor:		Contractor's Project No.:	
Project:			
Contract:			

Application No.:	Application Period:	From	to	Application Date:
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[illegible]

## **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. Agenda:
  - 1. Procedural and Administrative:
    - a. Personnel and Teams:
      - 1) Designation of roles and personnel.
      - 2) Limitations of authority of personnel, including personnel who will sign Contract modifications and make binding decisions.
      - 3) Subcontractors and Suppliers in attendance.
      - 4) Authorities having jurisdiction.
    - b. Procedures for communications and correspondence, including electronic communication protocols.
    - c. Copies of the Contract Documents and availability.
    - d. The Work and Scheduling:
      - 1) General scope of the Work.
      - 2) Contract Times, including Milestones (if any).
      - 3) Phasing and sequencing.
      - 4) Preliminary Progress Schedule.
      - 5) Critical path activities.
    - e. Safety:
      - 1) Responsibility for safety.
      - 2) Emergency procedures and accident reporting.
      - 3) Emergency contact information.
      - 4) Confined space entry permits.
      - 5) Hazardous materials communication program.
      - 6) Impact of Project on public safety.
    - f. Permits.
    - g. Review of insurance requirements and insurance claims.
    - h. Coordination:
      - 1) Coordination of Subcontractors and Suppliers.

- 2) Coordination with Owner's operations.
- 3) Progress meetings – schedule and frequency.
- 4) Coordination meetings.
- i. Submittals:
  - 1) Current critical Submittals:
    - a) Preliminary Schedule of Submittals.
    - b) Other schedules (Progress Schedule, Schedule of Values).
    - c) Preconstruction photographic documentation.
    - d) List of proposed Subcontractors and Suppliers.
    - e) List of emergency contact information.
    - f) Notice of elements of Contractor's safety program with which Owner and Engineer are to comply.
    - g) Site use plan.
    - h) Traffic control plan.
    - i) Form of Contractor's site superintendent's daily reports.
  - 2) Work not eligible for payment without approved or accepted Submittals (as applicable).
  - 3) Submittal procedures.
    - a) Compliance with accepted Schedule of Submittals.
    - b) Actions required of Contractor prior to furnishing Shop Drawings and other Submittals
    - c) Contractor's Submittal approval stamp required; Contractor's coordination of Submittals.
    - d) Furnishing of Submittals.
    - e) Submittal types and meaning of Engineer's action on each.
    - f) Resubmittals—responsibility for, limitations on quantity.
  - 4) Identification of initial, critical Shop Drawings and product data.
  - 5) Construction photographic documentation.
- j. Substitutes and "Or-Equals":
  - 1) Product options.
  - 2) Procedures for proposing "or-equals".
  - 3) Procedures for proposing substitutes.
- k. Contract Modification Procedures:
  - 1) Requests for interpretation.
  - 2) Written clarifications.
  - 3) Field Orders.
  - 4) Change Proposal Requests.
  - 5) Work Change Directives.
  - 6) Change Orders.
  - 7) Differing site conditions or discovery of Hazardous Environmental Condition.
  - 8) Substantiating and documenting Change Proposals and Claims.
  - 9) Claims.
- l. Progress Payment:
  - 1) Owner's Project financing and funding, as applicable.
  - 2) Owner's tax-exempt status.
  - 3) Preliminary Schedule of Values.
  - 4) Procedures for measuring for payment (Unit Price Work).
  - 5) Retainage.
  - 6) Progress payment procedures; documents to accompany Applications for Payment.
  - 7) Payment for stored items not yet installed.
  - 8) Date of Owner's payments; payment is due.
- m. Subcontractors and Suppliers:
  - 1) List of proposed Subcontractors and Suppliers; monthly updates.
  - 2) Coordination and management.
  - 3) Subcontracts and purchase orders.

- n. Testing and inspections:
  - 1) Owner-hired and contractor-hired.
  - 2) Identification of Owner-hired testing entity and special inspectors.
  - 3) Responsibility for advising testing entity and special inspectors of need for services.
  - 4) Results of code-required special inspections and tests.
  - 5) Prompt remedy of apparent defects.
  - 6) Notice of defective Work.
  - 7) Remedy of defective Work.
  - 8) Defective Work not eligible for payment.
  - 9) Covering up defective Work.
  - 10) Cost responsibility for defective Work and retesting/re-inspection.
- o. Disposal of demolition materials.
- p. Record documents.
- q. Preliminary discussion of Contract closeout:
  - 1) Procedures for Substantial Completion.
  - 2) Partial utilization procedures; property insurance.
  - 3) Contract closeout requirements.
  - 4) Correction period; duration of Contractor's general warranty and guarantee.
  - 5) Duration of bonds and insurance.
- 2. Authorities Having Jurisdiction (if not covered in a separate meeting):
  - a. Municipal licenses.
  - b. Municipal permits required.
    - 1) Permits required and status.
    - 2) Inspections for building code official.
    - 3) Code-required special inspections and tests (if not covered in Administrative and Procedures part of meeting).
  - c. Right-of-way work permits; status of occupancy permit(s).
  - d. Environmental permits:
    - 1) Spill prevention control and countermeasures plan (40 CFR 112).
- 3. Site Mobilization (if not covered in a separate meeting):
  - a. Working days, working hours, and overtime.
  - b. Use of Site and other areas; use of existing facilities.
  - c. Field offices, storage trailers, and staging areas.
  - d. Temporary facilities.
  - e. Temporary utilities and limitations on utility use (where applicable).
  - f. Utility company coordination (if not done as a separate meeting).
  - g. Access to Site, access roads, and parking for construction vehicles.
  - h. Traffic controls.
  - i. Temporary controls:
    - 1) Erosion and sediment control; storm water pollution prevention plans.
    - 2) Dust control and air pollution control (including emissions control).
    - 3) Water control (storm water, surface water, groundwater).
    - 4) Water pollution control; spill prevention control and countermeasures plan.
    - 5) Solid waste control.
    - 6) Pest control.
    - 7) Other temporary controls.
  - j. Security; temporary security fencing (where required).
  - k. Storage of materials and equipment to be incorporated into the Work.
  - l. Protection of the Work and property; protective barriers.
  - m. Field engineering:
    - 1) Reference points and benchmarks.
    - 2) Surveys and layouts.
    - 3) Professional services for Contractor's means and methods (not delegated design).
    - 4) Contractor's site superintendent's daily records and submittal requirements.

- n. Site maintenance during the Project:
      - 1) Progress cleaning; removal of trash and debris.
      - 2) Maintenance and cleaning of existing access roads and parking areas.
    - o. Restoration.
  - 4. Next meeting.
  - 5. Site visit, as necessary.
- E. The Engineer will compile meeting minutes from the transcribed record of the meeting and electronically distribute copies to all participants.
- F. 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 indicate 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 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**

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## **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. Informational Submittals are Submittals, other than Action Submittals, required by the Contract Documents. Explicit response from Engineer is not required when such Submittal is acceptable and Engineer's acceptance thereof will be indicated in the Engineer's Submittals log. When Informational Submittal does not indicate full compliance with the Contract Documents, Engineer will indicate the non-compliance in a written response to Contractor.
  - 2. 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.



3. 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 7 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 by Friday, December 9, 2022, and approval prior to Friday, December 16, 2022. Contractor must allow time for review and addressing comments from Engineer within these dates.
- 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

HDR  
 300 E Locust Street, Suite 210  
 Des Moines, IA 50309  
 Attn: Austin Broshar  
 Austin.Broshar@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:

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

HDR  
300 E Locust Street, Suite 210  
Des Moines, IA 50309  
Attn: Austin Broshar  
Austin.Broshar@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:

<p>A - Furnish as Submitted</p> <p>B - Furnish as Noted</p> <p>C - Revise and Submit</p> <p>    1. Not enough information for review.</p> <p>    2. No reproducibles submitted.</p> <p>    3. Copies illegible.</p> <p>    4. Not enough copies submitted.</p> <p>    5. Wrong sequence number.</p> <p>    6. Wrong resubmittal number.</p> <p>    7. Wrong spec. section.</p> <p>    8. Wrong form used.</p> <p>    9. See comments.</p> <p>D - Rejected</p>	<p>E - Engineer's review not required</p> <p>    1. Submittal not required.</p> <p>    2. Supplemental Information. Submittal retained for informational purposes only.</p> <p>    3. Information reviewed and approved on prior submittal.</p> <p>    4. See comments.</p> <p>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.</p>
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Comments:

By	Date
----	------

Distribution:    Contractor    |    File    |    Field    |    Owner    |    Other    |

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# 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

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

Remarks:

To:	From:
	HDR Engineering, Inc.
	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.

B - Furnish as Noted

C - Revise and Resubmit

This Operation and Maintenance Manual Submittal is deficient in the following area:

1. Equipment Records.
2. Functional description.
3. Assembly, disassembly, installation, alignment, adjustment & checkout instructions.
4. Operating instructions.

5. Lubrication & maintenance instructions.
6. Troubleshooting guide.
7. Parts list and ordering instructions.
8. Organization (binder, binder titles, index & tabbing).
9. Wiring diagrams & schematics specific to installation.
10. Outline, cross section & assembly diagrams.
11. Test data & performance curves.
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

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## EXHIBIT B1

## Equipment Record

## 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			
<b>MECHANICAL NAMEPLATE DATA</b>									
Equip.					Serial No.				
Make					Model No.				
ID No.	Frame No.		HP		RPM		Cap.		
Size	TDH		Imp. Sz.		CFM		PSI		
Other:									
<b>ELECTRICAL NAMEPLATE DATA</b>									
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:									
<b>SPARE PARTS PROVIDED PER CONTRACT</b>									
Part No.		Part Name						Quantity	
<b>RECOMMENDED SPARE PARTS</b>									
Part No.		Part Name						Quantity	

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## EXHIBIT B2

## Equipment Record

## Recommended Maintenance Summary

Equipment Description	Project Equip. Tag No(s).							
RECOMMENDED BREAK-IN MAINTENANCE (FIRST OIL CHANGES, ETC.)	INITIAL COMPLETION * FOLLOWING START-UP							
	D	W	M	Q	S	A	RT	Hours
RECOMMENDED PREVENTIVE MAINTENANCE	PM TASK INTERVAL *							
	D	W	M	Q	S	A	RT	Hours

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

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EXHIBIT B3

# Equipment Record

## 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					

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**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, rock 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 rock 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. Control of Concrete Waste:

1. Concrete slurry waste shall not be allowed to enter storm drains or watercourses and shall be collected and disposed of or placed in a temporary concrete washout facility.
2. A sign shall be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.
3. Temporary concrete washout facilities shall be located a minimum of 50 FT from storm drain inlets, open drainage facilities, protected vegetation, and water courses. Each facility shall be located away from construction traffic or access areas to prevent disturbance or tracking.
4. Temporary concrete washout facilities shall be constructed above grade or below grade at the option of the Contractor. Temporary concrete washout facilities shall be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
  - a. Above grade temporary concrete washout facility: Straw bales or sandbags secured with wood or steel stakes shall form the washout area barrier with a lining comprised of a minimum of 10 MIL polyethylene sheeting free of holes, tears, or other defects that compromise the impermeability of the material.

- b. Below grade temporary concrete washout facility: Lath and flagging at the perimeter of the lined area shall be commercial type anchoring and marking three sides of the basin comprised of a minimum of 10 MIL polyethylene sheeting free of holes, tears, or other defects that compromise the impermeability of the material. Sand bags shall be spaced around the perimeter of the lined area to hold the lining in place.
  - 5. Washout of concrete trucks shall be performed in designated areas only. Only concrete from mixer chutes shall be washed into concrete wash out.
  - 6. Once concrete wastes are washed into the designated area and allowed to harden, the concrete shall be broken up, removed, and disposed of on a regular basis.
  - 7. When temporary concrete washout facilities are no longer required for the work, the hardened concrete shall be removed and disposed of. Materials used to construct temporary concrete washout facilities shall be removed from the site of the work and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled and repaired.
- I. 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.
- J. 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.
- K. Burning: Do not burn material on the site.
- L. Control of Noise:
  - 1. Control noise by fitting equipment with appropriate and properly functioning mufflers.
- M. 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.
- N. 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.
- O. 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.
- P. 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.
- Q. 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**



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**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. Owner/Engineer's Field Office.
    - d. 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 supplied at both the Owner/Engineer office trailer location and the Contractor office trailer or staging and laydown area.
  - 2. Units shall be properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
  - 3. 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.

### **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.
- D. Owner/Engineer's Field Office:
1. Establish at CRLCSWA Landfill agreed upon between Contractor, Engineer, and Owner.
  2. Separate from Contractor's field office.
  3. General construction:
    - a. Mobile office trailer as manufactured by Satellite Co., Acton, or approved equal.
    - b. Interior paneling.
    - c. Vinyl tile floor covering in office area.
    - d. Aluminum exterior.
    - e. One private office area and one lockable storage area accessible from exterior and interior of unit.
    - f. Windows:
      - 1) Minimum two per room, with one each on opposing walls.
      - 2) Combination screen-storm windows.
      - 3) Provide horizontal louver blinds on each window.
    - g. Nominal 26 FT long and 8 FT wide (minimum, equivalent to Satellite Model 830MO or similar).
    - h. Minimum two exterior doors for office.
      - 1) All exterior doors to have cylinder deadbolt locks.
      - 2) All exterior doors to have exterior stairs and railings.
  4. Electrical System:
    - a. All fixtures, outlets, and wiring of Underwriters Laboratories, Inc. (UL) approved devices.
    - b. All circuits protected by circuit breakers; fuses are not acceptable.
    - c. Electrical system shall meet requirements of the latest National Electric Code (NEC).
    - d. Any transformers or other devices required shall be provided and connected.
    - e. Provide a circuit breaker for the incoming service.
    - f. Each interior room shall have at least two, 110V duplex electrical convenience outlets.
  5. Electric Heating and Air-Conditioning System suitable for local climate and four seasons.
    - a. System to be capable of maintaining 75 DEGF constant temperature in office room.
  6. Lighting System:
    - a. Fluorescent type ceiling light fixtures of ample quantity and quality to ensure adequate lighting throughout office and storage area.
  7. Furnishings:
    - a. One built-in desk with pencil drawer.
    - b. One plan table 36 IN x 72 IN.
    - c. One, 36 IN x 72 IN cork bulletin board. One, 48 x 60 IN liquid marking board with minimum four-color set of compatible markers.
    - d. One two-drawer legal size filing cabinet.
    - e. Two cushioned swivel arm chairs.
    - f. Two folding metal chairs.

- g. Two standard size waste paper baskets.
- h. One standard size recycling basket.
- 1. Field Office Equipment:
  - a. One copying machine: Canon NP400F.
  - b. One telecopier: Xerox 400.
  - c. One scanner: Epson GT 30000.
  - d. Combination copier/scanner/printer is acceptable, in lieu of items a, b, and c above.
    - 1) Combination unit to have same production capacities as individual units.
    - 2) All units to be new and compatible with other communications systems.
- 2. Internet Connection: Provide mobile hotspot high speed internet connection.
- 3. Maintenance:
  - a. Contractor shall provide all maintenance and upkeep of trailer and equipment.
    - 1) Equipment breakdowns shall be repaired promptly.
  - b. Janitorial service.
    - 1) Biweekly:
      - a) Floor sweeping using dust suppressing compound.
      - b) Wet mopping with floor detergent.
      - c) Empty waste paper and recycling baskets.
    - 2) Inclement weather: Conduct weekly requirements on daily basis.
  - c. Pay all utilities and communications costs.
  - d. Maintain at least until Substantial Completion or until otherwise suspended by the Engineer. Remove field office from site upon acceptance of the entire work by the Owner.

### **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**

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**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 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. Liner System: Recompacted Clay Liner, HDPE Geomembrane Liner, and Drainage 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. Composite Cap System: Recompacted Clay Liner, LLDPE Geomembrane 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.
- F. 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.
- G. 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**



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## **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 corrected in accordance with the Contract Documents	<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
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"/>		
Remarks:						
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"/>		
Remarks:						
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"/>		
Remarks:						
9. Manufacturer warranties and software license(s) furnished	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Remarks:						
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"/>		
Remarks:						
11. MBE/WBE/DBE/VBE compliance report(s) submitted (when applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Remarks:						

Item No./Description	Completed/Date	In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
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"/>		
Remarks:						
19. Evidence of Contractor liability insurance furnished for correction period	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Remarks:						

Item No./Description	Completed/Date	In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
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]

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## **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 29 73 - Schedule of Values, 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**



# DIVISION 03

CONCRETE



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## **SECTION 03 00 05**

### **CONCRETE**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Cast-in-place concrete and grout.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.

##### **1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. American Concrete Institute (ACI):
    - a. 117, Specification for Tolerances for Concrete Construction and Materials.
    - b. 211.1, Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
    - c. 212.3R, Chemical Admixtures for Concrete.
    - d. 304R, Guide for Measuring, Mixing, Transporting, and Placing Concrete.
    - e. 304.2R, Placing Concrete by Pumping Methods.
    - f. 305.1, Hot Weather Concreting.
    - g. 306.1, Cold Weather Concreting.
    - h. 318, Building Code Requirements for Structural Concrete.
    - i. 347, Guide to Formwork for Concrete.
    - j. CT-13, Concrete Terminology.
  - 2. ASTM International (ASTM):
    - a. A82, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
    - b. A185, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
    - c. A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
    - d. A1064, Standard Specification for Steel Wire and Welded Wire Replacement, Plain and Deformed, for Concrete.
    - e. C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field.
    - f. C33, Standard Specification for Concrete Aggregates.
    - g. C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
    - h. C94/C94M, Standard Specification for Ready-Mixed Concrete.
    - i. C138, Standard Method of Test for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.
    - j. C143, Standard Test Method for Slump of Hydraulic Cement Concrete.
    - k. C150, Standard Specification for Portland Cement.
    - l. C172, Standard Practice for Sampling Freshly Mixed Concrete.
    - m. C173, Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
    - n. C231, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
    - o. C260, Standard Specification for Air-Entraining Admixtures for Concrete.
    - p. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
    - q. C494, Standard Specification for Chemical Admixtures for Concrete.

- r. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
  - s. C1293, Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction.
  - t. C1315, Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
  - u. D882, Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
  - v. D994, Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
  - w. D1056, Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
  - x. D1709, Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method.
  - y. D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
  - z. E96, Standard Test Methods for Water Vapor Transmission of Materials.
  - aa. E329, Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.
- 3. Corps of Engineers (COE):
    - a. CRD-C621, Standard Specification for Packaged, Dry, Hydraulic-Cement Grout (Nonshrink).
  - 4. National Ready Mixed Concrete Association (NRMCA).
  - 5. National Sanitation Foundation (NSF):
    - a. 61, Drinking Water System Components - Health Effects.
- B. Quality Control:
- 1. Concrete testing agency:
    - a. Contractor to employ and pay for services of a testing laboratory to:
      - 1) Perform materials evaluation.
      - 2) Design concrete mixes.
    - b. Concrete testing agency to meet requirements of ASTM E329.
  - 2. Do not begin concrete production until proposed concrete mix design has been approved by Engineer.
    - a. Approval of concrete mix design by Engineer does not relieve Contractor of his responsibility to provide concrete that meets the requirements of this Specification.
  - 3. Adjust concrete mix designs when material characteristics, job conditions, weather, strength test results or other circumstances warrant.
    - a. Do not use revised concrete mixes until submitted to and approved by Engineer.
  - 4. Perform structural calculations as required to prove that all portions of the structure in combination with remaining forming and shoring system has sufficient strength to safely support its own weight plus the loads placed thereon.
- C. Qualifications:
- 1. Ready mixed concrete batch plant certified by NRMCA.
  - 2. Formwork, shoring and reshoring for slabs and beams except where cast on ground to be designed by a professional engineer currently registered in the state where the Project is located.

### 1.3 DEFINITIONS

- A. Per ACI CT-13 except as modified herein:
- 1. Concrete Testing Agency: Testing agency employed to perform materials evaluation, design of concrete mixes or testing of concrete placed during construction.
  - 2. Exposed concrete: Exposed to view after construction is complete.
  - 3. Indicated: Indicated by Contract Documents.
  - 4. Required: Required by Contract Documents.
  - 5. Specified strength: Specified compressive strength at 28 days.

6. Submitted: Submitted to 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. Concrete mix designs proposed for use.
  - a. Concrete mix design submittal to include the following information:
    - 1) Sieve analysis and source of fine and coarse aggregates.
    - 2) Test for aggregate organic impurities.
    - 3) Test for deleterious aggregate per ASTM C1293.
    - 4) Proportioning of all materials.
    - 5) Type of cement with mill certificate for cement.
    - 6) Type of fly ash with certificate of conformance to specification requirements.
    - 7) Slump.
    - 8) Air content.
    - 9) Brand, type, ASTM designation, and quantity of each admixture proposed for use.
    - 10) 28-day cylinder compressive test results of trial mixes per ACI 318 and as indicated herein.
3. Product technical data including:
  - a. Acknowledgement that products submitted meet requirements of standards referenced.
  - b. Manufacturer's installation instructions.
  - c. Manufacturers and types:
    - 1) Joint fillers.
    - 2) Curing agents.
    - 3) Chemical sealer.
    - 4) Bonding and patching mortar.
    - 5) Construction joint bonding adhesive.
    - 6) Nonshrink grout with cure/seal compound.
    - 7) Epoxy bonding agent.
4. Reinforcing steel:
  - a. Show grade, sizes, number, configuration, spacing, location and all fabrication and placement details.
  - b. In sufficient detail to permit installation of reinforcing without having to make reference to Contract Drawings.
  - c. Obtain approval of Shop Drawings by Engineer before fabrication.
  - d. Mill certificates.
5. Scaled (minimum 1/8 IN per foot) drawings showing proposed locations of construction joints, control joints, expansion joints (as applicable) and joint dimensions.
6. Strength test results of in place concrete including slump, air content and concrete temperature.
7. Certifications:
  - a. Certification of standard deviation value in psi for ready mix plant supplying the concrete.
  - b. Certification that the material and sources submitted in the mix design will be used in the concrete for this project.
8. Test reports:
  - a. Cement mill reports for all cement to be supplied.
9. Concrete Strength Test Results.
10. Exterior Pavement Jointing Plan.
  - a. See Iowa SUDAS Standard Specifications, Section 7010 – Portland Cement Concrete Pavement for requirements. Pavement jointing plan shall be designed in accordance with 2020 Iowa SUDAS Design Manual 5G-2, PCC Pavement Joints.



## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Storage of Material:
  - 1. Cement and pozzolan:
    - a. Store in moistureproof, weathertight enclosures.
    - b. Do not use if caked or lumpy.
  - 2. Aggregate:
    - a. Store to prevent segregation and contamination with other sizes or foreign materials.
    - b. Obtain samples for testing from aggregates at point of batching.
    - c. Do not use frozen or partially frozen aggregates.
    - d. Do not use bottom 6 IN of stockpiles in contact with ground.
    - e. Allow sand to drain until moisture content is uniform prior to use.
  - 3. Admixtures:
    - a. Protect from contamination, evaporation, freezing, or damage.
    - b. Maintain within temperature range recommended by manufacturer.
    - c. Completely mix solutions and suspensions prior to use.
  - 4. Reinforcing steel: Support and store all rebars above ground.
- B. Delivery:
  - 1. Concrete:
    - a. Prepare a delivery ticket for each load for ready-mixed concrete.
    - b. Truck operator shall hand ticket to Engineer at the time of delivery.
    - c. Ticket to show:
      - 1) Mix identification mark.
      - 2) Quantity delivered.
      - 3) Amount of each material in batch.
      - 4) Outdoor temp in the shade.
      - 5) Time at which cement was added.
      - 6) Numerical sequence of the delivery.
      - 7) Amount of water added.
  - 2. Reinforcing steel:
    - a. Ship to jobsite with attached plastic or metal tags with permanent mark numbers.
    - b. Mark numbers to match Shop Drawing mark number.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following products and manufacturers are acceptable:
  - 1. Nonshrink, nonmetallic grout:
    - a. Sika "SikaGrout 212."
    - b. Euclid Chemical "NS Grout."
    - c. BASF Admixtures, Inc. "Masterflow 713."
  - 2. Expansion joint fillers:
    - a. Permaglaze Co.
    - b. Rubatex Corp.
    - c. Williams Products, Inc.
  - 3. Form coating:
    - a. Richmond "Rich Cote."
    - b. Industrial Lubricants "Nox-Crete Form Coating."
    - c. Euclid Chemical "Kurez DR VOX."
  - 4. Cementitious concrete coating:
    - a. Aquafin International.
    - b. BASF Building Systems.
    - c. Euclid Chemical Company.

5. Chemical sealer:
    - a. L&M Construction Chemicals, Inc.
    - b. Euclid Chemical Company.
    - c. Dayton Superior.
  6. Epoxy bonding adhesive/agent:
    - a. Euco No. 452 MV by Euclid Chemical Co.
    - b. Sikadur 32, Hi-Mod by Sika Corporation
- B. Submit request for substitution in accordance with Specifications.

## **2.2 MATERIALS**

- A. Portland Cement: Conform to ASTM C150 Type I/II.
- B. Fly Ash:
1. ASTM C618, Class F or Class C.
  2. Nonstaining.
    - a. Hardened concrete containing fly ash to be uniform light gray color.
  3. Maximum loss on ignition: 4 PCT.
  4. Compatible with other concrete ingredients.
  5. Obtain proposed fly ash from a source approved by the State Highway Department in the state where the Project is located for use in concrete for bridges.
- C. Admixtures:
1. Air entraining admixtures: ASTM C260.
  2. Water reducing, retarding, and accelerating admixtures:
    - a. ASTM C494 Type A through E.
    - b. Conform to provisions of ACI 212.3R.
    - c. Do not use retarding or accelerating admixtures unless specifically approved in writing by Engineer and at no cost to Owner.
    - d. Follow manufacturer's instructions.
    - e. Use chloride free admixtures only.
  3. Maximum total water soluble chloride ion content contributed from all ingredients of concrete including water, aggregates, cementitious materials and admixtures by weight percent of cement:
    - a. 0.10 all concrete.
  4. Do not use calcium chloride.
  5. Pozzolanic admixtures: ASTM C618.
  6. Provide admixtures of same type, manufacturer and quantity as used in establishing required concrete proportions in the mix design.
- D. Water: Potable, clean, free of oils, acids and organic matter.
- E. Aggregates:
1. Normal weight concrete: ASTM C33, except as modified below.
  2. Fine aggregate:
    - a. Clean natural sand.
    - b. No manufactured or artificial sand.
  3. Coarse aggregate:
    - a. Crushed rock, natural gravel, or other inert granular material.
    - b. Maximum amount of clay or shale particles: 1 PCT.
  4. Gradation of coarse aggregate:
    - a. Lean concrete and concrete topping: Size #7.
    - b. All other concrete: Size #57 or #67.
- F. Concrete Grout:
1. Nonshrink, nonmetallic grout:
    - a. Nonmetallic, noncorrosive, nonstaining, premixed with only water to be added.
    - b. Grout to produce a positive but controlled expansion.

- c. Mass expansion not to be created by gas liberation.
  - d. Minimum compressive strength of nonshrink grout at 28 days: 6500 PSI.
  - e. In accordance with COE CRD-C621.
- G. Exterior Pavement Reinforcement:
  - 1. Pavement reinforcement shall be in accordance with Iowa SUDAS Design Manual 5G-2, PCC Pavement Joints.
- H. Reinforcing Steel:
  - 1. Reinforcing bars: ASTM A615, Grade 60.
  - 2. Welded wire reinforcement:
    - a. ASTM A185 or ASTM A1064.
    - b. Minimum yield strength: 60,000 PSI.
  - 3. Column spirals: ASTM A82 or ASTM A1064.
- I. Forms:
  - 1. Prefabricated or job built.
  - 2. Wood forms:
    - a. 5/8 or 3/4 IN 5-ply structural plywood of concrete form grade.
    - b. Built-in-place or prefabricated type panel.
  - 3. Metal forms:
    - a. Metal forms may be used except for aluminum in contact with concrete.
    - b. Forms to be tight to prevent leakage, free of rust and straight without dents to provide members of uniform thickness.
  - 4. Chamfer strips: Clear white pine, surface against concrete planed.
- J. Form Ties:
  - 1. Commercially fabricated for use in form construction.
    - a. Field fabricated ties are unacceptable.
  - 2. Constructed so that ends or end fasteners can be removed without causing spalling at surfaces of the concrete.
  - 3. 3/4 IN minimum to 1 IN maximum diameter cones on both ends.
  - 4. Embedded portion of ties to be not less than 1-1/2-IN from face of concrete after ends have been removed.
  - 5. Cone size:
    - a. 3/4 IN minimum to 2-1/2 IN maximum diameter cones on both ends.
    - b. Depth of cone not to exceed the concrete reinforcing cover.
  - 6. Form release: Nonstaining and shall not prevent bonding of future finishes to concrete surface.
- K. Chairs, Runners, Bolsters, Spacers, and Hangers:
  - 1. Stainless steel, epoxy coated, or plastic coated metal.
    - a. Plastic coated: Rebar support tips in contact with the forms only.
- L. Chemical Floor Sealer:
  - 1. Colorless low VOC water-based solution containing acrylic copolymers.
    - a. ASTM C1315, Class B, minimum 30 PCT solids.
  - 2. L&M Construction Chemicals Inc. Dress & Seal WB 30.
- M. Cementitious Concrete Coating:
  - 1. Polymer modified Portland cement based coating for concrete and masonry.
    - a. Waterproof.
    - b. Resistant to both positive and negative hydrostatic pressure.
    - c. Breathable.
  - 2. BASF "Masterseal 581 Thoroseal".
    - a. Color:
      - 1) Interior surfaces: Standard gray.
      - 2) Exterior surfaces: Custom color to match concrete surface.
      - 3) Texture: Fine.

- N. Membrane Curing Compound:
1. ASTM C309, Type 1D, Class A or B.
  2. Fugitive dye shall dissipate over time and exposure.
  3. Curing compound shall not prevent bonding of any future coverings, coatings or finishes.
- O. Expansion Joint Filler:
1. In contact with water or sewage:
    - a. Closed cell neoprene.
    - b. ASTM D1056, Class SC (oil resistant and medium swell) of 2 to 5 PSI compression deflection (Grade SCE41).
  2. Exterior driveways, curbs and sidewalks:
    - a. Asphalt expansion joint filler.
    - b. ASTM D994.
  3. Other use:
    - a. Fiber expansion joint filler.
    - b. ASTM D1751.
- P. Epoxy Bonding Adhesive/Agent
1. Rail embed coating:
    - a. Two component, moisture insensitive adhesive manufactured for the purpose of bonding fresh concrete to steel and to hardened concrete.

## 2.3 CONCRETE MIXES

- A. General:
1. All concrete to be ready mixed concrete conforming to ASTM C94/C94M.
  2. Concrete for exterior paving shall be high early strength concrete mix.
  3. Provide concrete of specified quality capable of being placed without segregation and, when cured, of developing all properties required.
  4. All concrete to be normal weight concrete.
  5. Provide pozzolan content for all cast-in-place construction.
- B. Strength:
1. Provide specified strength and type of concrete for each use in structure(s) as follows:

TYPE	WEIGHT	SPECIFIED STRENGTH*
Muck Basin	Normal weight	4500 PSI
Exterior Paving	Normal weight	4500 PSI
All other general use concrete	Normal weight	4000 PSI

\* Minimum 28-day compressive strength.

- C. Air Entrainment:
1. Provide air entrainment in all concrete resulting in a total air content percent by volume as follows:

MAX AGGREGATE SIZE	TOTAL AIR CONTENT PERCENT
1 IN or 3/4 IN	6 ±1-1/2
<3/4 IN	6-1/2 ±1-1/2

2. Air content to be measured in accordance with ASTM C231, ASTM C173, or ASTM C138.
- D. Slump - 4 IN maximum, 1 IN minimum:
1. Measured at point of discharge of the concrete into the concrete construction member.
  2. 8 IN maximum after addition of superplasticizer (if used).

3. Concrete of lower than minimum slump may be used provided it can be properly placed and consolidated.
  4. Pumped concrete:
    - a. Provide additional water at batch plant to allow for slump loss due to pumping.
    - b. Provide only enough additional water so that slump of concrete at discharge end of pump hose does not exceed maximum slump specified and the maximum specified water-cement ratio is not exceeded.
  5. Slump may be adjusted in the field through the use of water reducers.
    - a. Coordinate dosage and mixing requirements with concrete supplier.
  6. Determine slump per ASTM C143.
- E. Selection of Proportions:
1. General:
    - a. Proportion ingredients to:
      - 1) Produce proper workability, durability, strength, and other required properties.
      - 2) Prevent segregation and collection of excessive free water on surface.
  2. Minimum cement contents and maximum water cement ratios for concrete to be as follows:

SPECIFIED STRENGTH	TARGET CEMENT, MAXIMUM AGGREGATE SIZE			MAXIMUM WATER CEMENT RATIO BY WEIGHT
	1/2 IN	3/4 IN	1 IN	
4000	564	564	564	0.45
4500	611	611	--	0.42

3. Fly ash:
  - a. For cast-in-place concrete only, a maximum of 25 PCT by weight of Portland cement content per cubic yard may be replaced with fly ash at rate of 1 LB fly ash for 1 LB of cement.
  - b. When fly ash is used, the water to cementitious materials ratio shall not exceed the maximum value specified herein.
4. Concrete mix proportioning methods for normal weight concrete:
  - a. Proportion mixture to provide desired characteristics using one of methods described below:
    - 1) Method 1 (Trial Mix):
      - a) Per ACI 318, Chapter 5, except as modified herein.
      - b) Air content within range specified above.
      - c) Record and report temperature of trial mixes.
      - d) Proportion trial mixes per ACI 211.1.
    - 2) Method 2 (Field Experience):
      - a) Per ACI 318, Chapter 5, except as modified herein:
      - b) Field test records must be acceptable to Engineer to use this method.
      - c) Test records shall represent materials, proportions and conditions similar to those specified.
5. Required average strength to exceed the specified 28-day compressive strength by the amount determined or calculated in accordance with the requirements of Chapter 5 of ACI 318 using the standard deviation of the proposed concrete production facility.

## PART 3 - EXECUTION

### 3.1 FORMING AND PLACING CONCRETE

- A. Formwork:
1. Contractor is responsible for design and erection of formwork.

2. Construct formwork so that concrete members and structures are of correct size, shape, alignment, elevation and position.
    - a. Allowable tolerances: As recommended in ACI 347.
  3. Provide slabs and beams of minimum indicated depth when sloping foundation base slabs or elevated floor slabs to drains.
    - a. For slabs on grade, slope top of subgrade to provide floor slabs of minimum uniform indicated depth.
    - b. Do not place floor drains through beams.
  4. Openings:
    - a. Provide openings in formwork to accommodate work of other trades.
    - b. Accurately place and securely support items built into forms.
  5. Chamfer strips: Place 3/4 IN chamfer strips in forms to produce 3/4 IN wide beveled edges on permanently exposed corners of members.
  6. Clean and adjust forms prior to concrete placement.
  7. Tighten forms to prevent mortar leakage.
  8. Coat form surfaces with form release agents prior to placing reinforcing bars in forms.
- B. Reinforcement:
1. In accordance with Iowa SUDAS Standard Specifications, Section 7010 – Portland Cement Concrete Pavement.
  2. Position, support and secure reinforcement against displacement.
  3. Locate and support with chairs, runners, bolsters, spacers and hangers, as required.
  4. Set wire ties so ends do not touch forms and are directed into concrete, not toward exposed concrete surfaces.
  5. Lap splice lengths: ACI 318 Class B top bar tension splices unless indicated otherwise on the Drawings.
  6. Extend reinforcement to within 2 IN of concrete perimeter edges.
    - a. If perimeter edge is earth formed,
      - 1) Maximum clearance distance from earth form to bar is 3 inches.
      - 2) Maximum clearance distance from formwork is 2 inches.
  7. Minimum concrete protective covering for reinforcement: As shown on Drawings.
  8. Do not weld reinforcing bars.
  9. Welded wire reinforcement:
    - a. Install welded wire reinforcement in maximum practical sizes.
    - b. Splice sides and ends with a splice lap length measured between outermost cross wires of each fabric sheet not less than:
      - 1) One spacing of cross wires plus 2 IN.
      - 2) 1.5 x development length.
      - 3) 6 IN.
    - c. Development length: ACI 318 basic development length for the specified fabric yield strength.
- C. Construction, Expansion, and Contraction Joints:
1. Unplanned construction joints will not be allowed.
  2. Locate wall vertical construction joints at 30 FT maximum.
  3. Locate construction joints in floor slabs and foundation base slabs so that concrete placements are approximately square and do not exceed 2500 SQFT.
  4. Locate construction joints in columns and walls:
    - a. At the underside of beams, girders, haunches, drop panels, column capitals, and at floor panels.
    - b. Haunches, drop panels, and column capitals are considered part of the supported floor or roof and shall be placed monolithically therewith.
    - c. Column based need not be placed monolithically with the floor below.
  5. Install construction joints perpendicular to main reinforcement with all reinforcement continued across construction joints.
  6. At least 48 HRS shall elapse between placing of adjoining concrete construction.

7. Thoroughly clean and remove all laitance and loose and foreign particles from construction joints.
  8. Before new concrete is placed, dampen concrete surfaces.
- D. Embedments:
1. Set and build in anchorage devices and other embedded items required for other work that is attached to, or supported by concrete.
  2. Use setting diagrams, templates and instructions for locating and setting.
- E. Placing Concrete:
1. Place concrete in compliance with ACI 304R and ACI 304.2R.
  2. Place in a continuous operation within planned joints or sections.
  3. Begin placement when work of other trades affecting concrete is completed.
  4. Place concrete by methods which prevent aggregate segregation.
  5. Do not allow concrete to free fall more than 4 FT.
  6. Where free fall of concrete will exceed 4 FT, place concrete by means of tremie pipe or chute.
- F. Consolidation: Consolidate all concrete using mechanical vibrators supplemented with hand rodding and tamping, so that concrete is worked around reinforcement and embedded items into all parts of forms.
- G. Protection:
1. Protect concrete from physical damage or reduced strength due to weather extremes.
  2. In cold weather comply with ACI 306.1 except as modified herein.
    - a. Do not place concrete on frozen ground or in contact with forms or reinforcing bars coated with frost, ice or snow.  
Do not place heated concrete that is warmer than 80 DEGF.
    - b. If freezing temperatures are expected during curing, maintain the concrete temperature at or above 50 DEGF for seven days or 70 DEGF for 3 days.
    - c. Do not allow concrete to cool suddenly.
  3. In hot weather comply with ACI 305.1 except as modified herein.
    - a. At air temperature of 90 DEGF and above, keep concrete as cool as possible during placement and curing.
    - b. Do not allow concrete temperature to exceed 90 DEGF at placement.
    - c. Prevent plastic shrinkage cracking due to rapid evaporation of moisture.
    - d. Do not place concrete when the actual or anticipated evaporation rate equals or exceeds 0.2 LBS/SF/HR as determined from ACI 305.1, Figure 2.1.5.
- H. Curing:
1. Begin curing concrete as soon as free water has disappeared from exposed surfaces.
  2. Cure concrete by use of moisture retaining cover, burlap kept continuously wet or by membrane curing compound.
  3. Provide protection as required to prevent damage to concrete and to prevent moisture loss from concrete during curing period.
  4. Provide curing for minimum of 14 days.
  5. Form materials left in place may be considered as curing materials for surfaces in contact with the form materials except in periods of hot weather.
  6. In hot weather follow curing procedures outlined in ACI 305.1.
  7. In cold weather follow curing procedures outlined in ACI 306.1.
  8. Curing vertical surfaces with a curing compound:
    - a. Cover vertical surfaces with a minimum of two coats of the curing compound.
    - b. Allow the preceding coat to completely dry prior to applying the next coat.
    - c. Apply the first coat of curing compound immediately after form removal.
    - d. Vertical surface at the time of receiving the first coat shall be damp with no free water on the surface.
    - e. A vertical surface is defined as any surface steeper than 1 vertical to 4 horizontal.

- I. Form Removal:
  - 1. Remove forms after concrete has hardened sufficiently to resist damage from removal operations or lack of support.
  - 2. Where no reshoring is planned, leave forms and shoring used to support concrete until it has reached its specified 28-day compressive strength.

### 3.2 CONCRETE FINISHES

- A. Tolerances:
  - 1. Class A: 1/8 IN in 10 FT.
  - 2. Class B: 1/4 IN in 10 FT.
- B. Surfaces Exposed to View:
  - 1. Provide a smooth finish for exposed concrete surfaces and surfaces that are:
    - a. To be covered with a coating or covering material applied directly to concrete.
    - b. Scheduled for grout cleaned finish.
  - 2. Remove fins and projections, and patch voids, air pockets, and honeycomb areas with cement grout.
  - 3. Cementitious concrete coating:
    - a. Form facing material shall produce a smooth, hard, uniform texture.
      - 1) Use forms specified for surfaces exposed to view.
    - b. Prepare the surface in accordance with manufactures printed installation instructions.
    - c. Brush on coating to entire surface.
      - 1) As a mixing liquid for the coating, use bonding agent and water mixture as recommended by the manufacture.
      - 2) Apply two coats at 2 LB/SQYD per coat.
    - d. When second coat is set, float to a uniform texture with a sponge coat.
    - e. Provide this finish at the following locations:
      - 1) Walls, columns, exposed to view.
- C. Surfaces Not Exposed to View:
  - 1. Patch voids, air pockets and honeycomb areas with cement grout.
  - 2. Fill tie holes with nonshrink, nonmetallic grout.
- D. Slab Float Finish:
  - 1. After concrete has been placed, consolidated, struck off, and leveled, do no further work until ready for floating.
  - 2. Do not use water to aid in finishing.
  - 3. Begin floating when water sheen has disappeared and surface has stiffened sufficiently to permit operation.
  - 4. During or after first floating, check planeness of entire surface with a 10 FT straightedge applied at not less than two different angles.
  - 5. Cut down all high spots and fill all low spots during this procedure to produce a surface within Class B tolerance throughout.
  - 6. Refloat slab immediately to a uniform sandy texture.
- E. Troweled Finish:
  - 1. Float finish surface.
  - 2. Next power trowel, and finally hand trowel.
  - 3. Do not use water to aid in finishing.
  - 4. Produce a smooth surface which is relatively free of defects with first hand troweling.
  - 5. Perform additional trowelings by hand after surface has hardened sufficiently.
  - 6. Final trowel when a ringing sound is produced as trowel is moved over surface.
  - 7. Thoroughly consolidate surface by hand troweling.
  - 8. Leave finished surface essentially free of trowel marks, uniform in texture and appearance and plane to a Class A tolerance.
  - 9. On surfaces intended to support floor coverings remove any defects of sufficient magnitude that would show through floor covering by grinding.



- F. Broom Finish: Immediately after concrete has received a float finish as specified, give it a transverse scored texture by drawing a broom across surface.
- G. Painting and Striping:
  - 1. Stripe and mark pavement per the Drawings following sufficient cure time for pavement.
  - 2. Lay out markings with guidelines, templates, and forms.
  - 3. Apply 6 IN wide stripe with self-contained striping machine to a clean and dry pavement surface.
  - 4. Temperature must be above 40 DEGF and precipitation should not be expected during drying period.
  - 5. Use thermoplastic paint; color as approved by the local reviewing authority for the specific use (i.e., white, yellow, blue) complying with the Drawings.

### **3.3 GROUT**

- A. Preparation:
  - 1. Nonshrinking, nonmetallic grout:
    - a. Clean concrete surface to receive grout.
    - b. Saturate concrete with water for 24 HRS prior to grouting.
- B. Application:
  - 1. Nonshrinking, nonmetallic grout:
    - a. Mix in a mechanical mixer.
    - b. Use no more water than necessary to produce flowable grout.
    - c. Place in accordance with manufacturer's instructions.
    - d. Completely fill all spaces and cavities below the bottom of baseplates.
    - e. Provide forms where baseplates and bedplates do not confine grout.
    - f. Where exposed to view, finish grout edges smooth.
    - g. Except where a slope is indicated on Drawings, finish edges flush at the baseplate, bedplate, member, or piece of equipment.
    - h. Protect against rapid moisture loss by covering with wet rags or polyethylene sheets.
    - i. Wet cure grout for seven days, minimum.

### **3.4 FIELD QUALITY CONTROL**

- A. Contractor will employ and pay for services of a concrete testing laboratory to perform testing of concrete placed during construction.
  - 1. Contractor to cooperate with Owner in obtaining and testing samples.
- B. Tests During Construction:
  - 1. Strength test:
    - a. For each strength test, mold and cure cylinders from each sample in accordance with ASTM C31.
      - 1) Cylinder size: Per ASTM C31.
        - a) 4 IN cylinders may not be used for concrete mixes with concrete aggregate size larger than 1 IN.
      - 2) Quantity:
        - a) 4 IN DIA by 8 IN high: Six cylinders.
    - b. Field cure one cylinder for the seven day test.
      - 1) Laboratory cure the remaining.
    - c. Test cylinders in accordance with ASTM C39.
      - 1) 4 IN DIA cylinders:
        - a) Test three cylinders at 28 days for strength test result and the one field cured cylinder at seven days for information.
        - b) Hold remaining cylinders in reserve.
    - d. Strength test result:
      - 1) Average of strengths of three 4 IN DIA cylinders from the same sample tested at 28 days.

- 2) If one cylinder in a test manifests evidence of improper sampling, molding, handling, curing, or testing, discard and test reserve cylinder(s); average strength of remaining cylinders shall be considered strength test result.
- 3) Should all cylinders in any test show any of above defects, discard entire test.
- e. Frequency of tests:
  - 1) One strength test to be taken not less than once a day, nor less than once for each 50 CUYD or fraction thereof placed in any one day.
  - 2) Once for each 5000 SQFT of slab or wall surface area placed each day.
  - 3) If total volume of concrete on Project is such that frequency of testing required in above paragraph will provide less than five strength tests for each concrete mix, tests shall then be made from at least five randomly selected batches or from each batch if fewer than five batches are provided.
2. Slump test:
  - a. Per ASTM C143.
  - b. Determined for each strength test sample.
  - c. Additional slump tests may be taken.
3. Air content:
  - a. Per ASTM C231, ASTM C173, and ASTM C138.
  - b. Determined for each strength test sample.
4. Temperature: Determined for each strength test sample.
- C. Evaluation of Tests:
  1. Strength test results:
    - a. Average of 28-day strength of two cylinders from each sample.
      - 1) If one cylinder manifests evidence of improper sampling, molding, handling, curing or testing, strength of remaining cylinder will be test result.
      - 2) If both cylinders show any of above defects, test will be discarded.
- D. Acceptance of Concrete:
  1. Strength level of each type of concrete shall be considered satisfactory if both of the following requirements are met:
    - a. Average of all sets of three consecutive strength tests equals or exceeds the required specified 28-day compressive strength.
    - b. No individual strength test falls below the required specified 28-day compressive strength by more than 500 PSI.
  2. If tests fail to indicate satisfactory strength level, perform additional tests and/or corrective measures as directed by Engineer.
    - a. Perform additional tests and/or corrective measures at no additional cost to Owner.
- E. Concrete tolerances per ACI 117.

### **3.5 SCHEDULES**

- A. Form Types:
  1. Surfaces exposed to view:
    - a. Prefabricated or job-built wood forms.
    - b. Laid out in a regular and uniform pattern with long dimensions vertical and joints aligned.
    - c. Produce finished surfaces free from offsets, ridges, waves, and concave or convex areas.
    - d. Construct forms sufficiently tight to prevent leakage of mortar.
  2. Surfaces normally submerged or not normally exposed to view: Wood or steel forms sufficiently tight to prevent leakage of mortar.
  3. Other types of forms may be used:
    - a. For surfaces not restricted to plywood or lined forms.
    - b. As backing for form lining.

- B. Grout:
  - 1. Nonshrinking, nonmetallic grout: General use.
- C. Concrete:
  - 1. Normal weight concrete: all concrete
- D. Concrete Finishes:
  - 1. Slab finishes:
    - a. Use following finishes as applicable, unless otherwise indicated:
      - 1) Broom finish: Exterior paving.

**END OF SECTION**



# DIVISION 05

METALS



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## **SECTION 05 50 00**

### **METAL FABRICATIONS**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Custom fabricated metal items and certain manufactured units not otherwise indicated to be supplied under work of other Specification Sections.
  - 2. Design of all temporary bracing not indicated on Drawings.
  - 3. Design of systems and components, including but not limited to:
    - a. Bollards, steel channels, railings, grates, manholes. See 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. Section 03 00 05 - Concrete.
  - 4. Section 09 96 00 - High Performance Industrial Coatings.

##### **1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. Aluminum Association (AA):
    - a. ADM 1, Aluminum Design Manual.
  - 2. American Association of State Highway and Transportation Officials (AASHTO):
    - a. HB, Standard Specifications for Highway Bridges.
  - 3. American Institute of Steel Construction (AISC):
    - a. 325, Manual of Steel Construction.
    - b. 360, Specifications for Structural Steel Buildings (referred to herein as AISC Specification).
  - 4. The American Ladder Institute (ALI):
    - a. A14.3, Ladders - Fixed - Safety Requirements.
  - 5. American Society of Civil Engineers (ASCE):
    - a. 7, Minimum Design Loads for Buildings and Other Structures.
  - 6. ASTM International (ASTM):
    - a. A6, Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
    - b. A36, Standard Specification for Carbon Structural Steel.
    - c. A47, Standard Specification for Ferritic Malleable Iron Castings.
    - d. A48, Standard Specification for Gray Iron Castings.
    - e. A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
    - f. A108, Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished.
    - g. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
    - h. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
    - i. A197, Standard Specification for Cupola Malleable Iron.
    - j. A269, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
    - k. A276, Standard Specification for Stainless Steel Bars and Shapes.
    - l. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

- m. A312, Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
- n. A380, Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
- o. A500, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- p. A501, Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- q. A536, Standard Specification for Ductile Iron Castings.
- r. A554, Standard Specification for Welded Stainless Steel Mechanical Tubing.
- s. A572, Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
- t. A563, Standard Specification for Carbon and Alloy Steel Nuts.
- u. A666, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- v. A668, Standard Specification for Steel Forgings, Carbon and Alloy, for General Industrial Use.
- w. A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- x. A786, Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.
- y. A992, Standard Specification for Steel for Structural Shapes.
- z. A1064, Standard Specification for Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- aa. A1011, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
- bb. B26, Standard Specification for Aluminum-Alloy Sand Castings.
- cc. B209, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- dd. B221, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- ee. B308, Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles.
- ff. B429, Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
- gg. B632, Standard Specification for Aluminum-Alloy Rolled Tread Plate.
- hh. F436, Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.
- ii. F467, Standard Specification for Nonferrous Nuts for General Use.
- jj. F468, Standard Specification for Nonferrous Bolts, Hex Cap Screws, and Studs for General Use.
- kk. F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
- ll. F835, Standard Specification for Alloy Steel Socket Button and Flat Countersunk Head Cap Screws.
- mm. F879, Standard Specification for Stainless Steel Socket Button and Flat Countersunk Head Cap Screws.
- nn. F1789, Standard Terminology for F16 Mechanical Fasteners.
- oo. F3125, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.
- 7. American Welding Society (AWS):
  - a. A5.1/A5.1M, Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding.
  - b. D1.1, Structural Welding Code - Steel.
  - c. D1.2, Structural Welding Code - Aluminum.
  - d. D1.6/D1.6M, Structural Welding Code - Stainless Steel.

8. National Association of Architectural Metal Manufacturers (NAAMM):
    - a. AMP 510, Metal Stairs Manual.
    - b. AMP 555, Code of Standard Practice for the Architectural Metal Industry (Including Miscellaneous Iron).
    - c. MBG 531, Metal Bar Grating Manual.
  9. NACE International (NACE).
  10. Nickel Development Institute (NiDI):
    - a. Publication 11 007, Guidelines for the welded fabrication of nickel-containing stainless steels for corrosion resistant services.
  11. Occupational Safety and Health Administration (OSHA):
    - a. 29 CFR 1910, Occupational Safety and Health Standards, referred to herein as OSHA Standards.
- B. Qualifications:
1. Qualify welding procedures and welding operators in accordance with AWS.
  2. Fabricator shall have minimum of 10 years of experience in fabrication of metal items specified.
  3. Engineer for contractor-designed systems and components: Professional structural engineer licensed in the State of Iowa.

### 1.3 DEFINITIONS

- A. Fasteners: As defined in ASTM F1789.
- B. Galvanizing: Hot-dip galvanizing per ASTM A123/A123M or ASTM A153/A153M with minimum coating of 2.0 OZ of zinc per square foot of metal (average of specimens) unless noted otherwise or dictated by standard.
- C. Hardware: As defined in ASTM A153/A153M.
- D. Installer or Applicator:
1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
  2. Installer and applicator are synonymous.

### 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. Fabrication and/or layout drawings and details:
    - a. Submit drawings for all fabrications and assemblies.
      - 1) Include erection drawings, plans, sections, details and connection details.
    - b. Identify materials of construction, shop coatings and third party accessories.
  3. Product technical data including:
    - a. Acknowledgement that products submitted meet requirements of standards referenced.
    - b. Manufacturer's installation instructions.
    - c. Provide manufacturer's standard allowable load tables for the following:
      - 1) Grating and checkered plate.
      - 2) Castings, trench covers and accessories.
      - 3) Modular framing systems.
  4. Contractor designed systems and components:
    - a. Certification that manufactured units meet all design loads specified.
    - b. Shop Drawings and engineering design calculations:
      - 1) Indicate design live loads.
      - 2) Sealed by a licensed professional engineer, registered in the State of Iowa.
      - 3) Engineer will review for general compliance with Contract Documents.
    - c. Contractor designed systems and components include the following:



- B. Informational Submittals:
  - 1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
  - 2. Certification of welders and welding processes.
    - a. Indicate compliance with AWS.
  - 3. NACE certification of surface preparation.
  - 4. NACE certification of paint application.

## **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver and handle fabrications to avoid damage.
- B. Store above ground on skids or other supports to keep items free of dirt and other foreign debris and to protect against corrosion.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Abrasive stair nosings (embedded in concrete stairs):
    - a. American Safety Tread.
    - b. Balco.
  - 2. Headed studs and deformed bar anchors:
    - a. Nelson Stud Welding Div., TRW Inc.
    - b. Stud Welding Products, Inc.
  - 3. Castings, trench covers and accessories:
    - a. Neenah Foundry Co.
    - b. Deeter Foundry Co.
    - c. Barry Craft Construction Casting Co.
    - d. McKinley Iron Works.
  - 4. Galvanizing repair paint:
    - a. Clearco Products Co., Inc.
    - b. ZRC Products.
  - 5. Modular framing system:
    - a. Unistrut Building Systems.
    - b. B-Line Systems.
    - c. Kindorf.
    - d. Superstrut.
- B. Submit request for substitution in accordance with Specification Section 01 25 13.

### **2.2 MATERIALS**

- A. Steel:
  - 1. Structural:
    - a. W-shapes and WT-shapes: ASTM A992, Grade 50.
    - b. All other plates and rolled sections: ASTM A36.
  - 2. Pipe: ASTM A53, Types E or S, Grade B or ASTM A501.
  - 3. Structural tubing:
    - a. ASTM A500, Grade B (46 KSI minimum yield).
  - 4. Bolts, high strength:
    - a. ASTM F3125, Grade A325.
  - 5. Nuts, high strength:
    - a. ASTM A563.
  - 6. Washers (hardened):
    - a. ASTM F436.
    - b. Provide two (2) washers with all bolts.

7. Bolts and nuts (unfinished):
    - a. ASTM A307, Grade A.
  8. Welding electrodes: AWS D1.1, E70 Series.
  9. Steel forgings: ASTM A668.
- B. Iron:
1. Ductile iron: ASTM A536.
  2. Gray cast iron: ASTM A48 (minimum 30,000 PSI tensile strength).
  3. Malleable iron: ASTM A47, ASTM A197.
- C. Stainless Steel:
1. Stainless steel in welded applications: Low carbon 'L' type.
  2. Minimum yield strength of 30,000 PSI and minimum tensile strength of 75,000 PSI.
    - a. Bars, shapes: ASTM A276, Type 304.
    - b. Tubing and pipe: ASTM A269, ASTM A312 or ASTM A554, Type 304 or 316.
    - c. Strip, plate and flat bars: ASTM A666, Type 304 or 316.
    - d. Bolts and nuts: ASTM F593, Type 304 or 316.
  3. Minimum yield strength of 25,000 PSI and minimum tensile strength of 70,000 PSI.
    - a. Strip, plate and flat bar for welded connections, ASTM A666, Type 304L or 316L.
  4. Welding electrodes: In accordance with AWS for metal alloy being welded.
- D. Aluminum:
1. Alloy 6061-T6, 32,000 PSI tensile yield strength minimum.
    - a. ASTM B221 and ASTM B308 for shapes including beams, channels, angles, tees and zees.
    - b. Weir plates, baffles and deflector plates, ASTM B209.
  2. Alloy 6063-T5 or T6, 15,000 PSI tensile yield strength minimum.
    - a. ASTM B221 and ASTM B429 for bars, rods, wires, pipes and tubes.
  3. ASTM B26 for castings.
  4. ASTM F468, alloy 2024 T4 for bolts.
  5. ASTM F467, alloy 2024 T4 for nuts.
  6. Electrodes for welding aluminum: AWS D1.2, filler alloy 4043 or 5356.
- E. Washers: Same material and alloy as found in accompanying bolts and nuts.
- F. Headed Studs: ASTM A108 with a minimum yield strength of 50,000 PSI and a minimum tensile strength of 60,000 PSI.
- G. Deformed Bar Anchors: ASTM A1064 with a minimum yield strength of 70,000 PSI and a minimum tensile strength of 80,000 PSI.
- H. Iron and Steel Hardware: Galvanized in accordance with ASTM A153/A153M when required to be galvanized.
- I. Galvanizing Repair Paint:
1. High zinc dust content paint for regalvanizing welds and abrasions.
  2. ASTM A780.
  3. Zinc content: Minimum 92 PCT in dry film.
  4. ZRC "ZRC Cold Galvanizing" or Clearco "High Performance Zinc Spray."
- J. Dissimilar Materials Protection: See Specification Section 09 96 00.

## 2.3 MANUFACTURED UNITS

- A. Bollards:
1. 8 IN DIA extra strength steel pipe, ASTM A53.
    - a. Galvanized.
- B. Steel Grating:
1. NAAMM MBG 531.
  2. Bearing bars:

- a. Rectangular 1-1/2 by 3/16 IN unless otherwise noted on Drawings.
  - b. Maximum 1-3/16 IN OC spacing.
- 3. Cross bars:
  - a. Welded, swagged or pressure locked to bearing bars.
  - b. Maximum 4 IN OC spacing.
- 4. Top edges of bars: Serrated or grooved.
- 5. Removable grating sections: Not wider than 3 FT and not more than 100 LBS.
- 6. Finish:
  - a. Galvanized.
  - b. Clips and bolts: Galvanized.
  - c. Seat angles: Galvanized steel.
- 7. Ends and perimeter edges: Banded.
- 8. Openings through grating: Reinforced to provide required load carrying capacity and banded with 4 IN high toe plate.
- 9. Provide joints at openings between individual grating sections.
- C. Heavy-Duty Castings, Trench Covers, and Accessories:
  - 1. Design load: AASHTO HS-20 wheel loading for indicated span.
  - 2. Machine horizontal mating surfaces.
- D. Loose Lintels:
  - 1. Steel, ASTM A36 or ASTM A572 Grade 50, sizes as indicated on Drawings.
  - 2. Hot-dip galvanized per ASTM A123/A123M.

## 2.4 FABRICATION

- A. Verify field conditions and dimensions prior to fabrication.
- B. Form materials to shapes indicated with straight lines, true angles, and smooth curves.
  - 1. Grind smooth all rough welds and sharp edges.
    - a. Round all corners to approximately 1/32 - 1/16 IN nominal radius.
- C. Provide drilled or punched holes with smooth edges.
  - 1. Punch or drill for field connections and for attachment of work by other trades.
- D. Weld Shop Connections:
  - 1. Welds to be continuous fillet type unless indicated otherwise.
  - 2. Full penetration butt weld at bends in stair stringers and ladder side rails.
  - 3. Weld structural steel in accordance with AWS D1.1 using Series E70 electrodes conforming to AWS A5.1/A5.1M.
  - 4. Weld aluminum in accordance with AWS D1.2.
  - 5. Weld stainless steel in accordance with AWS D1.6.
    - a. Treat all welded areas in accordance with ASTM A380.
  - 6. All headed studs to be welded using automatically timed stud welding equipment.
  - 7. Grind smooth welds that will be exposed.
- E. Passivate stainless steel items and stainless steel welds after they have been ground smooth.
  - 1. ASTM A380.
- F. Conceal fastenings where practicable.
- G. Fabricate work in shop in as large assemblies as is practicable.
- H. Tolerances:
  - 1. Rolling:
    - a. ASTM A6.
    - b. When material received from the mill does not satisfy ASTM A6 tolerances for camber, profile, flatness, or sweep, the Contractor is permitted to perform corrective work by the use of controlled heating and mechanical straightening, subject to the limitations of the AISC Specification.
  - 2. Fabrication tolerance:

- a. Member length:
    - 1) Both ends finished for contact bearing: 1/32 IN.
    - 2) Framed members:
      - a) 30 FT or less: 1/16 IN.
      - b) Over 30 FT: 1/8 IN.
  - b. Member straightness:
    - 1) Compression members: 1/1000 of axial length between points laterally supported.
    - 2) Non-compression members: ASTM A6 tolerance for wide flange shapes.
  - c. Specified member camber (except compression members):
    - 1) 50 FT or less: -0/+1/2 IN.
    - 2) Over 50 FT: -0/+1/2 IN (+1/8 IN per 10 FT over 50 FT).
    - 3) Members received from mill with 75 PCT of specified camber require no further cambering.
    - 4) Beams/trusses without specified camber shall be fabricated so after erection, camber is upward.
    - 5) Camber shall be measured in fabrication shop in unstressed condition.
  - d. At bolted splices, depth deviation shall be taken up by filler plates.
    - 1) At welded joints, adjust weld profile to conform to variation in depth.
    - 2) Slope weld surface per AWS requirements.
  - e. Finished members shall be free from twists, bends and open joints.
    - 1) Sharp kinks, bends and deviation from above tolerances are cause for rejection of material.
- I. Fabricate grating, checkered plate, and accessories using galvanized steel unless shown otherwise on Drawings.
- 1. Finish:
    - a. Mill, unless noted otherwise.
    - b. Coat surfaces in contact with dissimilar materials.
      - 1) See Specification Section 09 96 00.
- J. Fabricate grating in accordance with NAAMM MBG 531.
- 1. Maximum tolerance for difference in depth between grating depth and seat or support angle depth: 1/8 IN.
  - 2. Distance between edge of grating and face of embedded seat angle or face of wall or other structural member: 1/4 IN.
    - a. Tolerance: NAAMM MBG 531.
  - 3. Removable sections: Not wider than 3 FT and not heavier than 100 LBS.
  - 4. Ends and perimeter edges: Banded, with alternate bearing bars welded to band.
    - a. Provide full depth banding unless noted otherwise.
    - b. Banding at trenches and sumps to be 1/4 IN less than grating depth to allow for drainage.
  - 5. Openings through grating: Reinforced to provide required load carrying capacity and banded with 4 IN high toe plate.
  - 6. Provide joints at openings between individual grating sections.
  - 7. Fabricate grating so that bearing bars and cross bars in adjacent sections are aligned.
- K. See Specification Section 09 96 00 for preparation and painting of ferrous metals and other surfaces.

## 2.5 SOURCE QUALITY CONTROL

- A. Surface Preparation:
  - 1. Refer to Specification Section 09 96 00 for surface preparation requirements.
  - 2. All miscellaneous metal fabrication item surfaces shall be inspected and approved by NACE certified coatings inspector prior to application of shop-applied coatings.
    - a. Inspection shall be performed to determine depth of blast profile and cleanliness of surface.
    - b. Fabricator shall reblast and or re-clean surfaces as required until acceptable.

- B. Shop Applied Coating Application:
  - 1. Refer to Specification Section 09 96 00 for coating requirements.
  - 2. After surface has been accepted in writing by NACE certified coatings inspector, fabricator may proceed with application of coatings.
  - 3. Application of coatings shall be observed and certified by NACE certified coatings inspector.
- C. Shop Inspection and Testing:
  - 1. Employ and pay for the services of a qualified independent testing agency to inspect and test all structural steel work for compliance with Contract Documents.
  - 2. Contractor responsible for testing to qualify shop and field welders and as needed for Contractor's own quality control to ensure compliance with Contract Documents.
  - 3. Independent testing agency shall have a minimum of five years performing similar work and shall be subject to Owner's approval.
- D. Responsibilities of Testing Agency:
  - 1. Inspect shop and field welding in accordance with AWS Code including the following non-destructive testing:
    - a. Visually inspect all welds.
    - b. In addition to visual inspection, test 50 PCT of full penetration welds and 20 PCT of fillet welds with liquid dye penetrant or mag particle.
    - c. Test 20 PCT of liquid dye penetrant tested full penetration welds with ultrasonic or radiographic testing.
  - 2. Inspect high-strength bolting in accordance with the RCSC Specification for Structural Joints Using High-Strength Bolts, Section 9.
    - a. Verify direct tension indicator gaps, if applicable.
  - 3. Inspect structural steel which has been erected.
  - 4. Inspect stud welding in accordance with AWS Code.
  - 5. Prepare and submit inspection and test reports to Engineer.
    - a. Assist Engineer to determine corrective measures necessary for defective work.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Provide items to be built into other construction in time to allow their installation.
  - 1. If such items are not provided in time for installation, cut in and install.
- B. Prior to installation, inspect and verify condition of substrate.
- C. Correct surface defects or conditions which may interfere with or prevent a satisfactory installation.
  - 1. Field welding aluminum is not permitted unless approved in writing by Engineer.

### **3.2 INSTALLATION**

- A. Set metal work level, true to line, plumb.
  - 1. Shim and grout as necessary.
- B. Contractor is solely responsible for safety.
  - 1. Construction means and methods and sequencing of work is the prerogative of the Contractor.
  - 2. Take into consideration that full structural capacity of many structural members is not realized until structural assembly is complete; e.g., until slabs, decks, and diagonal bracing or rigid connections are installed.
  - 3. Partially complete structural members shall not be loaded without an investigation by the Contractor.
  - 4. Until all elements of the permanent structure and lateral bracing system are complete, temporary bracing for the partially complete structure will be required.

- C. Adequate temporary bracing to provide safety, stability and to resist all loads to which the partially complete structure may be subjected, including construction activities and operation of equipment is the responsibility of the Contractor.
  - 1. Plumb, align, and set structural steel members to specified tolerances.
  - 2. Use temporary guys, braces, shoring, connections, etc., necessary to maintain the structural framing plumb and in proper alignment until permanent connections are made, the succeeding work is in place, and temporary work is no longer necessary.
  - 3. Use temporary guys, bracing, shoring, and other work to prevent injury or damage to adjacent work or construction from stresses due to erection procedures and operation of erection equipment, construction loads, and wind.
  - 4. Contractor shall be responsible for the design of the temporary bracing system and must consider the sequence and schedule of placement of such elements and effects of loads imposed on the structural steel members by partially or completely installed work, including work of all other trades.
    - a. If not obvious from experience or from the Drawings, confer with the Engineer to identify those structural steel elements that must be complete before the temporary bracing system is removed.
  - 5. Remove and dispose of all temporary work and facilities off-site.
- D. Examine work-in-place on which specified work is in any way dependent to ensure that conditions are satisfactory for the installation of the work.
  - 1. Report defects in work-in-place which may influence satisfactory completion of the work.
  - 2. Absence of such notification will be construed as acceptance of work-in-place.
- E. Field Measurement:
  - 1. Take field measurements as necessary to verify or supplement dimensions indicated on the Drawings.
  - 2. Contractor responsible for the accurate fit of the work.
- F. Check the elevations of all finished footings or foundations and the location and alignment of all anchor bolts before starting erection.
  - 1. Use surveyor's level.
  - 2. Notify Engineer of any errors or deviations found by such checking.
- G. Framing member location tolerances after erection shall not exceed the frame tolerances listed in the FIELD QUALITY CONTROL Article in PART 3 of this Specification Section.
- H. Erect plumb and level; introduce temporary bracing required to support erection loads.
- I. Use light drifting necessary to draw holes together.
  - 1. Drifting to match unfair holes is not allowed.
- J. Welding:
  - 1. Comply with AWS D1.1, AWS D1.2, and AWS D1.6 (as applicable for the material welded) and requirements of this Section's "Fabrications" Article in "Part 2 - Products".
  - 2. When joining two sections of steel of different ASTM designations, welding techniques shall be in accordance with a qualified AWS D1.1 procedure.
- K. Shore existing members when unbolting of common connections is required.
  - 1. Use new bolts for rebolting connections.
- L. Clean stored material of all foreign matter accumulated prior to the completion of erection.
- M. Bolt Field Connections: Where practicable, conceal fastenings.
- N. Field Welding:
  - 1. Follow AWS procedures.
  - 2. Grind welds smooth where field welding is required.
- O. Field cutting grating or checkered plate to correct fabrication errors is not acceptable.
  - 1. Replace entire section.

- P. Remove all burrs and radius all sharp edges and corners of miscellaneous plates, angles, framing system elements, etc.
- Q. Unless noted or specified otherwise:
1. Connect steel members to steel members with 3/4 IN DIA ASTM F3125, Grade A325 high strength bolts.
  2. Connect aluminum to aluminum with 3/4 IN DIA stainless bolts.
  3. Connect aluminum to structural steel using 3/4 IN DIA stainless steel bolts.
    - a. Provide dissimilar metals protection.
  4. Connect aluminum and steel members to concrete and masonry using stainless steel mechanical anchor bolts or adhesive anchor bolts unless shown otherwise.
    - a. Provide dissimilar materials protection.
  5. Provide washers for all bolted connections.
  6. Where exposed, bolts shall extend a maximum of 3/4 IN and a minimum of 1/2 IN above the top of installed nut.
    - a. If bolts are cut off to required maximum height, threads must be dressed to allow nuts to be removed without damage to the bolt or the nuts.
- R. Install and tighten ASTM F3125, Grade A325 high-strength bolts in accordance with the AISC 325, Allowable Stress Design (ASD).
1. Provide hardened washers for all Grade A325 bolts.
    - a. Provide the hardened washer under the element (nut or bolt head) turned in tightening.
- S. After bolts are tightened, upset threads of ASTM A307 bolts or anchor bolts to prevent nuts from backing off.
- T. Secure metal to wood with lag screws of adequate size with appropriate washers.
- U. Do not field splice fabricated items unless said items exceed standard shipping length or change of direction requires splicing.
1. Provide full penetration welded splices where continuity is required.
- V. Provide each fabricated item complete with attachment devices as indicated or required to install.
- W. Anchor such that work will not be distorted nor fasteners overstressed from expansion and contraction.
- X. Set beam and column base plates accurately on nonshrink grout as indicated on Drawings.
1. See Division 03 Specification Sections for non-shrink grout and anchorage.
  2. Set and anchor each base plate to proper line and elevation.
    - a. Use metal wedges, shims, or setting nuts for leveling and plumbing columns and beams.
      - 1) Wedges, shims and setting nuts to be of same metal as base plate they support.
      - 2) Tighten nuts on anchor bolts.
    - b. Fill space between bearing surface and bottom of base plate with nonshrink grout.
      - 1) Fill space until voids are completely filled and base plates are fully bedded on wedges, shims, and grout.
    - c. Do not remove wedges or shims.
      - 1) Where they protrude, cut off flush with edge of base plate.
    - d. Fill sleeves around anchor bolts solid with non-shrink grout.
- Y. Tie anchor bolts in position to embedded reinforcing steel using wire.
1. Tack welding prohibited.
    - a. Coat projecting bolt threads and nuts with heavy coat of clean grease.
  2. Anchor bolt location tolerance:
    - a. Per Section 03 15 19.
- Z. Install bollards as detailed on Drawings.
1. Fill pipe with concrete and round off at top.

- AA. Accurately locate and place frames for openings before casting into floor slab so top of plate is flush with surface of finished floor.
  - 1. Keep screw holes clean and ready to receive screws.
- BB. Attach grating to end and intermediate supports with grating saddle clips and bolts.
  - 1. Maximum spacing: 2 FT OC with minimum of two per side.
  - 2. Attach individual units of aluminum grating together with clips at 2 FT OC maximum with a minimum of two clips per side.
- CC. Coat aluminum surfaces in contact with dissimilar materials in accordance with Specification Section 09 96 00.
- DD. Repair damaged galvanized surfaces in accordance with ASTM A780.
  - 1. Prepare damaged surfaces by abrasive blasting or power sanding.
  - 2. Apply galvanizing repair paint to minimum 6 mils DFT in accordance with manufacturer's instructions.

### **3.3 FIELD QUALITY CONTROL**

- A. Tolerances (unless otherwise noted on the Drawings):
  - 1. Frame placement, after assembly and before welding or tightening.
    - a. Deviation from plumb, level and alignment: 1 IN 500, maximum.
    - b. Displacement of centerlines of columns: 1/2 IN maximum, each side of centerline location shown on Drawings.
- B. Owner Pays for Field Inspection and Testing:
  - 1. Owner will employ and pay for services of an independent testing agency to inspect and test structural steel shop and field work for compliance with this Specification Section, if necessary.
  - 2. Contractor provides sufficient notification and access so inspection and testing can be accomplished.
  - 3. Contractor pays for retesting of failed tests and for additional testing required when defects are discovered.

### **3.4 CLEANING**

- A. After fabrication, erection, installation or application, clean all miscellaneous metal fabrication surfaces of all dirt, weld slag and other foreign matter.
- B. All stainless steel products in addition to Paragraph A. above:
  - 1. Remove all heat tint, rusting, discoloration by passivation, ASTM A380, or other acceptable means as listed in NiDI 11 007 as approved by the Engineer.
- C. Provide surface acceptable to receive field applied paint coatings specified in Specification Section 09 96 00.

## **END OF SECTION**



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## DIVISION 07

THERMAL AND MOISTURE PROTECTION



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## **SECTION 07 92 00**

### **JOINT SEALANTS**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Sealing all joints which will permit penetration of dust, air or moisture.
  - 2. Sealing all cut joints in concrete pavement and interior slab areas.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.

##### **1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. American Concrete Institute (ACI):
    - a. 302.1R, Guide for Concrete Floor and Slab Construction.
  - 2. ASTM International (ASTM):
    - a. C834, Standard Specification for Latex Sealants.
    - b. C920, Standard Specification for Elastomeric Joint Sealants.
    - c. C1521, Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.
  - 3. NSF International (NSF):
    - a. 61, Drinking Water System Components -- Health Effects.
  - 4. Underwriters Laboratories, Inc. (UL).
- B. Qualifications: Sealant applicator shall have minimum five years experience using products specified on projects with similar scope.

##### **1.3 DEFINITIONS**

- A. Defect(ive): Failure of watertightness or airtightness.
- B. Finish sealant: Sealant material per this specification applied over face of compressible sealant or expanding foam sealant specified, to provide a finished, colored sealant joint.
- C. Installer or Applicator:
  - 1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
  - 2. Installer and applicator are synonymous.
- D. "Seal," "sealing" and "sealant": Joint sealant work.

##### **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.
    - c. Manufacturer's recommendations for joint cleaner, primer, backer rod, tooling and bond breaker.
  - 3. Certification from sealant manufacturer stating product being used is recommended for and is best suited for joint in which it is being applied.

4. Certification of applicator qualification.
- B. Test Results:
  1. Provide adhesion test results for each sealant sample including adhesion results compared to adhesion requirements.
  2. Manufacturer's authorized factory representative recommended remedial measures for all failing tests.
- C. Samples:
  1. Cured sample of each color for Engineer's color selection.
  2. Color chart not acceptable.
- D. Informational Submittals:
  1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.

## **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver material in manufacturer's original unopened containers with labels intact: Labels shall indicate contents and expiration date on material.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  1. Compressible sealant:
    - a. Schul International Company, LLC.
    - b. Emseal by Sika.
    - c. Norton.
    - d. Sandell Moisture Protection Systems.
  2. Expanding foam sealant:
    - a. M-D Building Products, Inc.
    - b. DAP Products, Inc.
    - c. FAI International, Inc.
  3. Polyether sealants:
    - a. BASF Corporation.
    - b. Chem Link.
    - c. Tremco Commercial Sealants & Waterproofing.
  4. Polysulfide rubber sealant:
    - a. Pecora Corporation.
    - b. BASF Corporation.
    - c. PolySpec by ITW Polymers Sealants.
  5. Polyurea joint filler:
    - a. Dayton Superior Corporation.
    - b. Euclid Chemical Company.
    - c. L&M by LATICRETE International, Inc.
    - d. BASF Corporation.
  6. Polyurethane sealants:
    - a. Pecora Corporation.
    - b. Sika.
    - c. BASF Corporation.
    - d. Tremco Commercial Sealants & Waterproofing.
  7. Silicone sealants:
    - a. Chem Link.
    - b. GE Silicones.
    - c. Dow.

- d. Tremco Commercial Sealants & Waterproofing.
- 8. Backer rod, compressible filler, primer, joint cleaners, bond breaker:
  - a. As recommended by sealant manufacturer.
- B. Submit request for substitution in accordance with Specification Section 01 25 13.

## 2.2 MATERIALS

- A. Sealants - General:
  - 1. Provide colors matching materials being sealed.
  - 2. Where compound is not exposed to view in finished work, provide manufacturer's color which has best performance.
  - 3. Nonsagging sealant for vertical and overhead horizontal joints.
  - 4. Sealants for horizontal joints: Self-leveling pedestrian/traffic grade.
  - 5. Joint cleaner, primer, bond breaker: As recommended by sealant manufacturer.
  - 6. Sealant backer rod and/or compressible filler:
    - a. Closed cell polyethylene, polyethylene jacketed polyurethane foam, or other flexible, nonabsorbent, non-bituminous material recommended by sealant manufacturer to:
      - 1) Control joint depth.
      - 2) Break bond of sealant at bottom of joint.
      - 3) Provide proper shape of sealant bead.
      - 4) Serve as expansion joint filler.
- B. Compressible Sealant:
  - 1. For joints exposed to wastewater fumes or vapor:
    - a. Closed cell ethylene vinyl acetate (EVA) foam with epoxy adhesive.
    - b. Schul "HydroStop".
  - 2. Foamed polyurethane strip saturated with polymerized polybutylene waterproofing coated on front face with nonreactive release agent that will act as bond breaker for applied sealant.
    - a. Schul "Sealtite B".
  - 3. Adhesive: As recommended by sealant manufacturer.
- C. Expanding Foam Sealant:
  - 1. One or two component moisture cured expanding urethane.
  - 2. Shall not contain formaldehyde.
  - 3. Density: Minimum 1.5 PCF.
  - 4. Closed cell content: Minimum 70 PCT.
  - 5. R-value: Minimum 5.0/IN.
  - 6. Flame spread: Less than 25.
  - 7. Smoke developed: Less than 25.
- D. Polyether Sealant:
  - 1. Silyl-terminated polyether polymer.
  - 2. ASTM C920, Type S, Grade NS, Class 50, Use NT, M, A, and O.
    - a. BASF MasterSeal 150.
    - b. Chem Link DuraLink.
    - c. Tremco Dymonic FC.
- E. Polysulfide Rubber Sealant:
  - 1. One or two component.
  - 2. Meet ASTM C920.
    - a. Pecora Synthacalk GC2+.
    - b. PolySpec THIOKOL 2235.
- F. Polyurea Joint Filler:
  - 1. Two component, semi-rigid material for filling formed or saw-cut control joints in interior concrete slabs.
    - a. Dayton Superior Corporation "Joint Fill, Joint Seal, Joint Saver II" as required for condition and recommended by manufacturer.

- b. Euclid Chemical Company "EUCO QWIK" joint.
    - c. L&M "Joint Tite 750".
    - d. BASF MasterSeal "CR100" control joint filler.
  - 2. Comply with ACI 302.1R performance recommendations regarding control and construction joints.
  - 3. Color: Gray.
- G. Polyurethane Sealant:
- 1. One or two components.
  - 2. Paintable.
  - 3. Meet ASTM C920 Type S or Type M, Grade NS or P, Class 25, Use NT, T, M, A and O.
    - a. Pecora Dynatrol-IXL, Dynatrol II, Urexpam NR-200, NR-201.
    - b. Sika Chemical Corporation Sikaflex-1a, Sikaflex-2C NS/SL.
    - c. BASF MasterSeal NP-1, NP-II, SL-1 SL-2.
    - d. Tremco Dymonic or Dymeric, Vulkem 116,227,45,245.
- H. Silicone Sealant:
- 1. One component.
  - 2. Meet ASTM C920, Type S, Grade NS, Class 25, Use NT, G, A, O.
    - a. Chem Link DuraSil.
    - b. GE Silpruf, Silglaze II.
    - c. GE Sanitary 1700 sealant for sealing around plumbing fixtures.
    - d. Dow 786 for sealing around plumbing fixtures.
    - e. Dow 7565, 790, 791, 795.
    - f. Tremco Spectrem 1, Spectrem 3, Tremsil 600.
  - 3. Mildew resistant for sealing around plumbing fixtures.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Before use of any sealant, investigate its compatibility with joint surfaces, fillers and other materials in joint system.
- B. Use only compatible materials.
- C. Where required by manufacturer, prime joint surfaces.
  - 1. Limit application to surfaces to receive sealant.
  - 2. Mask off adjacent surfaces.
- D. Provide joint depth for joints receiving polyurea joint filler in accordance with manufacturer's recommendations.

### **3.2 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions and UL requirements.
- B. Clean all joints.
- C. Make all joints water and airtight.
- D. At changes in direction of joints, joint intersections and where sealant joints interface with other construction, install continuous sealant as necessary to ensure a weather-tight seal.
- E. Make depth of sealing compounds, except expanding foam and polyurea sealant, not more than one-half width of joint, but in no case less than 1/4 IN nor more than 1/2 IN unless recommended otherwise by the manufacturer.
- F. Provide correctly sized backer rod, compressible filler or compressible sealant in all joints to depth recommended by manufacturer:
  - 1. Take care to not puncture backer rod and compressible filler.

2. Provide joint backer rod as recommended by the manufacturer for polyurea joint filler.
- G. Apply bond breaker where required.
- H. Tool sealants using sufficient pressure to fill all voids.
- I. Upon completion, leave sealant with smooth, even, neat finish.
- J. Where piping, conduit, ductwork, etc., penetrate wall, seal each side of wall opening.
- K. Install compressible sealant to position at indicated depth.
  1. Size so that width of material is twice joint width.
  2. Take care to avoid contamination of sides of joint.
  3. Protect side walls of joint (to depth of finish sealant).
  4. Install with adhesive faces in contact with joint sides.
  5. Install finish sealant where indicated.
- L. Install expanding foam sealant to minimum 4 IN depth or thickness of wall being penetrated if less than 4 IN or as indicated on Drawings.
  1. Provide adequate fire rated backing material as required.
  2. Hold material back from exposed face of wall as necessary to allow for installation of backer rod and finish sealant.
    - a. Allow expanding foam sealant to completely cure prior to installing backer rod and finish sealant.
  3. Trim off excess material flush with surface of the wall if not providing finished sealant.

### **3.3 SEALANT WORK**

- A. General:
  1. Work includes but is not limited to: Sealing all joints which will permit penetration of dust, air, or moisture.
  2. Refer to SCHEDULE for materials to be used.
- B. Concrete joints:
  1. Flooring joints.
  2. Isolation joints.
  3. Joints between paving or sidewalks and building.
  4. Construction, control and expansion joints.
  5. Joints between precast roof units and between precast roof units and walls.
  6. Joints between precast wall panels.
  7. Precast panel bearing joints:
    - a. At panels bearing at or above grade, seal both sides of panel base joint.
    - b. At panels bearing below grade:
      - 1) Seal exterior panel base joint prior to backfilling and/or placement of site paving.
      - 2) Provide compressible filler and sealant or backer rod and sealant as appropriate for interior slab condition.
- C. Flashing, reglets and retainers.
- D. Exterior Insulation and Finish System joints.
- E. Other joints where sealant, expanding foam sealant or compressible sealant is indicated.

### **3.4 SCHEDULE**

- A. Furnish sealant as indicated for the following areas:
  1. Exterior areas:
    - a. Above grade: Polyurethane.
  2. Interior areas:
    - a. Noncorrosive areas:
      - 1) Dry exposure: Polyurethane, unless noted otherwise.



- b. Sealant exposed to or having the potential of being exposed to concentrated chlorine gas or chlorine liquid: Polysulfide.
- 3. Compressible sealant: Where indicated.
- 4. Exterior wall penetrations: Expanding urethane foam, with finish sealant.
  - a. Finish sealant:
    - 1) Exterior side:
      - a) Above grade: Polyether.
      - b) Below grade: Polyurethane.
    - 2) Interior side:
      - a) Dry exposure: Polyurethane, unless noted otherwise.
- 5. Interior concrete slab formed or saw-cut control joints: Polyurea joint filler.

**END OF SECTION**



# DIVISION 09

FINISHES



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**SECTION 09 96 00**  
**HIGH PERFORMANCE INDUSTRIAL COATINGS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. High performance industrial coatings (HPIC).
  - 2. Any other coating, thinner, accelerator, inhibitor, etc., specified or required as part of a complete System specified in this Specification Section.
  - 3. Minimum surface preparation requirements.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. ASTM International (ASTM):
    - a. B499, Standard Test Method for Measurement of Coating Thicknesses by the Magnetic Method: Nonmagnetic Coatings on Magnetic Basis Metals.
    - b. D3359, Standard Test Methods for Rating Adhesion by Tape Test.
    - c. D4258, Standard Practice for Surface Cleaning Concrete for Coating.
    - d. D4259, Standard Practice for Abrading Concrete.
    - e. D4261, Standard Practice for Surface Cleaning Concrete Masonry Units for Coating.
    - f. D4262, Standard Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces.
    - g. D4263, Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
    - h. D4414, Standard Practice for Measurement of Wet Film Thickness by Notch Gages.
    - i. D4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
    - j. D6132, Standard Test Method for Nondestructive Measurement of Dry Film Thickness of Applied Organic Coatings Using an Ultrasonic Gage.
    - k. D6677, Standard Test Method for Evaluating Adhesion by Knife.
    - l. D7091, Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals.
    - m. D7234, Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
    - n. E337, Standard Test Method for Measuring Humidity with a Psychrometer (the Measurement of Wet- and Dry-Bulb Temperatures).
    - o. F1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
    - p. F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
  - 2. Environmental Protection Agency (EPA).
  - 3. International Concrete Repair Institute (ICRI):
    - a. 310.2, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.
  - 4. NACE International (NACE).

5. National Association of Pipe Fabricators (NAPF):
    - a. 500-03, Surface Preparation Standard for Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings:
      - 1) 500-03-04, Abrasive Blast Cleaning for Ductile Iron Pipe.
      - 2) 500-03-05, Abrasive Blast Cleaning for Cast Ductile Iron Fittings.
  6. NSF International (NSF).
    - a. 61, Drinking Water System Components - Health Effects.
  7. The Society for Protective Coatings (SSPC):
    - a. PA 2, Procedure for Determining Conformance to Dry Coating Thickness Requirements.
    - b. SP 1, Solvent Cleaning.
    - c. SP 2, Hand Tool Cleaning.
    - d. SP 3, Power Tool Cleaning.
    - e. SP 16, Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals.
  8. The Society for Protective Coatings/ NACE International (SSPC/ NACE):
    - a. SP 5/ NACE No. 1, White Metal Blast Cleaning
    - b. SP 6/ NACE No. 3, Commercial Blast Cleaning.
    - c. SP 7/ NACE No. 4, Brush-off Blast Cleaning.
    - d. SP 10/ NACE No. 2, Near-White Blast Cleaning.
    - e. SP 13/ NACE No. 6, Surface Preparation of Concrete.
- B. Qualifications:
1. Coating manufacturer's technical representative shall be a NACE Certified Coatings Inspector, Level 3 minimum.
  2. Applicators shall have minimum of 10 years of experience in application of similar products on similar project.
    - a. Provide references for minimum of three different projects completed in last five years with similar scope of work.
    - b. Include name and address of project, size of project in value (coating) and contact person.
  3. NACE inspector shall be NACE Certified Coatings Inspector Level 3 minimum and shall have minimum of five years of experience of conducting inspections and tests as indicated in this Specification Section.
- C. Miscellaneous:
1. Furnish coating through one manufacturer unless noted otherwise.
- D. Deviation from specified MIL thickness or product type is not allowed without written authorization of Engineer.
- E. Material shall not be thinned unless approved, in writing, by coating manufacturer's technical representative.

### **1.3 DEFINITIONS**

- A. Applicator:
1. Applicator is the person actually installing or applying the product in the field, at the Project site, or at an approved shop facility.
- B. Approved Factory Finish: Finish on a product in compliance with the finish specified in the Specification Section where the product is specified.
- C. Appurtenant Surface: Accessory or auxiliary surface attached to or adjacent to a surface indicated to be coated.
- D. Corrosive Environment:
1. Immersion in or subject to:
    - a. Condensation, spillage or splash of a corrosive material such as water, wastewater or chemical solution.

- b. Exposure to corrosive caustic or acidic agent, chemicals, chemical fumes, chemical mixture, or solutions.
  - c. For purposes of this Specification Section, corrosive environments include:
    - 1) Outdoor areas not otherwise identified as highly corrosive.
    - 2) Piping galleries.
    - 3) Surfaces within 2 FT of high water level.
- E. Outdoor Atmosphere or Surface: Outdoor atmosphere or surface exposed to weather and/or direct sunlight.
- F. Holiday:
  - 1. A void, crack, thin spot, foreign inclusion, or contamination in the coating that significantly lowers the dielectric strength of the coating.
  - 2. May also be identified as a discontinuity or pinhole.
- G. HPIC: High performance industrial coatings.
  - 1. Epoxies, urethanes, vinyl ester, waterborne vinyl acrylic emulsions, acrylates, silicones, alkyds, acrylic emulsions and any other coating listed as a HPIC.
- H. Interior Atmosphere or Surface: Indoor atmosphere or surface not exposed to weather and/or direct sunlight.
- I. Immersion Service:
  - 1. Any surface immersed in water or some other liquid.
  - 2. Surface of any pipe, valve, or any other component of the piping system subject to frequent wetting.
  - 3. Surfaces within two feet above high water level in water bearing structures.

#### **1.4 SUBMITTALS**

- A. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
- B. Certifications:
  - 1. Applicator experience qualifications.
    - a. No submittal information will be reviewed until Engineer has received and approved applicator qualifications.
  - 2. Certification that High Performance Coating Systems proposed for use have been reviewed and approved by a NACE Certified Coatings Inspector employed by the coating manufacturer.
    - a. Submittals not including this certification will be returned without review.
- C. Shop Drawings:
  - 1. Product technical data including:
    - a. Acknowledgement that products submitted meet requirements of standards referenced.
    - b. Manufacturer's surface preparation instructions.
    - c. Manufacturer's application instructions.
    - d. If products being used are manufactured by Company other than listed in the MATERIALS Article of this Specification Section, provide complete individual data sheet comparison of proposed products with specified products including:
      - 1) Application procedure.
      - 2) Coverage rates.
      - 3) Certification that product is designed for intended use and is equal or superior to specified product.
    - e. Coating manufacturer's technical representative's written statement attesting that applicator has been instructed on proper preparation, mixing and application procedures for coatings specified.
  - 2. Manufacturer's statement regarding applicator instruction on product use.

- D. Informational Submittals:
  - 1. Approval of application equipment.
  - 2. Applicator's daily records:
    - a. Submit daily records at end of each week in which coating work is performed unless requested otherwise by Engineer's on-site representative.

## **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver in original containers, labeled as follows:
  - 1. Name or type number of material.
  - 2. Manufacturer's name and item stock number.
  - 3. Contents, by volume, of major constituents.
  - 4. Warning labels.
  - 5. VOC content.
- B. Store materials in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 DEGF.

## **1.6 PROJECT CONDITIONS**

- A. Verify that atmosphere in area where coating is to take place is within coating manufacturer's acceptable temperature, humidity and sun exposure limits.
  - 1. Provide temporary heating, shade and/or dehumidification as required to bring area within acceptable limits.
    - a. Provide temporary dehumidification equipment properly sized to maintain humidity levels required by coating manufacturer.
  - 2. Do not apply coatings in snow, rain, fog or mist.

# **PART 2 - PRODUCTS**

## **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. High Performance Industrial Coatings:
    - a. Carboline Protective Coatings.
    - b. PPG.
    - c. The Sherwin-Williams Company.
    - d. Tnemec.
    - e. AkzoNobel.
- B. Submit request for substitution in accordance with Specification Section 01 25 13.
- C. "Or-Equal" Submittals:
  - 1. Materials by other manufacturers are acceptable provided that they are established as being compatible with and of equal quality to the coatings of the manufacturers listed.
  - 2. Provide satisfactory documentation from the proposed "or-equal" manufacturer that proposed materials meets or exceeds the following:
    - a. Is of the same generic resin.
    - b. Requires comparable surface preparation.
    - c. Has comparable application requirements.
    - d. Meets the same VOC levels or better.
    - e. Provides the same finish and color options.
    - f. Is suitable for the intended service.
    - g. Resistance to abrasion and physical damage.
    - h. Resistance to chemical attack.
    - i. Resistance to UV exposure.
    - j. Ability to recoat in future.

- k. Dry film thickness per coat.
    - 1) Where manufacturer's product data sheet indicates a minimum MIL thickness per coat that is greater than specified herein, MIL thickness for entire coating system shall be increased proportionately.
  - l. Minimum and Maximum time between coats.
  - m. Compatibility with other coatings.
  - n. Temperature limitations in service and during application.
  - o. Type and quality of recommended undercoats and topcoats.
  - p. Ease of application.
  - q. Ease of repairing damaged areas.
  - r. Stability of colors.
3. The cost of all testing and analyzing of the proposed substitute materials shall be borne by the CONTRACTOR.

## 2.2 MATERIALS

- A. Coatings used for interior finishes shall meet the requirements of the building code.
- B. Coatings shall comply with the VOC limits of EPA.
- C. For unspecified materials such as thinner, provide manufacturer's recommended products.
- D. High Performance Industrial Coatings:

COATING CODE	GENERIC DESCRIPTION	MANUFACTURER	
		TNEMEC	SHERWIN WILLIAMS
AAE	Acrylic/Acrylate Emulsion	Series 180 WB Tneme-Crete	Cement Plex 875
AREC	Abrasion-Resistant Epoxy Coating	Series 435 Perma-Glaze	Duraplate 5900
CRM	Cementitious Repair Mortar	Series 217 MortarCrete	Cemtec Silatec MSM
CRU	Corrosion Resistant Urethane	Series 290 CRU	Polylon HP
DFA	Dry-fall Acrylic	Series 115 Uni-Bond DF	DFA Dry Fall Acrylic
EBF	Epoxy Block Filler	Series 1254 Epoxoblock WB	Kem Cati Coat HS
ESF	Epoxy Surfacer/Filler	Series 215 Surfacing Epoxy	Steel Seam FT 910
EMM	Epoxy Modified Cementitious Mortar	Series 218 MortarClad	Duraplate 2300
EF	Epoxy Flooring	Series 237 Power-Tread	GP3746
GFRE	Glass Flake Reinforced Epoxy	Series 142	Sher-Glass FF
HREM	H2S-Resistant Epoxy Mortar	Series 434 Perma-Shield H <sub>2</sub> S	Duraplate 5900 Mortar
HU	Hybrid Urethane	Series 740 UVX	Acrolon Ultra
MIO	MIO Polyurethane	Series 1 Omnithane	Corothane 1 MIO



COATING CODE	GENERIC DESCRIPTION	MANUFACTURER	
		TNEMEC	SHERWIN WILLIAMS
MPE	Multi-Purpose Epoxy	Series N69 Hi-Build Epoxoline II	Macropoxy 646
MTEP	Moisture-Tolerant Epoxy Primer	Series 201 Epoxoprime	Corobond 100
SCE	Secondary Containment Epoxy	Series 237SC Chembloc	Cor Cote HP
SCEP	Secondary Containment Epoxy Primer	Series 206SC Chembloc	GP3552
STEP	Surface-Tolerant Epoxy Primer	Series 135 Chembuild	Macropoxy 646
UHSE	Ultra-High Solids Epoxy (NSF 61)	Series 22 Epoxoline	Duraplate UHS
VEP	Vinyl Ester Primer	Series 251SC Chembloc	Corobond Vinyl Ester Primer
VESC	Vinyl Ester Secondary Containment	Series 252SC Chembloc	Cor Cote VEN FF
ZRU	Zinc-Rich Urethane	Series 94-H <sub>2</sub> O Hydro-Zinc	Corothane 1 Galvapak

### 2.3 COATING SYSTEMS:

- A. The following tables indicate coating systems by material and environment, unless a specific application is indicated.

Environment/ Application	Surface Preparation	Prime Coat	Intermediate Coats	Finish Coat
<b>Galvanized Steel</b>				
Outdoor atmospheric	SSPC-SP 16	4.0 to 6.0 MIL STEP		2.5 to 3.5 MIL HU

## PART 3 - EXECUTION

### 3.1 ITEMS TO BE COATED

- A. Outdoor Surfaces, including but not limited to:
- Galvanized Steel Tube Railings at the Muck Basin.

### 3.2 EXAMINATION

- A. Test pH of surface to be coated in accordance with ASTM D4262.
- If surface pH is not within coating manufacturer's required acceptable range, use methods acceptable to coating manufacturer as required to bring pH within acceptable limits.
  - Retest pH until acceptable results are obtained.
- Verify that moisture content of surface to be coated is within coating manufacturer's recommended acceptable limits.
    - Test surface to be coated in accordance with ASTM D4263 to determine the presence of moisture.
      - If moisture is detected, test moisture content of surface to be coated in accordance with ASTM F1869.

- 2) Provide remedial measures as necessary to bring moisture content within coating manufacturer's recommended acceptable limits.
- 3) Retest surface until acceptable results are obtained.

### 3.3 PREPARATION

- A. General:
  1. Prepare surfaces to be coated in accordance with coating manufacturer's instructions and this Specification Section unless noted otherwise in this Specification Section.
    - a. Where discrepancy between coating manufacturer's instructions and this Specification Section exists, the more stringent surface preparation shall be provided unless approved otherwise, in writing, by the Engineer.
  2. Remove all dust, grease, oil, compounds, dirt and other foreign matter which would prevent bonding of coating to surface.
  3. Adhere to manufacturer's recoat time surface preparation requirements.
    - a. Surfaces that have exceeded coating manufacturer's published recoat time and/or have exhibited surface chalking shall be prepared prior to additional coating in accordance with manufacturer's published recommendations.
      - 1) Minimum SSPC-SP 7/ NACE No. 4 unless otherwise approved by Engineer.
- B. Protection:
  1. Protect surrounding surfaces not to be coated.
  2. Remove and protect hardware, accessories, plates, fixtures, finished work, and similar items; or provide ample in-place protection.
  3. Protect code labels, equipment identification or rating plates and similar labels, tagging and identification.
- C. Prepare and coat before assembly all surfaces which are inaccessible after assembly.
- D. Galvanized Steel and Non-ferrous Metals:
  1. Solvent clean in accordance with SSPC-SP 1 followed by brush-off blast clean in accordance with SSPC-SP 16 to remove zinc oxide and other foreign contaminants.
    - a. Provide uniform 1 MIL profile surface.

### 3.4 APPLICATION

- A. General:
  1. Thin, mix and apply coatings by brush, roller, or spray in accordance with manufacturer's installation instructions.
    - a. Application equipment must be inspected and approved in writing by coating manufacturer.
  2. Temperature and weather conditions:
    - a. Do not coat surfaces when surface temperature is below 50 DEGF unless product has been formulated specifically for low temperature application and application is approved in writing by Engineer and coating manufacturer's technical representative.
    - b. Avoid coating surfaces exposed to hot sun.
    - c. Do not coat damp surfaces.
    - d. Apply coating to concrete or masonry surfaces in descending temperatures, in accordance with coating manufacturer's application instructions.
  3. Apply materials under adequate illumination.
  4. Provide complete coverage to MIL thickness specified.
    - a. Thickness specified is dry MIL thickness.
  5. Evenly spread to provide full, smooth coverage.
    - a. All coating systems are "to cover."
      - 1) In situations of discrepancy between manufacturer's square footage coverage rates and MIL thickness, MIL thickness requirements govern.
    - b. When color or undercoats show through, apply additional coats until coating is of uniform finish and color.

- c. Finished coating system shall be uniform and without voids, bugholes, holidays, laps, brush marks, roller marks, runs, sags or other imperfections.
  - 6. If so directed by Engineer, do not apply consecutive coats until Engineer has had an opportunity to observe and approve previous coats.
  - 7. Work each application of material into corners, crevices, joints, and other difficult to work areas.
  - 8. Provide coating manufacturer's recommended details at all terminations, penetrations, embedments, cracks, joints and changes in substrate direction.
  - 9. Avoid degradation and contamination of blasted surfaces and avoid inter-coat contamination.
    - a. Clean contaminated surfaces before applying next coat.
    - b. Intercoat surface cleanliness shall be inspected and approved by the Engineer prior to application of each coat.
  - 10. Smooth out runs or sags immediately, or remove and recoat entire surface.
  - 11. Allow preceding coats to dry before recoating.
    - a. Recoat within time limits specified by coating manufacturer.
    - b. If recoat time limits have expired re-prepare surface in accordance with coating manufacturer's printed recommendations.
  - 12. Allow coated surfaces to cure prior to allowing traffic or other work to proceed.
  - 13. Coat all aluminum in contact with dissimilar materials.
  - 14. When coating rough surfaces which cannot be backrolled sufficiently, hand brush coating to work into all recesses provided that the maximum DFT is not exceeded.
  - 15. Backroll surfaces if coatings are spray applied.
- B. Employ services of coating manufacturer's technical representative to ensure that field-applied coatings are compatible with factory-applied or existing coatings.
- 1. Certify through material data sheets.
  - 2. Perform test patch.
    - a. Prepare existing coating surface to receive specified coating system.
    - b. Apply coating to a minimum 1 SQFT area and allow to cure in accordance with manufacturer's recommendations.
    - c. Evaluate adhesion to existing coating:
      - 1) Concrete or Masonry substrates: ASTM D4541.
      - 2) All other substrates: ASTM D6677 and ASTM D3359 (X-cut method).
  - 3. If field-applied coating is found to be not compatible, require the coating manufacturer's technical representative to recommend, in writing, product to be used as barrier coat, thickness to be applied, surface preparation and method of application.
    - a. Perform test patch as described above.
  - 4. At Contractor's option, coatings may be removed, surface re-prepared, and new coating applied using appropriate coating system listed in the MATERIALS Article, Coating Systems paragraph of this Specification Section.
    - a. All damage to surface as result of coating removal shall be repaired to original condition or better by Contractor at no additional cost to Owner.
- C. Prime Coat Application:
- 1. Apply structural steel and miscellaneous steel prime coat in the factory.
    - a. Prime coat referred to here is prime coat as indicated in this Specification.
      - 1) Prime coating applied in factory (shop) as part of Fabricator's standard rust inhibiting and protection coating is not acceptable as replacement for specified prime coating.
    - b. Application of all factory-applied coatings(s) on structural steel and miscellaneous steel shall be continually observed and certified by NACE coatings inspector.
  - 2. Prime all surfaces indicated to be coated.
    - a. Apply prime coat in accordance with coating manufacturer's written instructions and as written in this Specification Section.
  - 3. Apply zinc-rich primers while under continuous agitation.

4. Brush or spray bolts, welds, edges and difficult access areas with primer prior to primer application over entire surface.
  5. Touch up damaged primer coats prior to applying finish coats.
    - a. Restore primed surface equal to surface before damage.
  6. All surfaces of steel lintels and steel components of concrete lintels used in wall construction shall be completely coated with both prime and finish coats prior to placing in wall.
- D. Finish Coat Application:
1. Apply finish coats in accordance with coating manufacturer's written instructions and in accordance with this Specification Section; manufacturer instructions take precedent over these Specifications.
  2. Touch up damaged finish coats using same application method and same material specified for finish coat.
    - a. Prepare damaged area in accordance with the PREPARATION Article of this Specification Section.

### **3.5 FIELD QUALITY CONTROL**

- A. Application Deficiencies:
1. Surfaces showing runs, laps, brush marks, telegraphing of surface imperfections or other defects will not be accepted.
  2. Surfaces showing evidence of fading, chalking, blistering, delamination or other defects due to improper surface preparation, environmental controls or application will not be accepted.
    - a. Epoxy surfaces showing evidence of chalking or amine blush shall be prepared and recoated as follows:
      - 1) Solvent clean surfaces in accordance with SSPC-SP1 and abrasive blast in accordance with SSPC-SP7/ NACE No. 4.
      - 2) Recoat with intermediate and finish coats in accordance with coating system specified herein.
- B. Provide protection for coated surfaces.
1. Surfaces showing soiling, staining, streaking, chipping, scratches, or other defects will not be accepted.
- C. Contractor Performed Testing:
1. Provide ongoing testing and inspection, including but not limited to the following:
    - a. Measurement and recording of environmental conditions as specified herein.
    - b. Measurement and recording of substrate conditions as specified herein.
    - c. Thickness Testing:
      - 1) Wet film thickness during application in accordance with ASTM D4414.
      - 2) Dry Film Thickness (DFT) in accordance with SSPC-PA 2.
      - 3) Engineer may measure coating thickness at any time during project to assure conformance with these Specifications.
- D. Instrumentation:
1. Provide instrumentation as necessary to measure and record atmospheric and substrate conditions, including but not limited to:
    - a. Dry Film Thickness Gauge:
      - 1) Ultrasonic: ASTM D6132.
      - 2) Magnetic: ASTM B499.
    - b. Wet Film Thickness Gauge: ASTM D4414.
    - c. Sling Psychrometer: ASTM E337.
    - d. Surface Temperature Gauge.
    - e. Anemometer.
    - f. Moisture Meter.
    - g. Adhesion test apparatus:
      - 1) Steel: ASTM D4541.

- E. Maintain Daily Records:
1. Record the following information during application:
    - a. Date, starting time, end time, and all breaks taken by applicators.
    - b. Air temperature.
    - c. Relative humidity.
    - d. Dew point.
    - e. Moisture content and pH level of concrete or masonry substrates prior to coating.
    - f. Surface temperature of substrate.
    - g. Provisions utilized to maintain work area within manufacturer's recommended application parameters including temporary heating, ventilation, cooling, dehumidification and provisions utilized to mitigate wind-blown dust and debris from contaminating the wet coating.
    - h. For outdoor coating, also record:
      - 1) Sky condition.
      - 2) Wind speed and direction.
    - i. Record environmental conditions, substrate moisture content and surface temperature information not less than once every 4 HRS during application.
      - 1) Record hourly when temperatures are below 50 DEGF or above 100 DEGF.
  2. Record the following information daily for the coating manufacturer's recommended curing period:
    - a. Date and start time of cure period for each item or area.
    - b. For outdoor coating, also record:
      - 1) Sky conditions.
      - 2) Wind speed and direction.
      - 3) Air temperature.
        - a) Dry Bulb.
        - b) Wet Bulb.
      - 4) Relative humidity.
      - 5) Dew point.
      - 6) Surface temperatures.
    - c. Record environmental conditions not less than once every 4 HRS.
      - 1) Record hourly when temperatures are below 50 DEGF or above 100 DEGF.
    - d. Provisions utilized to protect each item or area and to maintain areas within manufacturer's recommended curing parameters.
  3. Format for daily record to be computer generated.
- F. Provide wet paint signs.

### **3.6 CLEANING**

- A. Clean coating spattered surfaces.
  1. Use care not to damage finished surfaces.
- B. Upon completion of coating, replace hardware, accessories, plates, fixtures, and similar items.
- C. Remove surplus materials, scaffolding, and debris.

### **3.7 COLOR SCHEDULE**

- A. Galvanized Steel Tube Railings: Safety Yellow.

## **END OF SECTION**



DIVISION 10

SPECIALTIES



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## **SECTION 10 14 23**

### **SIGNAGE**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Site Signage
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.

##### **1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. Americans with Disabilities Act (ADA):
    - a. Accessibility Guidelines for Buildings and Facilities (ADAAG).
  - 2. U.S. Department of Transportation:
    - a. Manual of Uniform Traffic Control Devices (MUTCD).
  - 3. Iowa Department of Transportation (IDOT), Standard Specifications for Highway and Bridge Construction.

##### **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. Product technical data including:
    - a. Acknowledgement that products submitted meet requirements of standards referenced.
    - b. Manufacturer's installation instructions.
    - c. Color charts for Engineer's color selection.
      - 1) Color selection shall be made from manufacturer's complete color line including all premium and special colors.
  - 3. Schedule of all signs indicating text and graphics.
  - 4. Site Signage showing size, letter style, text, border, finish, and installation detail.

#### **PART 2 - PRODUCTS**

##### **2.1 MATERIALS**

- A. Site Signage:
  - 1. Conform to IDOT Section 2524.02, Type A Signs.
  - 2. Posts to be galvanized steel.

##### **2.2 FABRICATION**

- A. Site Signage:
  - 1. Sing panels conforming to IDOT, Section 4186.02B, galvanized steel; thickness based on longest side.
  - 2. Optionally provide aluminum signs conforming to IDOT Section 4186.02A
  - 3. Reflective sheeting: Conforming to IDOT Section 4186.03, Type 1.



## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

#### **A. Site Signage:**

1. See Specification Section 01 22 00. Site Signage will be decided upon by Owner for permanent landfill traffic signage.
2. Conforming with IDOT and MUTCD.
3. Final location established in field with Owner.
4. See Drawings.

**END OF SECTION**



# DIVISION 26

ELECTRICAL



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**SECTION 26 05 00**  
**ELECTRICAL: BASIC REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes: Basic requirements for electrical systems.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.
  - 3. Section 26 05 19 - Wire and Cable - 600 Volt and Below.
  - 4. Section 26 05 33 - Raceways and Boxes.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. ETL Testing Laboratories (ETL).
  - 2. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
    - a. C2, National Electrical Safety Code (NESC).
  - 3. National Electrical Manufacturers Association (NEMA):
    - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
  - 4. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).
  - 5. Underwriters Laboratories, Inc. (UL).
- B. Where UL test procedures have been established for the product type, use UL or ETL approved electrical equipment and provide with the UL or ETL label.

**1.3 DEFINITIONS**

- A. For the purposes of providing materials and installing electrical work the following definitions shall be used.
  - 1. Outdoor area: Exterior locations where the equipment is normally exposed to the weather and including below grade structures, such as vaults, manholes and handholes.
  - 2. Non-architecturally finished interior area: Truck parking Bay, Fire Pump, mechanical, electrical rooms and other similar type rooms.
  - 3. Shop fabricated: Manufactured or assembled equipment for which a UL test procedure has not been established.

**1.4 SUBMITTALS**

- A. Shop Drawings:
  - 1. See Division 01 for requirements for the mechanics and administration of submittal process.
  - 2. See Division 01 and individual Specification Sections for submittal requirements for products defined as equipment.
  - 3. General requirements:
    - a. Provide manufacturer's technical information on products to be used, including product descriptive bulletin.
    - b. Include data sheets that include manufacturer's name and product model number.
      - 1) Clearly identify all optional accessories.
    - c. Acknowledgement that products are UL or ETL listed or are constructed utilizing UL or ETL recognized components.
    - d. Manufacturer's delivery, storage, handling and installation instructions.
    - e. Product installation details.
    - f. See individual specification sections for any additional requirements.

- B. Operation and Maintenance Manuals:
  - 1. See Division 01 for requirements for:
    - a. The mechanics and administration of the submittal process.
    - b. The content process of Operation and Maintenance Manuals.
- C. When a Specification Section includes products specified in another Specification Section, each Specification Section shall have the required Shop Drawing transmittal form per Division 01 and all Specification Sections shall be submitted simultaneously.

## **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. See Division 01.
- B. Protect nameplates on electrical equipment to prevent defacing.

## **1.6 AREA DESIGNATIONS**

- A. Designation of an area will determine the NEMA rating of the electrical equipment enclosures, types of conduits and installation methods to be used in that area.
  - 1. Outdoor areas:
    - a. Wet.
  - 2. Indoor areas:
    - a. Dry.

# **PART 2 - PRODUCTS**

## **2.1 ACCEPTABLE MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, refer to specific Electrical Specification Sections and specific material paragraphs below for acceptable manufacturers.
- B. Submit request for substitution in accordance with Division 01.
- C. Provide all components of a similar type by one (1) manufacturer.

# **PART 3 - EXECUTION**

## **3.1 INSTALLATION**

- A. Install and wire all equipment, including prepurchased equipment or existing relocated equipment, and perform all tests necessary to assure conformance to the Drawings and Specification Sections and ensure that equipment is ready and safe for energization.
- B. Install equipment in accordance with the requirements of:
  - 1. NFPA 70.
  - 2. IEEE C2.
  - 3. The manufacturer's instructions.
- C. In general, conduit routing is not shown on the Drawings.
  - 1. The Contractor is responsible for routing all conduits including those shown on one-line and control block diagrams and home runs shown on floor plans.
  - 2. Conduit routings and stub-up locations that are shown are approximate; exact routing to be as required for equipment furnished and field conditions.
- D. Do not use equipment that exceed dimensions or reduce clearances indicated on the Drawings or as required by the NFPA 70.
- E. Install equipment plumb, square and true with construction features and securely fastened.
- F. Install electrical equipment, including pull and junction boxes, minimum of 6 IN from gas, air and water piping and equipment.

- G. Install equipment so it is readily accessible for operation and maintenance, is not blocked or concealed and does not interfere with normal operation and maintenance requirements of other equipment.
- H. Device Mounting Schedule:
  - 1. Unless indicated otherwise on the Drawings, mounting heights are as indicated below:
    - a. Light switch (to center): 48 IN.
    - b. Receptacle on exterior wall of building (to center): 24 IN.
    - c. Receptacle in non-architecturally finished areas (to center): 40 IN.
    - d. Safety switch (to center of operating handle): 54 IN.
    - e. Separately mounted motor starter (to center of operating handle): 54 IN.
    - f. Pushbutton or selector switch control station (to center): 48 IN.
- I. Avoid interference of electrical equipment operation and maintenance with structural members, building features and equipment of other trades.
  - 1. When it is necessary to adjust the intended location of electrical equipment, unless specifically dimensioned or detailed, the Contractor may make adjustments of up to 6 IN in equipment location with the Owner's approval.
- J. Provide electrical equipment support system per the following area designations:
  - 1. Dry areas:
    - a. Galvanized system consisting of galvanized steel channels and fittings, nuts and hardware.
    - b. Field touch-up cut ends and scratches of galvanized components with the specified primer during the installation, before rust appears.
  - 2. Wet areas:
    - a. Galvanized system consisting of galvanized steel channels and fittings, nuts and hardware.
    - b. Field touch-up cut ends and scratches of galvanized components with the specified primer during the installation, before rust appears.
- K. Provide all necessary anchoring devices and supports rated for the equipment load based on dimensions and weights verified from approved submittals, or as recommended by the manufacturer.
  - 1. See Specification Section 05 50 00.
  - 2. Do not cut, or weld to, building structural members.
  - 3. Do not mount safety switches or other equipment to equipment enclosures, unless enclosure mounting surface is properly braced to accept mounting of external equipment.
- L. Provide corrosion resistant spacers to maintain 1/4 IN separation between metallic equipment and/or metallic equipment supports and mounting surface in wet areas.
- M. Do not place equipment fabricated from aluminum in direct contact with earth or concrete.
- N. Screen or seal all openings into equipment mounted outdoors to prevent the entrance of rodents and insects.
- O. Do not use materials that may cause the walls or roof of a building to discolor or rust.
- P. Identify electrical equipment and components.

### **3.2 FIELD QUALITY CONTROL**

- A. Verify exact rough-in location and dimensions for connection to electrified equipment, provided by others.
- B. Replace equipment and systems found inoperative or defective and re-test.
- C. Cleaning: See Division 01.

- D. The protective coating integrity of support structures and equipment enclosures shall be maintained.
  - 1. Repair galvanized components utilizing a zinc rich paint.
  - 2. Repair painted components utilizing touch up paint provided by or approved by the manufacturer.
  - 3. Repair surfaces which will be inaccessible after installation prior to installation.
  - 4. See Specification Section 26 05 33 for requirements for conduits and associated accessories.
- E. Replace nameplates damaged during installation.

### **3.3 DEMONSTRATION**

- A. Demonstrate equipment in accordance with Division 01.

### **END OF SECTION**

**SECTION 26 05 19**  
**WIRE AND CABLE: 600 VOLT AND BELOW**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Material and installation requirements for:
    - a. Building wire.
    - b. Wire connectors.
    - c. Insulating tape.
    - d. Pulling lubricant.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.
  - 3. Section 26 05 00 - Electrical: Basic Requirements.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. National Electrical Manufacturers Association/Insulated Cable Engineers Association (NEMA/ICEA):
    - a. WC 70/S-95-658, Non-Shielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
  - 2. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).
    - b. 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.
  - 3. Underwriters Laboratories, Inc. (UL):
    - a. 44, Standard for Safety Thermoset-Insulated Wires and Cables.
    - b. 83, Standard for Safety Thermoplastic-Insulated Wires and Cables.
    - c. 467, Standard for Safety Grounding and Bonding Equipment.
    - d. 486A, Standard for Safety Wire Connectors and Soldering Lugs for use with Copper Conductors.
    - e. 486C, Standard for Safety Splicing Wire Connections.
    - f. 510, Standard for Safety Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape.
    - g. 1581, Standard for Safety Reference Standard for Electrical Wires, Cables, and Flexible Cords.

**1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. See Division 01 for requirements for the mechanics and administration of the submittal process.
  - 2. Product technical data:
    - a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
      - 1) Wire connectors.
      - 2) Insulating tape.
      - 3) Cable lubricant.
    - b. See Specification Section 26 05 00 for additional requirements.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. See Specification Section 26 05 00.



## **PART 2 - PRODUCTS**

### **2.1 ACCEPTABLE MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
1. Building wire:
    - a. Aetna Insulated Wire.
    - b. Alphawire.
    - c. Cerrowire.
    - d. Encore Wire Corporation.
    - e. General Cable.
    - f. Okonite Company.
    - g. Southwire Company.
  2. Wire connectors:
    - a. Burndy Corporation.
    - b. Buchanan.
    - c. Ideal.
    - d. Ilsco.
    - e. 3M Co.
    - f. Teledyne Penn Union.
    - g. Thomas and Betts.
    - h. Phoenix Contact.
  3. Insulating and color coding tape:
    - a. 3M Co.
    - b. Plymouth Bishop Tapes.
    - c. Red Seal Electric Co.
- B. Submit request for substitution in accordance with Division 01.

### **2.2 MANUFACTURED UNITS**

- A. Building Wire:
1. Conductor shall be copper with 600 V rated insulation.
  2. Conductors shall be stranded, except for conductors used in lighting and receptacle circuits which may be stranded or solid.
  3. Surface mark with manufacturer's name or trademark, conductor size, insulation type, and UL label.
  4. Conform to NEMA/ICEA WC 70/S-95-658 and UL 83 for type THHN/THWN and THHN/THWN-2 insulation.
  5. Conform to NEMA/ICEA WC 70/S-95-658 and UL 44 for type XHHW-2 insulation.
- B. Wire Connectors:
1. Twist/screw on type:
    - a. Insulated pressure or spring type solderless connector.
    - b. 600 V rated.
    - c. Ground conductors: Conform to UL 486C and/or UL 467 when required by local codes.
    - d. Phase and neutral conductors: Conform to UL 486C.
  2. Compression and mechanical screw type:
    - a. 600 V rated.
    - b. Ground conductors: Conform to UL 467.
    - c. Phase and neutral conductors: Conform to UL 486A.
- C. Insulating and Color Coding Tape:
1. Pressure sensitive vinyl.
  2. Premium grade.
  3. Heat, cold, moisture, and sunlight resistant.
  4. Thickness, depending on use conditions: 7, 8.5, or 10 mil.

5. For cold weather or outdoor location, tape must also be all-weather.
  6. Color:
    - a. Insulating tape: Black.
    - b. Color coding tape: Fade-resistant color as specified herein.
  7. Comply with UL 510.
- D. Pulling Lubricant: Cable manufacturer's standard containing no petroleum or other products which will deteriorate insulation.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Permitted Usage of Insulation Types:
1. Type XHHW-2:
    - a. Building wire and power and control cable in non-architectural finished areas.
    - b. Building wire in conduit below grade.
  2. Type THHN/THWN and THHN/THWN-2:
    - a. Building wire No. 8 AWG and smaller in non-architectural finished areas.
- B. Conductor Size Limitations:
1. Feeder and branch power conductors shall not be smaller than No. 12 AWG unless otherwise indicated on the Drawings.
- C. Color Code All Wiring as Follows:
1. Building wire:

	208/120 V	480/277 V
Phase 1	Black	Brown
Phase 2	Red	Orange
Phase 3	Blue	Yellow
Neutral	White	White or Gray
Ground	Green	Green

- a. Conductors No. 6 AWG and smaller: Insulated phase, neutral and ground conductors shall be identified by a continuous colored outer finish along its entire length.
  - b. Conductors larger than No. 6 AWG:
    - 1) Insulated phase and neutral conductors shall be identified by one (1) of the following methods:
      - a) Continuous colored outer finish along its entire length.
      - b) 3 IN of colored tape applied at the termination.
    - 2) Insulated grounding conductor shall be identified by one (1) of the following methods:
      - a) Continuous green outer finish along its entire length.
      - b) Stripping the insulation from the entire exposed length.
      - c) Using green tape to cover the entire exposed length.
    - 3) The color coding shall be applied at all accessible locations, including but not limited to: Junction and pull boxes, wireways, manholes and handholes.
- D. Install all wiring in raceway unless otherwise indicated on the Drawings.
- E. Feeder and branch circuits shall not be combined in a raceway, cable tray, junction or pull box, except as permitted in the following:
1. Where specifically indicated on the Drawings.
  2. Where field conditions dictate and written permission is obtained from the Engineer.

3. Multiple branch circuits for lighting, receptacle and other 120 Vac circuits are allowed to be combined into a common raceway.
  - a. Contractor is responsible for making the required adjustments in conductor and raceway size, in accordance with all requirements of the NFPA 70, including but not limited to:
    - 1) Up sizing conductor size for required ampacity de-ratings for the number of current carrying conductors in the raceway.
    - 2) The neutral conductors may not be shared.
    - 3) Up sizing raceway size for the size and quantity of conductors.
- F. Splices and terminations for the following circuit types shall be made in the indicated enclosure type using the indicated method.
  1. Feeder and branch power circuits:
    - a. Device outlet boxes:
      - 1) Twist/screw on type connectors.
    - b. Junction and pull boxes and wireways:
      - 1) Twist/screw on type connectors for use on No. 8 and smaller wire.
      - 2) Compression, mechanical screw or terminal block or terminal strip type connectors for use on No. 6 AWG and larger wire.
    - c. Motor terminal boxes:
      - 1) Twist/screw on type connectors for use on No. 10 AWG and smaller wire.
      - 2) Insulated mechanical screw type connectors for use on No. 8 AWG and larger wire.
  2. Non-insulated compression and mechanical screw type connectors shall be insulated with tape or hot or cold shrink type insulation to the insulation level of the conductors.
- G. Insulating Tape Usage:
  1. For insulating connections of No. 8 AWG wire and smaller: 7 mil vinyl tape.
  2. For insulating splices and taps of No. 6 AWG wire or larger: 10 mil vinyl tape.
  3. For insulating connections made in cold weather or in outdoor locations: 8.5 mil, all weather vinyl tape.
- H. Color Coding Tape Usage: For color coding of conductors.

## END OF SECTION

## **SECTION 26 05 26**

### **GROUNDING AND BONDING**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Material and installation requirements for grounding and bonding system(s).
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.
  - 3. Section 26 05 00 - Electrical: Basic Requirements.
  - 4. Section 26 05 19 - Wire and Cable - 600 Volt and Below.
  - 5. Section 26 05 33 - Raceways and Boxes.

##### **1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. ASTM International (ASTM):
    - a. B8, Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
  - 2. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
    - a. 837, Standard for Qualifying Permanent Connections Used in Substation Grounding.
  - 3. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).
  - 4. Underwriters Laboratories, Inc. (UL):
    - a. 467, Grounding and Bonding Equipment.
- B. Assure ground continuity is continuous throughout the entire Project.

##### **1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. See Division 01 for requirements for the mechanics and administration of the submittal process.
  - 2. Product technical data.
    - a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
      - 1) Grounding clamps, terminals and connectors.
    - b. See Specification Section 26 05 00 for additional requirements.

#### **PART 2 - PRODUCTS**

##### **2.1 ACCEPTABLE MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Grounding clamps, connectors and terminals:
    - a. Erico Products, Inc.
    - b. Harger Lightning & Grounding.
    - c. Heary Brothers.
    - d. Hubbell - Burndy.
    - e. Robbins Lightning Protection.
    - f. Thomas & Betts - Blackburn.

- g. Thompson Lightning Protection.

## **2.2 COMPONENTS**

- A. Wire and Cable:
  - 1. Bare conductors: Soft drawn stranded copper meeting ASTM B8.
  - 2. Insulated conductors: Color coded green, per Specification Section 26 05 19.
- B. Conduit: As specified in Specification Section 26 05 33.
- C. Grounding Clamps, Connectors and Terminals:
  - 1. Mechanical type:
    - a. Standards: UL 467.
    - b. High copper alloy content.
  - 2. Compression type for interior locations:
    - a. Standards: UL 467.
    - b. High copper alloy content.
    - c. Non-reversible.
    - d. Terminals for connection to bus bars shall have two bolt holes.
  - 3. Compression type suitable for direct burial in earth or concrete:
    - a. Standards: UL 467, IEEE 837.
    - b. High copper alloy content.
    - c. Non-reversible.
    - d. Factory filled with oxide inhibiting compound.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. General:
  - 1. Install products in accordance with manufacturer's instructions.
  - 2. Size grounding conductors and bonding jumpers in accordance with NFPA 70, Article 250, except where larger sizes are indicated on the Drawings.
  - 3. Remove paint, rust, or other non-conducting material from contact surfaces before making ground connections.
  - 4. Where ground conductors pass through floor slabs or building walls provide nonmetallic sleeves and install per Division 01.
  - 5. Do not splice grounding conductors.
- B. Raceway Bonding/Grounding:
  - 1. All metallic conduit shall be installed so that it is electrically continuous.
  - 2. All conduits to contain a grounding conductor with insulation identical to the phase conductors, unless otherwise indicated on the Drawings.
  - 3. NFPA 70 required grounding bushings shall be of the insulating type.
  - 4. Provide double locknuts at all panels.
  - 5. Bond all conduit, at entrance and exit of equipment, to the equipment ground bus or lug.
  - 6. Provide bonding jumpers if conduits are installed in concentric knockouts.
  - 7. Make all metallic raceway fittings and grounding clamps tight to ensure equipment grounding system will operate continuously at ground potential to provide low impedance current path for proper operation of overcurrent devices during possible ground fault conditions.
- C. Equipment Grounding:
  - 1. All utilization equipment shall be grounded with an equipment ground conductor.

## **END OF SECTION**

## **SECTION 26 05 33 RACEWAYS AND BOXES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Material and installation requirements for:
    - a. Conduits.
    - b. Conduit fittings.
    - c. Conduit supports.
    - d. Outlet boxes.
    - e. Pull and junction boxes.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.
  - 3. Section 26 05 00 - Electrical: Basic Requirements.
  - 4. Section 26 27 26 - Wiring Devices.

#### **1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. American Iron and Steel Institute (AISI).
  - 2. ASTM International (ASTM):
    - a. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
    - b. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
    - c. D2564, Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
  - 3. National Electrical Manufacturers Association (NEMA):
    - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
    - b. RN 1, Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit (IMC).
    - c. TC 2, Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
    - d. TC 3, Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.
    - e. TC 14.AG, Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
    - f. TC 14.BG, Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
  - 4. National Electrical Manufacturers Association/American National Standards Institute (NEMA/ANSI):
    - a. C80.1, Electric Rigid Steel Conduit (ERSC).
    - b. C80.3, Steel Electrical Metallic Tubing (EMT).
    - c. OS 1, Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
  - 5. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).
  - 6. Underwriters Laboratories, Inc. (UL):
    - a. 1, Standard for Flexible Metal Conduit.
    - b. 6, Standard for Electrical Rigid Metal Conduit - Steel.
    - c. 50, Enclosures for Electrical Equipment, Non-Environmental Considerations.
    - d. 360, Standard for Liquid-Tight Flexible Steel Conduit.
    - e. 467, Grounding and Bonding Equipment.

- f. 514A, Metallic Outlet Boxes.
- g. 514B, Conduit, Tubing, and Cable Fittings.
- h. 651, Standard for Schedule 40 and 80 Rigid PVC Conduit and Fittings.
- i. 797, Electrical Metallic Tubing - Steel.
- j. 870, Standard for Wireways, Auxiliary Gutters, and Associated Fittings.
- k. 886, Standard for Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations.
- l. 2420, Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
- m. 2515, Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.

### **1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. See Division 01 for requirements for the mechanics and administration of the submittal process.
  - 2. Product technical data:
    - a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
      - 1) Conduit fittings.
      - 2) Support systems.
    - b. See Specification Section 26 05 00 for additional requirements.
  - 3. Fabrication and/or layout Drawings:
    - a. Identify dimensional size of pull and junction boxes to be used.

### **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. See Specification Section 26 05 00.

## **PART 2 - PRODUCTS**

### **2.1 ACCEPTABLE MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Rigid metallic conduits:
    - a. Allied Tube and Conduit Corporation.
    - b. Triangle PWC Inc.
    - c. Western Tube and Conduit Corporation.
    - d. Wheatland Tube Company.
    - e. LTV Steel Company.
  - 2. Rigid nonmetallic conduit:
    - a. Prime Conduit (Carlon).
    - b. Cantex.
    - c. Osburn Associates.
    - d. Champion Fiberglass.
    - e. United Fiberglass of America, Inc.
  - 3. Flexible conduit:
    - a. AFC Cable Systems.
    - b. Anamet, Inc.
    - c. Electri-Flex.
    - d. Flexible Metal Hose Company.
    - e. International Metal Hose Company.
    - f. Triangle PWC Inc.
    - g. LTV Steel Company.
  - 4. Conduit fittings and accessories:
    - a. Appleton Electric Co.
    - b. Carlon.
    - c. Cantex.

- d. Crouse-Hinds.
- e. Killark.
- f. Osburn Associates.
- g. OZ Gedney Company.
- h. RACO.
- i. Steel City.
- j. Thomas & Betts.
- 5. Support systems:
  - a. Unistrut Building Systems.
  - b. Eaton B-Line.
  - c. Kindorf.
  - d. Minerallac Fastening Systems.
  - e. Caddy.
  - f. Thomas & Betts Superstrut.
- 6. Outlet, pull and junction boxes:
  - a. Appleton Electric Co.
  - b. Eaton Crouse-Hinds.
  - c. Killark.
  - d. O-Z/Gedney.
  - e. Thomas & Betts Steel City.
  - f. Raco.
  - g. Bell.
  - h. Hoffman Engineering Co.
  - i. Wiegmann.
  - j. Eaton B-Line.
  - k. Adalet.
  - l. Rittal.
  - m. Stahlin.

B. Submit request for substitution in accordance with Division 01.

## **2.2 RIGID METALLIC CONDUITS**

- A. Rigid Galvanized Steel Conduit (RGS):
  - 1. Mild steel with continuous welded seam.
  - 2. Metallic zinc applied by hot-dip galvanizing or electro-galvanizing.
  - 3. Threads galvanized after cutting.
  - 4. Internal coating: Baked lacquer, varnish or enamel for a smooth surface.
  - 5. Standards: NFPA 70 Type RMC, NEMA/ANSI C80.1, UL 6.
- B. Electrical Metallic Tubing (EMT):
  - 1. Mild steel with continuous welded seam.
  - 2. Metallic zinc applied by hot-dip galvanizing or electro-galvanizing.
  - 3. Internal coating: Baked lacquer, varnish, or enamel for a smooth surface.
  - 4. Standards: NFPA 70 Type EMT, NEMA/ANSI C80.3, UL 797.

## **2.3 RIGID NONMETALLIC CONDUIT**

- A. Schedules 40 (PVC-40) and 80 (PVC-80):
  - 1. Polyvinyl-chloride (PVC) plastic compound which includes inert modifiers to improve weatherability and heat distribution.
  - 2. Rated for direct sunlight exposure.
  - 3. Fire retardant and low smoke emission.
  - 4. Shall be suitable for use with 90 DegC wire and shall be marked "maximum 90 DegC".
  - 5. Standards: NFPA 70 Type PVC, NEMA TC 2, UL 651.



## **2.4 FLEXIBLE CONDUIT**

- A. Flexible Galvanized Steel Conduit (FLEX):
  - 1. Formed of continuous, spiral wound, hot-dip galvanized steel strip with successive convolutions securely interlocked.
  - 2. Standard: NFPA 70 Type FMC, UL 1.
- B. PVC-Coated Flexible Galvanized Steel (liquid-tight) Conduit (FLEX-LT):
  - 1. Core formed of continuous, spiral wound, hot-dip galvanized steel strip with successive convolutions securely interlocked.
  - 2. Extruded PVC outer jacket positively locked to the steel core.
  - 3. Liquid and vaportight.
  - 4. Standard: NFPA 70 Type LFMC, UL 360.

## **2.5 CONDUIT FITTINGS AND ACCESSORIES**

- A. Fittings for Use with RGS:
  - 1. General:
    - a. In hazardous locations listed for use in Class I locations.
  - 2. Locknuts:
    - a. Threaded steel or malleable iron.
    - b. Gasketed or non-gasketed.
    - c. Grounding or non-grounding type.
  - 3. Bushings:
    - a. Threaded, insulated metallic.
    - b. Grounding or non-grounding type.
  - 4. Hubs: Threaded, insulated and gasketed metallic for raintight connection.
  - 5. Couplings:
    - a. Threaded straight type: Same material and finish as the conduit with which they are used on.
    - b. Threadless type: Gland compression or self-threading type, concrete tight.
  - 6. Unions: Threaded galvanized steel or zinc plated malleable iron.
  - 7. Conduit bodies (ells and tees):
    - a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
    - b. Standard and mogul size.
    - c. Cover:
      - 1) Clip-on type with stainless steel screws.
      - 2) Gasketed or non-gasketed galvanized steel, zinc plated cast iron or cast copper free aluminum.
  - 8. Conduit bodies (round):
    - a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
    - b. Cover: Threaded screw on type, gasketed, galvanized steel, zinc plated cast iron or cast copper free aluminum.
  - 9. Sealing fittings:
    - a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
    - b. Standard and mogul size.
    - c. With or without drain and breather.
    - d. Fiber and sealing compound: UL listed for use with the sealing fitting.
  - 10. Expansion couplings:
    - a. 2 IN nominal straight-line conduit movement in either direction.
    - b. Galvanized steel with insulated bushing.
    - c. Gasketed for wet locations.
    - d. Internally or externally grounded.
  - 11. Expansion/deflection couplings:
    - a. 3/4 IN nominal straight-line conduit movement in either direction.
    - b. 30-degree nominal deflection from the normal in all directions.
    - c. Metallic hubs, neoprene outer jacket and stainless steel jacket clamps.

- d. Internally or externally grounded.
  - e. Watertight, raintight and concrete tight.
- 12. Standards: UL 467, UL 514B, UL 886.
- B. Fittings for Use with EMT:
  - 1. Connectors:
    - a. Straight, angle and offset types furnished with locknuts.
    - b. Zinc plated steel.
    - c. Insulated gland compression type.
    - d. Concrete and raintight.
  - 2. Couplings:
    - a. Zinc plated steel.
    - b. Gland compression type.
    - c. Concrete and raintight.
  - 3. Conduit bodies (ells and tees):
    - a. Body: Copper free aluminum with threaded hubs.
    - b. Standard and mogul size.
    - c. Cover:
      - 1) Screw down type with steel screws.
      - 2) Gasketed or non-gasketed galvanized steel or copper free aluminum.
  - 4. Standard: UL 514B.
- C. Fittings for Use with FLEX:
  - 1. Connector:
    - a. Zinc plated malleable iron.
    - b. Squeeze or clamp-type.
  - 2. Standard: UL 514B.
- D. Fittings for Use with FLEX-LT:
  - 1. Connector:
    - a. Straight or angle type.
    - b. Metal construction, insulated and gasketed.
    - c. Composed of locknut, grounding ferrule and gland compression nut.
    - d. Liquid tight.
  - 2. Standards: UL 467, UL 514B.
- E. Fittings for Use with Rigid Nonmetallic PVC Conduit:
  - 1. Coupling, adapters and conduit bodies:
    - a. Same material, thickness, and construction as the conduits with which they are used.
    - b. Homogeneous plastic free from visible cracks, holes or foreign inclusions.
    - c. Bore smooth and free of blisters, nicks or other imperfections which could damage the conductor.
  - 2. Solvent cement for welding fittings shall be supplied by the same manufacturer as the conduit and fittings.
  - 3. Standards: ASTM D2564, NEMA TC 3, UL 651, UL 514B.
- F. Weather and Corrosion Protection Tape:
  - 1. PVC based tape, 10 mils thick.
  - 2. Protection against moisture, acids, alkalis, salts and sewage and suitable for direct bury.
  - 3. Used with appropriate pipe primer.

## 2.6 ALL RACEWAY AND FITTINGS

- A. Mark Products:
  - 1. Identify the nominal trade size on the product.
  - 2. Stamp with the name or trademark of the manufacturer.

## **2.7 OUTLET BOXES**

- A. Metallic Outlet Boxes:
  - 1. Hot-dip galvanized steel.
  - 2. Conduit knockouts and grounding pigtail.
  - 3. Styles:
    - a. 2 IN x 3 IN rectangle.
    - b. 4 IN square.
    - c. 4 IN octagon.
    - d. Masonry/tile.
  - 4. Accessories:
    - a. Flat blank cover plates.
    - b. Barriers.
    - c. Extension, plaster or tile rings.
    - d. Box supporting brackets in stud walls.
    - e. Adjustable bar hangers.
  - 5. Standards: NEMA/ANSI OS 1, UL 514A.
- B. Cast Outlet Boxes:
  - 1. Zinc plated cast iron or die-cast copper free aluminum with manufacturers standard finish.
  - 2. Threaded hubs and grounding screw.
  - 3. Styles:
    - a. "FS" or "FD".
    - b. "Bell".
    - c. Single or multiple gang and tandem.
    - d. "EDS" or "EFS" for hazardous locations.
  - 4. Accessories: 40 mil PVC exterior coating and 2 mil urethane interior coating.
  - 5. Standards: UL 514A, UL 886.
- C. See Specification Section 26 27 26 for wiring devices, wallplates and coverplates.

## **2.8 PULL AND JUNCTION BOXES**

- A. NEMA 1 Rated:
  - 1. Body and cover: 14 GA minimum, galvanized steel or 14 GA minimum, steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
  - 2. With or without concentric knockouts on four (4) sides.
  - 3. Flat cover fastened with screws.
- B. Miscellaneous Accessories:
  - 1. Rigid handles for covers larger than 9 SF or heavier than 25 LBS.
  - 2. Split covers when heavier than 25 LBS.
  - 3. Weldnuts for mounting optional panels and terminal kits.
  - 4. Terminal blocks: Screw-post barrier-type, rated 600 volt and 20 ampere minimum.
- C. Standards: NEMA 250, UL 50.

## **2.9 SUPPORT SYSTEMS**

- A. Multi-conduit Surface or Trapeze Type Support and Pull or Junction Box Supports:
  - 1. Material requirements:
    - a. Galvanized steel: ASTM A123/A123M or ASTM A153/A153M.
    - b. Stainless steel: AISI Type 316.
    - c. PVC coat galvanized steel: ASTM A123/A123M or ASTM A153/A153M and 20 mil PVC coating.
- B. Single Conduit and Outlet Box Support Fasteners:
  - 1. Material requirements:
    - a. Zinc plated steel.
    - b. Stainless steel.

- c. Malleable iron.
- d. PVC coat malleable iron or steel: 20 mil PVC coating.
- e. Steel protected with zinc phosphate and oil finish.

## **2.10 OPENINGS AND PENETRATIONS IN WALLS AND FLOORS**

- A. Sleeves, smoke and fire stop fitting through walls and floors: See Division 01.

## **PART 3 - EXECUTION**

### **3.1 RACEWAY INSTALLATION - GENERAL**

- A. Shall be in accordance with the requirements of:
  - 1. NFPA 70.
  - 2. Manufacturer instructions.
- B. Size of Raceways:
  - 1. Raceway sizes are shown on the Drawings, if not shown on the Drawings, then size in accordance with NFPA 70.
  - 2. Unless specifically indicated otherwise, the minimum raceway size shall be:
    - a. Conduit: 3/4 IN.
    - b. Wireway: 2-1/2 IN x 2-1/2 IN.
- C. Field Bending and Cutting of Conduits:
  - 1. Utilize tools and equipment recommended by the manufacturer of the conduit, designed for the purpose and the conduit material to make all field bends and cuts.
  - 2. Do not reduce the internal diameter of the conduit when making conduit bends.
  - 3. Prepare tools and equipment to prevent damage to the PVC coating.
  - 4. Degrease threads after threading and apply a zinc rich paint.
  - 5. Debur interior and exterior after cutting.
- D. Male threads of conduit systems shall be coated with an electrically conductive anti-seize compound.
- E. The protective coating integrity of conduits, fittings, outlet, pull and junction boxes and accessories shall be maintained.
  - 1. Repair galvanized components utilizing a zinc rich paint.
  - 2. Repair painted components utilizing touch up paint provided by or approved by the manufacturer.
  - 3. Repair PVC coated components utilizing a patching compound, of the same material as the coating, provided by the manufacturer of the conduit; or a self-adhesive, highly conformable, cross-linked silicone composition strip, followed by a protective coating of vinyl tape.
    - a. Total nominal thickness: 40 mil.
  - 4. Repair surfaces which will be inaccessible after installation prior to installation.
- F. Remove moisture and debris from conduit before wire is pulled into place.
  - 1. Pull mandrel with diameter nominally 1/4 IN smaller than the interior of the conduit, to remove obstructions.
  - 2. Swab conduit by pulling a clean, tight-fitting rag through the conduit.
  - 3. Tightly plug ends of conduit with tapered wood plugs or plastic inserts until wire is pulled.
- G. Only nylon or polyethylene rope shall be used to pull wire and cable in conduit systems.
- H. Where portions of a raceway are subject to different temperatures and where condensation is known to be a problem, where passing from the interior to the exterior of a building, the raceway shall be sealed to prevent circulation of warm air to colder section of the raceway.
- I. Fill openings in walls, floors, and ceilings and finish flush with surface.
  - 1. See Division 01.

### **3.2 RACEWAY ROUTING**

- A. Raceways shall be routed in the field unless otherwise indicated.
  - 1. Conduit and fittings shall be installed, as required, for a complete system that has a neat appearance and is in compliance with all applicable codes.
  - 2. Run in straight lines parallel to or at right angles to building lines.
  - 3. Do not route conduits:
    - a. Through areas of high ambient temperature or radiant heat.
    - b. In suspended concrete slabs.
  - 4. Conduit shall not interfere with, or prevent access to, piping, valves, ductwork, or other equipment for operation, maintenance and repair.
  - 5. Provide pull boxes or conduit bodies as needed so that there is a maximum of 360 degrees of bends in the conduit run or in long straight runs to limit pulling tensions.
- B. All rigid conduits within a structure shall be installed exposed except as follows:
  - 1. As indicated on the Drawings.
  - 2. Buried under floor serving equipment in non-architecturally finished areas that are not located on or near a wall or column and the ceiling height is greater than 12 FT.
- C. Maintain minimum spacing between parallel conduit and piping runs in accordance with the following when the runs are greater than 30 FT:
  - 1. Between telecommunication and 600 V and less AC power: 6 IN.
  - 2. Between gas, air and water pipes: 6 IN.
- D. Conduits shall be installed to eliminate moisture pockets.
  - 1. Where water cannot drain to openings, provide drain fittings in the low spots of the conduit run.
- E. Conduit shall not be routed on the exterior of structures except as specifically indicated on the Drawings.
- F. Where sufficient room exists within the housing of roof-mounted equipment, the conduit shall be stubbed up inside the housing.
- G. Provide all required openings in walls, floors, and ceilings for conduit penetration.

### **3.3 RACEWAY APPLICATIONS**

- A. Permitted Raceway Types Per Wire or Cable Types:
  - 1. Building wire: All raceway types.
  - 2. Telecommunication cables: All raceway types.
- B. Permitted Raceway Types Per Area Designations:
  - 1. Dry areas:
    - a. RGS.
    - b. EMT may be used above 10 FT.
  - 2. Wet areas:
    - a. RGS.
- C. Permitted Raceway Types Per Routing Locations:
  - 1. In concrete block or brick walls:
    - a. PVC-40.
  - 2. Beneath floor slab-on-grade:
    - a. PVC-40.
  - 3. Through floor penetrations:
    - a. PVC-RGS in areas designated as wet.
  - 4. Direct buried conduits and ductbanks:
    - a. PVC-80.
    - b. 90 degree elbows for transitions to above grade:
      - 1) PVC-RGS.
    - c. Long sweeping bends greater than 15 degrees:

- 1) PVC-RGS.
- D. FLEX conduits shall be installed for connections to light fixtures, HVAC equipment and other similar devices above the ceilings.
  - 1. The maximum length shall not exceed:
    - a. 6 FT to light fixtures.
    - b. 3 FT to all other equipment.
- E. FLEX-LT conduits shall be install as the final conduit connection to light fixtures, dry type transformers, motors, electrically operated valves, instrumentation primary elements, and other electrical equipment that is liable to vibrate.
  - 1. The maximum length shall not exceed:
    - a. 6 FT to light fixtures.
    - b. 3 FT to motors.
    - c. 2 FT to all other equipment.
- F. Underground Conduit: See Specification Section 26 05 43.

### **3.4 CONDUIT FITTINGS AND ACCESSORIES**

- A. Rigid nonmetallic conduit and fittings shall be joined utilizing solvent cement.
  - 1. Immediately after installation of conduit and fitting, the fitting or conduit shall be rotated 1/4 turn to provide uniform contact.
- B. Install Expansion Fittings:
  - 1. Where conduits are exposed to the sun and conduit run is greater than 200 FT.
  - 2. Elsewhere as identified on the Drawings.
- C. Install Expansion/Deflection Fittings:
  - 1. Where conduits enter a structure.
    - a. Except where the ductbank is tied to the structure with rebar.
  - 2. Where conduits span structural expansions joints.
  - 3. Elsewhere as identified on the Drawings.
- D. Threaded connections shall be made wrench-tight.
- E. Conduit joints shall be watertight:
  - 1. Where subjected to possible submersion.
  - 2. In areas classified as wet.
  - 3. Underground.
- F. Terminate Conduits:
  - 1. In metallic outlet boxes:
    - a. RGS:
      - 1) Conduit hub and locknut.
      - 2) Insulated bushing and two (2) locknuts.
      - 3) Use grounding type locknut or bushing when required by NFPA 70.
    - b. EMT: Compression type connector and locknut.
  - 2. In NEMA 1 rated enclosures:
    - a. RGS:
      - 1) Conduit hub and locknut.
      - 2) Insulated bushing and two (2) locknuts.
      - 3) Use grounding type locknut or bushing when required by NFPA 70.
    - b. EMT: Compression type connector and locknut.
  - 3. When stubbed up through the floor into floor mount equipment:
    - a. With an insulated grounding bushing on metallic conduits.
    - b. With end bells on nonmetallic conduits.
- G. Threadless couplings shall only be used to join new conduit to existing conduit when the existing conduit end is not threaded and it is not practical or possible to cut threads on the existing conduit with a pipe threader.

### 3.5 CONDUIT SUPPORT

- A. Permitted multi-conduit surface or trapeze type support system per area designations and conduit types:
  - 1. Dry or wet areas:
    - a. Galvanized system consisting of: Galvanized steel channels and fittings, nuts and hardware and conduit clamps.
  - 2. Conduit type shall be compatible with the support system material.
    - a. Galvanized steel system may be used with RGS and EMT.
    - b. Stainless steel system may be used with RGS.
- B. Permitted single conduit support fasteners per area designations and conduit types:
  - 1. Dry or wet areas:
    - a. Material: Zinc plated steel, stainless steel and malleable iron.
    - b. Types of fasteners: Straps, hangers with bolts, clamps with bolts and bolt on beam clamps.
  - 2. Conduit type shall be compatible with the support fastener material.
    - a. Zinc plated steel, steel protected with zinc phosphate and oil finish and malleable iron fasteners may be used with RGS and EMT.
    - b. Stainless steel system may be used with RGS.
    - c. Nonmetallic fasteners may be used with PVC-.
- C. Conduit Support General Requirements:
  - 1. Maximum spacing between conduit supports per NFPA 70.
  - 2. Support conduit from the building structure.
  - 3. Do not support conduit from gas, air or water piping; or from other conduits.
  - 4. Provide hangers and brackets to limit the maximum uniform load on a single support to 25 LBS or to the maximum uniform load recommended by the manufacturer if the support is rated less than 25 LBS.
    - a. Do not exceed maximum concentrated load recommended by the manufacturer on any support.
    - b. Conduit hangers:
      - 1) Continuous threaded rods combined with struts or conduit clamps: Do not use perforated strap hangers and iron bailing wire.
    - c. Do not use suspended ceiling support systems to support raceways.
    - d. Hangers in metal roof decks:
      - 1) Utilize fender washers.
      - 2) Not extend above top of ribs.
      - 3) Not interfere with vapor barrier, insulation, or roofing.
  - 5. Conduit support system fasteners:
    - a. Use sleeve-type expansion anchors as fasteners in masonry wall construction.
    - b. Do not use concrete nails and powder-driven fasteners.

### 3.6 OUTLET, PULL AND JUNCTION BOX INSTALLATION

- A. General:
  - 1. Install products in accordance with manufacturer's instructions.
  - 2. See Specification Section 26 05 00 and the Drawings for area classifications.
  - 3. Fill unused punched-out, tapped, or threaded hub openings with insert plugs.
  - 4. Size boxes to accommodate quantity of conductors enclosed and quantity of conduits connected to the box.
- B. Outlet Boxes:
  - 1. Permitted uses of metallic outlet boxes:
    - a. Housing of wiring devices:
      - 1) Recessed in all stud framed walls and ceilings.
      - 2) Recessed in poured concrete, concrete block and brick walls of architecturally finished areas and exterior building walls.

2. Permitted uses of cast outlet boxes:
    - a. Housing of wiring devices surface mounted in non-architecturally finished dry, wet, and hazardous areas.
    - b. Pull and junction box surface mounted in non-architecturally finished dry, wet areas.
  3. Mount device outlet boxes where indicated on the Drawings and at heights as scheduled in Specification Section 26 05 00.
  4. Set device outlet boxes plumb and vertical to the floor.
  5. Outlet boxes recessed in walls:
    - a. Install with appropriate stud wall support brackets or adjustable bar hangers so that they are flush with the face of the wall.
    - b. Locate in ungrouted cell of concrete block with bottom edge of box flush with bottom edge of block and flush with the face of the block.
  6. Place barriers between switches in boxes with 277 V switches on opposite phases.
  7. Back-to-back are not permitted.
  8. When an outlet box is connected to a PVC coated conduit, the box shall also be PVC coated.
- C. Pull and Junction Boxes:
1. Install pull or junction boxes in conduit runs where indicated or required to facilitate pulling of wires or making connections.
    - a. Make covers of boxes accessible.
  2. Permitted uses of NEMA 1 enclosure:
    - a. Pull or junction box surface mounted in areas designated as dry.

## **END OF SECTION**



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## **SECTION 26 24 19**

### **MOTOR CONTROL EQUIPMENT**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Separately mounted motor starters (including those supplied with equipment).
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.
  - 3. Section 26 05 00 - Electrical: Basic Requirements.
  - 4. Section 26 28 00 - Overcurrent and Short Circuit Protective Devices.

##### **1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. International Electrotechnical Commission (IEC).
  - 2. National Electrical Manufacturers Association (NEMA):
    - a. 250, Enclosures for Electrical Equipment (1000 Volt Maximum).
    - b. ICS 2, Controllers, Contactors and Overload Relays Rated 600 V.
  - 3. Underwriters Laboratories, Inc. (UL):
    - a. 508, Standard for Industrial Control Equipment.
- B. Miscellaneous:
  - 1. Verify motor horsepower loads, other equipment loads, and controls from approved shop drawings and notify Engineer of any discrepancies.

##### **1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. See Division 01 for requirements for the mechanics and administration of the submittal process.
  - 2. Product technical data:
    - a. Provide submittal data for all products specified in PART 2 of this Specification Section.
    - b. See Specification Section 26 05 00 for additional requirements.
- B. Contract Closeout Information:
  - 1. Operation and Maintenance Data:
    - a. See Division 01 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

#### **PART 2 - PRODUCTS**

##### **2.1 ACCEPTABLE MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Allen-Bradley.
  - 2. c3controls.
  - 3. Eaton.
  - 4. General Electric Company.
  - 5. Square D Company.
  - 6. Siemens.

- B. Submit request for substitution in accordance with Division 01.

## **2.2 SEPARATELY MOUNTED COMBINATION STARTERS**

- A. Standards:
  - 1. NEMA 250, NEMA ICS 2.
  - 2. UL 508.
- B. Enclosure:
  - 1. NEMA 12 rated:
    - a. Body and cover: Sheet steel finished with rust inhibiting primer and manufacturer's standard paint inside and out.
    - b. No knockouts, external mounting flanges, hinged and gasketed door.
- C. Operating Handle:
  - 1. With the door closed the handle mechanism allows complete ON/OFF control of the unit disconnect and clear indication of the disconnect status.
  - 2. Circuit breaker and MCP operators includes a separate TRIPPED position.
  - 3. Mechanical interlock to prevent the opening of the door when the disconnect is in the ON position with a defeater mechanism for use by authorized personnel.
  - 4. Mechanical interlock to prevent the placement of the disconnect in the ON position with the door open with a defeater mechanism for use by authorized personnel.
  - 5. Padlockable in the OFF position.
- D. External mounted overload relay pushbutton.
- E. Control Devices:
  - 1. Provide control devices as indicated.
  - 2. The following devices are the minimum required unless otherwise indicated on the Drawings:
    - a. Three-position switch (HAND-OFF-AUTO).
    - b. Red ON indicator light.
    - c. Green OFF indicator light.
  - 3. Devices will be accessible with the door closed.
- F. Control Power Transformer:
  - 1. 120V secondary.
  - 2. Fused on primary and secondary side.
  - 3. Sized for 140 percent of required load.
- G. Fault Current Withstand Rating: Equal to the rating of the electrical gear from which it is fed.
- H. Motor Starters: See requirements within this Specification Section.
- I. Disconnect Switch, Overcurrent and Short Circuit Protective Devices:
  - 1. Motor circuit protector.
  - 2. See Specification Section 26 28 00 for overcurrent and short circuit protective device requirements.
  - 3. Factory installed.

## **2.3 MOTOR STARTERS**

- A. Standards:
  - 1. NEMA ICS 2.
  - 2. UL 508.
- B. Full Voltage Non-Reversing (FVNR) Magnetic Starters:
  - 1. NEMA full size rated contactor.
    - a. NEMA half sizes and IEC contactors are not permitted.
  - 2. Double-break silver alloy contacts.

3. Overload relays:
  - a. Ambient insensitive, adjustable solid state type with phase loss protection, phase imbalance protection and manual reset.
4. Interlock and auxiliary contacts, wired to terminal blocks:
  - a. Holding circuit contact, normally open.
  - b. Overload alarm contact, normally open.
  - c. Normally open auxiliary contact, for remote run status.
  - d. Additional field replaceable auxiliary contacts as required per the Sequence of Operation.
  - e. Two (2) additional normally open spare field replaceable auxiliary contacts.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install as indicated on the Drawings and in accordance with manufacturer's recommendations and instructions.
- B. Mounting height for surface mounted equipment: See Specification Section 26 05 00.
- C. Combination and Manual Starter Enclosures:
  1. Permitted uses of NEMA 12 enclosure:
    - a. Surface mounted in areas designated as dry.

**END OF SECTION**

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## **SECTION 26 27 26**

### **WIRING DEVICES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Material and installation requirements for:
    - a. Wall switches.
    - b. Receptacles.
    - c. Device wallplates and coverplates.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.
  - 3. Section 26 05 00 - Electrical: Basic Requirements.
  - 4. Section 26 05 33 - Raceways and Boxes.

##### **1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. National Electrical Manufacturers Association (NEMA):
    - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
    - b. WD 1, General Color Requirements for Wiring Devices.
    - c. WD 6, Wiring Devices - Dimensional Requirements.
  - 2. Underwriters Laboratories, Inc. (UL):
    - a. 20, General-Use Snap Switches.
    - b. 498, Standard for Attachment Plugs and Receptacles.
    - c. 514A, Metallic Outlet Boxes.
    - d. 943, Ground-Fault Circuit-Interrupters.
    - e. 1310, Standard for Class 2 Power Units.

##### **1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. See Division 01 for requirements for the mechanics and administration of the submittal process.
  - 2. Product technical data:
    - a. Provide submittal data for all products specified in PART 2 of this Specification Section.
    - b. See Specification Section 26 05 00 for additional requirements.

#### **PART 2 - PRODUCTS**

##### **2.1 ACCEPTABLE MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Wall switches and receptacles:
    - a. Bryant Electric.
    - b. Cooper Wiring Devices by Eaton.
    - c. Hubbell Incorporated Wiring Device-Kellems.
    - d. Leviton Manufacturing Company.
    - e. Legrand/Pass & Seymour.
    - f. Eaton Crouse-Hinds.

- g. Appleton Electric Co.
- h. Hubbell Killark.

## **2.2 WALL SWITCHES**

- A. Basic requirements unless modified in specific requirements paragraph of switches per designated areas or types:
  - 1. Industrial Specification Grade.
  - 2. Quiet action, snap switch.
  - 3. Self grounding with grounding terminal.
  - 4. Back and side wired.
  - 5. Solid silver cadmium oxide contacts.
  - 6. Rugged thermoplastic and/or nylon housing and one-piece switch arm.
  - 7. Ratings: 20 A, 120/277 Vac.
  - 8. Switch handle type: Toggle.
  - 9. Switch handle color: Gray.
  - 10. Types as indicated on the Drawings:
    - a. Single-pole.
    - b. Double-pole.
    - c. 3-way.
    - d. 4-way.
    - e. Momentary contact.
  - 11. Standards: UL 20, UL 514A, NEMA WD 1, NEMA WD 6.
- B. Dry Non-architecturally Finished Area Specific Requirements:
  - 1. Coverplate for use on surface mounted outlet boxes:
    - a. Cast iron alloy, galvanized and factory painted finish.
    - b. Cast aluminum, natural, lacquer, or factory painted finish.
    - c. Sheet steel, galvanized.
    - d. Sheet aluminum.
    - e. Single or multiple gang as required.
  - 2. Wallplate for use on recessed outlet boxes:
    - a. 302 or 304 brushed finish stainless steel.
    - b. Single or multiple gang as required.
- C. Wet or Damp Non-Architecturally Finished or Exterior Area Specific Requirements:
  - 1. Coverplate:
    - a. Cast aluminum, gasketed, stainless steel hardware, natural, lacquer, or factory painted finish.
    - b. Operator type:
      - 1) Side mounted rocker type handle to operate snap switch.
      - 2) Front mouted lever type handle to operate snap switch.
      - 3) Push/pull operator to operate snap switch.
      - 4) Spring type door to cover snap switch.
    - c. Wet location rated.
    - d. Single or multiple gang as required.

## **2.3 RECEPTACLES**

- A. Basic requirements unless modified in specific requirements paragraph of receptacles and per designated areas:
  - 1. Industrial Specification Grade.
  - 2. Straight blade.
  - 3. Brass triple wipe line contacts.
  - 4. One-piece grounding system with double wipe brass grounding contacts and self grounding strap with grounding terminal.
  - 5. Back and side wired.
  - 6. Rating: 20 A, 125 Vac.

7. High impact nylon body.
  8. Receptacle body color:
    - a. Normal power: Gray.
  9. Duplex or simplex as indicated on the Drawings.
  10. Configuration: NEMA 5-20R.
  11. Standards: UL 498, UL 514A, NEMA WD 1, NEMA WD 6.
- B. Receptacle Type Specific Requirements:
1. Basic receptacles:
    - a. Weather-resistant when located in exterior locations or interior damp or wet areas as indicated on the Drawings.
      - 1) Identification: Letters "WR" on face of receptacle.
  2. Ground Fault Circuit Interrupter (GFCI):
    - a. Specification Grade.
    - b. Class A protection.
    - c. Feed through type.
    - d. Test and reset buttons.
    - e. Self-testing.
    - f. Visual indicator light.
    - g. Weather-resistant when located in exterior locations or interior damp or wet areas as indicated on the Drawings.
      - 1) Identification: Letters "WR" on face of receptacle.
    - h. Additional standards: UL 943.
- C. Dry Non-architecturally Finished Areas Specific Requirements:
1. Coverplate for use on surface mounted outlet boxes:
    - a. Cast iron alloy, galvanized and factory painted finish.
    - b. Cast aluminum, natural, lacquer or factory painted finish.
    - c. Sheet steel, galvanized.
    - d. Sheet aluminum.
    - e. Single or multiple gang as required.
  2. Wallplate for use on recessed outlet boxes:
    - a. 302 or 304 brushed finish stainless steel.
    - b. Single or multiple gang as required.
- D. Exterior Locations Specific Requirements:
1. Coverplate:
    - a. Extra-duty rated, weatherproof (NEMA 3R) while in use, gasketed, stainless steel hardware, copper-free aluminum, 3.2 IN minimum cover depth for #12 AWG cord.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Mount devices where indicated on the Drawings and as scheduled in Specification Section 26 05 00.
- C. See Specification Section 26 05 33 for device outlet box requirements.

## **END OF SECTION**



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**SECTION 26 28 00**  
**OVERCURRENT AND SHORT CIRCUIT PROTECTIVE DEVICES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes: Low voltage circuit breakers.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.
  - 3. Section 26 05 00 - Electrical: Basic Requirements.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
    - a. C37.13, Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures.
    - b. C37.16, Low-Voltage Power Circuit Breakers and AC Power Circuit Protectors - Preferred Ratings, Related Requirements, and Application Recommendations.
    - c. C37.17, Trip Devices for AC and General Purpose DC Low Voltage Power Circuit Breakers.
  - 2. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).
  - 3. Underwriters Laboratories, Inc. (UL):
    - a. 489, Standard for Safety Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures.
    - b. 943, Standard for Safety for Ground-Fault Circuit-Interrupters.
    - c. 1066, Standard for Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures.

**1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. See Division 01 for requirements for the mechanics and administration of the submittal process.
  - 2. Product technical data including:
    - a. Provide submittal data for all products specified in PART 2 of this Specification Section.
    - b. See Specification Section 26 05 00 for additional requirements.
- B. Contract Closeout Information:
  - 1. Operation and Maintenance Data:
    - a. See Division 01 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.
- C. Informational Submittals:
  - 1. See Division 01 for requirements for the mechanics and administration of the submittal process.

## **PART 2 - PRODUCTS**

### **2.1 ACCEPTABLE MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Circuit breakers:
    - a. Eaton.
    - b. General Electric Company.
    - c. Square D Company.
    - d. Siemens.
- B. Submit request for substitution in accordance with Division 01.

### **2.2 CIRCUIT BREAKERS**

- A. Molded Case Type:
  - 1. General:
    - a. Standards: UL 489.
    - b. Unit construction.
    - c. Over-center, toggle handle operated.
    - d. Quick-make, quick-break, independent of toggle handle operation.
    - e. Manual and automatic operation.
    - f. All poles open and close simultaneously.
    - g. Three (3) position handle: On, off and tripped.
    - h. Molded-in ON and OFF markings on breaker cover.
    - i. One-, two- or three-pole as indicated on the Drawings.
    - j. Current and interrupting ratings as indicated on the Drawings.
    - k. Bolt on type.
  - 2. Thermal magnetic type:
    - a. Inverse time overload and instantaneous short circuit protection by means of a thermal magnetic element.
    - b. Frame size 150 amp and below:
      - 1) Non-interchangeable, non-adjustable thermal magnetic trip units.
    - c. Ground Fault Circuit Interrupter (GFCI) Listed:
      - 1) Standard: UL 943.
      - 2) One- or two-pole as indicated on the Drawings.
      - 3) Class A ground fault circuit.
      - 4) Trip on 5 mA ground fault (4-6 mA range).

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Current and interrupting ratings as indicated on the Drawings.
- B. Series rated systems not acceptable.
- C. Devices shall be ambient temperature compensated.
- D. Circuit Breakers:
  - 1. Molded case circuit breakers shall incorporate the following, unless indicated otherwise on the Drawings:
    - a. Frame sizes 100 amp and less with trip setting less than 100A shall be thermal magnetic type.

## **END OF SECTION**



# DIVISION 31

EARTHWORK



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**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.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. Iowa Statewide Urban Design and Specifications – SUDAS Standard Specifications 2020, Section 3010 – Trench Excavation and Backfill.

**1.3 DEFINITIONS**

- A. Excavation: All excavation will be defined as unclassified.

**1.4 SUBMITTALS**

- A. Shop Drawings:
  - 1. SUDAS Standard Specifications 2020, Section 9010.1.03 – Submittals.
- B. 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 where the Project is located.
    - d. Engineer is not responsible to, and will not, review and approve.

**1.5 SITE CONDITIONS**

- A. Protect and maintain bench marks, monuments or other established points and reference points and if disturbed or destroyed, replace items to full satisfaction of Owner and controlling agency.
- B. Verify location of existing underground utilities.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Backfill Material:
  - 1. SUDAS Standard Specifications 2020, Section 3010.2.03 – Backfill Material, A. – Class II Material.
- B. Subgrade Stabilization Materials:
  - 1. SUDAS Standard Specifications 2020, Section 3010.2.05 – Stabilization (Foundation) Materials.
- C. Bedding Materials:
  - 1. SUDAS Standard Specifications 2020, Section 3010.2.02 – Bedding Material, A – Class I Material.

## **PART 3 - EXECUTION**

### **3.1 EXCAVATION**

- A. Trench Excavation:
  - 1. SUDAS Standard Specifications 2020, Section 3010.3.01 – Trench Excavation.
- B. Groundwater Dewatering:
  - 1. SUDAS Standard Specifications 2020, Section 3010.3.04 – Dewatering.

### **3.2 PREPARATION OF FOUNDATION FOR PIPE LAYING**

- A. Rock Excavation:
  - 1. SUDAS Standard Specifications 2020, Section 3010.3.02 – Rock or Unsuitable Soils in Trench Bottom.
- B. Subgrade Stabilization:
  - 1. SUDAS Standard Specifications 2020, Section 3010.3.02 – Rock or Unsuitable Soils in Trench Bottom.

### **3.3 BACKFILLING METHODS**

- A. Backfill:
  - 1. SUDAS Standard Specifications 2020, Section 3010.3.05 – Pipe Bedding and Backfill.
  - 2. SUDAS Standard Specifications 2020, Figures 3010.101 and 3010.102.

### **3.4 FIELD QUALITY CONTROL**

- A. Testing:
  - 1. SUDAS Standard Specifications 2020, Section 3010.3.06 – Trench Compaction Testing.

**END OF SECTION**

**SECTION 31 25 00**  
**SOIL EROSION AND SEDIMENT CONTROL**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Soil erosion and sediment control.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. Iowa Statewide Urban Design and Standards – SUDAS Standard Specifications 2020, Section 9400 – Erosion and Sediment Control, Section 9010 – Seeding.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Silt Fence:
  - 1. SUDAS Standard Specifications 2020, Section 9040.2.13 – Silt Fence.
- B. Mulch:
  - SUDAS Standard Specifications 2020, Section 9040.2.16 – Erosion Control Mulch – Conventional Mulch.
- C. Dust Control:
  - 1. SUDAS Standard Specifications 2020- Section 9040.2.15 – Dust Control.
- D. Any other necessary erosion control methods: straw bales, matting, etc.
  - 1. Materials are to be selected and installed per Iowa SUDAS Standard Specifications.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Prior to General Stripping Topsoil and Excavating:
  - 1. Install perimeter dikes and swales.
  - 2. Excavate and shape sediment basins and traps.
  - 3. Construct pipe spillways and install stone filter where required.
  - 4. Machine compact all berms, dikes and embankments for basins and traps.
  - 5. Install straw bales where necessary.
    - a. Provide two stakes per bale.
    - b. First stake angled toward previously installed bale to keep ends tight against each other.
- B. Construct sediment traps where during rough grading as grading progresses.
- C. Temporarily seed basin slopes and topsoil stockpiles:
  - 1. Rate: 1/2 LB/1000 SQFT.
  - 2. Reseed as required until good stand of grass is achieved.
- D. Install sediment controls as necessary to protect newly constructed work such as side slopes, culverts, etc.



- E. In addition to newly constructed areas, controls are to be installed on contractor disturbed areas due to construction such as haul routes, perimeter ditches, etc.

### **3.2 DURING CONSTRUCTION PERIOD**

- A. Maintain Basins, Dikes, Traps, Stone Filters, Straw Bales, etc.:
  - 1. Inspect regularly especially after rainstorms.
  - 2. Repair or replace damaged or missing items.
- B. After rough grading, sow temporary grass cover over all exposed earth areas not draining into sediment basin or trap.
- C. Construct inlets as soon as possible.
  - 1. Excavate and tightly secure straw bales completely around inlets.
- D. Provide necessary swales and dikes to direct all water towards and into sediment basins and traps.
- E. Do not disturb existing vegetation (grass and trees).
- F. Excavate sediment out of basins and traps when capacity has been reduced by 50 PCT.
  - 1. Remove sediment from behind bales to prevent overtopping.
- G. Topsoil and Fine Grade Slopes and Swales, etc.: Seed and mulch as soon as areas become ready.
- H. SWPPP Management: SUDAS Standard Specifications 2020, Section 9040.3.02.
  - 1. Contractor will identify any required changes necessitated by Contractor's Work.
  - 2. Coordinate construction with SWPPP and required controls to verify that all Work related releases pass through an erosion and sediment control measure of adequate design and construction.
    - a. Identify to Owner any required changes to SWPPP in accordance with SUDAS Standard Specifications 2020, Section 9040.1.07 – Special Requirements.
- I. Dust Control:
  - 1. Provide dust control in accordance with Division 01 – General Requirements and per SUDAS Standard Specifications 2020, Section 9040.3.20.
  - 2. Contractor shall sweep or otherwise clean all dirt and soils off of access roads within construction limits and as a result of construction activities at a minimum once a day at the end of the workday.
    - a. More frequent sweeping and cleaning shall be undertaken as necessary if dirt or soil from Work is observed on the site access drive.
    - b. Sweeping equipment shall be wet sweeping or vacuum supplemented so as not to cause airborne dust off-site.
- J. Erosion and Sediment Control Inspection: SUDAS Standard Specifications 2020, Section 9040.3.03.
  - 1. Contractor will be responsible for maintenance and repair of existing Owner provided controls within construction limits or in areas impacted by the Work as well as Contractor provided controls.
  - 2. Contractor shall replace any erosion and sediment control measures installed by Owner or Contractor and damaged or removed by Contractor, including damage by lack of maintenance.

### **3.3 NEAR COMPLETION OF CONSTRUCTION**

- A. Eliminate basins, dikes, traps, etc.
- B. Grade to finished or existing grades.
- C. Fine grade all remaining earth areas, then seed and mulch.

**END OF SECTION**

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DIVISION 34

TRANSPORTATION



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## **SECTION 34 78 13**

### **TRUCK SCALES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Low profile truck scales.
  - 2. Junction boxes for all scales.
  - 3. Digital weight indicators for all scales.
- B. Related Sections include but are not necessarily limited to:
  - 1. Division 26 - Electrical.

##### **1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. American Welding Society (AWS):
    - a. AWS D1.1 Structural Welding Code.
  - 2. National Electrical Manufacturer's Association (NEMA):
    - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
  - 3. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).
  - 4. National Institute of Standards and Technology (NIST):
    - a. Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices.
  - 5. National Type Evaluation Program (NTEP).
  - 6. Society for Protective Coatings/NACE International (SSPC/NACE):
    - a. SP 6/NACE No. 3, Commercial Blast Cleaning.
- B. Qualifications:
  - 1. If a substitution is being requested, the scale manufacturer shall have had same equipment as specified in operation with a similar use for a minimum of three years at a minimum of five different scale installation locations.
  - 2. The dimensions, tolerances, materials and construction of the scale system shall comply with reference standards and codes listed above.

##### **1.3 SYSTEM DESCRIPTION**

- A. Definitions:
  - 1. Scale equipment includes but is not limited to:
    - a. Weighbridge modules.
    - b. Scale load cells.
    - c. Structural members.
    - d. Anchor bolts.
    - e. All cables.
    - f. Junction boxes and conduit between scale equipment and components.
    - g. Digital weight indicator.
    - h. Deck mounted side rub rails.
  - 2. Accessories include but are not limited to:
    - a. Hardware interconnection cables and connectors.
    - b. Isolators and housings as required for lightning protection.
    - c. Cable tags.
    - d. Spare fuses.

## **1.4 SUBMITTALS**

- A. Shop Drawings:
  - 1. Furnish for truck scale system:
    - a. Detailed dimensions, clearances and data for all components [including truck scale automation components and equipment] and connections.
      - 1) Drawings shall include all scale components, foundation details, and loading information necessary for the design of the scale foundation or installation.
    - b. Complete foundation details to coordinate with foundation shown on Drawings.
      - 1) Observe dimensional foundation limitations shown on Engineer's structural Drawings.
      - 2) Call attention to revisions due to any approved substitutions of equipment.
      - 3) Include all embedded anchorages and items required to connect scale to foundation.
    - c. Wiring, conduit and power required for hook-up.
    - d. Warranty.
- B. Contract Closeout Information:
  - 1. Complete description of programming, wiring, troubleshooting, and operating practices.
  - 2. Parts list.
  - 3. Installation manuals.
  - 4. Shop manuals.
  - 5. Maintenance schedule:
    - a. Detailed to anticipated frequency of repairs.
    - b. Recalibration recommendations and required parts for a typical 10 year operating period.
  - 6. List of local suppliers qualified to perform maintenance.
- C. Permits and Certification:
  - 1. State certification that scales have been inspected and tested and are approved for use in commerce transaction weighing.
    - a. Pay all testing and certification costs on behalf of Owner.
  - 2. Permits and approvals required for local construction.
    - a. Pay all associated costs and fees on behalf of Owner.
  - 3. Manufacturer's certification of compliance with NIST Handbook 44 requirements for commercial weighing.
- D. "Or-Equals" and Substitution/Redesign:
  - 1. If the scales are not as shown in the Contract Documents but are approved by the Engineer as acceptable "or-equals", be responsible for redesigning foundations and other required features, and shall submit for approval all required design and construction changes to foundations and approach slabs.
  - 2. Only "or-equals" approved in advance, as described in Division 01, for substitutions shall be submitted.

## **1.5 01 25 00DELIVERY, STORAGE, AND HANDLING**

- A. Schedule delivery of items to site to provide minimum time of on-site storage before installation.
- B. Store all components and accessories off the ground in areas where they will be protected from physical damage, exposure to the environment, and theft.

## **1.6 WARRANTY**

- A. Manufacturer's Warranty including specific terms provided herein and any other standard terms and conditions.
  - 1. Standard terms and conditions shall not conflict with warranty specified herein.

- B. All scale equipment and related components shall have a minimum five year non-prorated parts, including lightning protection and labor warranty from the later date of acceptance or State certification.
  - 1. Warranty must be fully transferable to Owner.
  - 2. Furnish name, address and phone number of local Service Representative who will provide warranty repairs and certify that local service representative will maintain inventory of spare parts.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, only the following manufacturers are acceptable:
  - 1. Truck scales:
    - a. Mettler Toledo.
    - b. Fairbanks.
    - c. Rice Lake.
- B. Subject to compliance with the Contract Documents, the manufacturers listed in the applicable Articles below are acceptable.

### **2.2 EQUIPMENT**

- A. Scale shall be provided in accordance with NIST requirements and have the approval of a Certificate of Conformance by the NTEP.
- B. Approved truck scale manufacturers shall provide all equipment specified below.
- C. Scale House Inbound [and Outbound] Scales:
  - 1. Quantity:
  - 2. Provide truck scale with equipment and accessories for a complete scale, [complete automation system, traffic lights, and scoreboard] installation.
    - a. Total gross capacity: 200,000 LBS.
    - b. Minimum Concentrated Load Capacity (CLC): 80,000 LBS.
    - c. Platform arrangement:
      - 1) 80 FT x 10 FT.
      - 2) Other recommended dimensions must be coordinated and approved with Engineer.
    - d. Construction:
      - 1) Complete concrete scale deck with the dimensions as specified.
      - 2) The deck shall be supported entirely by load cells.
  - 3. Access to each load cell provided through covers located directly above the load cells in the scale deck or via removable grating platforms (grating provided by others) on either side of scale deck.
  - 4. Scales shall have self diagnostic abilities to identify, predict and display error conditions with each individual load cell.
    - a. Display of failure and cause of failure (trouble shooting) shall take place in scale house.
    - b. Display shall identify which individual load cell has failed.
  - 5. Provide digital weight indicators for each truck scale.
    - a. Indicators shall be single multi-screen indicators.
    - b. If digital weight indicator has ability to display multiple scales simultaneously, a single weight indicator is acceptable.
- D. Scale Decks:
  - 1. Steel construction minimum of 1/4 IN thick, entirely supported by load cells.
- E. Load Cells:
  - 1. Electronic load cells:
    - a. Stainless steel enclosure.



- 1) Enclosure NEMA 6P / IP68 rating (minimum).
  - b. Hermetically sealed.
  - c. 150% overload capacity (minimum).
  - d. Operating temperature range: +120 DEGF to -10 DEGF.
  - e. Provide one spare load cell in original container for each load cell type.
    - 1) Owner to store.
  - f. Load cell cable: Stainless steel sheathed for environmental and rodent protection.
  - g. Acceptable manufacturers:
    - 1) Mettler Toledo.
    - 2) Fairbanks.
- F. Junction Boxes and Cables:
  - 1. Junction boxes: NEMA 4X, stainless steel enclosure.
  - 2. Scale instrument cables: Stainless steel sheathed for environmental and rodent protection.
- G. Digital Weight Indicators:
  - 1. Features:
    - a. Six high intensity, red LED digits; or back lit LCD screen, 20 LB increments for each screen.
    - b. Motion detector.
    - c. Center zero detection.
    - d. Auto zero tracking.
    - e. RS-232 or ASCII outputs to computer (coordinate type with Owner's equipment).
  - 2. Construction:
    - a. For indoor mounting applications in conditioned spaces:
      - 1) Table mounted unit with dust proof case meeting manufacturer's standards.
    - b. For outdoor and industrial environments:
      - 1) Weatherproof enclosure with impact resistant casing.
      - 2) Free-standing or surface mount per Drawings.
  - 3. Location shall be as shown on Drawings or directed by Owner.

## **2.3 GROUNDING**

- A. Furnish grounding for the scale, the load cells, junction boxes[, totalizers] and equipment per manufacturer's recommendations.
  - 1. Connect to grounding system supplied by Electrical Contractor for scales[, scale house,] [and building].
  - 2. Provide certification of proper grounding per NEC.
- B. Surge Voltage Protection: Provide surge voltage protection on scale components.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install truck-weighing scales as indicated on the approved Shop Drawings, and in accordance with manufacturer's recommendations.
- B. Coordinate conduit requirements and electrical connections with Electrical Contractor.
  - 1. Electrical Contractor will provide and install conduits.
- C. Coordinate foundation construction with the requirements of the specific scale selected.
- D. All welds shall be completed in accordance with AWS D1.1.
- E. All metal surfaces shall be cleaned to a minimum of SSPC SP 6/NACE No. 3 finish and galvanized or painted with corrosion-resistant epoxy paint.
  - 1. Coordinate paint compatibility with manufacturer.

- F. Scale manufacturer shall supply the necessary length of cable required for complete scale system including to connect the junction boxes and the digital weight indicators.
- G. Supply digital weight indicators with all equipment necessary for installation and operation.
- H. Install all parts and portions of the scales as specified on the approved Shop Drawings and as indicated by the scale manufacturer.
  - 1. Install junction boxes and digital weight indicators, and UPS in locations indicated by Owner.
- I. Electrical Grounding and Lightning Protection:
  - 1. Connect to grounding system as specified and as directed by the scale equipment supplier.
  - 2. Provide certificate of proper grounding per NEC.
  - 3. A lightning protection system shall be provided with each truck scale.
    - a. Major scale components including load cells and other scale instruments shall be included in the lightning protection system.
- J. All wiring and tubing shall be enclosed in conduit per Division 26 Specification Sections.

### **3.2 SCALE OPERATIONS CONTROL SEQUENCE**

- A. Inbound Scales:
  - 1. One set of traffic lights for each inbound scale will be provided.
    - a. See Drawings for locations.
  - 2. Initial conditions (neutral state):
    - a. The following conditions represent the state of each primary component of the facility signaling system without any vehicles present:
      - 1) Entry side of scale traffic light:
        - a) Green signal illuminated when scale is unoccupied and ready to receive vehicles.
        - b) Signal is to be controlled by scale software and manual override switch inside the scale house.
      - 2) Exiting side of scale traffic light:
        - a) Red signal illuminated when scale is unoccupied and ready to receive vehicles.
        - b) Signal is to be controlled by scale software and manual switch inside scale house.
  - 3. Sequence of Operations:
    - a. The following events describe the general sequence of operations for all inbound scales on the facility and how they interact with the signaling system and scale software package.
      - 1) Traffic lights for the inbound scales shall be primarily operated by the scale software package.
        - a) Entry side of the scale traffic light:
          - (1) During normal hours of operation when there is no truck on the scales, the traffic light will be green.
          - (2) When the scale senses a weight, the program sends a signal to toggle the traffic light from green to red.
          - (3) When the transaction is complete and the scale senses a change of weight (one (1) truck axle off scale), the traffic lights will return to the neutral state.
        - b) Exit side of the scale traffic light:
          - (1) During normal hours of operation when there is no truck on the scales, the traffic light will be red.
          - (2) When the scale senses a weight, the driver interface terminal prints a receipt, the program sends a signal to toggle the traffic light from red to green and the transaction is complete.
          - (3) When the scale senses a change of weight (one truck axle off scale), the traffic light will return to the neutral state.

### **3.3 FIELD QUALITY CONTROL**

- A. Employ and pay for services of equipment manufacturer's field service representative(s) to:
  - 1. Inspect equipment covered by this Specification Section.
  - 2. Supervise adjustments and installation checks.
  - 3. Provide test equipment, tools, and instruments necessary to accomplish equipment testing.
  - 4. Conduct start-up of equipment and perform operational checks.
  - 5. Provide Owner with a written statement that manufacturer's equipment has been installed properly, has been started up, and is ready for operation by Owner's personnel.

### **3.4 CLEANING**

### **3.5 DEMONSTRATION**

- A. Provide, at no additional cost to Owner, on-site instruction by a manufacturer's authorized Field Representative, for up to 24 working hours, to instruct Owner's personnel in the operation, including software training and maintenance of scales, and accessories.
  - 1. Owner will give Contractor notice after installation of the equipment as to the dates when instruction will be required.
- B. Demonstrate complete operation and applicable certification of the scale system prior to its acceptance by the Owner.
  - 1. Owner, with input from scale manufacturer, Contractor and Engineer, shall decide when scale may be opened to traffic.

## **END OF SECTION**