Appendix K

Technical Specifications
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DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

NOTE: The individual specification sections in this Division are highly dependent on the requirements and needs of the Project Owner. At the time of publication of this Final Design, the Project Owner has not been identified. Therefore, all of the specification sections in this Division are subject to change prior to project bid and execution.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Advertisement for Bids</td>
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<tr>
<td>Statement of Bidder’s Qualifications</td>
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<tr>
<td>Checklist for Bidders</td>
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<td>Instructions to Bidders</td>
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<td>Bid Form</td>
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<td>Unit Price Bid Schedule</td>
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<td>Bid Bond (Penal Sum Form)</td>
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<td>Field Order</td>
<td>00 63 61</td>
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<td>00 63 62</td>
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<td>Certificate of Substantial Completion</td>
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<td>Notice of Acceptability of Work</td>
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<td>Supplementary Conditions</td>
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<td>Prevailing Wage Rate Determination</td>
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DIVISION 01 – GENERAL REQUIREMENTS

NOTE: The individual specification sections in this Division are highly dependent on the requirements and needs of the Project Owner. At the time of publication of this Final Design, the Project Owner has not been identified. Therefore, all of the specification sections in this Division are subject to change prior to project bid and execution.

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<td>Payment Procedures</td>
<td>01 29 00</td>
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<tr>
<td>Project Meetings</td>
<td>01 31 19</td>
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### DIVISION 03 – CONCRETE

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<td>Concrete Reinforcing</td>
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<td>Cast-in-Place Concrete</td>
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### DIVISION 05 – METALS

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<td>Excavation and Fill for Roadway</td>
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<td>Erosion and Sedimentation Control</td>
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<td>Steel Piles</td>
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<tr>
<td>Armor Stone Breakwater</td>
<td>35 31 23</td>
<td>7</td>
</tr>
<tr>
<td>Grout Filled Bags for Shoreline Protection</td>
<td>35 43 29</td>
<td>3</td>
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<tr>
<td>Marine Fenders</td>
<td>35 59 13.16</td>
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</table>
Sealed Bids for the construction of the Dredged Materials Management Facility at Port Milwaukee in Milwaukee, WI will be received, by [insert Owner’s name], at the office of the [insert location where Bids will be received], until [insert time for receipt of Bids] local time on [insert date for receipt of Bids], at which time the Bids received will be [insert either “publicly” or “privately” as applicable to the Project] opened and read. The Project consists of constructing [insert a very brief summary description of the scope of the Work].

Bids will be received for a single prime Contract. Bids shall be on a lump sum and unit price basis, with additive alternate bid items as indicated in the Bid Form.

The Issuing Office for the Bidding Documents is: [insert name, address, and phone number of Engineer, Owner, or other entity serving as the Issuing Office, as well as contact person and that person’s phone number and e-mail address]. Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Fridays between the hours of [insert hours], and may obtain copies of the Bidding Documents from the Issuing Office as described below.

Bidding Documents also may be examined at [insert names and addresses of plan rooms and similar locations/services]; online at [insert name of Internet-based construction information subscription services]; the office of the [insert Owner’s name and address], on Mondays through Fridays between the hours of [insert hours]; and the office of the Engineer, [insert name of Engineer’s firm and address], on Mondays through Fridays between the hours of [insert hours].

Printed copies of the Bidding Documents may be obtained from the Issuing Office, during the hours indicated above, upon payment of a deposit of $[insert amount] for each set. Checks for Bidding Documents shall be payable to “[insert entity name]”. Upon request and receipt of the document deposit indicated above plus a non-refundable shipping charge, the Issuing Office will transmit the Bidding Documents via delivery service. The shipping charge amount will depend on the shipping method selected by the prospective Bidder. The date that the Bidding Documents are transmitted by the Issuing Office will be considered the Bidder’s date of receipt of the Bidding Documents. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office.

Bidding Documents may be viewed online by registering with the Issuing Office at [insert website URL, if any, where Bidding Documents may be registered for and downloaded]. Following registration, complete sets of Bidding Documents may be downloaded from the Issuing Office’s website as “zipped” portable document format (PDF) files.
A pre-bid conference will be held at [insert time] local time on [insert date] at the [insert location, including site name, building name if applicable, and address]. Attendance at the pre-bid conference is not mandatory/mandatory.

**NOTE(S) TO USER:**
Due to COVID-19 restrictions, you may want to consider a virtual pre-bid conference. [Insert meeting link]

Bid security shall be furnished in accordance with the Instructions to Bidders.

**NOTE(S) TO USER:**
When applicable, include a provision to the effect of, “Bids will be accepted only from Bidders prequalified by the Owner. Contact [insert Owner contact person name and contact information] to obtain prequalification requirements.” Edit to suit the Project, or use alternative language when other qualifications requirements are sufficiently important to warrant including them in the Advertisement.

Bidders shall submit proof of qualifications to perform the Work as described in the Instructions to Bidders. Bids will be accepted only from Bidders prequalified by the Owner. Contact [insert Owner contact person name and contact information] to obtain prequalification requirements.

Owner:[Owner’s name]
By: [Name of individual authorized to issue notices]
Title: [Title of individual]
Date: [Date of initial publication of Advertisement]

END OF ADVERTISEMENT FOR BIDS
SECTION 00 11 53

STATEMENT OF BIDDER’S QUALIFICATIONS

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

1. SUBMITTED BY:

Official Name of Firm: ____________________________________________________________

Address: _______________________________________________________________________

______________________________________________________________________________

2. SUBMITTED TO: ________________________________________________________________

3. SUBMITTED FOR:

Owner: _______________________________________________________________________

Project Name: ___________________________________________________________________

__________________________________________________________

TYPE OF WORK: __________________________________________________________________

__________________________________________________________

4. CONTRACTOR'S CONTACT INFORMATION

Contact Person: _________________________________________________________________

Title: _________________________________________________________________________

Phone: _________________________________________________________________________

Email: _________________________________________________________________________
5. **AFFILIATED COMPANIES:**

Name: 

Address: 

6. **TYPE OF ORGANIZATION:**

☐ SOLE PROPRIETORSHIP

Name of Owner: 

Doing Business As: 

Date of Organization: 

☐ PARTNERSHIP

Date of Organization: 

Type of Partnership: 

Name of General Partner(s): 

☐ CORPORATION

State of Organization: 

Date of Organization: 

Executive Officers:

- President: 

- Vice President(s): 

- Treasurer: 

- Secretary:
☐ LIMITED LIABILITY COMPANY

State of Organization: ____________________________

Date of Organization: __________________________

Members: ______________________________________

☐ JOINT VENTURE

State of Organization: ____________________________

Date of Organization: __________________________

Form of Organization: ____________________________

Joint Venture Managing Partner
- Name: ____________________________
- Address: ____________________________

Joint Venture Managing Partner
- Name: ____________________________
- Address: ____________________________

Joint Venture Managing Partner
- Name: ____________________________
- Address: ____________________________
7. LICENSING

Jurisdiction: 
Type of License: 
License Number: 
Jurisdiction: 
Type of License: 
License Number: 

8. CERTIFICATIONS

Disadvantage Business Enterprise: 
Minority Business Enterprise: 
Woman Owned Enterprise: 
Small Business Enterprise: 
Other (____________________): 

9. BONDING INFORMATION

Bonding Company: 
Address: 

Bonding Agent: 
Address: 

Contact Name: 
Phone: 

Aggregate Bonding Capacity: 
Available Bonding Capacity as of date of this submittal: 

STATEMENT OF BIDDER’S QUALIFICATIONS

00 11 53 - 4
10. **FINANCIAL INFORMATION**

   Financial Institution: ____________________________________________________________
   Address: ________________________________
   Account Manager: ________________________________
   Phone: ________________________________

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

11. **CONSTRUCTION EXPERIENCE:**

    Current Experience:

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

    Previous Experience:

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

    Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?
    □YES □NO

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

    Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?
    □YES □NO

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

    Are there any judgments, claims, disputes or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?
    □YES □NO

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

Name of Contractor's Safety Officer and contact information:

Address: ____________________________________________

________________________________________________________________________

Mobile Phone: ____________________________________________

Include the following as attachments:

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

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

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

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

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

<table>
<thead>
<tr>
<th>YEAR</th>
<th>EMR</th>
</tr>
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<tbody>
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Total Recordable Frequency Rate (TRFR) for the last 5 years:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TRFR</th>
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Total number of man-hours worked for the last 5 Years:

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

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<thead>
<tr>
<th>YEAR</th>
<th>DART</th>
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13. **EQUIPMENT:**

**MAJOR EQUIPMENT:**

List on Schedule C all pieces of major equipment available for use on Owner's Project.
I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HEREWITH, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION: ________________________________

BY: ________________________________

TITLE: ________________________________

DATED: ________________________________

NOTARY ATTEST:

SUBSCRIBED AND SWORN TO BEFORE ME

THIS _________ DAY OF _________, 20___

NOTARY PUBLIC - STATE OF _________________

MY COMMISSION EXPIRES: _________________

REQUIRED ATTACHMENTS

1. Schedule A (Current Experience).
2. Schedule B (Previous Experience).
3. Schedule C (Major Equipment).
4. Audited balance sheet for each of the last 3 years for firm named in Section 1.
5. Evidence of authority for individuals listed in Section 9 to bind organization to an agreement.
6. Resumes of officers and key individuals (including Safety Officer) of firm named in Section 1.
7. Required safety program submittals listed in Section 12.
8. Additional items as pertinent.
### SCHEDULE A

**CURRENT EXPERIENCE**

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### SCHEDULE B

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

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**Note:** The table is populated with fictional data for demonstration purposes.
### Schedule B

#### Previous Experience (Include ALL Projects Completed within last 5 years)

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Owner's Contact Person</th>
<th>Design Engineer</th>
<th>Contract Date</th>
<th>Type of Work</th>
<th>Status</th>
<th>Cost of Work</th>
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## SCHEDULE C - LIST OF MAJOR EQUIPMENT AVAILABLE

<table>
<thead>
<tr>
<th>ITEM</th>
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<th>CONDITION</th>
<th>ACQUIRED VALUE</th>
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SECTION 00 15 00

CHECKLIST FOR BIDDERS

BIDDERS ARE ENCOURAGED TO USE THIS CHECKLIST, OR ONE OF THEIR OWN MAKING, BEFORE THEY SUBMIT THEIR BIDS FOR CONSIDERATION BY THE OWNER

ITEMS REQUIRED BY THE DUE DATE AND TIME:

<table>
<thead>
<tr>
<th>Submittal Items with Bid</th>
<th>Section/Page(s)</th>
<th>Check if Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bid Form with Valid Signature</td>
<td>00 21 13, X.X</td>
<td>00400-3</td>
</tr>
<tr>
<td>Acknowledgement of all Addenda</td>
<td>00 21 13, X.X</td>
<td>00400-3</td>
</tr>
<tr>
<td>Bid Guaranty (Performance Bond, Payment Bond, and Bid Bond)</td>
<td>00 21 13, X.X</td>
<td>00 61 13, 00 61 14, 00 43 13</td>
</tr>
<tr>
<td>To be Completed by Owner/Owner’s Rep</td>
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</table>

ITEMS REQUIRED TO BE RECEIVED NO LATER THAN XX HOURS AFTER THE BID DUE DATE AND TIME:

<table>
<thead>
<tr>
<th>Submittal Items with Bid</th>
<th>Section/Page(s)</th>
<th>Check if Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be Completed by Owner/Owner’s Rep</td>
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</table>
SECTION 00 21 13
SUGGESTED INSTRUCTIONS TO BIDDERS

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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.
B. Owner
C. Engineer
D. Contractor
E. Work

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder’s qualifications to perform the Work, Bidder shall submit with its Bid (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:

A. Evidence of Bidder’s authority to do business in the state of Wisconsin.
B. Bidder’s state or other contractor license number, if applicable.
C. Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, “Subcontractors, Suppliers, and Others.”

3.02 A Bidder’s failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder’s qualifications.

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder’s representations and certifications.
ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS;
EXAMINATION OF SITE; OWNER’S SAFETY PROGRAM; OTHER WORK AT THE
SITE

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

4.02 Existing Site Conditions
A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
   1. The Supplementary Conditions identify:
      a. those reports known to Owner of explorations and tests of subsurface
         conditions at or adjacent to the Site.
      b. those drawings known to Owner of physical conditions relating to existing
         surface or subsurface structures at the Site (except Underground Facilities).
      c. reports and drawings known to Owner relating to Hazardous Environmental
         Conditions that have been identified at or adjacent to the Site.
   d. Technical Data contained in such reports and drawings.
   2. Owner will make copies of reports and drawings referenced above available to
      any Bidder on request. These reports and drawings are not part of the Contract
      Documents, but the Technical Data contained therein upon whose accuracy
      Bidder is entitled to rely, as provided in the General Conditions, has been
      identified and established in the Supplementary Conditions. Bidder is
      responsible for any interpretation or conclusion Bidder draws from any
      Technical Data or any other data, interpretations, opinions, or information
      contained in such reports or shown or indicated in such drawings.
   3. If the Supplementary Conditions do not identify Technical Data, the default
      definition of Technical Data set forth in Article 1 of the General Conditions will
      apply.
   4. Geotechnical Baseline Report: The Bidding Documents contain a Geotechnical
      Baseline Report (GBR). The GBR describes certain select subsurface conditions
      that are anticipated to be encountered by Contractor during construction in
      specified locations (“Baseline Conditions”). The GBR is a Contract Document.
      The Baseline Conditions in the GBR are intended to reduce uncertainty and the
degree of contingency in submitted Bids. However, Bidders cannot rely solely
on the Baseline Conditions. Bids should be based on a comprehensive approach
that includes an independent review and analysis of the GBR, all other Contract
Documents, Technical Data, other available information, and observable surface
conditions. Not all potential subsurface conditions are baselined.
   Nothing in the GBR is intended to relieve Bidders of the responsibility to make
their own determinations regarding construction costs, bidding strategies, and
Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or adjacent to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 Site Visit and Testing by Bidders

A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.

B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner’s authority regarding the Site.

D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 Owner’s Safety Program

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

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

ARTICLE 5 – BIDDER’S REPRESENTATIONS

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

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

NOTE(S) TO USER:

Bidder is expected to visit the Site and conduct an alert, heads-up, eyes-open, reasonable examination of the area and the conditions under which the Work is to be performed, and that is the intent of Paragraph 5.01.B. Any special requirements for such examination are to be set forth in writing (Paragraph 4.03 is the preferable location for such requirements).

C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;

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

NOTE(S) TO USER:

If there are no reports or drawings of the type referred to in this representation, either modify or delete the paragraph, and expressly state that there are none.

E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of...
construction to be employed by Bidder; and (3) Bidder’s safety precautions and programs;

NOTE(S) TO USER:

If the Bidding Documents do not identify any Site-related reports and drawings, modify this paragraph accordingly.

F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

NOTE(S) TO USER:

The representations by Bidder in EJCDC’s Bid Form (EJCDC® C-410) and in both of its Owner-Contractor Agreements (EJCDC® C-520, Stipulated Sum, and EJCDC® C-525, Cost-Plus) are closely coordinated with the wording in this Article so that a change in one would necessitate changes in the others.

ARTICLE 6 – PRE-BID CONFERENCE

6.01 A pre-Bid conference will be held at the time and location stated in the invitation or advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

NOTE(S) TO USER:

1. EJCDC recommends that Engineer record the prospective Bidders in attendance at the beginning and at the end of the pre-bid conference, and keep a record of the proceedings. If regulatory authorities having jurisdiction are also present, their attendance should be noted.
2. It is most common for attendance at the pre-bid conference to be encouraged but not required, though practices vary by jurisdiction. Mandatory pre-Bid conferences are not allowed in some jurisdictions. If Owner makes it mandatory that Bidders attend the pre-bid conference, this should be made clear in the instruction above and in the advertisement or invitation to bid, and the instruction should state the consequences of failure to attend.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

NOTE(S) TO USER:

1. The time in which Bidders’ questions must be submitted to receive consideration, set by EJCDC as seven days prior to the opening of bids, may be governed by Laws or Regulations, and should be modified in Paragraph 7.01 if necessary.

2. Addenda are not to be issued after Bid opening. If the administration of the bidding procedures is not conducted by Engineer (for example, if questions are to be submitted to Owner or to a construction manager), it may be appropriate to amend Article 7.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of [_____] percent of Bidder’s maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

NOTE(S) TO USER:

1. Reference should be made to statutory requirements and applicable governmental regulations with respect to Bid security required on public projects. It may be necessary to delete Article 8 in its entirety and replace it with specific language required by Laws and Regulations. In the event such language does not provide for the release of Bid security to Bidders who decline to substitute Subcontractors, Suppliers, or other individuals or entities requested by
Owner, as provided in Article 12 below, it may be necessary to make coordinated revisions.

2. Article 5 of the Bid Form should be carefully reviewed to ensure there will be no misunderstanding of the term “Bidder’s maximum Bid price.”

3. For recommended bid bond forms see EJCDC® C 430 (Penal Sum Form) and EJCDC® C 435 (Damages Form).

4. If a specific bid bond form, such as EJCDC® C-430 or EJCDC® C-435, is required, the form should be included in the Bidding Documents.

5. Bid security is not universally used or required. When used, it is typically in the range of 5-10 percent.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner’s exclusive remedy if Bidder defaults.

NOTE(S) TO USER:

1. The remedy provided Owner by Paragraph 8.02 for Bidder default presumes that a certified check, money order, or a Penal Sum Form Bid Bond, such as EJCDC® C-430, will be required.

2. If EJCDC’s Damages Form Bid Bond (EJCDC® C-435) or similar damages form is specified or permitted, the second sentence of Paragraph 8.02 should be revised to state that “...Owner may consider Bidder to be in default, annul the Notice of Award, and exercise its rights under the Bid Bond.”

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

NOTE(S) TO USER:

1. Retaining the Bid security of those other Bidders that may be in line for contract award in the event of default by the initial Successful Bidder is a standard practice that provides Owner with similar security if award to one of the other Bidders becomes necessary.

2. The “61 days” is based on the fact that, as provided in Paragraph 2.01 of the Bid Form, Bids will remain subject to acceptance “for 60 days after the Bid opening.” Therefore, on the sixty-first day the Bids are no longer effective. Also see the Commentary on the 2013 EJCDC
Construction Series Documents, EJCDC® C-001, in the section discussing Article 4 of the General Conditions, regarding the suggested schedule of events between opening of Bids and starting of Contract Times.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which, [Milestones are to be achieved and] the Work is to be substantially completed, and completed and ready for final payment, are set forth in the Agreement.

[or]

9.01 Bidder shall set forth in the Bid the time by which Bidder shall achieve Substantial Completion, subject to the restrictions established in Paragraph 14.04 of these Instructions. The Owner will take Bidder’s time commitment regarding Substantial Completion into consideration during the evaluation of Bids, and it will be necessary for the apparent Successful Bidder to satisfy Owner that it will be able to achieve Substantial Completion within the time such Bidder has designated in the Bid. [If applicable include the following: Bidder shall also set forth in the Bid its commitments regarding the achievement of Milestones and readiness for final payment.] The Successful Bidder’s time commitments will be entered into the Agreement (or incorporated in the Agreement by reference to the specific terms of the Bid).

NOTE(S) TO USER:

Use one of the two alternative Paragraphs 9.01, and delete the other. The first (and most common) alternative anticipates that the times for Milestones, if any, Substantial Completion, and completion of the Work in readiness for final payment have been set forth in the Agreement that is included in the Bidding Documents. The second alternative may be used to permit Bidders to designate the time of Substantial Completion in the Bids, as a factor in determining the Successful Bidder. In most cases Bidders will not be asked to designate the time in which it commits to achieving Milestones or readiness for final payment, and hence the sentence in brackets above should in most cases be deleted. See note regarding price-plus-time ("A+B") bidding following Paragraph 19.03 below.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

NOTE(S) TO USER:

Liquidated damages amounts and terms should be stated in Article 4 of the Agreement.
ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or “or-equal” items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or “or-equal” item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

NOTE(S) TO USER:

The EJCDC presumptive practice is that no substitute or “or-equal” materials or equipment will be considered until after the Effective Date of the Contract. However, some practitioners do consider, and some Laws and Regulations require, evaluations of substitutions and “or-equals” during the bidding period and issuance of Addenda when a substitute or “or-equal” is accepted. In such cases, use the second alternative Paragraph 11.01, immediately below.

[or]

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those “or-equal” or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an “or-equal” or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer’s decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

NOTE(S) TO USER:

Note that the General Conditions draw a distinction between “or-equal” and substitute items of materials and equipment. Paragraph 7.04 of the General Conditions addresses “or-equals”; Paragraph 7.05 addresses substitutes.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder
objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.

12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work: [drafter should here list key categories of the Work; depending on the Project this might include electrical, fire protection, major equipment items, etc.].

If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

12.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

NOTE(S) TO USER:

1. The matter of Owner retaining the right to disapprove of or reject certain Subcontractors, Suppliers, individuals, or entities (including those who are to furnish the principal items of material and equipment) which apparent Successful Bidder proposes for the Work has not been approached uniformly nor with unanimous endorsement by various interested organizations. Prequalification of certain Subcontractors, Suppliers, individuals, or entities prior to the submission of Bids is one approach, but the effort, procedures, and intricacies involved require careful consideration, and prequalification may not be permitted on public works projects in some jurisdictions. Provisions dealing with this matter after the submittal of a Bid are contained in Paragraph 7.06 of the General Conditions. EJCDC believes that, as a general principle, Contractors should be entitled to retain Subcontractors, Suppliers, individuals, or entities of their own choosing, that occasions when Owner and Engineer will wish to either require use of specific Subcontractors,
Suppliers, or personnel, or to disapprove or reject proposed or retained Subcontractors, Suppliers, or personnel will arise infrequently, and that the right to reject should be exercised only with appropriate supporting data. It is recognized, however, that there will be situations in which, because of the peculiarities of a given project, it will be important for Owner and Engineer to have the right to reject certain Subcontractors, Suppliers, individuals, or entities that are proposed for or have been retained for the Work.

2. Provisions dealing with the prequalification of Subcontractors, Suppliers, individuals, or entities prior to the opening of Bids should be set forth in Article 12, as should provisions dealing with Owner’s right to disapprove between the time of the opening of Bids and the giving of the Notice of Award. Coordination of the language with Article 3 and Article 19 of these Instructions should not be overlooked. It is important to remember that Owner’s right to reject will apply only to those Subcontractors, Suppliers, individuals, or entities whose identity is to be submitted to Owner as required by these Instructions; accordingly, unless a particular trade, manufacturer, etc., has been so singled out, the right to reject would not exist (except as generally provided in Paragraph 7.06 of the General Conditions). In the event Subcontractors, Suppliers, individuals, or entities are not required to be identified, it may be appropriate to delete some or all of Article 12.

3. Requiring the apparent Successful Bidder to retain a substitute Subcontractor, Supplier, individual, or entity that is acceptable to Owner and Engineer may have a serious effect on the Bid price first submitted, and there are various ways of dealing with the situation should it arise. EJCDC’s suggested approach is set forth in the last sentence of Paragraph 12.03. Most owners favor this approach as being more equitable to contractors and for its tendency to produce a lower initial Bid.

Others may prefer an alternative approach that does not allow a price increase, because of legal constraints applicable to public works projects or because of the desire to hold firm the initial Bid even though this may result generally in higher Bids. This alternative may be accomplished by revising the last sentence of Paragraph 12.03 to state:

“"If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, without an increase in Bid price.""’

In addition, under the alternative approach Owner and its advisors may conclude that it would be inequitable to claim a Bid security forfeiture, hence the second sentence of Paragraph 12.04 would be revised to state:
“Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder.”

There are other sound ways to address these problems. The entire matter should be reviewed by Owner and Owner’s legal counsel prior to finalizing these Instructions.

4. Any restrictions or limitations on subcontracting should appear in SC 7.06, and cross-references to that location should appear here in Article 12.

5. Reference should be made to applicable Laws and Regulations with respect to Subcontractors, Suppliers, individuals or entities. Specific provisions may be required by Laws or Regulations, in which case Article 12 may require amending or deletion and replacement with the required language. Note also that Article 12 as written contemplates that Subcontractors and Suppliers required to be identified by apparent Successful Bidder prior to award of the Contract will be listed here in the Instructions. If these requirements instead will be established in the Supplementary Conditions, the Bid Form, or other location, such specific location should be noted here in Article 12.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”

NOTE(S) TO USER:

Coordinate these paragraphs carefully with the Bid Form and edit as required.

13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

NOTE(S) TO USER:

A corporate seal may be required in some jurisdictions. If so, add appropriate wording. The following is an example: “The corporate seal shall be affixed and attested by the corporate secretary or an assistant corporate secretary.”
13.03 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The partnership’s address for receiving notices shall be shown.

13.04 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the firm’s address for receiving notices shall be shown.

13.05 A Bid by an individual shall show the Bidder’s name and address for receiving notices.

13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture’s address for receiving notices shall be shown.

13.07 All names shall be printed in ink below the signatures.

13.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.09 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.10 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form.

**NOTE(S) TO USER:**

See Note to User 5, Paragraph 3.01.

**ARTICLE 14 – BASIS OF BID**

14.01 *Lump Sum*

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

[or]

14.01 *Base Bid with Alternates*

A. Bidders shall submit a Bid on a lump sum basis for the base Bid and include a separate price for each alternate 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.

[or]

14.01 *Sectional Bids*

A. Bidders may submit a Bid on any individual section or any combination of sections, as set forth in the Bid Form.
B. Submission of a Bid on any section signifies Bidder’s willingness to enter into a Contract for that section alone at the price offered.

C. If Bidder submits Bids on individual sections and a Bid based on a combination of those sections, such combined Bid need not be the sum of the Bids on the individual sections.

D. Bidders offering a Bid on one or more sections shall be capable of completing the Work covered by those sections within the time period stated in the Agreement.

14.01 Cost-Plus-Fee Bids

A. Bidders shall submit a Bid on the Contractor’s fee, which shall be in addition to compensation for Cost of the Work. Such fee shall be either (1) a fixed fee or (2) percentages of categories of costs, as set forth in the Bid Form.

B. If the Contractor’s fee, as set forth in the Bid Form, is to be based on percentages of categories of cost, Bidders shall enter a maximum amount limiting the total fee if required by the Bid Form to do so.

C. Bidders shall submit a Bid on the Guaranteed Maximum Price, setting a maximum amount on the compensable Cost of the Work plus Contractor’s fee, if required by the Bid Form to do so.

NOTE(S) TO USER:

1. Paragraph 14.01 gives four frequently used alternatives for defining the basis and determination of Bid prices. The user should select one and delete the others. For a particular project, a unique, customized set or combination of paragraphs may be necessary, following the concept shown above; for example, sectional bids together with alternates. The user should carefully review Paragraph 14.01 and compare to the final Bid Form for clarity and consistency.

2. The fourth alternative above addresses bidding on cost-plus-fee contracts. See EJCDC® C-525, Agreement Between Owner and Contractor for Construction Contract (Cost-Plus). Such contracts are more frequently formed through a negotiation or proposal/selection process, but may in some cases be competitively bid. The Instruction above, the Bid comparison provisions of Paragraph 19.03 below, and Article 5 of the Bid Form all assume that the principal means of comparing cost-plus-fee bids will be the Guaranteed Maximum Price. An alternative to this would be to make a selection based on the Contractor’s fee, either because no Guaranteed Maximum Price is to be included as part of the specific contract or bidding process, or because in a particular case the Contractor’s fee is judged to be the more critical criterion for Contractor selection. The Instructions and Bid Form must be customized to accommodate a selection based on Contractor’s fee.

3. Also note the importance of including the following paragraph, 14.02, when unit prices are part of the Bid. It is common for bid forms to be
structured to require lump sum prices for specified portions of the Work, and unit prices for other Work items.

14.02 Unit Price

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The “Bid Price” (sometimes referred to as the extended price) for each unit price Bid item will be the product of the “Estimated Quantity” (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding “Bid Unit Price” offered by the Bidder. The total of all unit price Bid items will be the sum of these “Bid Prices”; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

NOTE(S) TO USER:

Some lettings may be based exclusively on unit prices. As noted following Paragraph 14.01 above, it is also common for bid forms to be structured to require lump sum prices for specified portions of the Work, and unit prices for other Work items. Unit prices on select items can also be used in combination with other pricing methods such as cost-plus-fee; see Article 5 of EJCDC® C-525, Agreement between Owner and Contractor for Construction Contract (Cost-Plus).

14.03 Allowances

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

14.04 Price-Plus-Time Bids

A. The Owner will consider the time of Substantial Completion commitment made by the Bidder in the comparison of Bids.

B. Bidder shall designate the number of days required to achieve Substantial Completion of the Work and enter that number in the Bid Form as the total number of calendar days to substantially complete the Work.

C. The total number of calendar days for Substantial Completion designated by Bidder shall be less than or equal to a maximum of [____], but not less than the minimum of [____]. If Bidder purports to designate a time for Substantial Completion that is less than the allowed minimum, or greater than the allowed maximum, Owner will reject the Bid as nonresponsive.

D. The Agreement as executed will contain the Substantial Completion time designated in Successful Bidder’s Bid, and the Contractor will be assessed liquidated damages
at the rate stated in the Agreement for failure to attain Substantial Completion within that time.

E. [Bidder shall also designate the time in which it will achieve Milestones, and achieve readiness for final payment. Such time commitments shall be consistent with the “Time of Substantial Completion” to which Bidder commits. The Agreement as executed will contain, as binding Contract Times, Successful Bidder’s time commitments regarding Milestones, as applicable, and readiness for final payment.]

NOTE(S) TO USER:

1. Paragraph 14.04 should be used if Bidder is permitted to designate the Contract Times and it is therefore necessary to explain the manner in which differences in completion time will be compared in determining the Successful Bidder. In the more common situation in which the Contract Times are fixed by Owner (by setting them out in the Agreement that has been included in the Bidding Documents), delete Paragraph 14.04.

2. The primary purpose of this price-plus-time bidding procedure is to encourage the shortening of the construction duration. It is commonly referred to as A+B bidding. This procedure is beneficial to the Owner in situations in which it is advantageous for the Work to be completed early. The apparent low bidder is determined based on a monetary combination of the traditional Contract bid item(s) (A) and the time component (B) proposed by Bidder.

3. When price-plus-time (A+B) bidding is used, the date of completion in readiness for final payment should be linked in the Agreement to the date of Substantial Completion; typically Bidders should not be asked to separately designate such date of final completion. Similarly, establishing intermediate Milestones (or asking Bidders to designate times to achieve Milestones) may be difficult because of the uncertainty of the date required for Substantial Completion, pending receipt of the Bids. For these reasons, in most cases Paragraph 14.04.E will not be needed, and should be deleted.

4. Check that the jurisdiction of the project permits consideration of the time proposed by the Bidder when determining the lowest responsive bid.

5. Another means of encouraging early completion is to offer a monetary incentive (bonus) for early completion.

6. If no liquidated damages for late completion of the Work are specified, it will be necessary to specify an adjusting amount or formula for comparing bids and Paragraph 14.04.D modified accordingly.

7. Note that the Bidder may intend to achieve the reduced project duration resulting from this price-plus-time bidding procedure by accelerated work schedules. As such the Owner and Engineer may require increased personnel for testing and inspection as well as other resources to accommodate the accelerated schedule.
8. This bidding procedure is not appropriate for all contracts. Site access limitations, safety concerns, potential third party conflicts, trade-stacking worries, and scheduling complexities (including those associated with Milestones) may make it too risky to encourage contractors to strive for an early completion.

ARTICLE 15 – SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.

NOTE(S) TO USER:

1. The language of Paragraph 15.01 may be modified to require submittal of a bound copy of the Bidding Documents intact with the Bid. This is not recommended by EJCDC, but may be required by Laws and Regulations.

2. Some public and private owners allow for some form of electronic submittal of bids, or for preparation and submittal of bids on spreadsheets or in similar formats that allow bidders to process and manage entries, particularly unit prices, with speed and accuracy. Article 15 is an appropriate location for providing instructions regarding such submittals.

15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation “BID ENCLOSED.” A mailed Bid shall be addressed to [______].

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

NOTE(S) TO USER:

1. Bids are usually submitted to and opened at the Owner’s office, and this is frequently different from the Issuing Office.

2. Practices vary with respect to the documentation required to be submitted with Bids. It is usually necessary to supplement Article 15.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted.
prior to the date and time for the opening of Bids. Upon receipt of such notice, the
unopened Bid will be returned to the Bidder.

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial
Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date
and time for the opening of Bids.

16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with
Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that
there was a material and substantial mistake in the preparation of its Bid, that Bidder may
withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid,
that Bidder will be disqualified from further bidding on the Work.

NOTE(S) TO USER:

1. Paragraph 16.02 allows Bidders who withdraw bids prior to opening
to submit a second bid. This may not be permitted in all jurisdictions.

2. Withdrawal of any Bid that is demonstrated to contain a substantial
mistake is permitted under Paragraph 16.03. However, it is recognized
that some Laws and Regulations or Owners’ standards or policies may
differ and that it may be necessary to modify or delete Paragraph
16.03.

ARTICLE 17 – OPENING OF BIDS

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

[or]

17.01 Bids will be opened privately.

NOTE(S) TO USER:

Two paragraphs are provided, one for public opening and one for private
opening.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

NOTE(S) TO USER:

1. Provisions on the commencement of Contract Times appear in
Paragraph 4.01 of the General Conditions. Note that the period of
time during which Bids are to remain open and by which a Notice of
Award is to be given are interrelated with the date when the Contract
Times commence to run. The EJCDC suggested schedule of events

INSTRUCTIONS TO BIDDERS
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between the opening of Bids and the starting of the Contract Times is discussed in the Commentary on the EJCDC Construction Documents, EJCDC® C-001, in the section commenting on Article 4 of the General Conditions. Any changes must be carefully coordinated among all of the Bidding Documents.

2. In some cases it may be feasible to extend the time that a Bid remains subject to acceptance by mutual written agreement of Owner and one or more Bidders and their respective sureties. Note, however, that the time for performance and completion of the Work are material terms of the Contract, and an extension could create a conflict with those terms. In many instances it may be better practice to rebid the Work rather than issuing lengthy extensions of the time for acceptance of bids.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.

NOTE(S) TO USER:
The statement in Paragraph 19.02 is the prevailing rule for competitively bid public projects, and is commonly used in private construction procurements as well. The clear, unequivocal statement of the basic rule for winning the award—that the contract will go to the qualified bidder submitting the low bid—will encourage participation, stimulate competitive pricing, and avoid bid disputes. If governing ordinances or statutes, or Owner preferences, require a different rule, then amend this paragraph accordingly.

19.03 Evaluation of Bids

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form. To determine the Bid prices for purposes of comparison, Owner shall announce to all bidders a “Base Bid plus alternates” budget after receiving all Bids, but prior to opening them. 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, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which Owner determines funds will be available at the time of award.

[or]

B. For determination of the apparent low Bidder(s) when sectional bids are submitted, Bids will be compared on the basis of the aggregate of the Bids for separate sections and the Bids for combined sections that result in the lowest total amount for all of the Work.

[or]

B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

[or]

B. For the determination of the apparent low Bidder when cost-plus bids are submitted, Bids will be compared on the basis of the Guaranteed Maximum Price set forth by Bidder on the Bid Form.

NOTE(S) TO USER:

Paragraph 19.03.B provides alternative choices for comparison of bids. This must be carefully coordinated with the basis of Bid price set forth in Paragraph 14.03 above and in the Bid Form. With respect to cost-plus-fee contracts, see Note to User 2 following Paragraph 14.01 above.

NOTE(S) TO USER:

The following should be included in these Instructions only when Paragraph 14.04, establishing a process for Bidders to commit to a shortened time for attaining Substantial Completion, will be used (price-plus-time or “A+B” bidding).

C. Bid prices will be compared after adjusting for differences in time of Substantial Completion (total number of calendar days to substantially complete the Work) designated by Bidders. The adjusting amount will be determined at the rate set forth in the Agreement for liquidated damages for failing to achieve Substantial Completion, or such other amount that Owner has designated in the Bid Form.

1. The method for calculating the lowest bid for comparison will be the summation of the Bid price shown in the Bid Form plus the product of the Bidder-specified time of Substantial Completion (in calendar days) times the rate for liquidated damages [or other Owner-designated daily rate] (in dollars per day).

2. This procedure is only used to determine the lowest bid for comparison and contractor selection purposes. The Contract Price for compensation and payment purposes remains the Bid price shown in the Bid Form.
NOTE(S) TO USER:

1. The monetary value of each calendar day to complete the Work will typically be the liquidated damages amount set forth in the Agreement for failing to achieve Substantial Completion. Thus note the importance of setting and documenting the liquidated damages for late completion to a realistic value accurately reflecting the daily effect of delays to the project or benefits of earlier completion. In appropriate cases (for example, if there are no liquidated damages stated) an alternative per-day amount can be used, such as “Monetary Value for each Calendar Day.” Regardless of the label, Owner or its representative (drafter) should specify the per-day amount in the Bid Form before distribution to Bidders.

2. The required payment and performance bonds will be based on the total construction cost shown in the Bid Form—the Successful Bidder’s Bid Price including any accepted alternates.

3. This provision must be closely coordinated with the corresponding content of the Bid Form and the Agreement.

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

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

NOTE(S) TO USER:

1. Certain rights of Owner stated in Article 19, such as those regarding waiver of informalities in submitted Bids, or pertaining to qualifications and experience of Subcontractors, Suppliers, individuals and entities, may not be available in public bidding.

2. Note particularly the relationship of Paragraph 19.05 to Notes to User accompanying Article 12.

3. Many factors not included in Article 19 as written may be important to consider in evaluating Bids for any particular project, and it will often be necessary to amend or supplement Article 19. When factors in addition to price will be significant in evaluating Bids, the manner in which evaluations will be made should be fully described in Article 19.

4. In the event major equipment is included in the Work, it may be appropriate to consider differences in operating efficiency and service support facilities. Relevant factors may include, for example, Owner-required inventory of spare parts; building design changes that may be required to accommodate the proposed equipment; experience and performance record of the Supplier or the manufacturer; and maintenance and frequency of inspections required to assure reliable
performance of the equipment. Equipment-related bidding criteria may be stated in a manner similar to the following example:

“The evaluation of Supplier’s or manufacturer’s data on [___] submitted with the Bid, or submitted upon request prior to the Notice of Award, will include consideration of the efficiency and related operating expense during the anticipated useful life of the equipment and the availability of service support facilities. Costs related to efficiency will be calculated as follows:

- Anticipated useful life 15 years.
- Annual service 4,000 hours.
- Average energy costs $0.08/kwh.
- Capitalization at 10% interest.”

5. Note the time within which Notice of Award may be issued is governed by the need to allow the Successful Bidder sufficient time in which to sign the Agreement—see Article 21 below.

6. EJCDC® C-510, Notice of Award, is recommended for use in awarding the Contract.

ARTICLE 20 – BONDS AND INSURANCE

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

NOTE(S) TO USER:

In the event bonds are not required, it would be appropriate to modify Paragraph 20.01. For recommended Performance and Payment Bond Forms, see EJCDC® C-610 and C-615.

ARTICLE 21 – SIGNING OF AGREEMENT

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

NOTE(S) TO USER:

1. Practices vary widely, and it is recognized that the procedures described in Article 21 may often require amending. See Commentary.
INSTRUCTIONS TO BIDDERS

on the 2013 EJCDC Construction Documents, EJCDC® C-001 (section commenting on Article 4 of the General Conditions) for
discussion of EJCDC’s suggested scheduling of events prior to starting
of the Contract Times.

2. It is customary for Owner to fill in the date on the signature page of
the Agreement in order to indicate when it is to become effective (the
Effective Date of the Contract) so that the required bonds may be
properly dated.

ADDITIONAL ARTICLES

Articles 1 through 21 of these Suggested Instructions to Bidders for Construction Contracts,
when used as intended with the other EJCDC construction related documents, address the basic
subject matter required for Instructions to Bidders on most projects. However, it is often
necessary to supplement the Instructions to Bidders with additional articles addressing:

1. prevailing wage rates statements required by Laws or Regulations, funding agencies, or
   appropriate reference thereto;
2. purchasing by Owner and subsequent assignment of procurement contracts to Contractor;
3. Owner’s special tax exemption; or
4. intended use of partnering.

Examples of some supplementary articles are presented in Articles 22 and 23.

ARTICLE 22 – SALES AND USE TAXES

22.01 Owner is exempt from [_____] state sales and use taxes on materials and equipment to be
incorporated in the Work. (Exemption No. [____]). Said taxes shall not be included in
the Bid. Refer to Paragraph SC-7.09 of the Supplementary Conditions for additional
information.

NOTE(S) TO USER:

Public owners are exempt from sales taxes only in some states, and only
under certain circumstances. Advice of Owner’s legal counsel is essential
since statutory exemptions vary extensively. Note Paragraph 7.09 of the
General Conditions and SC-7.09 of the Supplementary Conditions for
conflicts and modify this Article if necessary.

ARTICLE 23 – CONTRACTS TO BE ASSIGNED

NOTE(S) TO USER:

When the Contractor will be required to accept assignment of a
procurement contract, previously entered into by the Owner (as “Buyer”)
with a manufacturer (as “Seller”) for the direct purchase of goods and
special services, insert at this location in these Instructions to Bidders for
the Construction Contract language regarding the assignment. For model
language, refer to EJCDC® P-200, Notes to User at Article 23. For
additional information on assigning a procurement contract, refer to EJCDC® P-001, Commentary on the EJCDC Procurement Documents.
INTRODUCTION

This Bid Form for Construction Contracts (“Bid Form”) has been prepared for use with the Suggested Instructions to Bidders for Construction Contracts (“Instructions”) (EJCDC® C-200, 2013 Edition); the Agreement between Owner and Contractor for Construction Contract (“Agreement”) (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions); and the Standard General Conditions of the Construction Contract (“General Conditions”) (EJCDC® C-700, 2013 Edition). Their provisions are interrelated, and a change in one may necessitate a change in the others. See also the Guide to the Preparation of Supplementary Conditions (EJCDC® C-800, 2013 Edition) and the Commentary on the 2013 EJCDC Construction Documents (EJCDC® C-001, 2013 Edition).

The Bid Form assumes a competitive bidding process and the use of a Project Manual that contains the following documentary information for a construction project:

• Bidding Requirements, which include the Advertisement or invitation to bid, the Instructions to Bidders, the Bid Form that is suggested or prescribed, all of which provide information and guidance for all Bidders, and Bid Form supplements (if any) such as Bid Bond Form and Qualifications Statement; and,

• Contract Documents, which include the Agreement, performance and payment bonds, the General Conditions, the Supplementary Conditions, the Drawings, and the Specifications. (Note also that the Supplementary Conditions and other Contract Documents may refer to other documents that are provided to or made available to Bidders for reference purposes, but which are not Contract Documents.)

Together, the Bidding Requirements and the Contract Documents are referred to as the Bidding Documents. (The terms “Bidding Documents,” “Bidding Requirements,” and “Contract Documents” are defined in Article 1 of the General Conditions.) The Bidding Requirements are not Contract Documents because much of their substance pertains to the relationships prior to the award of the Contract, and has little effect or impact thereafter. Many contracts are awarded without even going through a bidding process, and thus have no Bidding Requirements, illustrating that the bidding items are typically superfluous to the formation of a binding and comprehensive construction contract.

The Bid Form itself ordinarily should not be included as one of the Contract Documents. In most cases the pricing information contained in the Bid Form is transferred into the Agreement. However, there are situations where, to avoid errors incident to rekeying, it may prove wise to attach the Bid Form (or a reproduced copy of it) as an exhibit to the Agreement. The likelihood of such errors increases with many unit-price bid items. The Bid Form should not contain basic contractual provisions since it is only an offer to perform the Work as required by and in accordance with the Contract Documents.

Suggested provisions are accompanied by “Notes to User” and bracketed notes and prompts to assist in preparing the Bid Form prior to distribution to prospective Bidders. The provisions have been coordinated with the other forms produced by EJCDC. Much of the language should be usable on most projects, but modifications and additional provisions often will be necessary. When modifying the suggested language or writing additional provisions, the user must check the other documents thoroughly for conflicts and coordination of terms, and make appropriate revisions in all affected documents.
All parties involved in a construction project benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location; doing so frequently leads to confusion and unanticipated legal consequences. When preparing documents for a construction project, careful attention should be given to the guidance provided in EJCDC® N-122/AIA® A521, Uniform Location of Subject Matter (2012 Edition), available at no charge from the EJCDC website, www.ejcde.org, and from the websites of EJCDC’s sponsoring organizations.

If CSI’s MasterFormat™ is being used for the Project Manual, consult MasterFormat™ for the appropriate document number and number the pages accordingly.

Instructions and restrictions regarding the use of this document are set out in the License Agreement that accompanied the document at the time of purchase. To prepare this document for use on a specific project, (1) remove the cover pages and this Introduction, (2) fill in Project-specific information and make revisions to the document, following the guidance in the Notes to Users and bracketed notes and prompts, and the advice of legal counsel, and (3) delete the Notes to Users and bracketed notes and prompts.
NOTE(S) TO USER:

1. Refer to Article 1 of the General Conditions for definition of the term “Project.” If applicable, also indicate designated portion of Project for which Bid is submitted.

2. Contract identification, including title, number, and date, that appears in the other Bidding Documents is to be included in above identification.
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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

[Insert name and address of Owner]

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.

NOTE(S) TO USER:

The party to which the Bid is submitted should be the specific entity that will enter into the Agreement with the Successful Bidder.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

NOTE(S) TO USER:

1. Bid acceptance periods may vary, particularly if funding agency reviews and approvals are required.

2. Bid acceptance periods should be coordinated with Paragraph 4.01 of the General Conditions. See Commentary on the 2013 EJCDC Construction Documents, EJCDC® C-001 (section commenting on Article 4 of the General Conditions) for discussion.

3. Bid acceptance periods may also be set by statute.

4. When the Contractor is required to accept assignment of a procurement contract, previously entered into by the Owner (as “Buyer”) with a supplier or manufacturer (as “Seller”) for the direct purchase of goods and special services, insert at this location in the Bid Form language regarding the assignment. For model language, refer to EJCDC® P-200, Notes to User at Article 23. See also the “Stipulated Lump Sum” for this assignment, in Article 5 below. For additional information on assigning a procurement contract, refer to EJCDC® P-001, Commentary on the EJCDC Procurement Documents.
ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

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

<table>
<thead>
<tr>
<th>Addendum No.</th>
<th>Addendum, Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE(S) TO USER:**

*It is important that all Bidders receive and acknowledge receipt of all Addenda. To be certain that Bidders receive all Addenda, use of methods providing proof of receipt, such as courier services or return receipt requested mail, is suggested. (If fax or e-mail is used, Bidders should be requested to confirm receipt by the same means.) Ensure any specific requirement of the Owner concerning issuing and receipt of Addenda are reviewed and addressed. Note also the definition of Addenda in Article 1 of General Conditions, indicating that by definition Addenda are documents issued prior to the opening of Bids.*

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

**NOTE(S) TO USER:**

*It is important for Bidder to visit the Site before submitting its Bid and to conduct an alert, heads-up, eyes-open examination of the area and conditions under which the Work is to be performed. See Instructions, Article 4.*

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

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

If there are no reports or drawings of the type referred to in this representation, either modify or delete the paragraph.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder’s safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

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

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

NOTE(S) TO USER:

If any changes to these representations are made in the Bid Form, corresponding changes may need to be made in both the Instructions to Bidders and the Agreement.

ARTICLE 4 – BIDDER’S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

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

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

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

NOTE(S) TO USER:

For public work, relevant requirements of Laws and Regulations in the jurisdiction where Work is to be performed should be coordinated with the language of this paragraph.

ARTICLE 5 – BASIS OF BID

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

NOTE(S) TO USER:

1. Note that language is provided for lump sum (three suggested formats), lump sum allowances (two formats), a stipulated lump sum for an assigned contract, unit price Bids, a price-plus-time bidding option, and cost-plus-fee (two suggested fee formats). The contract pricing may include various combinations of these methods. Inapplicable methods and language should be deleted.

2. Provide sufficient space and arrange format so that Bidders will have uniform understanding of how to submit prices.

[SUGGESTED FORMATS FOR LUMP SUM BID]

<table>
<thead>
<tr>
<th>Lump Sum Bid Price</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>or</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lump Sum Bid Price for Base Bid</th>
<th>$</th>
</tr>
</thead>
</table>
Alternate A [Add] [Deduct] $  
Alternate B [Add] [Deduct] $  

[or]

Lump Sum Bid Price for Section I only $  
Lump Sum Bid Price for Section II only $  
Lump Sum Bid Price for Sections I and II $  

[and (if applicable)]

NOTE(S) TO USER:

Drafter should fill in the amounts below for allowances prior to distribution of Bid Form

Lump Sum for Cash Allowances $  

All specified cash allowances are included in the price(s) set forth above, and have been computed in accordance with Paragraph 13.02 of the General Conditions.

[or] [and]

Lump Sum Contingency Allowance $  

NOTE(S) TO USER:

1. If alternate Bids are requested, it is preferable that they be all “deductive” or all “additive.” Alternates should be clearly specified in Division 01 of the Specifications (General Requirements). The itemization in the Bid Form should be clearly identifiable and carefully follow the Division 01 presentation. The Instructions should contain appropriate guidance for preparing the Bid. Alternates should be accepted in a particular order, which should be explained in the Instructions. The alternates should be listed here in the Bid Form in order of priority.

2. To minimize the risk of error and to ensure objectivity in comparison of Bids, a single lump sum Bid price for a complete project or section is preferable to a total price determined by the sum of a list of individual lump sum items.

3. Allowances are addressed at Paragraph 13.02 of the General Conditions. Cash allowances, if such are to be used, should be clearly specified in Division 01. Language such as the following is typically used: "Allow the lump sum of [$____] for the supply and installation of: [1. Amount and description of Cash Allowance 1] [2. Amount and description of Cash Allowance 2]." Owner or its representative ("drafter") should add the cash allowances and as noted above enter the sum in the Bid Form prior to making the Bid Form available to prospective Bidders. Similarly, the Owner establishes the contingency...
allowance, if any, and drafter should enter it in the location indicated. If the contingency is to apply only to certain categories of the Work, or if there are to be multiple contingency allowances, revise as needed.

4. **The following provisions apply only when a separate contract entered into by the Owner for the Project will be assigned to the Contractor**—in such case, include the provisions as part of this Article 5 of the Bid Form:

4a. Below is a suggested format for incorporating into the Bid Form language in support of the assignment of a procurement contract for the purchase by Owner (as “Buyer”) of goods and special services from an equipment manufacturer (as “Seller”), where the Owner intends to assign the procurement contract to the Contractor.

4b. When the Project includes a procurement contract that will be assigned to the Contractor, EJCDC suggests including in the construction contract Bid Form a separate bid item for each procurement contract, with the associated balance of the procurement contract price that has not yet been paid by the Owner to the Seller at the time of the construction contract’s Effective Date (Effective Date of the Contract). The drafter of the construction contract Bid Form should explicitly indicate the specific amount before the construction contract is advertised for Bids or negotiated, as applicable. Thus, the construction Contract Price will include the unpaid balance of the procurement contract price, allowing the Contractor to invoice the Owner for payments that Contractor will make to the Seller after the assignment is effective, and ensuring that the Contractor’s performance bond and payment bond are each in an amount equal to the total price of construction plus the amount of the procurement contract for which the Contractor will be responsible. When the Contractor will furnish builder’s risk or installation floater insurance for the Work, inclusion in the construction Contract Price of the unpaid procurement contract amount will aid in attaining insurance coverage that is sufficient to cover the procured item.

4c. The amount to be stipulated for this bid item in the construction Bid Form will often be the total procurement contract price minus the amount paid by Owner to Seller for approval of the procurement contract shop drawings.

4d. When the construction will be implemented under multiple prime construction contracts, provisions relating to the assignment of the procurement contract should be included only on the construction Bid Form for the prime construction contract that is to incorporate the stipulated procurement contract bid item.

4e. For additional information on assigning a procurement contract, refer to EJCDC® P-001, Commentary on the EJCDC Procurement Documents. For other recommended language on assignment to be
incorporated into the construction Bidding Requirements and construction Contract Documents, refer to the Notes to User at Article 23 of EJCDC® P-200, Suggested Instructions to Bidders for Procurement Contracts.

5. Drafter to specify amount below; see Note to User Nos. 4a-e, above.

| Lump Sum Price for Contractor’s payment obligation to indicate here equipment being purchased, such as “centrifuge”] supplier or manufacturer, as “Seller”, for goods and special services set forth in assigned Procurement Contract No. | $ |

Bidder to include in other Bid item(s) the other costs (if any) associated with accepting such assignment and administering the assigned contract.

Total of All Lump Sums $ ____________________________

[SUGGESTED FORMAT FOR UNIT PRICE BID]

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
<th>Estimated Quantity</th>
<th>Bid Unit Price</th>
<th>Bid Price</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Total of All Unit Price Bid Items $ ____________________________

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

Total of Lump Sum and Unit Price Bids = Total Bid Price $ ____________________________

NOTE(S) TO USER:

If unit prices are requested, whether it be a unit price Bid or in connection with a lump sum or cost-plus contract, appropriate guidance for completing the Bid Form should appear in the Instructions, and details with respect to what is included in each unit price item should be included in the Specifications. Owner or its representative should provide an estimated quantity in the Bid Form for each item as defined or indicated in
the Specifications. Read specifically Paragraph 13.03 of the General Conditions and Paragraph SC-13.03 of the Supplementary Conditions.

[SUGGESTED FORMAT FOR PRICE-PLUS-TIME BID]

Total Bid Price $__________.
Total number of calendar days to substantially complete the Work: _______ days.
Liquidated Damages Rate (from Agreement): $__________/day.

NOTE(S) TO USER:
[Drafter should fill in the Liquidated Damages Rate, from Agreement, for use by all Bidders.]

Amount for Comparison = Total Bid Price + (Calendar days for completion x Liquidated Damages Rate) = __________.

The purpose of the formula above is only to calculate the lowest price-plus-time bid amount for bid comparison purposes. The price for completion of the Work (the Contract Price) is the Total Bid Price.

Bonds required under Paragraph 6.01 of the General Conditions will be based on the Contract Price.

NOTE(S) TO USER:
1. The monetary value of each calendar day to complete the Work will typically be the liquidated damages amount set forth in the Agreement for failing to achieve Substantial Completion. In appropriate cases (for example, if there are no liquidated damages stated) alternate wording to “Liquidated Damages Rate” can be used, such as “Monetary Value for each Calendar Day.” Regardless of the label, as noted above the per-day amount should be specified in the Bid Form by Owner or its representative (“drafter”) before distribution to Bidders.

2. If bids are on a cost-plus-fee basis (see suggested formats below), subject to a guaranteed maximum price that will be used as the basis of comparison, the “Price-Plus-Time” process can be used, with the following structure:

Guaranteed Maximum Price: $__________.
Total number of calendar days to substantially complete the Work: _______ days.
Liquidated Damages Rate (from Agreement): $__________/day. [Drafter should fill in the Liquidated Damages Rate, from Agreement, for use by all Bidders.]

Amount for Comparison = Guaranteed Maximum Price + (Calendar days for completion x Liquidated Damages Rate) = __________.

The purpose of the formula above is only to calculate the lowest price-plus-time bid amount for bid comparison purposes. The price for completion of the Work (the Contract
Price) is based on the cost of the Work, plus a fee, subject to a guaranteed maximum price, as set forth in the Agreement.

Bonds required under Paragraph 6.01 of the General Conditions will be based on the Contract Price.

[SUGGESTED FORMATS FOR COST-PLUS-FEE BID]

The cost of the Work (other than Unit Price and other excluded Work), determined as provided in Paragraph 13.01 of the General Conditions, together with the following fee, and subject to the Guaranteed Maximum Price:

NOTE(S) TO USER:
Select one of the following methods to determine the Bider’s fee.
Contractor’s fee will be a fixed sum of $__________.

[or]

Contractor’s fee will be determined by applying the following percentages to the various portions of the Cost of the Work as defined in Article 13 of the General Conditions:

<table>
<thead>
<tr>
<th>Percent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Payroll costs</td>
<td></td>
</tr>
<tr>
<td>Material and Equipment Costs</td>
<td></td>
</tr>
<tr>
<td>Amounts paid to Subcontractors</td>
<td></td>
</tr>
<tr>
<td>Amounts paid to special consultants</td>
<td></td>
</tr>
<tr>
<td>Supplemental costs</td>
<td></td>
</tr>
</tbody>
</table>

None of the costs described in Paragraph 13.01.C of the General Conditions will be included in determining Contractor’s fee.

The maximum amount payable to Contractor on account of this percentage fee will not exceed: $__________.

The Guaranteed Maximum Price to Owner of the Cost of the Work including Contractor’s Fee will not exceed $__________.

NOTE(S) TO USER:

1. In cost-plus-fee contracts, provide space for the Bid figures to be included in the Agreement, such as varying percentages on which the Contractor’s fee may be based and amount of Work to be subcontracted. Provide space for the guaranteed maximum price(s) where applicable. See EJCDC® C-525, Agreement between Owner and Contractor for Construction Contract, Cost-Plus, 2013 Edition.

2. The Bid Form must be identical with that of the proposed Agreement, and the format for submission of percentages and maximum amount organized so as to permit the easy transfer of information in the Bid of
3. In most cases cost-plus-fee contracts are negotiated or part of a proposal-based selection process, rather than competitively bid. When competitive bidding is used for cost-plus-fee, the most common criterion for comparison of bids is a Guaranteed Maximum Price. For that reason, EJCDC assumes for purposes of this Bid Form that a Guaranteed Maximum Price will apply to the Cost of the Work plus Contractor's fee, and thus on cost-plus-fee contracts the drafter should include and Bidders should complete the Guaranteed Maximum Price provision. See EJCDC® C-525, Agreement between Owner and Contractor for Construction Contract (Cost-Plus), 2013 Edition, Article 8.

4. See also the Instructions, Articles 14 and 19, including discussion of customized bidding procedures for cost-plus-fee that use the Contractor’s Fee for comparison purposes.

[END OF SUGGESTED BID FORMATS]

ARTICLE 6 – TIME OF COMPLETION

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

[or]

6.01 Bidder agrees that the Work will be substantially complete on or before ____, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before ____.

[or]

6.01 Bidder agrees that the Work will be substantially complete within ____ calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within ____ calendar days after the date when the Contract Times commence to run.

NOTE(S) TO USER:

1. Select one of the above paragraphs to establish the Contract Times for the Work.

2. If the Contract Times are designated by the Owner prior to the receipt of Bids, the first option should be selected in order to avoid a potential conflict with the Agreement.

3. If Bidders are permitted to designate the Contract Times by calendar date, the second option should be selected.
4. If Bidders are permitted to designate the Contract Times by calendar days, the third option should be selected.

5. Bid Form language should follow exactly the language of the Agreement. For some projects it may be desirable to include space for Bidders to indicate variations in completion times, but note that in some jurisdictions it is required that an award be made to the lowest Bidder regardless of time for completion.

6. When the basis of award is a price-plus-time Bid, these time-of-completion provisions must be carefully coordinated with the criteria for Bid comparisons.

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

NOTE(S) TO USER:

Provisions for liquidated damages should appear in the Agreement and may be cross-referenced in other places in the Bidding Requirements and the Contract Documents. It is unwise to repeat liquidated damages provisions in the Bid or to summarize or paraphrase them here or elsewhere.

ARTICLE 7 – ATTACHMENTS TO THIS BID

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

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. List of Project References;

E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

F. Contractor’s License No.: _______ [or] Evidence of Bidder’s ability to obtain a State Contractor’s License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;

G. Required Bidder Qualification Statement with supporting data; and

H. [List other documents and edit above as pertinent]

NOTE(S) TO USER:

1. The above paragraph should be coordinated with the Instructions. Some of the items, such as the List of Proposed Subcontractors and List of Proposed Suppliers, are commonly required to be submitted within a prescribed number of days after the Bid, not with the Bid, and only by the apparent Successful Bidder. See Instructions, Article 12. If no documents are required to be submitted with the Bid, the paragraph may be eliminated.
2. Requirements as to Bid security should be contained in the Instructions (See Instructions, Article 8). For recommended form of Bid Bond see EJCDC® C-430 (Bid Bond, Penal Sum Form) and C-435 (Bid Bond, Damages Form).

3. Requirements for identifying Subcontractors and Suppliers, and for indicating the amount of Work to be subcontracted in the case of cost-plus-fee contracts, are to be set forth in the Instructions and Supplementary Conditions.

4. Requirements as to qualifications of Bidders appear in the Instructions at Article 3. EJCDC recommends the use of EJCDC® C-451, Qualifications Statement.

5. Additional documents may have to be submitted with the Bid because of Laws and Regulations applicable to the Project. List all of these so Bidders are informed as to what is required.

ARTICLE 8 – DEFINED TERMS

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

NOTE(S) TO USER:

Careful attention to proper use of terms defined in the Instructions to Bidders, the General Conditions, and Supplementary Conditions is most important.

ARTICLE 9 – BID SUBMITTAL

BIDDER: [Indicate correct name of bidding entity]

By: [Signature]
[Printed name]

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

Attest: [Signature]
[Printed name]

Title: ________________________________

Submittal Date: __________________________
Address for giving notices:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Telephone Number: _______________________________________________________

Fax Number: _____________________________________________________________

Contact Name and e-mail address: ___________________________________________

________________________________________________________________________

Bidder’s License No.: _____________________________________________________

(where applicable)

NOTE TO USER: Use in those states or other jurisdictions where applicable or required.
### SECTION 00 41 43

#### UNIT PRICE BID SCHEDULE

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
<th>Estimated Quantity</th>
<th>Bid Unit Price</th>
<th>Bid Price</th>
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<td>MOBILIZATION AND DEMOBILIZATION</td>
<td>LS</td>
<td>1</td>
<td>$____________</td>
<td>$__________</td>
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<td>2</td>
<td>EROSION AND SEDIMENTATION CONTROLS</td>
<td>LS</td>
<td>1</td>
<td>$____________</td>
<td>$__________</td>
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<tr>
<td>3</td>
<td>FIELD EXPLORATORY PROGRAM</td>
<td>LS</td>
<td>1</td>
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<td>4</td>
<td>PS31 STEEL FLAT SHEET PILE FOR CELLULAR COFFERDAMS PLUS TIE-IN' (64 FT. LONG)</td>
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<td>OBSTRUCTION REMOVAL BY DREDGING</td>
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<td>GUARD RAIL CONCRETE BASE</td>
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<td>TOE STONE FOR DMMF-DMDF CONNECTOR DIKE</td>
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<td>$__________</td>
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<td>17</td>
<td>ROAD BASE FOR DMMF-DMDF CONNECTOR DIKE</td>
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<td>$__________</td>
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<tr>
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<td>Description</td>
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<td>Unit Price</td>
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<td>18</td>
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<td>$_________</td>
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<td>FURNISH AND INSTALL HP12 X 84 SUPPORT AT DMMF-DMDF CONNECTOR PLATFORM</td>
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<td>21</td>
<td>FURNISH AND INSTALL HP10 X 42 STRUTS</td>
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<td>FURNISH AND INSTALL HP12 X 63 WALES</td>
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<td>COATING OF SUPPORT HP 12X84 (TOP TO 5 FT INTO MUD)</td>
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<tr>
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<td>CONCRETE FILL BETWEEN CELL AND DMMF-DMDF CONNECTOR BOX STRUCTURE</td>
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### RELIEVING PLATFORM AND DOLPHINS

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<th>Total Price</th>
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<td>FURNISH AND INSTALL 32&quot; X 0.688&quot; DRIVEN PIPE PILE (100 FT LONG)</td>
<td>Tons</td>
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<td>FURNISH AND INSTALL 24&quot; X 0.688&quot; DRIVEN PIPE PILE (100 FT LONG)</td>
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<td>FURNISH AND INSTALL 20&quot; X 0.5&quot; DRIVEN PIPE PILE</td>
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<td>31</td>
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<td>$_________</td>
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<td>35</td>
<td>EXPANSION JOINT (DETAIL S11-1)</td>
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<td>CONCRETE, REBAR, AND CASTING OF DOLPHINS</td>
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<td>AHC-20 ALUMINIUM ANODE (CATHODIC PROTECTION)</td>
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<td>44</td>
<td>TEST PILE PROGRAM</td>
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<td>46</td>
<td>SCOUR PROTECTION BOULDER STONE</td>
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<td>47</td>
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<td>52</td>
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<td>53</td>
<td>FURNISH AND INSTALL 16&quot; O.D. DRIVEN PIPE PILE (64 FT LONG)</td>
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<td>5</td>
<td>$________</td>
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<td>54</td>
<td>COATING OF HP AND PIPE PILES (TOP TO 10 FT INTO MUD)</td>
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<td>55</td>
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<td>56</td>
<td>FURNISH AND INSTALL 25 TON BOLLARDS</td>
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<td>WIRE ROPES</td>
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**WATER MANAGEMENT FACILITIES**

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<td>66</td>
<td>FURNISH AND INSTALL HP12 X 84 SUPPORT (WEIRS)</td>
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<td>67</td>
<td>FURNISH AND INSTALL HP10 X 42 STRUTS (WEIRS)</td>
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<td>69</td>
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</tbody>
</table>

Total Unit Price Bid

$
SECTION 00 43 13

BID BOND (DAMAGES FORM)

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

BIDDER (Name and Address):

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

OWNER (Name and Address):

BID

Bid Due Date:
Description (Project Name—Include Location):

BOND

Bond Number:
Date:
Penal sum $ (Words) (Figures)

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

BIDDER

Bidder’s Name and Corporate Seal

By:
Signature
Print Name
Title
Attest:
Signature
Title

SURETY

Surety’s Name and Corporate Seal

By:
Signature (Attach Power of Attorney)
Print Name
Title
Attest:
Signature
Title

Note: Addresses are to be used for giving any required notice.
Provide execution by any additional parties, such as joint venturers, if necessary.
1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder 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 penal sum set forth on the face of this Bond, and
   1.2 In no event shall Bidder’s and Surety’s obligation hereunder exceed the penal sum set forth on the face of this Bond.
   1.3 Recovery under the terms of this Bond shall be Owner’s sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

   3.1 Owner accepts Bidder’s Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
   3.2 All Bids are rejected by Owner, or
   3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety’s written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term “Bid” as used herein includes a Bid, offer, or proposal as applicable.
SECTION 00 43 33

SUBSTITUTE AND OR EQUAL SCHEDULE

Within five (5) days of the bid opening and before the Notice of Award, where possible, Bidder shall identify one or more proposed "or equals" and/or substitutes meeting the requirements of paragraph 6.05 of the General Conditions for the following items identifying the comparative cost with the specified "named" item. The purpose of this schedule is to identify any proposed substitutes and "or equals" for these specific items. Proposed substitute/"or equal" proposals shall be submitted to Bidder prior to bid date for consideration.

If Engineer and Owner believe consideration of the proposed items will result in the betterment of the project, then the apparent low bidder shall submit sufficient information for evaluation; in accordance with paragraph 6.05 of the General Conditions.

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<tr>
<th>Specification Section</th>
<th>Named Equipment</th>
<th>Proposed Substitute/ &quot;Or Equal&quot;</th>
<th>Bid Price Deduct</th>
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The following subcontractors will be utilized for portions of the project work. Changes shall not be made subsequent to the bid unless the change(s) is approved by the Owner.

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<th>Subcontractor</th>
<th>Classification of Work</th>
<th>Estimated Dollar Amount</th>
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SECTION 00 51 00

NOTICE OF AWARD

Date of Issuance:

Owner: Owner's Contract No.:

Engineer: Engineer's Project No.:

Project: Contract Name:

Bidder: Bidder’s Address:

TO BIDDER:

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

______________________________________________________________________________________.

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

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

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

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

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

1. Deliver to Owner [____] counterparts of the Agreement, fully executed by Bidder.

2. Deliver with the executed Agreement(s) the Contract security [e.g., performance and payment bonds] and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.

3. Other conditions precedent (if any):

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

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

Owner:

Authorized Signature

By:

Title:

Copy: Engineer

NOTICE OF AWARD 00 51 00 - 1
INTRODUCTION

This Agreement between Owner and Contractor for Construction Contract (Cost-Plus) ("Agreement") has been prepared for use with the Suggested Instructions to Bidders for Construction Contracts ("Instructions to Bidders") (EJCDC® C-200, 2013 Edition); the Suggested Bid Form for Construction Contracts ("Bid Form") (EJCDC® C 410, 2013 Edition); and the Standard General Conditions of the Construction Contract ("General Conditions") (EJCDC® C-700, 2013 Edition). Their provisions are interrelated, and a change in one may necessitate a change in the others. See also the Guide to the Preparation of Supplementary Conditions (EJCDC® C-800, 2013 Edition), and the Commentary on the 2013 EJCDC Construction Documents (EJCDC® C-001, 2013 Edition).

In construction contracting, as a general matter the “agreement” is the legal instrument executed (signed) by the project owner and the construction contractor, binding the parties to the terms of the contract. See CSI Project Delivery Practice Guide (2011), Section 11.1.2, p. 210, and CSI Construction Specification Practice Guide (2011), Section 5.1, p. 75. This EJCDC Agreement form serves that basic function, by identifying the parties and Contract Documents, and establishing the Contract Price and Contract Times. This Agreement form is specifically intended for cost-plus-fee contracts (commonly referred to by the shortened term “cost-plus”)—that is, contracts in which Owner agrees to compensate Contractor based on the cost of performing the Work, and also pay the Contractor a fee. A cost-plus contract may also include some Work items that are compensated on a unit price basis. For construction contracts in which the Contract Price is primarily based on a stipulated price (lump sum), or a mix of stipulated prices and unit prices, users should select EJCDC® C-520, Agreement between Owner and Contractor for Construction Contract (Stipulated Price).

This Agreement form is drafted to be flexible enough to be used on construction projects that are competitively bid, and for public and private contracts that are negotiated or awarded through a proposal process or otherwise (most uses of cost-plus contracts fall into this latter category). On competitively bid projects, the following documentary information would typically be made available to bidders:

- **Bidding Requirements**, which include the Advertisement or invitation to bid, the Instructions, and the Bid Form that is suggested or prescribed, all of which provide information and guidance for all Bidders, and Bid Form supplements (if any) such as Bid Bond and Qualifications Statement.

- **Contract Documents**, which include the Agreement, performance and payment bonds, the General Conditions, the Supplementary Conditions, the Drawings, and the Specifications.

- **Documents** referred to in the Supplementary Conditions or elsewhere as being of interest to bidders for reference purposes, but which are not Contract Documents.

Together, the Bidding Requirements and the Contract Documents are referred to as the Bidding Documents. (The terms “Bidding Documents,” “Bidding Requirements,” and "Contract Documents" are defined in Article 1 of the General Conditions.) The Bidding Requirements are not Contract Documents because much of their substance pertains to the relationships prior to the
award of the Contract and has little effect or impact thereafter. Many contracts are awarded without even going through a bidding process, and thus have no Bidding Requirements, illustrating that the bidding items are typically superfluous to the formation of a binding and comprehensive construction contract. In some cases, however, a bid or proposal will contain numerous line items and their prices; in such case the actual bid or proposal document may be attached as an exhibit to the Agreement to avoid extensive rekeying.

Suggested provisions are accompanied by “Notes to User” and bracketed notes and prompts to assist in preparing the Agreement. The provisions have been coordinated with the other forms produced by EJCDC. Much of the language should be usable on most projects, but modifications and additional provisions often will be necessary. When modifying the suggested language or writing additional provisions, the user must check the other documents thoroughly for conflicts and coordination of terms, and make appropriate revisions in all affected documents.

All parties involved in construction projects benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location; doing so frequently leads to confusion and unanticipated legal consequences. When preparing documents for a construction project, careful attention should be given to the guidance provided in EJCDC® N-122/AIA® A521, Uniform Location of Subject Matter (2012 Edition), available at no charge from the EJCDC website, www.ejcdc.org, and from the websites of EJCDC’s sponsoring organizations.

CSI MasterFormat™ (50-Division format) designates Document “00 52 XX” for various forms of the owner-contractor agreement. If this format is used, the first page of the Agreement would be numbered 00 52 13-1 (or other appropriate third pair of numbers, in accordance with MasterFormat™).

Instructions and restrictions regarding the use of this document are set out in the License Agreement that accompanied the document at the time of purchase. To prepare the Agreement for inclusion in a Project Manual or for use in a specific contractual engagement, (1) remove the cover pages and this Introduction, (2) fill in Project-specific information and make revisions to the Agreement, following the guidance in the Notes to Users and bracketed notes and prompts, and the advice of legal counsel, and (3) delete the Notes to Users and bracketed notes and prompts.
SECTION 00 52 13

AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (COST-PLUS)

THIS AGREEMENT is by and between ___________________________ ("Owner") and ___________________________ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: ___________________________.

ARTICLE 2 – THE PROJECT

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

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by ___________________________.

3.02 The Owner has retained ___________________________ ("Engineer") to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

NOTE(S) TO USER:

If an entity or individual other than the design engineer will serve as Owner’s representative during construction, then make appropriate revisions and additions to this Agreement, the General Conditions, the Supplementary Conditions, and other Contract Documents regarding the construction-phase roles and duties of the design engineer and such other entity or individual.

ARTICLE 4 – CONTRACT TIMES

4.01 Time of the Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
NOTE(S) TO USER:

1. Select one of the two alternative Paragraphs 4.02 below, and delete the other. The first uses dates for the time of completion; the second uses number of days.

2. If Owner elects to predetermine fixed dates or fixed number of days for completion of the Work, such dates or number of days should be inserted in the appropriate Paragraph 4.02 below prior to the bidding or other contractor selection process. If the time for completion will be determined through negotiation or a bidding process that allows bidders to specify the time for completion, then leave the blanks below open until the Contract is finalized (e.g., until after the Successful Bidder has been determined and its proposed completion time accepted).

**4.02 Contract Times: Dates**

A. The Work will be substantially completed on or before _____, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before _____.

**or**

**4.02 Contract Times: Days**

A. The Work will be substantially completed within _____ days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within _____ days after the date when the Contract Times commence to run.

NOTE(S) TO USER:

If the Contract includes Milestones, add the following Paragraph 4.02.B to the selected version of Paragraph 4.02.A:

B. Parts of the Work shall be substantially completed on or before the following Milestone(s):

1. Milestone 1 [event & date/days]
2. Milestone 2 [event & date/days]
3. Milestone 3 [event & date/days]

**4.03 Liquidated Damages**

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not
completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. **Substantial Completion**: Contractor shall pay Owner $_______ for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

2. **Completion of Remaining Work**: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $_______ for each day that expires after such until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

4. **Milestones**: Contractor shall pay Owner $_______ for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 1, until Milestone 1 is achieved.

**NOTE(S) TO USER:**

1. **At Substantial Completion, the Owner is able to use the Work for its intended purpose, by definition. See General Conditions, Paragraph 1.01.A. Achieving Substantial Completion is typically a critical deadline, and the associated damages for missing this deadline are typically significant. The subsequent failure to complete the punch list tasks and bring the Work to a complete close by the final completion date may also result in some degree of damages to Owner—though typically these damages are significantly less than the daily damages for not achieving Substantial Completion on time. Some users may choose to establish liquidated damages only for the failure to achieve Substantial Completion. If that is the case, delete paragraphs 4.03.A.2 and .3 above.**

2. **If failure to achieve a Milestone on time is of such consequence that the assessment of liquidated damages is warranted for failure to reach the Milestone on time, then retain and complete Paragraph 4.03.A.4; if not, delete it. Add additional similar paragraphs for any additional Milestones subject to a liquidated damages assessment. Liquidated damages for Milestones might, in some cases, be additive to liquidated damages for failing to timely attain Substantial Completion; if so this should be specifically noted.**

B. **Bonus**: Contractor and Owner further recognize the Owner will realize financial and other benefits if the Work is completed prior to the time specified for Substantial Completion. Accordingly, Owner and Contractor agree that as a bonus for early completion, Owner shall pay Contractor $_______ for each day prior to the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to
the Contract) that the Work is substantially complete. The maximum value of the bonus shall be limited to $__________.

NOTE(S) TO USER:

If early completion would be a benefit to Owner, then consider retaining and completing the bonus clause above as 4.03.B. The daily bonus for early completion need not be exactly the same as the daily post-Substantial Completion liquidated damages amounts, but presumably the two amounts will be reasonably compatible. If no bonus will be offered, then delete 4.03.B.

4.04 Special Damages

A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor’s failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.

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

NOTE(S) TO USER:

EJCDC recommends developing daily liquidated damages amounts that comprehensively account for the full range of Owner’s damages, including costs of additional engineering, construction observation, inspection, and administrative services, and potential fines or penalties. Some Owners, however, prefer to charge a Contractor that has not completed the Work on schedule for Owner’s additional hard-dollar costs for fines and penalties, and for extended engineering, construction observation, inspection, and administrative services; this charge is levied on top of the daily liquidated damages amount. It is very important if this practice is followed to be certain that the liquidated damages amount does not already include or rely in part on the potential for incurring these very same hard-dollar costs; if it does, then the separate charge for actual costs may be regarded as “double dipping” and the entire framework of liquidated damages for late completion may be called into question.

Those users that choose the “liquidated damages plus actual hard-dollar costs” approach may use the preceding “Special Damages” provisions, together with the liquidated damages provisions in Paragraph 4.03.
Liquidated Damages, above. Those users that follow the more conventional path of relying on comprehensive daily liquidated damages to cover the full scope of damage done by late Contractor completion should delete the “Special Damages” provisions—Paragraph 4.04—and rely solely on Paragraph 4.03, Liquidated Damages, above.

Finally, note that Paragraph 4.04.B above does not refer to fines or penalties. In the typical case, fines and penalties are linked to Substantial Completion, and are not applicable to delays in final completion of the Work.

ARTICLE 5 – CONTRACT PRICE

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

A. For all Work other than Unit Price Work, the Cost of the Work plus a Contractor’s fee for overhead and profit, both of which shall be determined as provided in Articles 6 and 7 below, subject to additions and deletions as provided in the Contract Documents and subject to the limitations set forth in Article 8 below.

B. 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):

<table>
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<tr>
<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
<th>Estimated Quantity</th>
<th>Unit Price</th>
<th>Extended Price</th>
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<tr>
<td>Total of all Extended Prices for Unit Price Work (subject to final adjustment based on actual quantities)</td>
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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.

C. For all Work, at the prices stated in Contractor’s Bid, attached hereto as an exhibit.

NOTE(S) TO USER:

Depending upon the particular project's pricing structure, use 5.01.A alone; 5.01.A and 5.01.B together; or 5.01.C alone, deleting those not used and renumbering accordingly. If 5.01.C is used, Contractor’s Bid is
ARTICLE 6 – COST OF THE WORK

6.01 Cost of the Work shall be determined as provided in Paragraph 13.01 of the General Conditions.

ARTICLE 7 – CONTRACTOR’S FEE

7.01 Contractor’s fee shall be determined as follows:

A. A fee based on the following percentages of the various portions of the Cost of the Work:
   1. Payroll costs (see Paragraph 13.01.B.1 of the General Conditions) __________.
   2. Material and equipment costs (see Paragraph 13.01.B.2 of the General Conditions) __________.
   3. Amounts paid to Subcontractors (see Paragraph 13.01.B.3 of the General Conditions) __________.
   4. Amounts paid to special consultants (see Paragraph 13.01.B.4 of the General Conditions) __________.
   5. Supplemental costs (see Paragraph 13.01.B.5 of the General Conditions) __________.
   6. No fee will be payable on the basis of costs itemized in Paragraph 13.01.C of the General Conditions.

B. Contractor guarantees that the maximum amount payable by Owner in accordance with Paragraph 7.01.A as a percentage fee (Guaranteed Maximum Fee) will not exceed $__________, subject to increases or decreases for changes in the Work as provided in Paragraph 9.01.B.

[or]

C. A fixed fee of $__________, which shall be subject to increases or decreases for changes in the Work as provided in Paragraph 9.01.A below.

NOTE(S) TO USER:

Depending on the fee agreement selected or negotiated, select 7.01.A (percentage fee), or 7.01.A and 7.01.B (percentage fee up to Guaranteed Maximum Fee), or the alternate 7.01.A (fixed fee).

ARTICLE 8 – GUARANTEED MAXIMUM PRICE

8.01 Contractor guarantees that the maximum amount payable by Owner for the sum of the Cost of the Work plus Contractor’s fee under Article 7 (Guaranteed Maximum Price) will not exceed $__________, subject to increases or decreases for changes in the Work. The Guaranteed Maximum Price will not apply to Unit Price Work.
NOTE(S) TO USER:

If a Guaranteed Maximum Price is not included in the Agreement, insert the words “Not Applicable” following the $ sign, in lieu of deleting Article 8 in its entirety. Such deletion of Article 8 would result in incorrect cross-references to other Articles.

ARTICLE 9 – CHANGES IN THE CONTRACT PRICE

9.01 The amount of any increases or decreases in Contractor’s fee, in any Guaranteed Maximum Price, or in any Guaranteed Maximum Fee which results from a Change Order shall be set forth in the applicable Change Order subject to the following:

A. If Contractor’s fee is a fixed fee, any increase or decrease in the Contractor’s fee resulting from net additions or decreases in the Cost of the Work shall be determined in accordance with Paragraph 11.04.C of the General Conditions, subject to any Guaranteed Maximum Price.

[or]

A. If Contractor’s fee is a percentage fee, Contractor’s fee will adjust automatically as the Cost of the Work changes, subject to any Guaranteed Maximum Fee and Guaranteed Maximum Price.

NOTE(S) TO USER:

Select one of the two provisions above for Paragraph 9.01.A.

B. Wherever there is a Guaranteed Maximum Price or Guaranteed Maximum Fee:

1. In the case of net additions in the Work, the amounts of any increase in either Guaranteed Maximum (Price or Fee) shall be proportional to the increase in Contract Price for such additions to the Work, exclusive of any mark-ups for profit, overhead, or fees of Contractor, Subcontractors, or Suppliers.

2. In the case of net deletions in the Work, the amount of any decrease in either Guaranteed Maximum (Price or Fee) shall be proportional to the decrease in Contract Price for such deletions to the Work.

ARTICLE 10 – PAYMENT PROCEDURES

10.01 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 indicate the amount of Contractor’s fee then payable. Applications for Payment will be processed by Engineer as provided in the General Conditions.

10.02 Progress Payments; Retainage

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor’s Applications for Payment as recommended by Engineer on or about the____ day of each month during construction as provided in Paragraphs 10.02.A.1
and 10.02.A.2 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. For Cost of the Work: Progress payments on account of the Cost of the Work will be made:
   a. 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:
      1) _____ percent Cost of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
      2) _____ percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
   b. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to _____ percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less _____ percent of Engineer’s estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

2. For Contractor’s fee: Progress payments on account of the Contractor’s fee will be made as follows:
   a. If Contractor’s fee is a fixed fee, payments prior to Substantial Completion will be in an amount equal to _____ percent of such fee earned to the date of the approved Application for Payment (less in each case payments previously made on account of such fee) based on the progress of the Work measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work on the number of units completed), and upon Substantial Completion in an amount sufficient to increase total payments to Contractor on account of his fee to _____ percent of Contractor’s fee. In the event there is no Schedule of Values the progress of the Work will be measured as provided elsewhere in the Contract.

NOTE(S) TO USER:

Typical values used in Paragraph 10.02.A.1.b are 100 percent and 200 percent respectively.
b. If Contractor’s fee is a percentage fee, payments prior to Substantial Completion will be in an amount equal to _____ percent of such fee (less in each case payments previously made on account of such fee) based on the Cost of the Work completed, and upon Substantial Completion in an amount sufficient to increase total payments to Contractor on account of that fee to _____ percent of Contractor’s fee.

10.03 Final Payment

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

ARTICLE 11 – INTEREST

A. All amounts not paid when due shall bear interest at the rate of _____ percent per annum.

ARTICLE 12 – CONTRACTOR’S REPRESENTATIONS

12.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

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

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

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

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

NOTE(S) TO USER:

Modify the above paragraph if there are no such reports or drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and
documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor’s safety precautions and programs.

NOTE(S) TO USER:

If the Contract Documents do not identify any Site-related reports and drawings, modify this paragraph accordingly.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

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

J. Contractor’s entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 13 – ACCOUNTING RECORDS

13.01 Contractor shall keep such full and detailed accounts of materials incorporated and labor and equipment utilized for the Work consistent with the requirements of Paragraph 13.01.E of the General Conditions and as may be necessary for proper financial management under this Agreement. Subject to prior written notice, Owner shall be afforded reasonable access during normal business hours to all Contractor’s 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.

ARTICLE 14 – CONTRACT DOCUMENTS

14.01 Contents

A. The Contract Documents consist of the following:
   
   1. This Agreement (pages 1 to ___, inclusive).
   2. Performance bond (pages ___ to ___, inclusive).
   3. Payment bond (pages ___ to ___, inclusive).
4. Other bonds.
   a. (pages ___ to ___, inclusive).

**NOTE(S) TO USER:**

_Such other bonds might include maintenance or warranty bonds intended to manage risk after completion of the Work._

5. General Conditions (pages ___ to ___, inclusive).
6. Supplementary Conditions (pages ___ to ___, inclusive).
7. Specifications as listed in the table of contents of the Project Manual.
8. Drawings (not attached but incorporated by reference) consisting of ___ sheets with each sheet bearing the following general title: ___ [or] the Drawings listed on the attached sheet index.
9. Addenda (numbers ___ to ___, inclusive).
10. Exhibits to this Agreement (enumerated as follows):
   a. Contractor’s Bid (pages ___ to ___, inclusive).

**NOTE(S) TO USER:**

1. _As noted in the introduction to this Agreement, in the typical case bidding-related documents such as the Instructions to Bidders and Bid are not included as Contract Documents. Include Contractor’s Bid as a Contract Document here only as a matter of necessity, for example if the Bid contains numerous line items and their prices, and rekeying such information would be burdensome and susceptible to error._

2. _List other required attachments (if any), such as documentation submitted by Contractor prior to Notice of Award and documents required by funding or lending agencies._

3. _If a Geotechnical Baseline Report or a Geotechnical Data Report is used, include them as lettered items under Paragraph 14.01.A.10. For a further discussion of GBRs and GDRs, see EJCDC C-001, Commentary on the 2013 EJCDC Construction Documents._

11. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
   a. Notice to Proceed.
   b. Work Change Directives.
   c. Change Orders.
   d. Field Orders.
NOTE(S) TO USER:

If any of the items listed are not to be included as Contract Documents, remove such item from the list and renumber the remaining items.

B. The documents listed in Paragraph 14.01.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 14.

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

ARTICLE 15 – MISCELLANEOUS

15.01 Terms

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

15.02 Assignment of Contract

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

15.03 Successors and Assigns

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

15.04 Severability

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

15.05 Contractor’s Certifications

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 15.05:
1. “corrupt practice” means the offering, giving, receiving or soliciting of anything of value 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 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.

15.06 Other Provisions

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

NOTE(S) TO USER:

1. Delete Paragraph 15.06.A if inapplicable.

2. Insert other provisions here if applicable.

3. When the Contractor is required in this Contract to accept assignment of a procurement contract, previously entered into by the Owner (as “Buyer”) with a manufacturer or distributor (as “Seller”) for the direct purchase of goods (most commonly equipment) and related special services, insert at this location in the Agreement language regarding the assignment. For model language, refer to EJCDC® P-200 (Suggested Instructions to Bidders for Procurement Contracts), Notes to User at Article 23. For additional information on assigning a procurement contract, refer to EJCDC® P-001, Commentary on the EJCDC Procurement Documents.

4. Performance Requirements and Damages. In some cases the construction contract will contain performance requirements that must be met by the equipment, systems, or facilities constructed or furnished by Contractor. The Owner’s remedies for Contractor’s failure to meet the performance requirements may include rejection of the items in question; correction remedies; exercise of warranty rights; and acceptance of the underperforming items coupled with a reduction in Contract Price or imposition of damages to compensate Owner for not
receiving its full contractual entitlement. Typical damages might be for reduced production or treatment, or for the costs of increased electricity or chemical consumption over the life of the equipment. On some projects the Owner and Contractor may contractually stipulate specific damages that will be owed in the event of specific levels of underperformance. It is important when drafting such provisions to clarify whether the availability of underperformance damages is meant to close off other potential remedies. Most commonly performance provisions (and any stipulated damages amounts) will be located in the Specifications. It may be useful to provide a cross-reference to such provisions here in the Agreement, or in some cases to state the stipulated damages amounts here because of their importance to the pricing of the Contract, which is one of the primary subjects of the Agreement.
IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

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

NOTE(S) TO USER:

1. See Article 21 of the Instructions to Bidders and correlate procedures for format and signing of the documents.

2. The Effective Date of the Contract stated above and the dates of any construction performance bond (EJCDC® C-610 or other) and construction payment Bond (EJCDC C-615® or other) should be the same, if possible. In no case should the date of any bonds be earlier than the Effective Date of the Contract.

OWNER: ____________________________

By: ________________________________

Title: _______________________________

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

Attest: ______________________________

Title: _______________________________

Address for giving notices: ____________________________

______________________________

______________________________

______________________________

License No.: _________________________

(where applicable)

NOTE TO USER: Use in those states or other jurisdictions where applicable or required.
SECTION 00 55 00
NOTICE TO PROCEED

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

Effective Date of Contract:

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [____, 20__]. [see Paragraph 4.01 of the General Conditions]

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, [the date of Substantial Completion is __ and the date of readiness for final payment is ______] or [the number of days to achieve Substantial Completion is ______, and the number of days to achieve readiness for final payment is ______].

Before starting any Work at the Site, Contractor must comply with the following:
[Note any access limitations, security procedures, or other restrictions]

Owner:

Authorized Signature

By:
Title:
Date Issued:

Copy: Engineer
SECTION 00 61 13

PERFORMANCE BOND

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

OWNER (name and address):

CONSTRUCTION CONTRACT
  Effective Date of the Agreement:
  Amount:
  Description (name and location):

BOND
  Bond Number:
  Date (not earlier than the Effective Date of the Agreement of the Construction Contract):
  Amount:
  Modifications to this Bond Form:  None  See Paragraph 16

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

CONTRACTOR AS PRINCIPAL

Contractor’s Name and Corporate Seal  (seal)
By: ____________________________
    Signature

Print Name
Title
Attest: ____________________________
    Signature

SURETY

Surety’s Name and Corporate Seal  (seal)
By: ____________________________
    Signature (attach power of attorney)

Print Name
Title
Attest: ____________________________
    Signature

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.
1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

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

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

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

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

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

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

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

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

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

   5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

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

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

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

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

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

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

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

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

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

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

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

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

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

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

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

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

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

16. Modifications to this Bond are as follows:
SECTION 00 61 14

PAYMENT BOND

CONTRACTOR (name and address):

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

OWNER (name and address):

CONSTRUCTION CONTRACT
   Effective Date of the Agreement:
   Amount:
   Description (name and location):

BOND
   Bond Number:
   Date (not earlier than the Effective Date of the Agreement of the Construction Contract):
   Amount:
   Modifications to this Bond Form: None

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

CONTRACTOR AS PRINCIPAL

By: ____________________________ (seal)
   Signature
   Print Name
   Title
   Attest: ____________________________ (seal)
   Signature
   Title

SURETY

By: ____________________________ (seal)
   Signature (attach power of attorney)
   Print Name
   Title
   Attest: ____________________________
   Signature
   Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.
1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety’s obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner’s property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety promptly and at the Surety’s expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety’s obligations to a Claimant under this Bond shall arise after the following:

   5.1 Claimants who do not have a direct contract with the Contractor,

      5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

      5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).

   5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant’s obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety’s expense take the following actions:

7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

7.2 Pay or arrange for payment of any undisputed amounts.

7.3 The Surety’s failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney’s fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety’s total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney’s fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner’s priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

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

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of
one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

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

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

16.1 Claim: A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of “labor, materials, or equipment” that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor’s subcontractors, and all other items for which a mechanic’s lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

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

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

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

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

18. Modifications to this Bond are as follows:
# Contractor's Application for Payment No.

<table>
<thead>
<tr>
<th>Application</th>
<th>Application Date:</th>
</tr>
</thead>
</table>

<table>
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<tr>
<th>To (Owner):</th>
<th>From (Contractor):</th>
<th>Via (Engineer):</th>
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<table>
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<th>Project:</th>
<th>Contract:</th>
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<tr>
<th>Owner's Contract No.:</th>
<th>Contractor's Project No.:</th>
<th>Engineer's Project No.:</th>
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</thead>
</table>

## Application For Payment

### Change Order Summary

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<th>Approved Change Orders</th>
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<tbody>
<tr>
<td>Number</td>
<td>Additions</td>
<td>Deductions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 1. ORIGINAL CONTRACT PRICE | $ |
| 2. Net change by Change Orders | $ |
| 3. Current Contract Price (Line 1 ± 2) | $ |

**5. RETAINAGE:**

- a. X Work Completed $ |
- b. X Stored Material $ |
- c. Total Retainage (Line 5.a + Line 5.b) $ |

| 4. TOTAL COMPLETED AND STORED TO DATE | $ |
| (Column F total on Progress Estimates) |

| 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, PLUS RETAINAGE**

(Column G total on Progress Estimates + Line 5.c above) $ |

### Contractor's Certification

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

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

### Contractor Signature

By: Date:

---

Payment of: $ (Line 8 or other - attach explanation of the other amount)

is recommended by: (Engineer) (Date)

Payment of: $ (Line 8 or other - attach explanation of the other amount)

is approved by: (Owner) (Date)

Approved by: Funding or Financing Entity (if applicable) (Date)

---

CONTRACTORS APPLICATION

pw:\WEC Business Services\0019W012.00\10000 Reports\Final Design\App K Technical Specs\div 00/00 62 76 Contractors Application.xltx
## Progress Estimate - Lump Sum Work

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<th>Specification Section No.</th>
<th>Description</th>
<th>A Scheduled Value ($)</th>
<th>B This Period</th>
<th>C Work Completed</th>
<th>D Materials Presently Stored (not in C or D)</th>
<th>E Total Completed and Stored to Date (C + D + E)</th>
<th>F % (F / B)</th>
<th>G Balance to Finish (B - F)</th>
</tr>
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<tbody>
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**Totals**
## Progress Estimate - Unit Price Work

**Contractor's Application**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bid Item No.</td>
<td></td>
<td>Quantity</td>
<td>Unit</td>
<td>Unit Price</td>
<td>Total Value of Item ($)</td>
<td>Estimated Quantity Installed</td>
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<tr>
<td>Totals</td>
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<td></td>
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</tbody>
</table>

**Application Information**

- For (Contract): 
- Application Number: 
- Application Period: 
- Application Date: 
- Contractor's Information: 
- Application Number: 

**Contract Information**

- Item: 
- Quantity: 
- Unit: 
- Unit Price: 
- Total Value of Item ($): 
- Estimated Quantity Installed: 
- Value of Work Installed to Date: 
- Materials Presently Stored (not in C): 
- Total Completed and Stored to Date (D + E): 
- % (F / B): 
- Balance to Finish (B - F):
# Stored Material Summary

**Contractor's Application**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bid Item No.</td>
<td>Supplier Invoice No.</td>
<td>Submittal No. (with Specification Section No.)</td>
<td>Storage Location</td>
<td>Description of Materials or Equipment Stored</td>
<td>Stored Previously</td>
<td>Subtotal Amount Completed and Stored to Date (D + E)</td>
</tr>
<tr>
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</table>

**Totals**

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**Application Period:**

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<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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</tbody>
</table>

**Application Number:**

**Application Date:**

---

**Date Placed into Storage (Month/Year):**

**Amount ($):**

**Date (Month/Year):**

**Amount ($):**

---

**Amount Stored this Month ($) (D + E):**

**Amount Stored Completed and Stored to Date (D + E):**

**Materials Remaining in Storage ($) (D + E - F):**

---

**Date Placed into Storage (Month/Year):**

**Amount ($):**
SECTION 00 63 60

WORK CHANGE DIRECTIVE

No.

Date of Issuance: Effective Date:
Owner: Owner’s Contract No.:
Contractor: Contractor’s Project No.:
Engineer: Engineer's Project No.:
Project: Contract Name:

Contractor is directed to proceed promptly with the following change(s):
Description:

Attachments: [List documents supporting change]

Purpose for Work Change Directive:
Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: [check one or both of the following]

☐ Non-agreement on pricing of proposed change.
☐ Necessity to proceed for schedule or other Project reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price $ [increase] [decrease].
Contract Time days [increase] [decrease].

Basis of estimated change in Contract Price:
☐ Lump Sum
☐ Unit Price
☐ Cost of the Work
☐ Other

RECOMMENDED: AUTHORIZED BY: RECEIVED:

By: By: By:
Engineer (Authorized Signature) Owner (Authorized Signature) Contractor (Authorized Signature)

Title: Title: Title:
Date: Date: Date:

Approved by Funding Agency (if applicable)

By: Date:
Title:

WORK CHANGE DIRECTIVE

00 63 60 - 1
## SECTION 00 63 61

### FIELD ORDER

**No.**

<table>
<thead>
<tr>
<th>Date of Issuance:</th>
<th>Effective Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner:</td>
<td>Owner’s Contract No.:</td>
</tr>
<tr>
<td>Contractor:</td>
<td>Contractor’s Project No.:</td>
</tr>
<tr>
<td>Engineer:</td>
<td>Engineer’s Project No.:</td>
</tr>
<tr>
<td>Project:</td>
<td>Contract Name:</td>
</tr>
</tbody>
</table>

Contractor is hereby directed to promptly execute this Field Order, issued in accordance with General Conditions Paragraph 11.01, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

**Reference:**

<table>
<thead>
<tr>
<th>Specification(s)</th>
<th>Drawing(s) / Detail(s)</th>
</tr>
</thead>
</table>

**Description:**

Attachments:

**ISSUED:**

By: ________________________________  By: ________________________________

Engineer (Authorized Signature)  Contractor (Authorized Signature)

<table>
<thead>
<tr>
<th>Title:</th>
<th>Date:</th>
</tr>
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<tbody>
<tr>
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</table>

Copy to: Owner

**FIELD ORDER**

00 63 61 - 1
SECTION 00 63 62
CHANGE ORDER

Date of Issuance: ____________________________
Owner: ____________________________
Contractor: ____________________________
Engineer: ____________________________
Project: ____________________________

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

Attachments: [List documents supporting change]

<table>
<thead>
<tr>
<th>CHANGE IN CONTRACT PRICE</th>
<th>CHANGE IN CONTRACT TIMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Contract Price: $ ____________________________</td>
<td>Original Contract Times:</td>
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<tr>
<td>[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: $ ____________________________</td>
<td>[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___:</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract Price prior to this Change Order: $ ____________________________</td>
<td>Contract Times prior to this Change Order:</td>
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<td></td>
<td></td>
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<tr>
<td>[Increase] [Decrease] of this Change Order: $ ____________________________</td>
<td>[Increase] [Decrease] of this Change Order:</td>
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<tr>
<td></td>
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</tr>
<tr>
<td>Contract Price incorporating this Change Order: $ ____________________________</td>
<td>Contract Times with all approved Change Orders:</td>
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</table>

RECOMMENDED: ____________________________
By: ____________________________
Title: ____________________________
Date: ____________________________

ACCEPTED: ____________________________
By: ____________________________
Owner (Authorized Signature)
Title: ____________________________
Date: ____________________________

ACCEPTED: ____________________________
By: ____________________________
Contractor (Authorized Signature)
Title: ____________________________
Date: ____________________________

Approved by Funding Agency (if applicable)
By: ____________________________
Title: ____________________________
Date: ____________________________

Milwaukee Estuary AOC DMMF
WEC Energy Group – Business Services

CHANGE ORDER
00 63 62 - 1
SECTION 00 65 16
CERTIFICATE OF SUBSTANTIAL COMPLETION

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

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

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

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

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

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

EXECUTED BY ENGINEER: 
By: (Authorized signature) 
Title: 
Date: 

RECEIVED:
By: Owner (Authorized Signature) 
Title: 
Date: 

By: Contractor (Authorized Signature) 
Title: 
Date: 

CERTIFICATE OF SUBSTANTIAL COMPLETION

http://sharepoint/IE/CSBD/Standard Specifications/Division 00 - 2013 Update/00 65 16 Certificate of Substantial Completion.doc
SECTION 00 65 17

NOTICE OF ACCEPTABILITY OF WORK

PROJECT: 

OWNER: 

CONTRACTOR: 

OWNER’S CONSTRUCTION CONTRACT IDENTIFICATION: 

EFFECTIVE DATE OF THE CONSTRUCTION CONTRACT: 

ENGINEER: 

NOTICE DATE: 

To: ___________________________________________ 
Owner 

And To: _________________________________________ 
Contractor 

From: __________________________________________ 
Engineer 

The Engineer hereby gives notice to the above Owner and Contractor that Engineer has recommended final payment of Contractor, and that the Work furnished and performed by Contractor under the above Construction Contract is acceptable, expressly subject to the provisions of the related Contract Documents, the Agreement between Owner and Engineer for Professional Services dated _____, and the following terms and conditions of this Notice:

CONDITIONS OF NOTICE OF ACCEPTABILITY OF WORK

The Notice of Acceptability of Work (“Notice”) is expressly made subject to the following terms and conditions to which all those who receive said Notice and rely thereon agree:

1. This Notice is given 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 is given as 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 Engineer’s Agreement with Owner, 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 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 related 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 Construction Contract Documents, or to otherwise comply with the Construction 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.

By: ____________________________________________

Title: ____________________________________________

Dated: ____________________________________________
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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term’s singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. **Addenda**—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. **Agreement**—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. **Application for Payment**—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. **Bid**—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. **Bidder**—An individual or entity that submits a Bid to Owner.

6. **Bidding Documents**—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. **Bidding Requirements**—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. **Change Order**—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. **Change Proposal**—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. **Claim**—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer’s decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer’s decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. **Constituent of Concern**—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq.
12. Contract—The entire and integrated written contract between the Owner and Contractor concerning the Work.

13. Contract Documents—Those items so designated in the Agreement, and which together comprise the Contract.

14. Contract Price—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. Contract Times—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. Contractor—The individual or entity with which Owner has contracted for performance of the Work.

17. Cost of the Work—See Paragraph 13.01 for definition.

18. Drawings—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. Effective Date of the Contract—The date, indicated in the Agreement, on which the Contract becomes effective.

20. Engineer—The individual or entity named as such in the Agreement.

21. Field Order—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

22. Hazardous Environmental Condition—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

23. Laws and Regulations; Laws or Regulations—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. Liens—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. Milestone—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

26. Notice of Award—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.

27. Notice to Proceed—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. **Owner**—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. **Progress Schedule**—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.

30. **Project**—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

31. **Project Manual**—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

32. **Resident Project Representative**—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.

33. **Samples**—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

34. **Schedule of Submittals**—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.

35. **Schedule of Values**—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.

36. **Shop Drawings**—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. **Site**—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

38. **Specifications**—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

39. **Subcontractor**—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

40. **Substantial Completion**—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
41. **Successful Bidder**—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. **Supplementary Conditions**—The part of the Contract that amends or supplements these General Conditions.

43. **Supplier**—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

44. **Technical Data**—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. **Underground Facilities**—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

46. **Unit Price Work**—Work to be paid for on the basis of unit prices.

47. **Work**—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

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

1.02 **Terminology**

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. **Intent of Certain Terms or Adjectives:**

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall
not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. **Day:**
   1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. **Defective:**
   1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
      a. does not conform to the Contract Documents; or
      b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
      c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. **Furnish, Install, Perform, Provide:**
   1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
   2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
   3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
   4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

**ARTICLE 2 – PRELIMINARY MATTERS**

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

2.02 Copies of Documents

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 Before Starting Construction

A. Preliminary Schedules: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

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

2.04 Preconstruction Conference; Designation of Authorized Representatives

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 Initial Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor’s full responsibility therefor.
2. Contractor’s Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor’s Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 Electronic Transmittals

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient’s use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 Intent

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 Reference Standards

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake
responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies:

1. Contractor’s Verification of Figures and Field Measurements: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

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

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. Resolving Discrepancies:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

   a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

   b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Requirements of the Contract Documents

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

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer’s
written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 Reuse of Documents

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner’s express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 Commencement of Contract Times; Notice to Proceed

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

4.02 Starting the Work

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

4.03 Reference Points

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

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05  **Delays in Contractor’s Progress**

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor’s entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor’s ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor’s performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor’s entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor’s ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor’s sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. abnormal weather conditions;
3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 Availability of Lands

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

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner’s interest therein as necessary for giving notice of or filing a mechanic’s or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor’s operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor’s performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. Removal of Debris During Performance of the Work: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and
other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. **Cleaning**: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

5.03 **Subsurface and Physical Conditions**

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

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
3. Technical Data contained in such reports and drawings.

B. **Reliance by Contractor on Technical Data Authorized**: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 **Differing Subsurface or Physical Conditions**

A. **Notice by Contractor**: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;
then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. **Engineer’s Review**: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner’s obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor’s resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer’s findings, conclusions, and recommendations.

C. **Owner’s Statement to Contractor Regarding Site Condition**: After receipt of Engineer’s written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer’s written findings, conclusions, and recommendations, in whole or in part.

D. **Possible Price and Times Adjustments**:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
   a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
   b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
   c. Contractor’s entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor’s ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
   a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
   b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor’s making such commitment; or
   c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor’s entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner’s issuance of the Owner’s written statement to Contractor regarding the subsurface or physical condition in question.

5.05 Underground Facilities

A. Contractor’s Responsibilities: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
   a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
   b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
   c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
   d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. Notice by Contractor: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. Engineer’s Review: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor’s resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer’s findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. Owner’s Statement to Contractor Regarding Underground Facility: After receipt of Engineer’s written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer’s written findings, conclusions, and recommendations in whole or in part.
E. Possible Price and Times Adjustments:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
   a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
   b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
   c. Contractor’s entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor’s ability to complete the Work within the Contract Times; and
   d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor’s entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner’s issuance of the Owner’s written statement to Contractor regarding the Underground Facility in question.

5.06 Hazardous Environmental Conditions at Site

A. Reports and Drawings: The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

2. Technical Data contained in such reports and drawings.

B. Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner’s written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner’s own forces or others in accordance with Article 8.

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

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor’s obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 Insurance—General Provisions

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

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party’s full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party’s obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner’s termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party’s interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor’s interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor’s liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 Contractor’s Insurance

A. Workers’ Compensation: Contractor shall purchase and maintain workers’ compensation and employer’s liability insurance for:

1. claims under workers’ compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers’ Compensation Act and Jones Act coverage (if applicable).
3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor’s employees (by stop-gap endorsement in monopolist worker’s compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. Commercial General Liability—Claims Covered: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor’s employees.
2. claims for damages insured by reasonably available personal injury liability coverage.
3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. Commercial General Liability—Form and Content: Contractor’s commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:
   a. Such insurance shall be maintained for three years after final payment.
   b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor’s contractual indemnity obligations in Paragraph 7.18.
3. Broad form property damage coverage.
4. Severability of interest.
5. Underground, explosion, and collapse coverage.
6. Personal injury coverage.
7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, “Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured” or its equivalent.

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

E. Umbrella or excess liability: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. Contractor’s pollution liability insurance: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution.
conditions arising from Contractor’s operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. **Additional insureds:** The Contractor’s commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. **Contractor’s professional liability insurance:** If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. **General provisions:** The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.
2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor’s performance of the Work and Contractor’s other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

### 6.04 Owner’s Liability Insurance

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner’s option, may purchase and maintain at Owner’s expense Owner’s own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner’s liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner’s liability policies for any of Contractor’s obligations to the Owner, Engineer, or third parties.
6.05 **Property Insurance**

A. **Builder’s Risk:** Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder’s risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder’s risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as “insureds.”

2. be written on a builder’s risk “all risk” policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; volcanic activity, and other earth movement; or flood, are not commercially available under builder’s risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

6. extend to cover damage or loss to insured property while in transit.

7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder’s risk insurance.

8. allow for the waiver of the insurer’s subrogation rights, as set forth below.

9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.

10. not include a co-insurance clause.
11. include an exception for ensuing losses from physical damage or loss with respect to any 
defective workmanship, design, or materials exclusions.

12. include performance/hot testing and start-up.

13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and 
partial occupancy or use of the Work by Owner, until the Work is complete.

B. Notice of Cancellation or Change: All the policies of insurance (and the certificates or other evidence 
thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a 
provision or endorsement that the coverage afforded will not be canceled or materially changed or 
renewal refused until at least 10 days prior written notice has been given to the purchasing 
policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall 
provide a copy of the notice to each other insured.

C. Deductibles: The purchaser of any required builder’s risk or property insurance shall pay for costs not 
covered because of the application of a policy deductible.

D. Partial Occupancy or Use by Owner: If Owner will occupy or use a portion or portions of the Work 
prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, 
if it is the purchaser of the builder’s risk policy, or through Contractor) will provide notice of such 
occupancy or use to the builder’s risk insurer. The builder’s risk insurance shall not be canceled or 
permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work 
that are occupied or used by Owner may come off the builder’s risk policy, while those portions of the 
Work not yet occupied or used by Owner shall remain covered by the builder’s risk insurance.

E. Additional Insurance: If Contractor elects to obtain other special insurance to be included in or 
supplement the builder’s risk or property insurance policies provided under this Paragraph 6.05, it may 
do so at Contractor’s expense.

F. Insurance of Other Property: If the express insurance provisions of the Contract do not require or 
address the insurance of a property item or interest, such as tools, construction equipment, or other 
personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a 
Subcontractor, then the entity or individual owning such property item will be responsible for deciding 
whether to insure it, and if so in what amount.

6.06 Waiver of Rights

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder’s risk 
policy, shall contain provisions to the effect that in the event of payment of any loss or damage the 
insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its 
consultants, or their officers, directors, members, partners, employees, agents, consultants, or 
subcontractors. Owner and Contractor waive all rights against each other and the respective officers, 
directors, members, partners, employees, agents, consultants, and subcontractors of each and any of 
them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes 
of loss covered by such policies and any other property insurance applicable to the Work; and, in 
addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or 
entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, 
partners, employees, agents, consultants, and subcontractors of each and any of them, under such 
policies for losses and damages so caused. None of the above waivers shall extend to the rights that 
any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as 
trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, 
members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner’s property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder’s risk insurance and any other property insurance applicable to the Work.

6.07 Receipt and Application of Property Insurance Proceeds

A. Any insured loss under the builder’s risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder’s risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES

7.01 Supervision and Superintendence

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.
7.02 Labor; Working Hours

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

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner’s written consent, which will not be unreasonably withheld.

7.03 Services, Materials, and Equipment

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

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

7.04 "Or Equals"

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an “or equal” item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

   a. in the exercise of reasonable judgment Engineer determines that:

      1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

      2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

      3) it has a proven record of performance and availability of responsive service; and
4) it is not objectionable to Owner.

b. Contractor certifies that, if approved and incorporated into the Work:
   1) there will be no increase in cost to the Owner or increase in Contract Times; and
   2) it will conform substantially to the detailed requirements of the item named in the
      Contract Documents.

B. Contractor’s Expense: Contractor shall provide all data in support of any proposed “or equal” item at
   Contractor’s expense.

C. Engineer’s Evaluation and Determination: Engineer will be allowed a reasonable time to evaluate
   each “or-equal” request. Engineer may require Contractor to furnish additional data about the
   proposed “or-equal” item. Engineer will be the sole judge of acceptability. No “or-equal” item will be
   ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines
   that the proposed item is an “or-equal”, which will be evidenced by an approved Shop Drawing or
   other written communication. Engineer will advise Contractor in writing of any negative
   determination.

D. Effect of Engineer’s Determination: Neither approval nor denial of an “or-equal” request shall result in
   any change in Contract Price. The Engineer’s denial of an “or-equal” request shall be final and
   binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. Treatment as a Substitution Request: If Engineer determines that an item of material or equipment
   proposed by Contractor does not qualify as an “or-equal” item, Contractor may request that Engineer
   considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 Substitutes

A. Unless the specification or description of an item of material or equipment required to be furnished
   under the Contract Documents contains or is followed by words reading that no substitution is
   permitted, Contractor may request that Engineer authorize the use of other items of material or
   equipment under the circumstances described below. To the extent possible such requests shall be
   made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine
   if the item of material or equipment proposed is functionally equivalent to that named and an
   acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute
   items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as
   supplemented by the Specifications, and as Engineer may decide is appropriate under the
   circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of
   material or equipment that Contractor seeks to furnish or use. The application:

   a. shall certify that the proposed substitute item will:

      1) perform adequately the functions and achieve the results called for by the general
         design,

      2) be similar in substance to that specified, and

      3) be suited to the same use as that specified.
b. will state:
   1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
   2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
   3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:
   1) all variations of the proposed substitute item from that specified, and
   2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer’s Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer’s determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor’s expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer’s Cost:* Engineer will record Engineer’s costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor’s Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor’s expense.

F. *Effect of Engineer’s Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer’s denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
C. Subsequent to the submittal of Contractor’s Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner’s requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor’s own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
O. Nothing in the Contract Documents:
   1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
   2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 Permits

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

7.09 Taxes

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

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor’s compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor’s responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor’s obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor’s Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 Record Documents

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

7.12 Safety and Protection

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

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and
utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner’s safety programs, if any. The Supplementary Conditions identify any Owner’s safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor’s safety program with which Owner’s and Engineer’s employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor’s duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor’s duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 Safety Representative

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

7.14 Hazard Communication Programs

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

7.15 Emergencies

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

A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
   a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
   b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
   c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
   d. determined and verified all information relative to Contractor’s responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor’s obligations under the Contract Documents with respect to Contractor’s review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

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

1. *Shop Drawings:*
   a. Contractor shall submit the number of copies required in the Specifications.
   b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples:*
   a. Contractor shall submit the number of Samples required in the Specifications.
   b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer’s review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
D. **Engineer’s Review:**

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer’s review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer’s review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer’s review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer’s review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer’s review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer’s review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer’s receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

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

E. **Resubmittal Procedures:**

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer’s time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer’s charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer’s charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 **Contractor’s General Warranty and Guarantee**

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners,
employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor’s warranty and guarantee.

B. Contractor’s warranty and guarantee hereunder excludes defects or damage caused by:
   1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
   2. normal wear and tear under normal usage.

C. Contractor’s obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor’s obligation to perform the Work in accordance with the Contract Documents:
   1. observations by Engineer;
   2. recommendation by Engineer or payment by Owner of any progress or final payment;
   3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
   4. use or occupancy of the Work or any part thereof by Owner;
   5. any review and approval of a Shop Drawing or Sample submittal;
   6. the issuance of a notice of acceptability by Engineer;
   7. any inspection, test, or approval by others; or
   8. any correction of defective Work by Owner.

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

7.18 Indemnification

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits...
payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers’ compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer’s officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 Delegation of Professional Design Services

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor’s responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional’s written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer’s review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer’s review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 Other Work

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner’s employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner’s employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner’s employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor’s Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor’s Work. Contractor’s failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor’s Work except for latent defects and deficiencies in such other work.

8.02 Coordination

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner’s employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 Legal Relationships

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

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays,
disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner’s contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner’s employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor’s failure to take reasonable and customary measures with respect to Owner’s other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

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

ARTICLE 9 – OWNER’S RESPONSIBILITIES

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

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

9.03 Furnish Data
   A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 Pay When Due
   A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 Lands and Easements; Reports, Tests, and Drawings
   A. Owner’s duties with respect to providing lands and easements are set forth in Paragraph 5.01.
   B. Owner’s duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
   C. Article 5 refers to Owner’s identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
9.06 Insurance
   A. Owner’s responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

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

9.08 Inspections, Tests, and Approvals
   A. Owner’s responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

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

9.10 Undisclosed Hazardous Environmental Condition
   A. Owner’s responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

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

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

ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION

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

10.02 Visits to Site
   A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor’s executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer’s efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
B. Engineer’s visits and observations are subject to all the limitations on Engineer’s authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer’s visits or observations of Contractor’s Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

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

10.04 Rejecting Defective Work
A. Engineer has the authority to reject Work in accordance with Article 14.

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

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

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

10.08 Limitations on Engineer’s Authority and Responsibilities
A. Neither Engineer’s authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations
applicable to the performance of the Work. Engineer will not be responsible for Contractor’s failure to perform the Work in accordance with the Contract Documents.

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

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

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 Compliance with Safety Program

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

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

11.01 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. Change Orders:

   a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

   b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. Work Change Directives: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive’s effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

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

11.02 Owner-Authorized Changes in the Work

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

11.03 Unauthorized Changes in the Work

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

11.04 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor’s fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. Contractor’s Fee: When applicable, the Contractor’s fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

   a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor’s fee shall be 15 percent;
b. for costs incurred under Paragraph 13.01.B.3, the Contractor’s fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.04.C.2.a and 11.04.C.2.b is that the Contractor’s fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor’s fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor’s fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 Change of Contract Times

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor’s progress.

11.06 Change Proposals

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. Procedures: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. Engineer’s Action: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor’s supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal...
within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the
other party indicating that as a result of Engineer’s inaction the Change Proposal is deemed
denied, thereby commencing the time for appeal of the denial under Article 12.

3. **Binding Decision**: Engineer’s decision will be final and binding upon Owner and Contractor,
   unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. **Resolution of Certain Change Proposals**: If the Change Proposal does not involve the design (as set
   forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other
   engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to
   resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such
   notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of
   Article 12.

11.07 **Execution of Change Orders**

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

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

11.08 **Notification to Surety**

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

ARTICLE 12 – CLAIMS

12.01 **Claims**

A. **Claims Process**: The following disputes between Owner and Contractor shall be submitted to the
   Claims process set forth in this Article:
   1. Appeals by Owner or Contractor of Engineer’s decisions regarding Change Proposals;
   2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the
      Contract Documents; and
   3. Disputes that Engineer has been unable to address because they do not involve the design (as set
      forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other
      engineering or technical matters.
B. **Submittal of Claim:** The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor’s knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. **Review and Resolution:** The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. **Mediation:**

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
3. Owner and Contractor shall each pay one-half of the mediator’s fees and costs.

E. **Partial Approval:** If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. **Denial of Claim:** If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. **Final and Binding Results:** If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

13.01 **Cost of the Work**

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

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. Costs Included: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers’ compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers’ field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor’s Cost of the Work and fee shall be determined in the same manner as Contractor’s Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:
   a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor’s employees incurred in discharge of duties connected with the Work.
   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
   c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of
said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor’s fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

1. Payroll costs and other compensation of Contractor’s officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor’s principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor’s fee.

2. Expenses of Contractor’s principal and branch offices other than Contractor’s office at the Site.

3. Any part of Contractor’s capital expenses, including interest on Contractor’s capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. **Contractor’s Fee:** When the Work as a whole is performed on the basis of cost-plus, Contractor’s fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor’s fee shall be determined as set forth in Paragraph 11.04.C.
E. **Documentation**: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 **Allowances**

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

B. **Cash Allowances**: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor’s costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. **Contingency Allowance**: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 **Unit Price Work**

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor’s overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer’s preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer’s written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer’s written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and
3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

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

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

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

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

14.03 **Defective Work**

A. **Contractor’s Obligation:** It is Contractor’s obligation to assure that the Work is not defective.

B. **Engineer’s Authority:** Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. **Notice of Defects:** Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. **Correction, or Removal and Replacement:** Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. **Preservation of Warranties:** When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner’s special warranty and guarantee, if any, on said Work.

F. **Costs and Damages:** In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 **Acceptance of Defective Work**

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

14.05 **Uncovering Work**

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

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer’s observation, and then replace the covering, all at Contractor’s expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer’s request, shall uncover, expose, or
otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor’s full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 Owner May Stop the Work

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

14.07 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor’s services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner’s representatives, agents and employees, Owner’s other contractors, and Engineer and Engineer’s consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor’s defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner’s rights and remedies under this Paragraph 14.07.
ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 **Progress Payments**

A. **Basis for Progress Payments:** The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. **Applications for Payments:**

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner’s interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor’s legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. **Review of Applications:**

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer’s reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer’s recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer’s observations of the executed Work as an experienced and qualified design professional, and on Engineer’s review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer’s knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor’s being entitled to such payment appear to have been fulfilled in so far as it is Engineer’s responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer’s review of Contractor’s Work for the purposes of recommending payments nor Engineer’s recommendation of any payment, including final payment, will impose responsibility on Engineer:
   a. to supervise, direct, or control the Work, or
   b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
   c. for Contractor’s failure to comply with Laws and Regulations applicable to Contractor’s performance of the Work, or
   d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
   e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer’s opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer’s opinion to protect Owner from loss because:
   a. the Work is defective, requiring correction or replacement;
   b. the Contract Price has been reduced by Change Orders;
   c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
   e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. Payment Becomes Due:

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

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
   
   a. claims have been made against Owner on account of Contractor’s conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor’s conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
   
   b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
   
   c. Contractor has failed to provide and maintain required bonds or insurance;
   
   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
   
   e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
   
   f. the Work is defective, requiring correction or replacement;
   
   g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
   
   h. the Contract Price has been reduced by Change Orders;
   
   i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
   
   j. liquidated damages have accrued as a result of Contractor’s failure to achieve Milestones, Substantial Completion, or final completion of the Work;
   
   k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
   
   l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner’s refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 **Contractor’s Warranty of Title**

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

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor’s notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner’s objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner’s use or occupancy of the Work following Substantial Completion, review the builder’s risk insurance policy with respect to the end of the builder’s risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner’s use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 Partial Use or Occupancy

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor’s performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder’s risk or other property insurance.

15.05 Final Inspection

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

15.06 Final Payment

A. Application for Payment:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
   a. all documentation called for in the Contract Documents;
   b. consent of the surety, if any, to final payment;
   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
   d. a list of all disputes that Contractor believes are unsettled; and
   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner.
against any Lien, or Owner at its option may issue joint checks payable to Contractor and
specified Subcontractors and Suppliers.

B. Engineer’s Review of Application and Acceptance:

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

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

D. Payment Becomes Due: Thirty days after the presentation to Owner of the final Application for
Payment and accompanying documentation, the amount recommended by Engineer (less any further
sum Owner is entitled to set off against Engineer’s recommendation, including but not limited to set-
offs for liquidated damages and set-offs allowed under the provisions above with respect to progress
payments) will become due and shall be paid by Owner to Contractor.

15.07 Waiver of Claims

A. The making of final payment will not constitute a waiver by Owner of claims or rights against
Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective
Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor’s failure to
comply with the Contract Documents or the terms of any special guarantees specified therein, from
outstanding Claims by Owner, or from Contractor’s continuing obligations under the Contract
Documents.

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

15.08 Correction Period

A. If within one year after the date of Substantial Completion (or such longer period of time as may be
prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by
any specific provision of the Contract Documents), any Work is found to be defective, or if the repair
of any damages to the Site, adjacent areas that Contractor has arranged to use through construction
easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and
Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in
accordance with Owner’s written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;

2. correct such defective Work;

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with
Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner’s written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 Owner May Suspend Work

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

16.02 Owner May Terminate for Cause

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor’s persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor’s disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor’s repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor’s services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 Owner May Terminate For Convenience

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice
to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor’s stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

A. Disputes Subject to Final Resolution: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. Final Resolution of Disputes: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 Computation of Times

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

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

18.04 **Limitation of Damages**

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

18.05 **No Waiver**

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

18.06 **Survival of Obligations**

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

18.07 **Controlling Law**

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

18.08 **Headings**

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

A. Mandatory Supplementary Conditions

Several provisions of the General Conditions expressly indicate that essential Project-specific information will be set out in a corresponding Supplementary Condition. For example, Paragraph 6.03.1 of the General Conditions indicates that required insurance coverage limits will be specified in the Supplementary Conditions. Every EJCDC-based construction contract should include, at a minimum, the following Supplementary Conditions:

1. One of the suggested Paragraphs SC-5.03, concerning reports and drawings of conditions at the Site, and any Technical Data in the reports and drawings on whose accuracy the Contractor may rely;

2. One of the suggested Paragraphs SC-5.06, concerning reports and drawings regarding Hazardous Environmental Conditions at the Site, and any Technical Data in those reports and drawings on whose accuracy the Contractor may rely;

3. Those portions of SC-6.03 identifying specific insurance coverage requirements; and

4. One of the two alternatives presented in SC-10.03 (either the Engineer will provide Resident Project Representative services on the Project, with specific authority and responsibilities, or Engineer will not provide Resident Project Representative services).

Other suggested Supplementary Conditions are mandatory under specific circumstances: for example, on projects in which the Contractor will be responsible for compliance with Owner's safety program, SC-7.12 would be mandatory.

B. Relationship of Supplementary Conditions to Other Contract Documents

Supplementary Conditions are modifications to the General Conditions—additions, deletions, changes. This is as the term is defined by EJCDC and the Construction Specification Institute (CSI). Other organizations use their supplementary conditions to modify a broader range of contract documents, such as agreement forms and standard specifications.

This Guide and the other Construction-related documents prepared and issued by EJCDC assume use of the CSI MasterFormat™ concept, which provides an organizational format for location of all documentary information for a construction project: Bidding Requirements, contract forms (Agreement, Bonds, and certificates), General Conditions, Supplementary Conditions, and Specifications. Under the CSI MasterFormat™, the last grouping, Specifications, is divided into 49 Divisions, the first of which, Division 01, is entitled “General Requirements.”

The standard fundamental provisions affecting the rights and duties of the parties appear in the General Conditions. Language to modify the fundamental relationships between the parties, supplement the framework set forth in the General Conditions, or change the language of the General Conditions, should appear in the Supplementary Conditions. Examples of this are a change in Contractor’s Site responsibilities, and a supplemental clause specifying the details of insurance coverages and limits for the Project.

Price terms, monetary terms such as liquidated damages clauses, and completion dates should all be set forth in the Agreement (EJCDC® C-520–Stipulated Sum or C-525–Cost-Plus), and should not be included in the Supplementary Conditions.

The substance of the General Requirements (Division 01 of the Specifications) falls generally into three categories: (1) administrative requirements, such as summary of work, allowances, coordination, alternatives (materials, equipment, or price), product options, project meetings, and
project close-out; (2) work-related provisions, such as temporary facilities, field testing, and start-up; and (3) general provisions applicable to more than one section in Divisions 02 through 49.

C. Arrangement of Subject Matter

This Guide is arranged in the same order as the 2013 edition of the General Conditions, and the paragraphs herein bear comparable addresses to those of the General Conditions but with the prefix “SC.” A discussion of the purpose and function of these suggested Supplementary Conditions is included in EJCDC® C-001, Commentary on the 2013 EJCDC Construction Documents.

D. Use of this Guide

The text presented in bold type in the remainder of this Guide is suggested language for some commonly used Supplementary Conditions. The drafter should bear in mind that most contractual provisions have important legal consequences. Consultation with legal counsel before finalization of any amendment or supplement is recommended. Many sets of supplementary conditions examined by EJCDC contain typical or “boilerplate” provisions that have accumulated like moss over the years, appear to have no practical significance for the particular project, and may produce unintended and surprising legal consequences. Such provisions are usually there because someone saw similar terms in other contract documents and it “sounded good.” Selecting contract terms in that manner is not recommended. Provisions of the Supplementary Conditions should address a particular point in the General Conditions or cover a particular topic. The Supplementary Conditions should not be a repository for general language of vague meaning for which another location cannot be readily found.

This Guide assumes a general familiarity with the other Construction-related (C-series) documents prepared by EJCDC and, when drafting language, specific attention to them is encouraged. Standard documents or prescribed forms issued by governmental bodies and other owners may differ materially from the documents of EJCDC so that careful correlation of any amending or supplementing language is essential. The practice of stating that any provision in one document that is inconsistent with another is superseded, or that one document always takes precedence over another in the event of a conflict in language or requirements, is sometimes necessary, but generally discouraged. The resulting legal consequences of such provisions are frequently difficult to decipher and may be very different from what was anticipated.

The EJCDC General Conditions use carefully chosen language and set forth the basic responsibilities of the parties with respect to fundamental matters and legal consequences. Their provisions should be altered only where mandated by the specific requirements of a given project and the consequences of any modification are thoroughly understood.

Caution should be exercised when making any change in the standard documents. They have been carefully prepared, terms are used uniformly throughout and are consistent with the terms in other EJCDC documents. Their provisions have been carefully integrated, and are dependent on one another. A change in one document may necessitate a change in another, and a change in one paragraph may necessitate a change in other language of the same document. No change should be made until its full effect on the rest of the General Conditions and other Contract Documents has been considered.
Users must follow the instructions and restrictions regarding the use of this document that are set out in the License Agreement that accompanied the document at the time of purchase or acquisition. To prepare this document for use on a specific project, after reviewing all instructions and explanatory text and notes, (1) remove the cover pages, this Introduction, Part II (Standard Prefatory Language and Traditional Format for Supplementary Conditions) and Part III (Alternative Format for Supplementary Conditions) (2) fill in Project-specific information and make revisions to the document, following the guidance in the explanatory text and notes, and the advice of legal counsel, and (3) delete the explanatory text and notes.

Lastly, remember that an engineer is neither qualified nor licensed to give advice to others on the legal consequences of contracts. All of the Contract Documents have important legal consequences. Owners should be encouraged to seek the advice of an attorney before accepting any modification of the printed forms, before the documents are sent out for bidding, and most assuredly before signing any agreement.

II. STANDARD PREFATORY LANGUAGE AND TRADITIONAL FORMAT FOR SUPPLEMENTARY CONDITIONS

Suggested format and wording conventions for Supplementary Conditions appear below.

A. Table of Contents

The inclusion of a table of contents will benefit the user of the Supplementary Conditions, especially if additional articles (beyond the 18 Articles of the General Conditions) are added for the purpose of including mandated or other provisions.

B. Pagination

If CSI’s MasterFormat™, 2012 Edition, is being used for the Project Manual, consult MasterFormat™ for the appropriate section number and number the pages accordingly.

C. Format for Complete Paragraph Change

When completely superseding a paragraph of the General Conditions, the following language may be used:

**SC 5.09.B Delete Paragraph 5.09.B in its entirety and insert the following in its place:**

D. Format for Change within a Paragraph

When changing language within a paragraph of the General Conditions, the following language may be used:

**SC 6.21.A Amend the second sentence of Paragraph 6.21.A [to read as follows] [or] [by striking out the following words]:**
E. Format for Additional Language

When adding language to an existing paragraph of the General Conditions, the idea may be expressed as follows:

SC 9.03 Add the following language at the end of the second sentence of Paragraph 9.15:


F. Format for Additional Paragraph

If it is desired to add a new paragraph to the General Conditions, the thought may be expressed as follows:

SC 8.06 Add the following new paragraph immediately after Paragraph 8.06.B:


These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® 00 70 00 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

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

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

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01 Defined Terms

A. If the Contract will include a Geotechnical Baseline Report (see Article 5 below), include the following definitions:

SC-1.01. Add to the list of definitions in Paragraph 1.01.A by inserting the following as numbered items in their proper alphabetical positions:

Geotechnical Baseline Report (GBR) — The interpretive report prepared by or for Owner regarding subsurface conditions at the Site, and containing specific baseline geotechnical conditions that may be anticipated or relied upon for bidding and contract administration purposes, subject to the controlling provisions of the Contract, including the GBR’s own terms. The GBR is a Contract Document.

Geotechnical Data Report (GDR) — The factual report that collects and presents data regarding actual subsurface conditions at or adjacent to the Site, including Technical Data and other geotechnical data, prepared by or for Owner in support of the Geotechnical Baseline Report. The GDR’s content may include logs of borings, trenches, and other site investigations, recorded measurements of subsurface water levels, the results of field and laboratory testing, and descriptions of the investigative and testing programs. The GDR does not include an interpretation of the data. If opinions, or interpretive or speculative non-factual comments or statements appear in a document that is labeled a GDR, such opinions, comments, or statements are not operative parts of the GDR and do not have contractual standing. Subject to that exception, the GDR is a Contract Document.
ARTICLE 2 – PRELIMINARY MATTERS

SC-2.01 Delivery of Bonds and Evidence of Insurance

A. Paragraph 2.01.B of the General Conditions requires that Contractor furnish certificates of insurance. Paragraph 6.02.C states that upon request by Owner or other named or additional insureds, Contractor must provide evidence of insurance such as copies of required policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Parallel provisions apply to Owner and the insurance that Owner is required to provide. Rather than relying on this two-step process (delivery of certificates of insurance at the outset; subsequent requests for additional evidence of insurance), some contract drafters may elect to require from the outset that copies of the insurance policies, rather than certificates of insurance, be delivered to the other party. If exchange of copies of insurance policies is required, the following should be used:

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 executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies of insurance (including all endorsements, and identification of applicable self-insured retentions and deductibles) required to be provided by Contractor in Article 6. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

C. Evidence of Owner’s Insurance: After receipt from Contractor of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor copies of the policies of insurance to be provided by Owner under Article 6 (if any). Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

SC-2.02 Copies of Documents

A. If the number of printed or hard copies of the Drawings and Project Manual to be provided is different than four copies the following may be used:

SC-2.02.A. Amend the first sentence of Paragraph 2.02.A. to read as follows:

Owner shall furnish to Contractor [____] copies of the Contract Documents (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF).

A. On some projects it may be useful to produce conformed Contract Documents, in which the content of Addenda and negotiated changes are merged into the appropriate Specifications, Drawings, General Conditions, or other Contract Documents. This may be especially true on private construction projects where the terms and scope are negotiated and modified significantly after the initial release of proposed Contract Documents. Conformed documents may be considerably more convenient to use during the performance of the Work and the administration of the Contract.
EJCDC advises that if conformed documents are to be prepared and made available to Contractor, sufficient time and budget must be allocated to ensure the quality and full coordination of the conformed documents, and Owner and Engineer must recognize that Contractor, Subcontractors, and Suppliers will likely rely on the conformed version of the Contract Documents rather than the source components. If conformed documents are prepared without the level of commitment necessary to allow them to be accorded the full status of “Contract Documents,” and are merely for reference or convenience, they should be accompanied by clear disclaimers of their content and a warning to consult the actual source Contract Documents.

A Supplementary Condition regarding conformed documents is necessary only if the Owner intends to provide the Contractor with conformed documents that will serve as binding Contract Documents. The following may be used for that purpose:

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

A. Owner shall furnish to Contractor [_____] copies of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

A. Note: If Owner is not furnishing PDF or other electronic files of the Contract Documents, then draft (1) a Supplementary Condition that deletes the reference in 2.02.A of the General Conditions to providing the PDF files, and (2) a Supplementary Condition that deletes Paragraph 3.01.C in its entirety.

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

SC-5.03 Subsurface and Physical Conditions

A. This is a mandatory Supplementary Condition. Paragraph 5.03, Subsurface and Physical Conditions, of the General Conditions requires the identification of all known documents regarding subsurface and physical conditions at or adjacent to the Site (this requirement is broader than merely requiring that Contractor be given access to subsurface reports prepared for the current Project). It also requires the identification of Technical Data (upon whose accuracy Contractor may rely) contained in such documents. Use the first version of SC-5.03, presented immediately below, for the purpose of identifying the known Site condition documents. If no such documents are known, then use the second version of SC-5.03, below. Also note that if the known documents include either a geotechnical report or environmental report prepared for the Project, or both, and the Supplementary Conditions neglect to expressly identify the Technical Data, upon whose accuracy Contractor may rely, that is contained in such reports, then the default definition of Technical Data in Paragraph 1.01 of the General Conditions will apply.

Note that if Owner elects to furnish a Geotechnical Baseline Report (GBR), use the alternate SC/GBR-5.03 and SC/GBR 5.04 located in the next section of this document, rather than one of the SC-5.03 versions immediately following. If a GBR is used, it remains important to disclose known
reports and tests regarding subsurface conditions; a place for doing so is provided in SC/GBR-5.03. If some Site conditions are outside the scope of the Geotechnical Baseline Report it will continue to be necessary to identify reliable Technical Data contained in such reports and drawings; however, if the Geotechnical Baseline Report or a related Geotechnical Data Report already establish the data that is worthy of reliance, it will not be necessary to make a redundant identification in SC/GBR 5.03.

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

C. The following reports of explorations and tests of subsurface conditions at or adjacent to the Site are known to Owner:
   1. Report dated [May 21, 2013, prepared by Aye and Bea, Consulting Engineers, Philadelphia, Pa., entitled: “Results of Investigation of Subsoil Conditions and Professional Recommendations for Foundations of Iron Foundry at South and Front Streets, Pembriq, NJ”, consisting of 42 pages.] The Technical Data contained in such report upon whose accuracy Contractor may rely are [here indicate any such Technical Data, or state “none.”] [or] [those indicated in the definition of Technical Data in the General Conditions.]
   2. Report dated [May 2, 2000, prepared by Ecks, Wye and Tzsee, Inc., Baltimore, Md., entitled: “Tests of Water Quality in Mixter River at Pembriq, NJ”, consisting of 26 pages.] The Technical Data contained in such report upon whose accuracy Contractor may rely are [here indicate any such Technical Data, or state “none.”] [or] [as indicated in the definition of Technical Data in the General Conditions.]

D. The following drawings of physical conditions relating to existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities) are known to Owner:
   1. Drawings dated [March 2, 2000, of Route 24A Overpass Abutment, prepared by Dea & Associates, Inc., Wilmington, Del., entitled: “Record Drawings: Route No. 24A Overpass Abutment”, consisting of 12 sheets numbered 001 to 012, inclusive.] [Use one of the following two subparagraphs:]
      a. All of the information in such drawings constitutes Technical Data on whose accuracy Contractor may rely, except for _________________________ appearing on Drawing No. _____ and __________________ appearing on Drawing No. ______.
      [or]
      a. None of the contents of such drawings is Technical Data on whose accuracy Contractor may rely.

E. Contractor may examine copies of reports and drawings identified in SC 5.03.C and SC 5.03.D that were not included with the Bidding Documents at [insert location] during regular business hours, or may request copies from Engineer.

If there are no known Site-related reports or drawings, use the following version of SC-5.03:

SC 5.03 Delete Paragraphs 5.03.A and 5.03.B in their entirety and insert the following:
A. No reports of explorations or tests of subsurface conditions at or adjacent to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to Owner.

B. Geotechnical Baseline Reports: Some project owners use a Geotechnical Baseline Report (GBR) for projects (or portions of a project) in which the subsurface conditions will play a significant role. Providing a GBR may result in bids with lower contingencies for subsurface conditions, and simplify the application of the differing site conditions provisions in Article 5 of the General Conditions. Commentary on Geotechnical Baseline Reports is presented in EJCDC® C-001. See also Geotechnical Baseline Reports for Construction—Suggested Guidelines, by Randall J. Essex, P.E., ASCE 2007. In many cases it may be advantageous for Owner, Engineer, or the geotechnical engineer to engage a consultant with GBR experience to assist in preparation of the GBR and related documents.

On projects in which a Geotechnical Baseline Report is used, it is typical to also assemble and provide a Geotechnical Data Report (GDR), as a separate, single source of factual geotechnical information regarding the Site. The content of the GDR is in essence what the EJCDC documents define as “Technical Data”—reliable factual information, such as boring logs and laboratory test results. (See the definition of Technical Data in Article 1 of the General Conditions, and the definition of a GDR in Article 1 of these Supplementary Conditions). Some Owners may elect to issue a GBR without compiling a GDR, but regardless of the format it is essential to identify and make all geotechnical data available. Note that a typical general purpose geotechnical report, usually prepared primarily to assist in the design of the project, often contains not only factual data but also opinions, interpretations, and even speculation regarding the Site’s subsurface conditions. Such a geotechnical report is not suitable to be adopted or identified as a GDR.

Although it is preferable that a GBR be comprehensive with respect to subsurface conditions, in some cases a GBR will establish baselines for a portion of a project, but will not address all subsurface issues. For example, the GBR may establish baseline subsurface conditions along the route of a pipeline, but be silent with respect to conditions underlying an associated pump building. Also, in some cases a project will involve both subsurface construction as well as building modifications or other tasks unrelated to geotechnical investigations, analysis, or interpretations. The SC/GBR provisions that follow retain certain differing site condition provisions of the General Conditions, in part because these may be needed for situations that are outside the scope of the GBR. As noted previously, these SC/GBR provisions contain locations for (1) identifying known reports and drawings regarding the subsurface conditions (a mandatory obligation), and (2) identifying Technical Data upon whose accuracy Contractor may rely (necessary in some but not all GBR projects, depending on the scope of the GBR and GDR documents).

If a GBR is used, then include the following GBR Supplementary Conditions, and do not use either of the Paragraphs SC-5.03 above:

1. SC/GBR-5.03 and 5.04. Delete Paragraphs 5.03 and 5.04 of the General Conditions in their entireties and replace with the following provisions:

SC/GBR-5.03 Subsurface and Physical Conditions

   A. Reports and Drawings: The Supplementary Conditions hereby identify:
1. Those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site (other than any Geotechnical Data Report or Geotechnical Baseline Report), and Technical Data contained in such reports. Such reports are as follows:
   a. Report dated [May 21, 2013, prepared by Aye and Bea, Consulting Engineers, Philadelphia, Pa., entitled: “Results of Investigation of Subsoil Conditions and Professional Recommendations for Foundations of Iron Foundry at South and Front Streets, Pembriag, NJ”, consisting of 42 pages.] The Technical Data contained in such report upon whose accuracy Contractor may rely are [here indicate any such Technical Data or state “none.”] [or] [those indicated in the definition of Technical Data in the General Conditions.]
   b. Report dated [May 2, 2000, prepared by Ecks, Wye and Tszee, Inc., Baltimore, Md., entitled: “Tests of Water Quality in Mixter River at Pembriag, NJ”, consisting of 26 pages.] The Technical Data contained in such report upon whose accuracy Contractor may rely are [here indicate any such Technical Data or state “none.”] [or] [as indicated in the definition of Technical Data in the General Conditions.]

2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), and Technical Data contained in such drawings. Such drawings are as follows:
      [Use one of the following two subparagraphs:]
      (1) All of the information in such drawings constitutes Technical Data on whose accuracy Contractor may rely, except for _______________________ appearing on Drawing No. _____ and ___________________ appearing on Drawing No. ______.
      [or]
      (2) None of the contents of such drawings is Technical Data on whose accuracy Contractor may rely.

3. Contractor may examine copies of reports and drawings identified immediately above that were not included with the Bidding Documents at _______________________ [insert location] during regular business hours, or may request copies from Engineer, at the cost of reproduction.

B. Reliance by Contractor on Technical Data Authorized:
   Contractor may rely upon the accuracy of the Technical Data contained in such reports and drawings, but such reports and drawings are not Contract Documents. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
   1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods,
techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

C. Geotechnical Baseline Report:
2. The GBR and GDR are incorporated as Contract Documents. The GBR and GDR are to be used in conjunction with other Contract Documents, including the Drawings and Specifications. If there is a conflict between the terms of the GBR and the GDR, the GBR’s terms shall prevail.
3. The GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations (referred to here in the Supplementary Conditions as “Baseline Conditions”). These may include ground, geological, groundwater, and other subsurface geotechnical conditions, and baselines of anticipated Underground Facilities or subsurface structures.
4. The Baseline Conditions shall be used to assist in the administration of the Contract’s differing site conditions clause at locations where subsurface conditions have been baselined. If a condition is baselined in the GBR, then only the pertinent Baseline Conditions shall be used to determine whether there is a differing site condition; and no other indication of that condition in the Contract Documents or Technical Data, or of a condition that describes, quantifies, or measures a similar characteristic of the subsurface, shall be used for the differing site condition determination.
5. The Baseline Conditions shall not be used to make differing site conditions determinations at locations that have not been baselined in the GBR, or at any location with respect to subsurface conditions that the Baseline Conditions do not address. If Underground Facilities or Hazardous Environmental Conditions are expressly addressed in the Baseline Conditions, then comparison to such Baseline Conditions shall be the primary means of determining (a) whether an Underground Facility was shown or indicated with reasonable accuracy, as provided in Paragraph 5.05 of the General Conditions, or (b) whether a Hazardous Environmental Condition was shown or indicated in the Contract Documents as indicated in Paragraph 5.06.H of the General Conditions. As indicated in Paragraph SC-5.04 below, the GDR shall be the primary resource for differing site conditions determinations in cases in which the GBR is inapplicable.
6. The descriptions of subsurface conditions provided in the GBR are based on geotechnical investigations, laboratory tests, interpretation,
interpolation, extrapolation, and analyses. Neither Owner, Engineer, nor any geotechnical or other consultant warrants or guarantees that actual subsurface conditions will be as described in the GBR, nor is the GBR intended to warrant or guarantee the use of specific means or methods of construction.

7. The behavior of the ground during construction depends substantially upon the Contractor’s selected means, methods, techniques, sequences, and procedures of construction. If ground behavior conditions are baselined in the GBR, they are based on stated assumptions regarding construction means and methods.

8. The GBR shall not reduce or relieve Contractor of its responsibility for the planning, selection, and implementation of safety precautions and programs incident to Contractor’s means, methods, techniques, sequences, and procedures of construction, or to the Work.

SC/GBR-5.04 Differing Subsurface or Physical Conditions

A. Notice: If Contractor believes that any subsurface condition that is uncovered or revealed at the Site:
   1. Differs materially from conditions shown or indicated in the GBR; or
   2. Differs materially from conditions shown or indicated in the GDR, to the extent the GBR is inapplicable; or
   3. Differs materially from conditions shown or indicated in Contract Documents other than the GBR or GDR, to the extent the GBR and GDR are inapplicable; or
   4. To the extent the GBR and GDR are inapplicable, is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
   5. To the extent the GBR and GDR are inapplicable, is of such a nature as to require a change in the Drawings or Specifications; or
   6. To the extent the GBR and GDR are inapplicable, 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 conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. Engineer’s Review: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner’s obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph SC/GBR 5.04.A above; obtain any pertinent cost or
schedule information from Contractor; prepare recommendations to Owner regarding the Contractor’s resumption or continuation 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 or continuation of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer’s written findings, conclusions, and recommendations, in whole or in part.

D. Possible Price and Times Adjustments:
   1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
      a. such condition must fall within any one or more of the categories described in Paragraph SC/GBR 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 of the General Conditions; and,
      c. Contractor’s entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor’s ability to complete the Work within the Contract Times.
   2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
      a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
      b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor’s making such commitment; or
      c. Contractor failed to give the written notice as required by Paragraph SC/GBR 5.04.A.
   3. If Owner and Contractor agree regarding Contractor’s entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
   4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times;
Times, or both, no later than 30 days after Owner’s issuance of the Owner’s written statement to Contractor regarding the subsurface or physical condition in question.

SC-5.06 Hazardous Environmental Conditions

A. This is a mandatory Supplementary Condition. Paragraph 5.06 of the General Conditions contemplates that Owner identify all known documents regarding Hazardous Environmental Conditions (HEC) that have been identified at or adjacent to the Site. It also requires the identification of Technical Data (upon whose accuracy Contractor may rely) contained in such documents. Use the first version of SC-5.06, presented immediately below, to identify the known HEC documents. If no HEC documents are known, then use the second version of SC-5.06, below. Also note that if the known documents include either a geotechnical report or environmental report prepared for the Project, or both, and the Supplementary Conditions neglect to expressly identify the Technical Data, upon whose accuracy Contractor may rely, that is contained in such reports, then the default definition of Technical Data in Paragraph 1.01 of the General Conditions will apply.

SC-5.06 Add the following new subparagraphs immediately after Paragraph 5.06.A.2:

A.3 The following reports regarding Hazardous Environmental Conditions at the Site are known to Owner:
   a. Report dated December 10, 2012, prepared by Eph Environmental Consultants, Princeton, N.J., entitled: “Results of Investigation of Conditions at Iron Foundry at South and Front Streets, Pembrig, NJ”, consisting of 27 pages. The Technical Data contained in such report upon whose accuracy Contractor may rely are [here indicate any such Technical Data or state “none.”]

A.4 The following drawings regarding Hazardous Environmental Conditions at the Site are known to Owner:
   [Use one of the following two subparagraphs:]
   1) All of the information in such drawings constitutes Technical Data on whose accuracy Contractor may rely, except for ______________ appearing on Drawing No. _____
      and ______________ appearing on Drawing No. ______.
   [or]
   1) None of the contents of such drawings is Technical Data on whose accuracy Contractor may rely.

A. Use the following SC-5.06 if there are no known HEC reports or drawings:

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

B. Not Used.
ARTICLE 6 – BONDS AND INSURANCE

SC-6.02 Insurance—General Provisions

A. Paragraph 6.02.B of the General Conditions requires that all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better, unless a different standard is indicated in the Supplementary Conditions. The A.M. Best ratings are based on the financial strength and size of the insurance company, with A-VII representing a commonly used standard. SC-6.02 is the location for noting any different standard, whether narrower or broader.

Note that in some states not all worker’s compensation insurers obtain A.M. Best ratings. The Owner may wish to include the following optional exception (modified to meet applicable provisions in the state) to the requirement in 6.02.B:

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.

SC-6.03 Contractor’s Insurance

A. This is a mandatory Supplementary Condition, because it is the location for specifying the limits of the coverages for the insurance required in Paragraph 6.03 of the General Conditions. The information set forth in this Supplementary Condition (and in all other contractual provisions regarding bonds and insurance) should be provided by Owner, either directly or through written instructions given to Engineer (see EJCDC® C-051, Engineer’s Letter to Owner Requesting Instructions Concerning Bonds and Insurance, and EJCDC® C-052, Owner’s Instructions to Engineer Concerning Bonds and Insurance).

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

K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers’ Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

<table>
<thead>
<tr>
<th>State:</th>
<th>Statutory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal, if applicable (e.g., Longshoreman’s):</td>
<td>Statutory</td>
</tr>
<tr>
<td>Jones Act coverage, if applicable:</td>
<td></td>
</tr>
<tr>
<td>Bodily injury by accident, each accident</td>
<td>$__________</td>
</tr>
<tr>
<td>Bodily injury by disease, aggregate</td>
<td>$__________</td>
</tr>
</tbody>
</table>
Employer’s Liability:
- Bodily injury, each accident $____________
- Bodily injury by disease, each employee $____________
- Bodily injury/disease aggregate $____________

For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker’s compensation or commercial general liability policy with a minimum limit of: $____________

Foreign voluntary worker compensation Statutory

2. Contractor’s Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:
   - General Aggregate $____________
   - Products - Completed Operations Aggregate $____________
   - Personal and Advertising Injury $____________
   - Each Occurrence (Bodily Injury and Property Damage) $____________

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:
   - Bodily Injury:
     - Each person $____________
     - Each accident $____________
   - Property Damage:
     - Each accident $____________
     [or]
     - Combined Single Limit of $____________

4. Excess or Umbrella Liability:
   - Per Occurrence $____________
   - General Aggregate $____________

[See Paragraph 6.03.E of the General Conditions.]
[If Owner revises the standard terms by deleting the requirement that Contractor provide Excess or Umbrella liability insurance, then Owner should]
consider requiring (in SC-6.03.K.2) that “The aggregate limits under SC-6.03.K.2 (Commercial General Liability) be maintained fully available for this Contract by obtaining and maintaining a Designated Construction Project General Aggregate Limit endorsement, or equivalent.”]

5. Contractor’s Pollution Liability:

Each Occurrence

$ ________________

General Aggregate

$ ________________

If box is checked, Contractor is not required to provide

[ ] Contractor’s Pollution Liability insurance under this Contract

[See Paragraph 6.03.F of the General Conditions.]

[On some projects, the Owner may conclude that it is not cost-effective to require the Contractor to carry Contractor’s Pollution Liability insurance, based on the type of work to be performed or knowledge of conditions at the Site. In such cases, check the box above and either delete the “Each Occurrence” and “General Aggregate” line items, or indicate “N.A.” or “Not applicable” in the blanks.]

6. Additional Insureds: In addition to Owner and Engineer, include as additional insureds the following: [Here list by name (not category, role, or classification) other persons or entities to be included on the commercial general liability, automobile liability, umbrella or excess, and pollution liability policies as additional insureds.]

7. Contractor’s Professional Liability:

Each Claim

$ ________________

Annual Aggregate

$ ________________

[See Paragraph 6.03.H of the General Conditions.]

[Contractor’s pollution liability and contractor’s professional liability policies are sometimes sold as a hybrid or combined policy. If after receiving the advice of its risk managers the Owner concludes that it is an acceptable alternative for Contractor to provide such a combination policy, this should be stated here, together with the required policy limits for a combination policy.]

8. Marine Operations Insurance:

Full Value Hull and Machinery Coverage

P&I Coverage with Limits of $5,000,000

Marine Pollution Liability with limits of $1,000,000. This coverage shall be included as an underlying policy on the Excess or Umbrella Liability Policy.

USL&H and/or Jones Act coverage(s) for contractor personnel.

Additional insured on P&I and Marine Pollution Liability as per SC 6.03 K.6.
A waiver of subrogation in favor of Engineer and Owner shall apply to all coverages, where not precluded by law.

☐ If box is checked, Contractor is not required to provide Marine Operations Insurance under this Contract

9. [Here list additional types and amounts of insurance that may be required by Owner.]

SC-6.05 Property Insurance

A. Builder’s Risk Deductible: Paragraph 6.05.A of the General Conditions requires builder’s risk insurance on a completed value basis, subject to such deductible amounts as are provided by the Supplementary Conditions. In many cases, the Owner (as the party directing or specifying the content of the insurance-related Supplementary Conditions) will choose not to specify any deductibles, leaving establishment of the deductible amounts to the discretion of the purchasing party, which is responsible for payment of the deductibles. Even when a deductible is stipulated, it is typically a maximum amount; the purchaser may choose to purchase a policy with a lower deductible. Note that it is common for builder’s risk policies to feature several different deductibles, typically including a primary deductible and specific deductibles applicable to specific types of loss. The following Supplementary Condition provides a means of identifying a primary deductible; other specific deductibles may also be added.

If a primary deductible is to be stipulated, use the following to establish the maximum amount of the deductible:

SC-6.05. Add the following to the list of requirements in Paragraph 6.05.A, as a numbered item:

14. be subject to a deductible amount of no more than $______ for direct physical loss in any one occurrence.

A. Builder’s Risk - Supplemental Insureds: Paragraph 6.05.A.1 of the General Conditions refers to other individuals or entities (in addition to the Owner, Contractor, and all Subcontractors) that are to be identified in the Supplementary Conditions as being entitled to protection as insureds under the builder’s risk insurance on the Work. In such cases use the following:

SC-6.05.A.1 Add the following new subparagraph after subparagraph 6.05.A.1:

a. In addition to Owner, Contractor, and all Subcontractors, include as insureds the following:

[Here list by name (not category, role, or classification) other persons or entities to be included on the builder’s risk policy as insureds.]

A. Builder’s Risk - Supplemental Requirements: Paragraph 6.05.A of the General Conditions lists several items that are to be included in the builder’s risk insurance. Consider adding one or more of the following items to the list as appropriate to the specific project:

SC-6.05.A. Add the following to the list of items in Paragraph 6.05.A, as numbered items:
15. include for the benefit of Owner loss of profits and soft cost coverage including, without limitation, fixed expenses and debt service for a minimum of 12 months with a maximum deductible of 30 days, plus attorneys fees and engineering or other consultants’ fees, if not otherwise covered;

16. include, in addition to the Contract Price amount, the value of the following equipment and materials to be installed by the Contractor but furnished by the Owner or third parties:
   a. [here list specific items of equipment and purchase value]
   b. [here list items of material and purchase value]

17. include by express endorsement coverage of damage to Contractor’s equipment.

A. Installation Floater: An installation floater is insurance carried by the Contractor, covering the materials and equipment to be incorporated in the Work. It typically does not insure against losses that occur after installation. In most cases, builder’s risk insurance offers broader coverage and is the preferred risk management instrument. On some projects, an installation floater may be an acceptable alternative to a builder’s risk policy. See EJCDC® C-001, Commentary on the 2013 EJCDC Construction Documents. (In other instances, Contractor may choose to purchase an installation floater to supplement property insurance provided by Owner.) If, after consultation with its risk managers, Owner elects to require purchase of an installation floater rather than a builder’s risk policy, the following requirements may be included as a Supplementary Condition:

SC-6.05.A. Delete Paragraph 6.05.A of the General Conditions and substitute the following in its place:

   Contractor shall provide and maintain installation floater insurance for property under the care, custody, or control of Contractor. The installation floater insurance shall be a broad form or “all risk” policy providing coverage for all materials, supplies, machinery, fixtures, and equipment that will be incorporated into the Work. Coverage under the Contractor’s installation floater will include:
   1. any loss to property while in transit,
   2. any loss at the Site, and
   3. any loss while in storage, both on-site and off-site.

Coverage cannot be contingent on an external cause or risk, or limited to property for which the Contractor is legally liable. The Contractor will be solely responsible for any deductible carried under this coverage and claims on materials, supplies, machinery, fixture, and equipment that will be incorporated into the Work while in transit or in storage. This policy will include a waiver of subrogation applicable to Owner, Contractor, Engineer, all Subcontractors, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them.

A. Builder’s Risk - Owner Purchase: In the event that the Owner, rather than the Contractor, will purchase the Builder's Risk insurance, use the following SC-6.05.A:

SC 6.05.A. Delete the first sentence of Paragraph 6.05.A and insert the following sentence in its place:

   Owner shall purchase and maintain builder’s risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof
(subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations).

ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES

SC-7.02 Labor; Working Hours

Paragraph 7.02.B of the General Conditions restricts Contractor to working during "regular hours" Monday through Friday, and no work is permitted on "legal holidays."

A. To provide details regarding the meaning of the terms “regular hours” and “legal holidays,” consider specifically defining them by adding the following:

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

1. Regular working hours will be [here insert schedule of regular working hours]
2. Owner's legal holidays are [here insert list of legal holidays]

B. To modify the days of the week that Contractor may work, use the following:

SC-7.02.B. Amend the first and second sentences of Paragraph 7.02.B to state “…all Work at the Site shall be performed during regular working hours, [___] through [___]. Contractor will not perform Work on a [___], [___], or any legal holiday.”

B. If the Owner has no objections to the Contractor working multiple shifts, weekends, and legal holidays, use the following:

SC-7.02.B. Delete Paragraph 7.02 B. in its entirety, and insert the following:

B. 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.

A. If Contractor is permitted to Work outside regular hours and on weekends and holidays, whether by a contractual provision or by Owner’s consent during the course of the Project, then it is good practice to address the issue of whether Owner may charge Contractor for engineering expenses associated with the non-regular schedule. Some Owners may prefer to absorb these costs to incentivize (or at least facilitate) an aggressive schedule and timely completion; and in many cases the net additional expense may be modest. Other Owners may prefer to establish and collect a charge for the engineering services. Add the following as SC-7.02.C, making a policy choice regarding responsibility in the beginning of the sentence:

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

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

A. If responsibility for costs in SC-7.02.C will be allocated to Contractor, Owner may wish to provide some specificity regarding the potential costs, through the addition of the following:

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

1. For purposes of administering the foregoing requirement, additional overtime costs are defined as [here insert parameters for compensated overtime hours]

SC-7.09 Taxes

A. If Owner qualifies for a state or local sales or use tax exemption in the purchase of certain materials and equipment, add the following Supplementary Condition, with any revisions necessary to meet the specific applicable exemption rules. (Note: If instructions to bidders or proposers are used, confirm that the provisions here are consistent with the corresponding provisions in such instructions. See Suggested Instructions to Bidders for Construction Contracts, EJCDC® C-200, Article 23.)

SC 7.09 Add a new paragraph immediately after Paragraph 7.09.A:

B. Owner is exempt from payment of sales and compensating use taxes of the State of [insert name of state where Project is located] and of cities and counties thereof on all materials to be incorporated into the Work.
   1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
   2. Owner’s exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

SC-7.12 Safety and Protection

A. Some Owners have written safety programs with which construction contractors must comply. If such is the case, Paragraph 7.12.C of the General Conditions mandates that the safety program be identified in the Supplementary Conditions (and Paragraph 9.12 requires Owner to provide a copy of such programs to Contractor). The identification of the safety programs may be accomplished as follows:

SC-7.12 Insert the following after the second sentence of Paragraph 7.12.C:

The following Owner safety programs are applicable to the Work: [here expressy identify by title and/or date, any such Owner safety programs].

ARTICLE 8 – OTHER WORK AT THE SITE

SC-8.02 Coordination
A. Paragraph 8.02 of the General Conditions requires that if in addition to retaining Contractor, Owner will arrange to have others perform work at the Site, Owner must provide to Contractor specified information regarding coordination of construction activities. (Note that Owner should provide specific information about the other work — nature of the work, scope, schedule, exact location — elsewhere in the Contract Documents or in other documentation.) Use the following in that case:

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

A. Owner intends to contract with others for the performance of other work at or adjacent to the Site.
   1. [Here identify individual or entirety] shall have authority and responsibility for coordination of the various contractors and work forces at the Site;
   2. The following specific matters are to be covered by such authority and responsibility: [here itemize such matters];
   3. The extent of such authority and responsibilities is: [here provide the extent]

ARTICLE 9 – OWNER’S RESPONSIBILITIES

SC-9.13 Owner’s Site Representative

A. Paragraph 10.03 of the General Conditions indicates that the Owner may designate a representative or agent who is not Engineer’s consultant, agent, or employee, to represent Owner at the Site (“Owner’s Site Representative”). In such case the Owner typically would not have the Engineer furnish a Resident Project Representative, hence the second version of SC-10.03.B below would be used to indicate there is no Engineer’s Resident Project Representative.

The following should be used for the identification of the Owner’s Site Representative. Note that the following must be supplemented by customized text that explains the responsibilities of the Owner’s Site Representative, so far as such are relevant to Contractor. The content of Paragraphs SC-10.03.B and C below may be a helpful starting point in drafting such supplemental text. In addition, if Owner’s retention of an Owner’s Site Representative will affect other aspects of Engineer’s status during construction, other portions of Article 10 and many other parts of the General Conditions will need to be revised. In such cases it is typical for (and Laws and Regulations may require) the design engineer (as engineer of record) to at least retain a role with respect to design-intent reviews of submittals and similar aspects of the Work.

SC-9.13 Add the following new paragraph immediately after Paragraph 9.12 of the General Conditions:

SC-9.13 Owner will furnish an “Owner’s Site Representative” to represent Owner at the Site and assist Owner in observing the progress and quality of the Work. The Owner’s Site Representative is not Engineer’s consultant, agent, or employee. Owner’s Site Representative will be [Here identify individual or entirety]. The authority and responsibilities of Owner’s Site Representative follow: [Here describe the duties and activities of the Owner’s Site Representative]

ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION
SC-10.03  Project Representative

A. **This is a mandatory Supplementary Condition.** As indicated in Paragraph 10.03 of the General Conditions, in those cases in which the Engineer will provide a Resident Project Representative (RPR) during construction, the authority and responsibilities of the RPR must be specified in the Supplementary Conditions. SC-10.03.B and C, immediately below, provide a mechanism for doing so. In the alternative, in some cases Engineer will not provide RPR services, either because there will not be an RPR, or because a party other than Engineer will provide the site services. When such is the case, the second SC-10.03.B below should be used.

As indicated in Paragraph 10.03 of the General Conditions, the Owner may designate a representative or agent who is not Engineer’s consultant, agent, or employee, to represent Owner at the Site. In such case, in addition to using the second version of SC-10.03.B, below, also use SC-9.13 above.

The following suggested language, which parallels the wording of Exhibit D to EJCDC® E-500, the Agreement Between Owner and Engineer for Professional Services, is for use when Engineer will provide RPR services. It should be edited to indicate the RPR authority and responsibilities that apply to this Contract.

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

B. **The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.**

1. **General:** RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. **Schedules:** Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

3. **Conferences and Meetings:** Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.

4. **Liaison:**
   a. Serve as Engineer’s liaison with Contractor. Working principally through Contractor’s authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
   b. Assist Engineer in serving as Owner’s liaison with Contractor when Contractor’s operations affect Owner’s on-Site operations.
   c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

5. **Interpretation of Contract Documents:** Report to Engineer when clarifications and interpretations of the Contract Documents are needed.
6. Shop Drawings and Samples:
   a. Record date of receipt of Samples and Contractor-approved Shop Drawings.
   b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
   c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.

7. Modifications: Consider and evaluate Contractor’s suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR’s recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

8. Review of Work and Rejection of Defective Work:
   a. Conduct on-Site observations of Contractor’s work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
   b. Report to Engineer whenever RPR believes that any part of Contractor’s work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

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

10. Records:
    a. Prepare a daily report or keep a diary or log book, recording Contractor’s hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.
    b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
    c. Maintain records for use in preparing Project documentation.

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

12. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

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

14. Completion:
   a. Participate in Engineer’s visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.
   b. Participate in Engineer’s final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
   c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

C. The RPR shall not:
   1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including “or-equal” items).
   2. Exceed limitations of Engineer’s authority as set forth in the Contract Documents.
   3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
   4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor’s work.
5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

B. On this Project, by agreement with the Owner, Engineer will not furnish a Resident Project Representative to represent Engineer at the Site or assist Engineer in observing the progress and quality of the Work. [See explanatory text at beginning of SC-9.13, and at beginning of SC-10.03, for discussion of this second alternative SC-10.03.B]

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

SC-13.01 Cost of the Work

A. Equipment rental charges, particularly with respect to Contractor-owned equipment, can sometimes lead to disagreements. To reduce the possibility of such disagreements, the following Supplementary Condition may be used. Note that it requires a published reference or method for determining the costs.

SC 13.01.B.5.c Delete Paragraph 13.01.B.5.c in its entirety and insert the following in its place:

c. Construction Equipment and Machinery:

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the [cite the rate book appropriate for the Project]. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than $1,000 will be considered small tools.

SC-13.03 Unit Price Work
A. The following Supplementary Condition is typically called a “variation in estimated quantities (VEQ) clause” and facilitates administrative resolution of situations where actual quantities of unit price items differ materially from estimated quantities. Typically, the clause applies where the extended price (unit price times estimated quantity) of an item of the Unit Price Work is more than 5 percent of the Contract Price (based on estimated quantities), and the actual quantity of the units of work performed or furnished varies by more than a specified percent (typically 15 to 25 percent).

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

E. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

1. if the extended price of a particular item of Unit Price Work amounts to ___ 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 ___ percent from the estimated quantity of such item indicated in the Agreement; and

2. if there is no corresponding adjustment with respect to any other item of Work; and

3. if Contractor believes that Contractor has incurred additional expense as a result thereof, Contractor may submit a Change Proposal, or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, Owner may make a Claim, seeking an adjustment in the Contract Price.

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

SC-15.03 Substantial Completion

A. Paragraph 15.03.A of the General Conditions requires Contractor to give notice that the Work is substantially complete; Paragraph 15.03.B requires an inspection of the Work to determine whether Engineer agrees that the Work is substantially complete. If the Work is not substantially complete, and must be inspected again at a later point, then the following Supplementary Condition, if included in the Contract, would allow Owner to recover the cost of the re-inspection.

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

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

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

A. Paragraph 17.01.B of the General Conditions provides that for any dispute subject to final resolution under Article 17, Owner or Contractor may invoke the dispute resolution procedure
called for in the Supplementary Conditions. Paragraph SC-17.02 is the location to identify any such primary dispute resolution procedure. If no procedure is identified here in the Supplementary Conditions, and the parties do not agree to a specific procedure, then the default resolution procedure will be litigation—the pursuit of rights in a court of competent jurisdiction. Note that before reaching the point of final resolution of disputes, in most cases the Owner and Contractor will already have engaged in the Claim process described in Article 12 of the General Conditions. That process allows for mediation of the dispute.

As an alternative to litigation, there are many other possible dispute resolution procedures, or combinations of procedures. One of the most common is arbitration; wording for an arbitration clause follows. A discussion of the pros and cons of the arbitration process (and there are many advocates on both sides) is beyond the scope of this Guide. Owner should consult with its legal counsel when considering the inclusion of an arbitration clause, or of any other dispute resolution procedure or combination of procedures.

The arbitration option is as follows:

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

SC-17.02 Arbitration

A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the rules of [insert name of selected arbitration agency], subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.

C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer’s consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and

2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.
D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.

E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.

F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

SC-17.03 Attorneys’ Fees

A. In most jurisdictions in the United States, as a general matter each party to a dispute is responsible for its own attorneys’ fees, unless an express agreement provides to the contrary. Some legal authorities believe that this general rule encourages claims and disputes, because claimants have little concern that they will be forced to pay for the opposing party’s fees if the claim fails. Other authorities take the opposite view—that the enticing prospect of not only prevailing but also of having one’s own fees paid by the opponent would encourage overly aggressive pursuit of claims (or overzealous defense against valid claims).

If an exception to the general American rule is preferred for disputes subject to final resolution under Article 17, then add the following express agreement:

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

SC-17.03 Attorneys’ Fees: For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys’ fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties’ initial demand or defense positions in comparison with the final result.
SECTION 00 73 46

PREVAILING WAGE RATE DETERMINATION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. References
   2. Specification Formats and Conventions
   3. Work Covered by the Contract Documents
   4. Work Phases
   5. Work Under Other Contracts
   6. Products Ordered in Advance
   7. Owner-Furnished Products
   8. Use of Premises
   9. Owner’s Occupancy Requirements
   10. Work Restrictions
   11. Project Utility Sources

1.2 REFERENCES

A. Definitions
   1. Basic Contract definitions and terminology are included in the General Conditions of the Contract and the Supplementary Conditions.
   2. The term "approved," when used to convey Engineer’s action on Contractor's submittals, applications, and requests, is limited to Engineer’s duties and responsibilities as stated in the General Conditions of the Contract.
   3. The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

B. Industry Standards
   1. Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
   2. Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
   3. If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.
   4. The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable
limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements.

5. Each section of the specifications generally includes a list of reference standards normally referred to in that respective section. The purpose of this list is to furnish the Contractor with a list of standards normally used for outlining the quality control desired on the project. The lists are not intended to be complete or all inclusive, but only a general reference of standards that are regularly referred to.

6. Each entity engaged in construction on the Project shall be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from the publication source and make them available on request.

1.3 SPECIFICATION FORMATS AND CONVENTIONS

A. The Specifications are organized into Divisions and Sections using the 49-division format and The Construction Specifications Institute "MasterFormat" 2004 Edition Numbering and Titles.

B. The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.

C. General and Supplementary Conditions of the Contract apply to all Specification Sections.

D. Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.

1.4 WORK COVERED BY THE CONTRACT DOCUMENTS

A. Project Identification

1. Project Name:  
2. Project Location:  [Insert Street Address, City and State] 
3. Owner:  [Insert Owner’s Name and Address] 
4. Engineer:  Foth Infrastructure & Environment, LLC [Insert Office Address] 
5. Work will be performed under the following prime contracts:
   a. Contract "_____": [Insert Project Title] 
   b. Contract "_____": [Insert Project Title] 

B. The Work includes:  [Insert brief listing of major products and systems included in the project. Quantities are generally not listed.]

1. Contract "_____":
   a. [Trenching, backfilling and compacting] 
   b. [Water distribution system]
1.5 WORK PHASES

A. Conduct the Work in the following phases and order, with each phase substantially complete before beginning the next phase:
   1. Phase 1 – [Briefly describe work of this phase]
      a. Work of this phase shall be substantially complete and ready for occupancy within [Insert number of days] after [the Notice to Proceed or commencement of construction of this phase].
   2. Phase 2 - The remaining Work shall be substantially complete and ready for occupancy at time of Substantial Completion.

B. Define constraints such as "one lane shall remain open to traffic at all times" or "existing plant operation to be uninterrupted during construction."

C. Define critical construction activity sequences such as "do not demolish existing structure ‘X’ until new structure ‘Y’ is constructed and operational."

1.6 WORK UNDER OTHER CONTRACTS [Select the following paragraphs as applicable]

A. General
   1. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.
   2. Coordinate the Work of this Contract with work performed under separate contracts.

B. Preceding Work
   1. Owner [has awarded or will award] separate contract(s) for the following construction operations at the Project site.
   2. The following operations are scheduled to be substantially complete before work under this Contract begins.
      a. [Insert Contract Name]: A separate contract [has been or will be] awarded to [Insert name of separate Contractor] [to or for] [Insert a brief description of work performed under separate contract].

C. Concurrent Work
   1. Owner [has awarded or will award] separate contract(s) for the following construction operations at the Project site.
2. The following operations will be conducted simultaneously with the work under this Contract.

3. [Insert contract name]: A separate contract [has been or will be] awarded to [Insert name of separate Contractor] [to or for] [Insert a brief description of work performed under separate contract].

D. Future Work

1. Owner [has awarded or will award] separate contract(s) for the following additional work to be performed at site after Substantial Completion.

2. Completion of the following work will depend on successful completion of preparatory work under this Contract.
   a. [Insert Contract Name]: A separate contract [has been or will be] awarded to [Insert name of separate Contractor] [to or for] [Insert a brief description of work performed under separate contract].

3. Avoid encroachment of areas designated for future work.

4. Provide for connections to future work.

1.7 PRODUCTS ORDERED IN ADVANCE

A. General

1. Owner has negotiated Purchase Orders with suppliers of material and equipment to be incorporated into the Work.

2. Owner will assign these Purchase Orders to Contractor.

3. Costs for receiving, handling, storage if required, and installation of material and equipment are included in the Contract Sum.

4. Contractor’s responsibilities are same as if Contractor had negotiated Purchase Orders, including responsibility to renegotiate purchase and to execute final Purchase-Order agreements.

B. List of Products Ordered in Advance:

1. [insert description, in separate subparagraphs, for each product ordered in advance.]

1.8 OWNER-FURNISHED PRODUCTS

A. Owner will furnish the products indicated for installation by the Contractor.

1. The Contractor’s Work includes providing support systems to receive Owner’s equipment.

2. Owner will arrange for and deliver Shop Drawings, Product Data, and Samples to Contractor. Contractor shall review Shop Drawings, Product Data, and Samples and return them to the Engineer noting discrepancies or anticipated problems in use of product.

3. Owner will arrange and pay for deliver of Owner-furnished items according to the agreed upon times in the Contractor’s Construction Schedule, if applicable.

4. After delivery, Owner will inspect delivered items for damage. Contractor shall be present for and assist in Owner’s inspection.

5. If Owner-furnished items are damaged, defective or missing, Owner will arrange for replacement.
6. Owner will arrange for manufacturer’s field services and for delivery of manufacturer’s warranties to Contractor.
7. Owner will furnish Contractor the earliest possible delivery date for Owner-furnished products. Using Owner-furnished earliest possible delivery dates, Contractor shall designate delivery dates of Owner-furnished items in Contractor’s Construction Schedule.
8. Contractor is responsible for receiving, unloading, and handling Owner-furnished items at Project site.
9. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.
10. If Owner-furnished items are damaged as a result of Contractor’s operations, Contractor shall repair or replace them.

B. Owner-Furnished Products:
1. [Insert a brief description of Owner-furnished products.]

1.9 USE OF PREMISES

A. General
1. Contractor shall have full use of the premises for construction operations, including use of the Project Site, as allowed by law, ordinances, permits, easement agreements and the Contract Documents.
2. Contractor’s use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of the Project.
3. The Project Site is limited to property boundaries, rights-of-way, easements and other areas designated in the Contract Documents.
4. Provide protection and safekeeping of material and products stored on or off the premises.
5. Move any stored material or products which interfere with operations of Owner or other Contractors.

B. Use of the Site
1. Limit use of premises to [work in areas or areas within the Contract limits] indicated.
2. Do not disturb portions of Project site beyond areas in which the Work is indicated.
3. Limits
   a. Confine constructions operations to [Insert description of areas where work is permitted.]
   b. Limit site disturbance, including earthwork and clearing of vegetation, to [40 feet (12.2 m)] beyond building perimeter; [5 feet (1.5 m)] beyond primary roadway curbs, walkways, and main utility branch trenches; and [25 feet (7.6 m)] beyond pervious paving areas.
4. Allow for Owner occupancy of Project site and use by the public.
5. Keep driveways and entrances serving premises clear and available to Owner, Owner’s employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
C. Use of Existing Building
   1. Maintain existing building in a weathertight condition throughout construction period.
   2. Repair damage caused by construction operations.
   3. Protect building and its occupants during construction period.

1.10 OWNER’S OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy
   1. Owner will occupy site and [existing or adjacent] building during entire construction period.
   2. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage.
   3. Perform the Work so as not to interfere with Owner's day-to-day operations.
   4. Maintain existing exits, unless otherwise indicated.
      a. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
      b. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
      c. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Partial Owner Occupancy
   1. Owner will occupy the premises during entire construction period, with the exception of areas under construction.
   2. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage.
   3. Perform the Work so as not to interfere with Owner's operations.
   4. Maintain existing exits, unless otherwise indicated.
      a. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
      b. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
      c. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

C. Owner Occupancy of Completed Areas of Construction
   1. Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work.
   2. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
      a. Follow procedure for Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
      b. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
c. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed.
d. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.
e. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

3. Schedule early completion of designated areas for Owner’s usage prior to Substantial Completion of entire project.

1.11 WORK RESTRICTIONS

A. On-Site Work Hours
1. Work shall be generally performed inside the existing building during normal business working hours of [Insert Time] a.m. to [Insert time] p.m., Monday through Friday, except otherwise indicated.
a. Weekend Hours: [Insert restrictions on times permitted for weekend work.]
b. Early Morning Hours: [Insert restrictions or references to regulations by authorities having jurisdiction for restrictions on noisy work.]
c. Hours for [Core Drilling] [Insert noisy activity]: [Insert Owner’s restrictions].
d. Hours for Utility Shutdowns: [Insert Owner’s restrictions]

B. Existing Utility Interruptions
1. Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
a. Notify Owner not less than two (2) working days in advance of proposed utility interruptions.
b. Do not proceed with utility interruptions without Owner’s written permission.

C. Easements
1. Owner will provide easements for construction outside road right-of-way and outside Owner owned property.
2. Work on easements shall be in strict compliance with the terms of the easements agreements.
3. Owner, easement grantee, Contractor, and Engineer shall be in full agreement with the method of execution prior to beginning work.
a. Remove only structures, trees, shrubs, and other obstructions as mutually agreed.
b. Restore to original condition or better condition or the conditions of the agreement.

OR

D. Easements
1. Private easement preconstruction meetings attended by the Owner, the grantee of easement or license, the Contractor and the Engineer shall be held prior to commencement of work on easements.
a. All parties listed above shall be in full agreement, before construction proceeds, on the terms of the easement, construction procedures to be used, and expected level of final condition of completed work.

b. Record of proceedings of this private easement preconstruction meeting will be made by Engineer with copies mailed promptly to all parties of the conference.

2. Remove only structures, trees, shrubbery or other obstructions agreed to at the private easement preconstruction meeting.

3. Restore property disturbed during construction on the easement to original condition or better condition or to a condition agreed to by the grantee at the private easement preconstruction meeting.

4. Approval of Easement Restoration
   a. Prior to final payment, send a Notice of Completion of Easement Restoration per Section “Closeout Procedures” to all easement grantors by certified mail, return receipt requested, with a copy sent to the Engineer.
   b. Names and addresses of easement grantors will be furnished by the Owner.
   c. Upon receipt of a notice of deficiency from the easement grantor, complete Work which may be necessary to satisfy the terms of the agreement.
   d. Should conditions exist which preclude the Contractor from completing satisfactory restoration, the Owner may require the Contractor to furnish a bond in a sum sufficient to cover any legal claims for damages.

1.12 PROJECT UTILITY SOURCES

A. [List the contact names, utility company names, telephone numbers for the utilities which may be within the construction site]

1.13 MISCELLANEOUS PROVISIONS

A. [List any special provisions. Special measurement and payment items should go in the appropriate measurement and payment specification, and not here]

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01 20 00

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
   1. Payment for all contract items shall be per the measurement and payment specifications in Part 3 and applicable requirements of each specification section.
   2. No payment shall be made for quantities exceeding 5% over the bid quantity without prior authorization by executed Change Order.
   3. All quantities are estimated. The Contractor shall not be entitled to increase, decrease or renegotiate bid prices if actual quantities differ from bid quantities by any margin.
   4. The order of bid items shall not be construed as a recommendation for sequence of work or construction operations. The contractor shall be responsible for all construction means and methods.

1.2 RELATED DOCUMENTS

A. Bid Form
B. Drawings and Technical Specifications
C. General provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 Bid Item No. 1: Mobilization and Demobilization (01 71 13)

A. The unit price for Mobilization/Demobilization work includes:
   2. Mobilization and demobilization will be measured as the lump sum to include compensation for project preparations, procurement and assembly of all equipment, materials, supplies, labor and bonds required for the prosecution of the work not otherwise included in other pay items and upon completion of the work as specified and directed, the clean-up of the work areas, removal of equipment, materials and supplies from the work area. Mobilization shall include all costs for operations accomplished prior to commencement of actual construction operations, i.e. transfer.
of materials and equipment to site; coordination and submittals as required; notifications, installation and maintenance of work area fencing and traffic controls, safety and site training for site as required by Owner for Contractor access, maintaining access for Owner operations, management of surface runoff and groundwater, establishing horizontal and vertical control for all proposed work and any other work that is necessary in advance of the actual construction operations.

3. Payment will be made for costs associated with mobilization and demobilization for operations including all incidental work described in the specifications and contract documents.

4. Mobilization shall include all site investigation work to identify site condition including but not limited to exploration trenches, progress hydrographic surveys, probing in advance of driving sheet piles, underwater inspections of the existing bulkhead, soil borings, or other investigation, the completion of pre-construction submittals, obtaining any necessary permits and approvals not already in place for the work specified in accordance with the Contract, full reimbursement for the premiums actually paid for performance and payment bonds, all costs connected with the mobilization of the Contractor’s plant(s) and equipment, scows, coordination, submittals and preparation for access to the offloading area(s) as required; support equipment or vessels (including all equipment needed for debris handling, separation and disposal), purchase of materials needed for construction, temporary facilities, installation of security measures, and registration/ training of project personnel, compliance with on-site security measures, and construction of environmental controls required by the Permits with respect to protection of the environment; and the coordination with the regulatory agencies, and any other work that is necessary.

5. Demobilization shall include complete restoration of all areas disturbed by the Contractor’s operations to their pre-construction conditions, submittal of a complete set of Record “As-Built” Drawings and removal of all equipment and temporary construction facilities from the site.

B. METHOD OF MEASUREMENT
1. The owner will measure Mobilization and Demobilization as a unit, acceptably performed.

2. This item shall be paid for by Lump Sum as required by Specification Section 01 71 13.

C. BASIS OF PAYMENT
1. 60% of the lump sum price for mobilization/demobilization unit will be paid to the Contractor upon completion of mobilization. 30% will be paid upon completion of demobilization and the remaining 10% will be paid upon submission of accepted As-Built Drawings for the project. Payment for this item will be limited to 10% of the Total Contract Price or the Sub-Total of the Base Bid Items, whichever is lower. In the event that the Owner considers the lump sum price for the bid item does not bear a reasonable relationship to the cost of the work in this contract, the Owner may require the Contractor to produce cost data to justify the price bid to the satisfaction of the Owner. If the Contractor fails to substantiate the price bid, then payment will be made for actual mobilization and demobilization costs as
determined by the Owner. Payment for this item will be considered full compensation for all labor, materials, off-site disposal, and other fees, equipment, supervision, and supplies required for the work.

2. If for any other reason, the Contractor must shut down and remove his plant from the site, then remobilize, Owners will not be responsible for payment of additional costs associated with such work. Demobilization shall include general preparation for transfer of plant to its home base, removal of equipment, and environmental restoration as required from construction, earthwork, drilling, blasting, dredging, and disposal operations.

3.2 Bid Item No. 2: Erosion and Sedimentation Controls (31 25 00)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by Lump Sum

B. BASIS OF PAYMENT
   1. This unit price includes means and methods to control erosion and sedimentation from upland areas, as well as sediment resuspension within the inwater work areas. Upland materials may include silt fence, hay bales, or any other method that meets Best Management Practices (BMPs). In water sediment resuspension control methods may include the use of full depth silt curtains, bubble curtains, or other methods that meet BMPs to minimize sediment resuspension.

3.3 Bid Item No. 3: Field Exploratory Program (01 71 23)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid lump sum as required by Specification Section 01 71 23.

B. BASIS OF PAYMENT
   1. The unit price will include all activities and materials necessary for completing the field exploration program.

3.4 Bid Item No. 4: PS31 Steel Flat Sheet Pile for Cellular Cofferdam Plus Tie-In (64ft. Long)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by weight of steel in Tons (2,000 lbs).

B. BASIS OF PAYMENT
   1. The unit price will be based on the weight of steel ordered as provided to the Owner by the Contractor.

3.5 Bid Item No. 5: Structural Fill for Cells and Tie-Ins (31 05 10)

A. SUMMARY
   The unit price for Structural Fill work includes:
2. Conform to requirements of Specification Section 31 01 00, “Earthwork” and Section 31 05 10 “Soils and Aggregates for Earthwork” and Section 31 23 01 “Excavation and Fill for Roadway and Cells.”
3. Furnishing, hauling, and placement.
4. Vibro-Compaction/Compaction, testing and confirmatory borings.
5. Progress Hydrographic Surveys of fill placement to insure proper placement.
6. Disposal of surplus and unsuitable material.

B. MEASUREMENT OF PAYMENT
1. This item shall be paid for by cubic yard (CYD) of material delivered and placed, as indicated by haul tickets from the material source. Each ticket shall indicate material type, load volume, and material source.

C. BASIS OF PAYMENT
1. The unit price shall include:
   a. Conform to requirements of Specification Section 31 01 00, “Earthwork” and Section 31 05 10 “Soils and Aggregates for Earthwork” and Section 31 23 01 “Excavation and Fill for Roadway and Cells.”
   b. Furnishing, hauling, and placement.
   c. Vibro-Compaction/Compaction
   d. Progress Hydrographic Surveys of fill placement to insure proper placement.
   e. Disposal of surplus and unsuitable material.

2. Engineered Structural Fill for cells and for the tie-in sheet pile boxes to be vibro-compacted ASTM C-33 B-3 Fine aggregate, or ASTM C144 B-4 masonry sand; or Soil Class D-3 Bank run - shall be measured for payment based on in-place neat lines and pre-placements surveys up to final surveyed finished grades.

3.6 Bid Item No. 6: Structural Crushed Rock Fill (top 3ft. of cells) (31 05 10)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by cubic yard (CYD) of material delivered and placed, as indicated by haul tickets from the material source. Each ticket shall indicate material type, load volume, and material source.

B. BASIS OF PAYMENT
1. The unit price shall include all materials activities required to furnish and place the structural crushed rock.

2. ASTM C-33 for 3/4” stone (unwashed) shall be measured for payment based on in-place neat lines and pre-placements surveys and post payment surveys – taken prior to installation of sheet pile walls.

3.7 Bid Item No. 7: Structural Crushed Rock Fill (below platform and transition slab) (31 05 10)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by cubic yard (CYD) of material delivered and placed, as indicated by haul tickets from the material source. Each ticket shall indicate material type, load volume, and material source.

B. BASIS OF PAYMENT
   1. The unit price shall include all materials activities required to furnish and place the structural crushed rock fill.

3.8 Bid Item No. 8: Obstruction Removal by Dredging (35 20 23)

   A. The work shall include:
      1. Removal of all obstructions within the sediments
      2. Removal of non-desirable sediments from within the cells

   B. MEASUREMENT OF PAYMENT
      1. This item shall be paid for at the unit bid price per cubic yard.

C. BASIS OF PAYMENT
   1. The unit price shall include removal and disposal of in-water debris and sediment using mechanical means. Materials requiring specialized disposal will be addressed between the Owner and Contractor.

3.9 Bid Item No. 9: Guard Rail Concrete Base (32 13 13)

   A. MEASUREMENT OF PAYMENT
      1. This item shall be paid for by unit price per cubic yard.

   B. BASIS OF PAYMENT
      1. The unit price shall include supplying and installing all components including tools, labor, equipment, and incidentals necessary to complete the work.

3.10 Bid Item No. 10: Guard Rail Pipes

   A. MEASUREMENT OF PAYMENT
      1. This item shall be paid for the actual units of installation as called for in plans, or as directed by the Engineer.

   B. BASIS OF PAYMENT
      1. The unit price shall be the installed weight per Tons as shown on the plans, or as approved by the Engineer.

3.11 Bid Item No. 11: Emergency Ladder Steel Rungs

   A. MEASUREMENT OF PAYMENT
      1. This item shall be paid for the actual units of installation as called for in plans, or as directed by the Engineer.
B. **Basis of Payment**  
   1. The unit price shall be the installed weight per Tons as shown on the plans, or as approved by the Engineer.

3.12 Bid Item No. 12: Cell Interlock Sealing (31 62 16)

A. **Measurement of Payment**  
   1. This item shall be paid for by actual installed lineal foot of coating. Payment will be made at the applicable contract unit prices. Prices and Payments shall include all costs of furnishing and installing the interlock sealing necessary to complete the contract work.

B. **Basis of Payment**  
   1. Cell Interlock Sealing shall be paid on a per lineal foot (LF) basis for the actual amount of interlock sealing installed.

3.13 Bid Item No. 13: Flat Sheet Coating (31 62 16)

A. **Measurement of Payment**  
   1. This item shall be paid for by actual installed square foot of coating as indicated on the drawings. Payment will be made at the applicable contract unit prices. Prices and Payments shall include all costs of furnishing and installing the interlock sealing necessary to complete the contract work.

B. **Basis of Payment**  
   1. Flat Sheet Coating shall be paid on a per square foot (SF) basis for the actual amount of coating installed.

3.14 Bid Item No. 14: Armor Stone for DMMF-DMDF Connector (35 31 23)

A. **Measurement of Payment**  
   1. This item shall be paid for by unit price per ton of stone acceptably placed in the work area. Payment for Armor Stone will be made at the applicable contract unit prices. Prices and payments shall include all costs of furnishing, hauling, and placing the armor stone.

B. **Basis of Payment**  
   1. Armor Stone will be measured for payment by the ton (2,000 pounds) for armor stone acceptably placed in the work as determined by certified truck weight tickets or barge gauge data.
   2. Material placed beyond the tolerance limits specified will not be paid for except where authorized by the Engineer. Reduction for materials placed beyond tolerance limits will be made based on 1.4 tons per cubic yard for all material. Any material wasted or used by the Contractor for other purposes and any material not placed in the work in accordance with the requirements of the specifications will not be measured or paid for.
3. Payment for Armor Stone shall not be made until the Engineer has received and approved the survey data, submittals and weight tickets or barge gauge data for the Armor Stone.

3.15 Bid Item No. 15: Toe Stone for DMMF-DMDF Connector (35 31 23)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per ton of stone acceptably placed in the work area. Payment for Toe Stone will be made at the applicable contract unit prices. Prices and payments shall include all costs of furnishing, hauling, and placing the Toe stone.

B. BASIS OF PAYMENT
   1. Toe Stone will be measured for payment by the ton (2,000 pounds) for armor stone acceptably placed in the work as determined by certified truck weight tickets or barge gauge data.
   2. Material placed beyond the tolerance limits specified will not be paid for except where authorized by the Engineer. Reduction for materials placed beyond tolerance limits will be made based on 1.4 tons per cubic yard for all material. Any material wasted or used by the Contractor for other purposes and any material not placed in the work in accordance with the requirements of the specifications will not be measured or paid for.
   3. Payment for Toe Stone shall not be made until the Engineer has received and approved the survey data, submittals and weight tickets or barge gauge data for the Toe Stone.

3.16 Bid Item No. 16: Core Stone for DMMF-DMDF Connector (35 31 23)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per ton of stone acceptably placed in the work area. Payment for Core Stone will be made at the applicable contract unit prices. Prices and payments shall include all costs of furnishing, hauling, and placing the core stone.

B. BASIS OF PAYMENT
   1. Core Stone will be measured for payment by the ton (2,000 pounds) for armor stone acceptably placed in the work as determined by certified truck weight tickets or barge gauge data.
   2. Material placed beyond the tolerance limits specified will not be paid for except where authorized by the Engineer. Reduction for materials placed beyond tolerance limits will be made based on 1.4 tons per cubic yard for all material. Any material wasted or used by the Contractor for other purposes and any material not placed in the work in accordance with the requirements of the specifications will not be measured or paid for.
   3. Payment for Core Stone shall not be made until the Engineer has received and approved the survey data, submittals and weight tickets or barge gauge data for the Core Stone.
3.17  Bid Item No. 17: Road Base for DMMF-DMDF Connector (35 31 23)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per ton of stone acceptably placed in the work area. Payment for Road Base will be made at the applicable contract unit prices. Prices and payments shall include all costs of furnishing, hauling, and placing the road base.

B. BASIS OF PAYMENT
   1. Road base will be measured for payment by the ton (2,000 pounds) for armor stone acceptably placed in the work as determined by certified truck weight tickets or barge gauge data.
   2. Material placed beyond the tolerance limits specified will not be paid for except where authorized by the Engineer. Reduction for materials placed beyond tolerance limits will be made based on 1.4 tons per cubic yard for all material. Any material wasted or used by the Contractor for other purposes and any material not placed in the work in accordance with the requirements of the specifications will not be measured or paid for.
   3. Payment for road base shall not be made until the Engineer has received and approved the survey data, submittals and weight tickets or barge gauge data for the road base.

3.18  Bid Item No. 18: Grout Mattress for DMMF-DMDF Connector (35 43 29)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per square foot (SF) of grout mattresses installed per the design plans.

B. BASIS OF PAYMENT
   1. Payment will be based on the installed square footage, as verified by survey. The unit bid price shall include all materials and activities necessary to furnish and install the grout mattresses.

3.19  Bid Item No. 20: 32” X 0.688” Driven Pipe Pile (100 ft.) (31 62 00)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per ton of steel delivered and installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the pipe piles.

3.20  Bid Item No. 20: AZ 19X700 Sheet Pile (55 Ft Long) (31 62 16)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton (2,000 lbs) steel ordered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.21 Bid Item No. 21: Furnish and Install HP 10X42 Brace (31 62 00)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton (2,000 lbs) steel ordered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.22 Bid Item No. 22: Furnish and Install HP 10X57 Waler (31 62 00)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton (2,000 lbs) steel ordered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.23 Bid Item No. 23: Coating of Support HP 12X84 (Top to 5FT into Mud)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per SF of coating applied.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for coating installation.

3.24 Bid Item No. 24: DMMF-DMDF Connector Box Structure Structural Fill (31 05 10)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per cubic yard (CYD) of structural fill placed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation. Testing of structural fill to meet specification is to be considered incidental to this bid item and should be included in the unit bid price.
3.25  Bid Item No. 25: Structural Crushed Rock (31 05 10)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per cubic yard (CYD) of structural crushed rock placed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation. Testing of structural fill to meet specification is to be considered incidental to this bid item and should be included in the unit bid price.

3.26  Bid Item No. 26: Concrete Fill Between Cell and DMMF-DMDF Connector Box Structure

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per cubic yard (CYD) concrete placed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.27  Bid Item No. 27: 32” X 0.688” Driven Pipe Pile (100 ft) (31 62 00)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per ton of steel delivered and installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the pipe piles.

3.28  Bid Item No. 28: 24” X 0.688” Driven Pipe Pile (100 ft) (31 62 00)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per ton of steel delivered and installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the pipe piles.

3.29  Bid Item No. 29: 20” X 0.5” Driven Pipe Pile (31 62 00)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per ton of steel delivered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the pipe piles.

3.30 Bid Item No. 30: W10X112 Pipe Pile Deck Connection (31 62 00)
   A. MEASUREMENT OF PAYMENT
      1. This item shall be paid for by unit price per ton of steel delivered and installed.
   B. BASIS OF PAYMENT
      1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the pipe pile deck connection.

3.31 Bid Item No. 31: Concrete Fill 32”X0.688” Pipe-Deck Connection
   A. MEASUREMENT OF PAYMENT
      1. This item shall be paid for by unit price per cubic yard of concrete placed.
   B. BASIS OF PAYMENT
      1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the concrete in pipe-deck connection.

3.32 Bid Item No. 32: Concrete Fill 24” X 0.688” Pipe-Deck Connection
   A. MEASUREMENT OF PAYMENT
      1. This item shall be paid for by unit price per cubic yard of concrete placed.
   B. BASIS OF PAYMENT
      1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the concrete in pipe-deck connection.

3.33 Bid Item No. 33: Concrete Fill 20” X 0.5” Pipe-Deck Connection
   A. MEASUREMENT OF PAYMENT
      1. This item shall be paid for by unit price per cubic yard of concrete placed.
   B. BASIS OF PAYMENT
      1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the concrete in pipe-deck connection.

3.34 Bid Item No. 34: Relieving Platform Concrete
   A. MEASUREMENT OF PAYMENT
      1. This item shall be paid for by unit price per cubic yard of concrete placed.
   B. BASIS OF PAYMENT
      1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the relieving platform concrete. Rebar is considered
incidental to the placement of the concrete deck and should be included in the unit bid price.

3.35 Bid Item No. 35: Expansion joint

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per each expansion joint installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the expansion joint.

3.36 Bid Item No. 36: Concrete, Rebar, and Casting of Dolphins

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per cubic yard of concrete placed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the concrete for the dolphins. Rebar and Casting is considered incidental to the concrete placement and costs should be included in the unit bid price.

3.37 Bid Item No. 37: Transition Concrete Slab

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per cubic yard of concrete placed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the Approach Concrete Slab.

3.38 Bid Item No. 38: AHC-20 Aluminum Anode Cathodic Protection

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per each Aluminum Anode Installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the Aluminum Anodes.

3.39 Bid Item No. 39: Fender SC1450

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per Fender installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the Fenders per plans and specifications.

3.40 Bid Item No. 40: 60 Ton Bollard (SDB1-50) with Anchors

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per 60 ton bollard with Anchors installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the bollards per plans and specifications.

3.41 Bid Item No. 41: Adeka A-30 Flexible Sealant

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per linear foot (LF) of sealant installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the flexible sealant per plans and specifications.
   2. Contractor may provide an alternate material or method of sealing to be paid on a per linear foot basis.

3.42 Bid Item No. 42: Cell Sheet Welding at Platform

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per linear foot of welding completed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor and materials necessary to weld the cell sheets per the plans and specifications.

3.43 Bid Item No. 43: Pipe Coating

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per square foot (SF) of pipe coated per plans and specifications.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor and materials for coating of the pipe.

3.44 Bid Item No. 44: Test Pile Program (01 71 23)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per test pile completed.
B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for completing the specified test piles.
2. The test pile program includes
   a. Static Load Test
   b. Indicator Piles
   c. Lateral Load Test
   d. Uplift Test

3.45 Bid Item No. 45: Mirafi G100W Water Proofing Membrane

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per square yard of membrane installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the membrane per plans and specifications.

3.46 Bid Item No. 46: Scour Protection Boulder Stone (31 05 10)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton of stone acceptably placed in the work area. Payment for Boulder Stone will be made at the applicable contract unit prices. Prices and payments shall include all costs of furnishing, hauling, and placing the boulder stone.

B. BASIS OF PAYMENT
1. Armor Stone will be measured for payment by the ton (2,000 pounds) for boulder stone acceptably placed in the work as determined by certified truck weight tickets or barge gauge data.
2. Material placed beyond the tolerance limits specified will not be paid for except where authorized by the Engineer. Reduction for materials placed beyond tolerance limits will be made based on 1.4 tons per cubic yard for all material. Any material wasted or used by the Contractor for other purposes and any material not placed in the work in accordance with the requirements of the specifications will not be measured or paid for.
3. Payment for Boulder Stone shall not be made until the Engineer has received and approved the survey data, submittals and weight tickets or barge gauge data for the Boulder Stone.

3.47 Bid Item No. 47: Scour Protection Filter Stone (31 05 10)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton of stone acceptably placed in the work area. Payment for Filter Stone will be made at the applicable contract unit prices. Prices and payments shall include all costs of furnishing, hauling, and placing the filter stone.

B. BASIS OF PAYMENT
1. Armor Stone will be measured for payment by the ton (2,000 pounds) for filter stone acceptably placed in the work as determined by certified truck weight tickets or barge gauge data.
2. Material placed beyond the tolerance limits specified will not be paid for except where authorized by the Engineer. Reduction for materials placed beyond tolerance limits will be made based on 1.4 tons per cubic yard for all material. Any material wasted or used by the Contractor for other purposes and any material not placed in the work in accordance with the requirements of the specifications will not be measured or paid for.
3. Payment for Filter Stone shall not be made until the Engineer has received and approved the survey data, submittals and weight tickets or barge gauge data for the Filter Stone.

3.48 Bid Item No. 48: Concrete Mattress (XX XX XX)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per cubic yard (CYD) of concrete mattress installed per the design plans.

B. BASIS OF PAYMENT
1. Payment will be based on the installed cubic yard, as verified by survey. The unit bid price shall include all materials and activities necessary to furnish and install the concrete mattress.

3.49 Bid Item No. 49: AZ 19 X 700 Sheet Pile (50 ft. Long) (31 62 16)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton of steel delivered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installing the sheet piles.

C.

3.50 Bid Item No. 5: HP10 X 57 Wale (31 62 16)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton of steel delivered and installed.
B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.51 Bid Item No. 51: HP 10 X 42 Brace

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton of steel delivered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.52 Bid Item No. 52: 12” OD Driven Pipe Pile (62 ft. Long) (31 62 00)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton of steel delivered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.53 Bid Item No. 53: 16” OD Driven Pipe Pile (64 ft. Long) (31 62 00)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton of steel delivered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.54 Bid Item No. 54: Coating of HP and Pipe Piles (31 62 00)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per square foot (SF) of coating applied.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.55 Bid Item No. 55: Rubber Fender Schuyler Model 114 (35 59 13)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per each fender installed.
B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.56 Bid Item No. 56: 25 Ton Bollard

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per each 25 Ton Bollard installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.57 Bid Item No. 57: Concrete Fill 12” OD Pipe Pile

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per cubic yard (CYD) concrete placed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.58 Bid Item No. 58: Concrete Fill 16” OD Pipe Pile and Bollard Cap

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per cubic yard (CYD) concrete placed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.59 Bid Item No. 59: Offloading Platform Structural Fill (31 05 10)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per cubic yard (CYD) of structural fill placed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation. Testing of structural fill to meet specification is to be considered incidental to this bid item and should be included in the unit bid price.

3.60 Bid Item No. 60: Structural Crushed Rock (31 05 10)
A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per cubic yard (CYD) of structural crushed rock placed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation. Testing of structural fill to meet specification is to be considered incidental to this bid item and should be included in the unit bid price.

3.61 Bid Item No. 61: Rubber Fender- Scuyler Model 153 (35 59 13)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per each fender installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.62 Bid Item No. 62: Wire Ropes

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per linear foot (LF) wire rope installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.63 Bid Item No. 63: 12” HDPE Dredge Pipe (33 00 10)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per linear foot (LF) of pipe installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation. Pipe racks to support the pipe are considered incidental to this bid item and should be included in the Unit Price.

3.64 Bid Item No. 64: Pipe Manifolds for 12” HDPE Dredge Pipe (33 00 10)

A. MEASUREMENT OF PAYMENT
   1. This item shall be paid for by unit price per each manifold installed.

B. BASIS OF PAYMENT
   1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.
3.65 Bid Item No. 65: AZ 19X700 Sheet Pile (55ft. Long) (Weir Structure)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton (2,000 lbs) steel ordered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.66 Bid Item No. 66: Furnish and Install HP 10X57 Support (Weir Structure)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton (2,000 lbs) steel ordered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.67 Bid Item No. 67: Furnish and Install HP 10X42 Struts (Weir Structure)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton (2,000 lbs) steel ordered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.68 Bid Item No. 68: Furnish and Install HP 10X57 Wales (Weir Structure)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per ton (2,000 lbs) steel ordered and installed.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.69 Bid Item No. 69: Coating of Support HP 12X84 (Weir Structure) (Top to 5 ft. into Mud)

A. MEASUREMENT OF PAYMENT
1. This item shall be paid for by unit price per square foot (SF) of coating applied.

B. BASIS OF PAYMENT
1. Unit Price shall include all costs to furnish all labor, materials, equipment and transportation for installation.

3.70 SCHEDULE OF ALTERNATIVES

A. Not Used

END OF SECTION
SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes:
   1. Administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

A. Unit price work will be the Schedule of Values used as the basis for reviewing Applications for Payment.

B. For lump sum contracts, furnish a statement allocating portions of the Contract Sum to various portions of the Work which will be used as the basis for reviewing Applications for Payment.
   1. Submit preliminary Schedule of Values within 10 days after the effective date of the Agreement and before the Preconstruction Conference.
   2. At the Preconstruction Conference, the preliminary Schedule of Values will be reviewed for acceptability by the Engineer.
   3. Within 10 days after the Preconstruction Conference, and before submittal of progress payments, make corrections and adjustments as necessary to obtain an acceptable Schedule of Values and resubmit to the Engineer.

C. Format and Content
   1. Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each specification section.
   2. Include the following project identification on the Schedule of Values:
      a. Project name and location.
      b. Name of Engineer.
      c. Engineer’s project number.
      d. Contractor’s name and address.
      e. Date of submittal.
   3. Arrange the Schedule of Values per specification section with the following subdivisions, description of work and dollar values for each:
      a. Subcontractor work.
      b. Manufacturer or fabricator.
      c. Supplier.
      d. Contractor work.
   4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports.
   5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

8. Provide a separate line item in the Schedule of Values for each allowance. Show line item value of unit cost allowances as a product of the unit cost multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense at Contractor’s option.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as recommended by the Engineer and approved by Owner.

B. The date for each progress payment is the [____________________] of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends 10 days before the date for each progress payment.

C. Requests for progress payments shall be at least 10 days before the date established for each progress payment, but not more often than once a month.

D. Use forms provided by Engineer for applications for payment. Sample copy of the Application for Payment and Continuation Sheet is included in section "Contractor's Application for Payment".

E. Application Preparation Procedures
   1. When requested by the Contractor, the Engineer will determine the actual quantities and classifications of Unit Price Work performed.
      a. Preliminary determinations will be reviewed with the Contractor before completing Application for Payment.
      b. Engineer will complete the Application for Payment based on Engineer’s decision on actual quantities and classifications.
      c. Engineer will submit three (3) original copies of Application for Payment to Contractor for certification of all three (3) original copies.
      d. Contractor shall submit signed Application for payment to Owner for approval within time frame agreed to at the Preconstruction Conference.
2. For a lump sum price contract, the Contractor shall prepare a preliminary determination for payment based on the approved Schedule of Values and review with Engineer before completing Application for Payment.
   a. Submit all three (3) original signed copies of Application for Payment to Engineer with signed certification within time frame agreed to at the Preconstruction Conference.
   b. Engineer will submit all three (3) original copies of the Application for Payment with recommendation to Owner.

3. If payment is requested for materials and equipment not incorporated in the Work, then the following shall be submitted with the Application for Payment:
   a. Evidence that materials and equipment are suitably stored at the site or at another location agreed to in writing.
   b. A bill of sale, invoice, or other documentation warranting that the materials and equipment are free and clear of all liens.
   c. Evidence that the materials and equipment are covered by property insurance.

4. Complete every entry on form. Execute by a person authorized to sign legal documents on behalf of Contractor.

F. With each Application for Payment, submit waivers of liens from subcontractors and suppliers for the construction period covered by the previous application.
   1. Submit partial waivers on each item for amount requested before deduction for retainage on each item.
   2. When an application shows completion for an item, submit final or full waivers.
   3. Owner reserves the right to designate which entities involved in the Work shall submit waivers.
   4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application.
   5. Submit waivers of lien on forms executed in a manner acceptable to Owner.

G. The following administrative actions and submittals shall precede or coincide with submittal of first Application for Payment:
   1. List of subcontractors.
   2. Schedule of Values.
   3. Contractor’s construction schedule.
   5. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.

H. Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. Consent of Surety to Final Payment.
   5. Final lien waivers as evidence that claims have been settled.
   6. Final liquidated damages settlement statement.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for project meetings including, but not limited to, the following:
   1. Preconstruction conferences.
   2. Progress meetings
   3. Preinstallation conferences.
   4. Preconstruction private easement meeting.

1.2 PRECONSTRUCTION CONFERENCE

A. Engineer will schedule a preconstruction conference within 20 days after the Contract Times start to run and before Work at the site is started.

B. Authorized representatives of the Owner, Engineer, the Contractor and its superintendent; major subcontractors; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to make binding decisions of matters relating to the Work.

C. The purpose of the Preconstruction Conference is to:
   1. Establish a working understanding among the parties as to the Work.
   2. Discuss the following preliminary schedules prepared by the Contractor.
      a. Progress schedule.
      b. Shop drawing and sample submittals.
      c. Schedule of values for all of the Work.
   3. Processing Applications for Payment.
   4. Maintaining required records.
   5. Other Project requirements.

1.3 PROGRESS MEETINGS

A. Progress meetings at the Project site will be scheduled by the Engineer at regular intervals.

B. In addition to representatives of the Owner, the Engineer and the Contractor, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to make binding decisions on matters relating to the Work.
C. Items of significance will be reviewed that could affect progress.
   1. Review progress since the last meeting. Determine where each activity is in relation to the Contractor’s construction schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether scheduled revisions are required to insure that current and subsequent activities will be completed within the Contract Time.
   2. Review the present and future needs of each entity present, including the following:
      a. Interface requirements.
      b. Time.
      c. Sequences.
      d. Status of submittals.
      e. Deliveries.
      f. Off-site fabrication problems.
      g. Access.
      h. Site utilization.
      i. Temporary facilities and services.
      j. Hours of work.
      k. Hazards and risks.
      l. Housekeeping.
      m. Quality and work standards.
      n. Change orders.
      o. Documentation of information for payment requests.

D. Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule within 5 days after each meeting.

1.4 PREINSTALLATION CONFERENCES

A. Conduct a preinstallation conference at the Project site at least 7 days before each construction activity that requires coordination with other construction.

B. The installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Engineer of scheduled meeting dates.
   1. Review the progress of other construction activities and preparations for the particular activity under consideration at each preinstallation conference, including requirements for the following:
      b. Options.
      c. Related Change Orders.
      d. Purchases.
      e. Deliveries.
      f. Shop drawings, product data, and quality control samples.
g. Review of mockups.

h. Possible conflicts.

i. Compatibility problems.

j. Time schedules.

k. Weather limitations.

l. Manufacturer’s recommendations.

m. Warranty requirements.

n. Compatibility of materials.

o. Acceptability of substrates.

p. Temporary facilities.

q. Space and access limitations.

r. Governing regulations.

s. Inspecting and testing requirements.

t. Required performance results.

u. Recording requirements.

v. Protection.

2. Record significant discussions and agreements and disagreements of each conference and the approved schedule. Promptly distribute the record of the meeting to everyone concerned including the Owner and the Engineer.

3. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.5 PRECONSTRUCTION PRIVATE EASEMENT MEETING

A. Advise the Engineer when ready for preconstruction easement meetings. Engineer will schedule preconstruction private easement meetings with each easement grantor prior to construction on the easement.

B. Authorized representatives of the property owner, Owner, Engineer, and Contractor and its superintendent, and other concerned parties shall attend the meeting. All participants at the meeting shall be familiar with the Project and authorized to make binding decisions of matters relating to the Work.

C. The purpose of the Preconstruction Private Easement Meeting is to:

1. Establish a working understanding among the parties as to the Work within private easements and easement requirements.

2. Establish the construction procedures which will be used to minimize damage within the easement.

3. Identify and agree to items such as structures, trees, shrubbery, walls, and other obstructions which will be removed and replaced.

4. Define and agree to the level of final restoration on the easement property.

5. Establish when the Work within the easement is scheduled.

D. Engineer will record the significant discussions and agreements and distribute to all participants.
E. Do not proceed with installation within an easement until the Preconstruction Private Easement Meeting is successfully completed and agreements are obtained.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for submittals:
   1. Progress Schedule
   2. Schedule of Shop Drawings and Sample Submittals
   3. Shop Drawings
   4. Samples
   5. Quality Assurance and Quality Control Submittals

B. Failure to meet Submittal requirements to the satisfaction of the Engineer will constitute unsatisfactory performance of the work in accordance with the Contract Documents, therefore, the Engineer may recommend to the Owner that all or a portion of payments requested during the corresponding pay period be withheld until these requirements are met.

1.2 SUBMITTAL PROCEDURES

A. Coordination
   Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.
      a. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
   3. To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
      a. Allow two weeks for initial submittal.
      b. Allow two weeks for reprocessing each submittal.
      c. No extension of Contract Time will be authorized because of failure to transmit submittals to the Engineer sufficiently in advance of the work to permit processing.

B. Submittal Preparation
   Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
   1. Assign a reference number to each submittal and resubmittal.
2. Provide a space approximately 4 by 5 inches (100 by 125 mm) on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

3. Include the following information on the label for processing and recording action taken.
   a. Project name.
   b. Date.
   c. Name and address of the Engineer.
   d. Name and address of the Contractor.
   e. Name and address of the subcontractor.
   f. Name and address of the supplier.
   g. Name of the manufacturer.
   h. Number and title of appropriate Specification Section.
   i. Drawing number and detail references, as appropriate.

4. Each submittal shall be stamped by the Contractor indicating that submittal was reviewed for conformance with the Contract Documents. The Engineer will not accept unstamped submittals.

C. Submittal Transmittal
Package each submittal appropriately for transmittal and handling. Transmit each submittal to the Engineer. The Engineer will not accept submittals received from sources other than the Contractor.

1. On the transmittal, record relevant information and requests for Engineer action. On a form, or separate sheet, record deviations from Contract Document requirements, including variations, limitations and justification. Include Contractor's certification that information complies with Contract Document requirements.

1.3 CONTRACTOR'S PROGRESS SCHEDULE

A. Prepare and submit to the Engineer within 10 days after the Effective Date of the Agreement, six copies of a preliminary progress schedule of the work activities from Notice to Proceed until Substantial Completion.

1. Provide sufficient detail of the work activities comprising the schedule to assure adequate planning and execution of the work, such that in the judgement of the Engineer, it provides an appropriate basis for monitoring and evaluation of the progress of the work. A work activity is defined as an activity which requires substantial time and resources (manpower, equipment and/or material) to complete and must be performed before the contract is considered complete.

2. The schedule shall indicate the sequence of work activities. Identify each activity with a description, start date, completion date and duration. Include, but do not limit to the following items, as appropriate to this contract:
   a. Shop drawing review by the Engineer.
   b. Material and Equipment:
      1) Order
      2) Manufacture
      3) Delivery
      4) Installation
5) Startup
6) Operation and maintenance training
   c. Performance tests and supervisory service activities.
   d. Excavation and grading.
   e. Concrete placement sequence.
   f. Construction of various facilities.
   g. Construction of various segments of utilities.
   h. Subcontractor’s items of work.
   i. Allowance for inclement weather.
   j. Contract interfaces, date of Substantial Completion.
   k. Interfacing and sequencing with existing facilities and utilities.
   l. Sequencing of major construction activities.
   m. Milestones and completion dates.

B. Distribution
   Following response to the initial submittal, print and distribute copies of the revised construction schedule to the Engineer, Owner, Subcontractors, and other parties required to comply with scheduled dates. Post copies in the field office.
   1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.

C. Schedule Updating
   Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

D. Punch List
   Prepare and submit to the Engineer within 10 days after substantial completion a detailed progress schedule for outstanding work and punch list items.

1.4 SCHEDULE OF SHOP DRAWINGS AND SAMPLE SUBMITTALS

A. Submit three (3) copies of preliminary submittal schedule in accordance with the General Conditions of the Contract and as follows:
   1. Coordinate submittal schedule with the subcontractors, Schedule of Values, and the list of products as well as the Contractor’s Progress Schedule.
   2. Prepare the schedule in chronological order. Provide the following information:
      a. Scheduled date for the first submittal.
      b. Related Section number.
      c. Submittal category (Shop Drawings, Product Data, or Samples).
      d. Name of the subcontractor.
      e. Description of the part of the work covered.
      f. Scheduled date for the Engineer’s final release or approval.

B. Distribution
   Following response to the preliminary submittal schedule, print and distribute copies of the revised submittal schedule to the Engineer, Owner, subcontractors, and other
parties required to comply with submittal dates indicated. Post copies in the field office.
1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.

C. Schedule Updating
Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 SHOP DRAWINGS

A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

B. Shop drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
1. Dimensions.
2. Identification of products and materials included by sheet and detail number.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.
6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8½ by 11 inches (215 by 280 mm) but no larger than 24 by 36 inches.

C. Collect product data into a single submittal for each element of construction or system. Product data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.
1. Mark each copy to show actual product to be provided. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
   a. Manufacturer's printed recommendations.
   b. Compliance with trade association standards.
   c. Compliance with recognized testing agency standards.
   d. Application of testing agency labels and seals.
   e. Notation of dimensions verified by field measurement.
   f. Notation of coordination requirements.

D. Do not use shop drawings without an appropriate final stamp indicating action taken.
E. Submittals
Submit 6 copies of each required submittal. The Engineer will retain two copies, forward one to the Owner, and will return the others to the Contractor marked with action taken and corrections or modifications required.

F. Distribution
Furnish copies of reviewed submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms. Maintain one copy at the project site for reference.
1. Do not proceed with installation until a copy of the Shop Drawing is in the Installer’s possession.
2. Do not permit use of unmarked copies of the Shop Drawing in connection with construction.

Delete article below if samples are not required.

1.6 SAMPLES

A. Submit full-size, fully fabricated samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
1. Mount or display samples in the manner to facilitate review of qualities indicated. Include the following:
   a. Specification section number and reference.
   b. Generic description of the sample.
   c. Sample source.
   d. Product name or name of the manufacturer.
   e. Compliance with recognized standards.
   f. Availability and delivery time.
2. Submit samples for review of size, kind, color, pattern, and texture.
   a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least three multiple units that show approximate limits of the variations.
   b. Refer to other specification sections for requirements for samples that illustrate workmanship, fabrication techniques, and details of assembly, connections, operation, and similar construction characteristics.
   c. Refer to other sections for samples to be returned to the Contractor for incorporation in the work. Such samples shall be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of sample submittals.
   d. Samples not incorporated into the work, or otherwise designated as the Owner’s property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.
B. Submittals
Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit three samples for review. The Engineer will return one sample marked with the action taken.

C. Distribution of Samples
Prepare and distribute additional samples to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the work. Show distribution on transmittal forms.
1. Maintain reviewed samples at the project site for quality comparisons throughout the course of construction.

D. Field Samples
Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.7 QUALITY ASSURANCE SUBMITTALS

A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other sections of the specifications.

B. Certifications
Where other sections of the specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.
1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

C. Inspection and Test Reports
Submit as required by other sections of the specifications.

1.8 ENGINEER’S ACTION

A. Except for submittals for the record or information, where action and return is required, the Engineer will review each submittal, mark to indicate action taken, and return promptly. The Engineer will stamp each submittal with a uniform action stamp. The Engineer will mark the stamp appropriately to indicate the action taken, as follows:
1. "No Exceptions Taken": The work covered by the submittal may proceed provided it complies with requirements of the Contract Documents.
2. "Make Corrections Noted": The work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents.
3. "Amend and Resubmit": Do not proceed with work covered by the submittal. Resubmit without delay. Do not use, or allow others to use, submittals marked "Amend and Resubmit" at the Project Site or elsewhere where work is in progress.
4. "Rejected - See Remarks": Do not proceed with work covered by the submittal. Resubmit without delay. Do not use, or allow others to use, submittals marked "Rejected and Resubmit" at the Project Site or elsewhere where work is in progress.

B. Unsolicited Submittals
The Engineer/Architect will return unsolicited submittals to the sender without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Underground Utilities
   2. Dewatering
   3. Property Monuments
   4. Discharging Chlorinated Water
   5. Traffic Control
   6. Wastewater Treatment During Construction
   7. Permits Required for the Project

1.2 UNDERGROUND UTILITIES

A. Under the provisions of Wisconsin Statutes, Section 182.0175, all contractors, subcontractors, and any firm or individual intending to do work on this contract shall contact all utility firms in the affected area of construction a minimum of three (3) working days prior to beginning construction so that affected utilities will be located and marked.

1.3 PROPERTY MONUMENTS

A. Protect iron pipe monuments from movement.

B. The cost of replacement of any monuments moved or destroyed during construction shall be the Contractor’s responsibility.

C. Perpetuation of destroyed or moved monuments shall be performed in accordance with state statutes by a registered land surveyor.

1.4 NOTICE TO MARINERS

A. The Contractor shall work with the US Coast Guard to issue a notice to mariners regarding the work.

B. All marine equipment shall meet Federal Regulations regarding lighting and anchoring.

1.5 TRAFFIC CONTROL

A. Provide traffic control facilities including barricades, signs, lights, warning devices, pavement markings, flaggers, etc.
B. Construct and use traffic control facilities in accordance with the U.S.D.O.T. Federal Highway Administration’s Manual on Uniform Traffic Control Devices for Streets and Highways.

C. Maintain traffic control devices as required to properly safeguard the public travel through final completion, including during periods of suspension of work.

1.6 WASTEWATER TREATMENT DURING CONSTRUCTION

A. The Contractor is required to meet wastewater treatment requirements to obtain a certain level of treatment at all times in accordance with the Contractor’s WPDES Permit issued by the Wisconsin Department of Natural Resources.

1. The day-to-day operation of the wastewater treatment plant is the responsibility of the Contractor.

2. The Contractor shall be responsible for providing the facilities and to provide operation and maintenance training of all equipment prior to placing in operation.

3. The Contractor's operations and sequence of operations shall be such that the Contractor can continue to meet the minimum requirements of the WPDES Permit.

4. Provide the Engineer and Owner with written plan for sequencing and operation of any proposed facility changes. Owner approval is required prior to start of any facility changes.

5. Any damage costs charged to the Owner due to Contractor’s improper or inadequate facilities provided to maintain proper plant operation will be deducted from any payments made to the Contractor.

B. Temporary Facilities

1. Provide temporary facilities to replace any treatment processes required to be out of service in order to complete construction of the new facilities.

2. Temporary facilities shall provide the same capacities and redundancies as those replaced to maintain the influent and effluent flow and treatment requirements of the wastewater treatment plant.

3. Insure that temporary facilities are operating properly before taking existing facilities out of service.

4. Provide sufficient operating automation to continuously maintain wastewater treatment and flow conditions.

5. Provide sufficient alarms for monitoring equipment and flow conditions which will notify Owner and Contractor personnel of emergency conditions which could cause damage, flooding or reduced treatment efficiency.
1.7 PERMITS REQUIRED FOR THE PROJECT

A. The following permits are being obtained by the Owner:
   1. Wisconsin Department of Natural Resources Low Hazard Exemption
   2. Wisconsin Department of Natural Resources Water Quality Certification NR 299
   3. USACE Section 401/404
   4. USACE Section 408

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Temporary utilities including:
   a. Temporary electric power.
   b. Temporary sanitary facilities, including drinking water.

2. Support facilities including:
   a. Dewatering facilities.
   b. Project identification and other temporary signs.
   c. Waste disposal services.
   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.

C. Pay water service use charges (power for temporary well), whether metered or otherwise, for water used by all entities engaged in construction activities at Project Site.

D. Pay electric power service use charges, whether metered or otherwise, for electricity used by all entities engaged in construction activities 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. Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

C. 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. Units shall be properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

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. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Temporary Water Well
   1. Install temporary water service and distribution piping of sizes and pressures adequate for construction needs.
   2. Sterilize water piping prior to use.

D. Temporary Electric Power Service
   1. Provide weatherproof grounded electric power service and distribution system of sufficient size, capacity and power characteristics for construction needs.
   2. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters and main distribution switch gear.

E. Temporary Lighting
   1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system.
   2. Provide lighting that provides adequate illumination for construction operations and traffic conditions.

F. Temporary Heat and Ventilation
   1. Provide temporary heat and ventilation required for the construction activities, including but not limited to curing or drying completed installations and protecting construction from adverse effects of low temperatures and high humidity.
   2. Use safe equipment that will not have a harmful effect on elements being installed and on completed installations.
   3. Coordinate ventilation requirements to produce the ambient condition required for the work and to minimize energy consumption, and to protect personnel from fumes and other harmful effects.

G. Heating Facilities
   1. Provide vented self-contained heaters with individual space thermostatic control.
Retain the following subparagraphs with either paragraph above. Edit to suit project.

2. Do not use gasoline-burning space heaters, open flame or salamander-type heating units.

H. Temporary Telephone Service
1. Minimally provide a separate telephone line for each temporary office and first-aid station, and provide a dedicated telephone line for a fax machine in the Contractor's field office.

I. 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.
   c. Include safety showers, eyewash fountains and similar facilities for the convenience, safety and sanitation of personnel.
5. Provide drinking water fountains or containerized tap-dispenser bottled-drinking water units, complete with paper cup supplies. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55°F (7 to 13°C).

J. Sewers and Drainage
1. Where sewers are available, provide temporary connections to remove effluent that can be discharged lawfully.
2. If sewers are not available, provide containers to remove and dispose of effluent off-site in a lawful manner.
3. Filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminants that might clog sewers or pollute waterways.
4. Connect temporary sewers as directed by sewer utility officials.
5. Maintain temporary sewers and facilities in a clean, sanitary condition. Following heavy use, promptly restore sewers and facilities to normal conditions.

K. Stormwater Controls
1. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains.
2. Provide erosion control facilities required to prevent eroded soil from leaving the Site.

3.2 TEMPORARY SUPPORT FACILITIES

A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access.

B. Provide incombustible construction for offices, shops and sheds located within the construction area or within 30 feet (9 m) of building lines. Comply with NFPA 241.

C. Field Offices
   1. Provide insulated, weathertight temporary offices of sufficient size to accommodate office personnel at the Project site.
   2. Provide a room of not less than 240 sq. feet (22.5 sq. m) for project meetings.
   3. Maintain offices clean and orderly.
   4. Furnish and equip offices for use.

D. Storage Sheds and Fabrication Shops
   1. Provide sheds and shops that are sized, furnished and equipped to accommodate materials and equipment involved.
   2. Include complete temporary utility services for intended use.
   3. Sheds and shops may be open shelters or fully enclosed spaces, as appropriate for use.

E. Temporary Paving
   1. Construct and maintain temporary roads and paving to support indicated loadings, if any, and to withstand exposure to traffic during the construction period.
   2. Locate temporary paving for roads, storage areas and parking where same permanent facilities will be located, or obtain authorization from the Contracting Officer's Representative for proposed temporary paving not located at permanent paving locations.
      a. Comply with Division 2 sections applicable to paving for construction and maintenance of temporary paving.
      b. Coordinate temporary paving development with subgrade grading, compaction, installation and stabilization of subbase, and installation of permanent paving.
      c. Install temporary paving to minimize the need to rework installations and result in permanent roads and paved areas without damage or deterioration when occupied.
      d. Extend temporary paving in and around the construction area as necessary to accommodate delivery and storage of materials, equipment usage, administration and supervision.
      e. Coordinate with weather conditions to avoid unsatisfactory results.
F. Dewatering Facilities and Drains
1. Comply with dewatering requirements of applicable Division 2 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 water.

G. Temporary Enclosures
1. Provide temporary enclosures for protection of construction, in progress or completed, from exposure, inclement weather, other construction operations and similar conditions.
2. Where heat is needed and the building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions or unacceptable effects.
3. Install tarpaulins securely with incombustible framing. Close openings of 25 sq. ft. (2.3 sq. m.) or less with plywood or similar materials.
4. Close openings through floor or roof decks and other horizontal surfaces with load-bearing wood-framed construction.
5. Where enclosure exceeds 100 sq. ft. (9.2 sq. m) in area, use UL labeled fire-retardant-treated wood and plywood for framing and sheathing.

Add subparagraphs for temporary elevators and other special lift and hoist requirements, if any.

H. Temporary Lifts and Hoists
1. Provide facilities for hoisting materials and personnel.

I. Project Identification and Other Temporary Signs
1. Provide project identification and other signs of sizes, layout, content, graphics and colors indicated.
2. Locate signs where best to inform public and instruct persons seeking entrance to the project.
3. Support signs on posts or framing of steel or preservative-treated wood.
4. Prepare signs to provide directional information to construction personnel and visitors.
5. Install exterior yard and sign lights so signs are visible at all times when work is being performed.
6. Do not permit installation of unauthorized signs.

J. Collection and Disposal of Waste
1. Collect waste from construction areas and elsewhere daily. Enforce requirements strictly and dispose of material lawfully.
3. Do not hold waste materials more than 7 days during periods when the ambient temperature remains continuously less than 80°F (27°C), or more than 3 days when the temperature exceeds or is expected to rise above 80°F (27°C).
4. Handle and properly containerize hazardous, dangerous or unsanitary waste materials separately from other waste.

K. Temporary Stairs
1. Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
2. When permanent stairs are available, cover finishes with protective coverings to result in undamaged conditions at project completion.

3.3 TEMPORARY PROTECTION FACILITIES

A. Temporary Facility Changeover
1. Except for using permanent fire protection facilities as soon as available, do not change over from temporary protection facilities until approved by the Owner.

B. Temporary Fire Protection
1. Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of types needed to protect against reasonably predictable and controlled fire losses.
3. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher at or near each access route exit or entrance.
4. Store combustible materials in containers in fire-safe locations.
5. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities and access routes.
6. Prohibit smoking in hazardous fire-exposure areas.
7. Provide supervision of welding operations, combustion-type temporary heating units and other sources of fire ignition.

C. 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.

D. Enclosure Fence
1. When excavation begins, install an enclosure fence with lockable entrance gates to prevent people and animals from easily entering the site, except by the entrance gates.
2. Locate where indicated or, if not indicated, enclose the entire site or the portion determined sufficient to accommodate construction operations.
3. Provide open-mesh chain link fencing with posts set in a compacted mixture of gravel and earth.

E. Security Enclosure and Lockup
1. Install substantial temporary enclosure of partially completed areas of construction.
2. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
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.

F. Environmental Protection
1. Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result.
2. Avoid using tools and equipment that produce harmful noise.
3. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons near the site.

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 similar elements.
3. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
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 and can be replaced by authorized use of a permanent facility.
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 Government reserves the right to take possession of project identification signs.

5. Prior to project completion, replace clean and restore permanent facilities used during the construction period including, but not limited to, the following:
   a. Replace air filters and clean inside of ductwork and housings.
   b. Replace significantly worn parts and parts subject to unusual operating conditions.
   c. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION
SECTION 01 57 19

ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Contractor shall furnish all labor, equipment, and materials required for environmental protection during and as the result of construction operations under this Contract except for those measures set forth in other provisions of these Specifications.

1.2 RELATED SECTIONS

A. Section 31 25 00, “Erosion and Sedimentation Controls”

B. Section 02 93 00, “Site Restoration”

1.3 REQUIREMENT

A. Environmental protection requires consideration of air, water, and land. Where applicable may also include monitoring and abatement of odors generated during sediment excavation and storage.

1.4 REGULATORY COMPLIANCE

A. In order to prevent environmental pollution and to provide for environmental protection arising from construction activities related to the performance of this Contract, Contractor and Subcontractors shall comply with all applicable federal, state and local laws and regulations concerning environmental protection, as well as the specific requirements stated in this section and elsewhere in the Specifications.

1.5 SUBMITTALS

A. Implementation Plan. Prior to commencement of the Work, Contractor shall:
   1. Submit in writing his/her plans for implementing this section for environmental protection.
   2. Meet with the Engineer to develop mutual understandings relative to compliance with the provisions of this section and administration of the environmental protection program.

B. Best Management Practices Plan. Contractor must abide by a Best Management Practices (BMP) Plan, prepared in accordance with the requirement of the Project permits. Contractor shall follow BMPs for invasive species control,
erosion-control and sediment control measures, implement prior to any work starting, and prevent offsite movement of sediment from onsite sources during normal storm events (and during dust control applications of water). The Contractor is responsible for adhering to all state and local requirements, the project Drawings, Specifications, and guidelines included in the permits for the Project obtained by the Engineer.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 GENERAL

A. Limits of working areas include areas for storage of construction material, and shall be cleared in a manner which will enable satisfactory restoration and will not affect the environment during or after the construction period. Contractor shall not enter beyond the limits of the working area except with written approval of Engineer and Owner.

B. The location of areas for storage of Contractor’s materials required temporarily in the performance of the Work, shall be within the limits of the Site and shall require written approval of Engineer prior to use. The preservation of the existing landscape is critical to the selection of the sites. Where temporary structures are constructed on slope, the Engineer may require cribbing or stepping to obtain level foundation.

C. Contractor shall remove all signs of temporary construction facilities such as work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, temporary erosion and sediment controls, or any other vestiges of construction. Disturbed areas shall be graded and filled as required in accordance to Section 02 93 00, “Site Restoration.”

3.2 PROTECTION OF WATER RESOURCES

A. Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acids or other harmful materials. It is the responsibility of Contractor to investigate and comply with all applicable federal, state, and local laws concerning pollution of rivers, streams and impounded water. All Work under this Contract shall be performed in such a manner that objectionable conditions will not be created in streams, lakes, reservoirs, or bodies of water adjacent to, or within, the Project Area.

B. Contractor shall adhere to slope stabilization specifications in Section 31 25 00, “Erosion and Sedimentation Controls.”
C. At all times of the year, special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, waste washing, herbicides and insecticides, and cement and surface drainage from entering public or private waters.

D. Any materials, wastes, effluent, trash, garbage, oil, grease, chemicals, etc., in or adjacent to reservoirs, streams or other waterways shall be disposed of by Contractor. If any waste material is dumped in an unauthorized area, Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated soil shall be excavated, disposed of as specified herein, and replaced with suitable fill material, compacted and finished with topsoil, all at the expense of Contractor.

3.3 MAINTENANCE

A. Contractor shall dispose of all discarded debris within the Project Area, from any source whatsoever, in a manner approved by the Engineer. Toilet facilities shall be kept clean and sanitary at all times. Services shall be performed at such a time and in such a manner to least interfere with the operations. Services shall be accomplished to the satisfaction of the Engineer.

B. Contractor shall frequently remove materials no longer required on the site, such as temporary facilities, excess materials, and equipment so that, at all times the site, access routes to the site and any other areas disturbed by the operations shall present a neat, orderly appearance.

C. Before final payment, Contractor shall remove all surplus material, temporary structures, including foundations thereof, plants of any description, and debris of every nature; and restore all areas which have been used for or disturbed by the operations, to their original condition or to a condition satisfactory to and approved of by Engineer.

3.4 DUST CONTROL

A. Contractor shall maintain all excavations, embankments, stockpiles, haul roads, permanent access roads, waste areas, borrow areas, dewatering basins, stockpiles, and all other work areas free from dust which would cause a hazard or nuisance to others or contaminate surface water.

B. Contractor shall, at their own expense, keep dust under control at all times on all roadways, sidewalks and other areas adjacent to the Work or on the site of the Work by the use sweepers, vacuums, water spray, or a combination of these methods at least once a day and at other times when directed.

C. All areas undergoing excavation, grading, filling, and cutting are subject to dust-inhibiting practices.
D. Spraying water shall be performed at such intervals to keep all parts of the disturbed area damp at all times, and Contractor shall have sufficient suitable equipment on the job to accomplish this. Dust control shall be performed daily as the Work proceeds and whenever a dust nuisance or hazard occurs.

E. The use of liquid palliative and penetrating asphaltic materials is prohibited.

3.5 PROHIBITED CONSTRUCTION PROCEDURES

A. Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors, and floodplain is strictly prohibited. Any violation of this restriction by Contractor or any person employed by him will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, Contractor will be required to remove the fill at their own expense and restore the area impacted.

B. Contractor shall comply with the following requirements regarding prohibited construction procedures as follows:
   1. Indiscriminate, arbitrary or capricious operations of equipment in any stream corridors, any wetlands or surface waters.
   2. Pumping of silt-laden water from trenches or other excavations into any surface waters, any stream corridors or any wetlands.
   3. Damaging vegetation adjacent to, or outside of, the access road or the right-of-way.
   4. Disposal of excess or unsuitable excavation material in wetlands or floodplain.
   5. Open burning of project debris.
   6. Location of storage stockpile areas in environmentally sensitive areas.

END OF SECTION
SECTION 01 71 23

FIELD ENGINEERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Engineering Surveys Provided by the Owner’s Representative.
   2. Engineering Surveys Provided by the Contractor.
   3. Profile and Topography Shown on the Drawings.
   4. Record Measurements and Markers.

1.2 SUBMITTALS

A. Provide record measurements of facilities as installed.

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 invert elevations at points of connection of sanitary sewer, storm sewer, water piping and underground electrical services.

C. Furnish information to the Engineer and the appropriate utility regarding conflicts that are necessary to adjust, move, or relocate existing utility structures, utility poles, 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.

3.2 ENGINEERING SURVEYS PROVIDED BY THE OWNER’S REPRESENTATIVE

A. General
   1. Establish benchmarks for construction as shown on the drawings.
   2. Establish control points as shown on the drawings.
B. Site Improvements and Buildings
   1. Provide construction reference stakes for location of construction limits.
   2. Provide construction reference stakes to establish a reference line from which facilities can be located.
   3. Provide benchmarks as shown on the drawings.

3.3 ENGINEERING SURVEYS TO BE PROVIDED BY THE CONTRACTOR

A. General
   1. Locate, preserve and protect established construction reference stakes, benchmarks and control points.
   2. Locate, preserve and protect property corners and section corner monuments. If moved or destroyed due to Contractor negligence, then replace in accordance with state requirements; some of which are referenced in section “Regulatory Requirements.”
   3. Provide additional construction staking as necessary to complete construction based on the construction reference stakes provided by the Owner’s representative and the Drawings.
   4. Before beginning with necessary construction staking, verify the information shown on the Drawings, in relation to the established construction reference stakes, benchmarks, control points and property corners. Notify the Engineer of any discrepancies.
   5. Remove construction reference stakes when directed by the Engineer.

B. Exploratory Probes:
   1. At the initialization of work, and before material orders are placed, the Contractor shall undertake a probing program which is intended to locate obstructions in the work areas; and to identify breakwater toe depth (to the extent practical) on the south east connection. The minimum equipment shall be a crane (floating or land or both), with a suitably sized vibratory hammer, and an HP12x53 (minimum) pile, equipped with a driving shoe. The crane shall also be equipped with real time RTK-GPS for positioning the pile at the probe locations. Probes shall be taken along the entire perimeter of each cell alignment at a 10 foot maximum spacing, and more frequently in locations where significant differences are found. Each probe is to be logged with GPS position, lead line (or surface) elevation; initial probe tip elevation (weight of probe and hammer only), refusal elevation, time to advance probe in 1-foot increments; along with any remarks. The Contractor shall also furnish a plot of the probing plan with the above data in electronic format. The operation shall be as follows:
      a. Position the pile at proper location
      b. Lower tip of pile to ground (bottom) surface – record depth and compare to lead-line depth at the same location.
      c. Vibrate pile to refusal – while recording time required at regular intervals.
      d. Record refusal depth.
C. Site Improvements and Buildings
   1. Provide construction reference stakes for site improvements including pavements,
      grading, fill and topsoil placement, and utility line and grades.
   2. Provide construction reference stakes for location and elevations of structures,
      building foundations, column grids, floor levels, electrical facilities and
      mechanical facilities.

D. Steel Sheet Interlock Sealing Tests
   1. Contractor will provide visual inspection of all sheet pile interlock sealing prior to
      installation. Inspection will verify that sealant has been installed per
      manufacturers recommendation.
   2. Upon completion of the cellular wall, a die test will be performed to determine
      effectiveness of the Sheet Pile Interlock Sealing. Any areas found to be deficient
      will be remediated using best management practices and may include welding of
      affected interlocks.

3.4 PROFILE AND TOPOGRAPHY SHOWN ON THE DRAWINGS

   A. Contours or profiles of the ground are shown on the drawings. 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.

3.5 RECORD MEASUREMENTS AND MARKERS

   A. Provide record survey information of the as-constructed facilities showing the
      horizontal and vertical location of buried utilities, structures, and other facilities which
      is covered when construction is complete.

END OF SECTION
SECTION 01 77 01

CLOSEOUT PROCEDURES - NON-BUILDING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Inspection procedures.
   2. Project Record Documents.
   3. Operation and maintenance manuals.
   4. Instruction of Owner's personnel.
   5. Final cleaning.

1.2 SUBSTANTIAL COMPLETION

A. Before notification that the Work is substantially complete, provide the following:
   1. Demonstrate to the Engineer that systems and system components operate as intended.
   2. Advise Owner of pending insurance changeover requirements.
   3. Prepare and submit Project Record Documents, operation and maintenance manuals, construction photographs, damage or settlement surveys, property surveys, and similar final record information.
   4. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   5. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   6. Complete startup testing of systems.
   7. Terminate and remove temporary facilities from Project Site.
   8. Complete final cleaning requirements, including touchup painting.
   9. Proof that "Notice of Completion of Easement Restoration" was submitted to grantors by certified mail. (Use form at end of section.)

B. Submit written notification to Owner and Engineer that the entire Work is ready for its intended use and the entire Work is substantially complete.
   1. If the items in paragraph A. above are complete, then within 14 days Owner, Contractor and Engineer shall make an inspection of the Work to determine status of completion.
   2. If Engineer considers the Work substantially complete, then Engineer will prepare and deliver to the Owner a tentative Certificate of Substantial Completion fixing the date of Substantial Completion with an attached tentative list of items to be completed or corrected before final payment.
   3. Engineer will issue a definitive Certificate of Substantial Completion with list of items to be completed or corrected or notify Contractor that the Work is not substantially complete within 21 days after submittal to Owner.
4. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
5. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 FINAL COMPLETION

A. Before requesting final inspection for determining final completion, complete the following:
   1. Items identified as requiring correction or completion.
   2. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
   3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Submit a written notice that the entire Work is complete. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements.
   1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 PROJECT RECORD DOCUMENTS

A. Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record documents for Engineer’s reference during normal working hours.

B. Maintain and submit one set of black-line white prints of Contract Drawings and Shop Drawings.
   1. Mark record drawings to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, Subcontractor, or similar entity, to prepare the marked-up record drawings.
      a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
      b. Accurately record information in an understandable drawing technique.
      c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
      d. Mark contract drawings or shop drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where shop drawings are marked, show cross-reference on Contract Drawings.
   2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
   3. Mark important additional information that was either shown schematically or omitted from original Drawings.
4. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.5 OPERATION AND MAINTENANCE MANUALS

A. Assemble and deliver six (6) complete sets of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual specification sections and as follows:

1. Operation Data:
   a. Emergency instructions and procedures.
   b. System, subsystem, and equipment descriptions, including operating standards.
   c. Operating procedures, including startup, shutdown, seasonal, and weekend operations.
   d. Description of controls and sequence of operations.
   e. Piping diagrams.

2. Maintenance Data:
   a. Manufacturer's information, including list of spare parts.
   b. Name, address, and telephone number of Installer or supplier.
   c. Maintenance procedures.
   d. Maintenance and service schedules for preventive and routine maintenance.
   e. Maintenance record forms.
   f. Sources of spare parts and maintenance materials.
   g. Copies of maintenance service agreements.
   h. Copies of warranties and bonds.

B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION
3.1 DEMONSTRATION AND TRAINING

A. Instruct Owner’s personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
1. Provide instructors experienced in operation and maintenance procedures.
2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
3. Schedule training with Owner through Engineer with at least seven days advance notice.
4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.

B. Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. For each training module, develop a learning objective and teaching outline. Include instruction for the following:
1. System design and operational philosophy.
2. Review of documentation.
3. Operations.
4. Adjustments.
5. Troubleshooting.
7. Repair.

3.2 FINAL CLEANING

A. Provide final cleaning. Conduct 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. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Remove labels that are not permanent.
   f. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

  g. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

  h. Replace parts subject to unusual operating conditions.

  i. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION
To:  Easement Grantor’s Name
       Address

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**Notice of Completion of Easement Restoration**

**Project Name**

**Project Owner**

The restoration of the granted easement for installation of utilities and other improvements is believed to be completed. If you take exception and believe the site restoration of the granted easement is not complete to your understanding and satisfaction, then advise the Engineer and/or Project Owner of the deficiencies in writing. Shortly after you have provided such notification of restoration deficiencies, arrangements will be made to view the site with you to obtain mutual agreement for resolution.

If the Engineer and/or the Owner do not hear from you in writing within 10 days from the date of receipt of this Notice, then it will be understood that the restoration of the granted easement is satisfactorily complete and acceptable to you.

---

**Contractor’s Name**

**Contractor’ Address**

**Contractor’s Phone Number**
SECTION 02 93 00
SITE RESTORATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. All areas of the site and adjacent properties impacted during construction shall be repaired at the expense of the Contractor.

B. The Contractor shall be responsible for all damages caused by construction of the project and shall be responsible for restoring any damaged areas to their original condition (before construction started). All damaged or disturbed concrete and/or asphalt along private and/or public areas, shall be repaired or replaced. Severely damaged asphalt roads shall be replaced.

C. The Contractor shall be responsible for all damages caused to the dikes of the United States Army Corps of Engineers (USACE) Dredged Material Disposal Facility (DMDF). The Contractor shall coordinate all repairs with USACE.

1.2 RELATED SECTIONS

A. Section 31 25 00, Erosion and Sedimentation Control

1.3 REFERENCES

A. Wisconsin Department of Transportation (WisDOT) Standard Specifications.

1.4 QUALITY ASSURANCE

A. Maintenance: Contractor shall maintain all surfaces where necessary, including areas affected by erosion. This includes maintenance of paved or vegetated surfaces.

1.5 SUBMITTALS

A. Prior to mobilizing for construction, the Contractor shall obtain a high definition video recording of the project area, staging areas, material stockpile areas and equipment storage areas as well as any areas required for Site access. The Contractor shall submit one copy of the video electronically to the Owner and Engineer prior to mobilizing any equipment or materials to the Site.

B. The Contractor shall submit a complete materials list of items proposed for the work and a description of how the work will be completed.
PART 2 - PRODUCTS

2.1 PAVEMENT REPAIRS

A. Concrete and asphalt repairs shall be made in accordance with WisDOT Standard Specifications.

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 03 11 00
CONCRETE FORMING

PART 1 - GENERAL

1.1 SUMMARY
A. Section includes formwork for cast-in-place concrete.

1.2 REFERENCES
A. American Concrete Institute (ACI) 347 – Guide for Formwork for Concrete

PART 2 - PRODUCTS

2.1 FORM MATERIALS
A. Use form materials which will
1. Prevent mortar leakage
2. Produce smooth exposed concrete surfaces
3. Maintain accurate alignment without warping
4. Avoid adverse reactions with concrete
B. Use plywood or metal for exposed finish concrete. Furnish in largest practical sizes to minimize number of joints. Do not use boards for exposed surfaces.
C. Use plywood, lumber or metal for unexposed finish concrete. Use lumber dressed on at least two edges and one side for tight fit.
C. For textured finish concrete, match Architect's control sample.
D. Form Ties
1. Adjustable bolts, rods, or other approved clamp type ties specifically designed for internal use. Allow no metal to remain with one inch of finished surface when disassembled. Do not use wires or bands.
2. For water-resisting and water-retaining structures, use deformed ties with integral water seals, designed to resist hydrostatic pressure.
3. Do not use ties which require complete removal, or which require concrete cutting or chipping.
4. Follow manufacturer’s recommendations for spacing.
D. Form release agent: Approved low VOC non-staining commercial form oil or bond breaking agent.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify lines, levels, and measurements before proceeding. Trim sides and bottoms of earth forms. Remove loose dirt. Oversize members 2 inches on each side where earth is used as a form.

B. Make reinforcement, forms, fillers, and ground with which concrete is in contact free from frost, debris, and standing water.

C. Soak subgrade before placing of slabs on grade unless a vapor barrier is used.

3.2 INSTALLATION

A. Follow ACI 347. Assume responsibility for design and structural adequacy of formwork. Design formwork to support all loads until such loads can be supported by concrete structure.

B. Brace or tie together to maintain position and shape. Conform to lines, shapes, dimensions and grades shown. Neatly fit so joints will not appear in exposed concrete. Achieve tolerances per ACI 347.

C. Provide 1-inch chamfer on exposed corners and edges. Do not chamfer columns which are flush with concrete block walls.

D. Provide temporary openings at bottom of column and wall forms, and at other remote locations, to allow inspection and cleaning. Provide additional temporary openings as requested by Engineer. Close openings with panels, flush with inside face of forms.

E. Do not displace or damage required vapor barriers.

3.3 FORM COATINGS AND REUSE

A. Make surfaces in contact with concrete clean, smooth, and free from defects. Do not use damaged or warped forms.

B. Before each use, coat contact surfaces with form release agent. Apply following manufacturer’s instructions.
   1. Clean and re-oil reusable forms before each use. Remove excess oil.
   2. Do not use rust-stained steel forms.
   3. Do not spill oil on reinforcement.
3.4 OPENINGS AND EMBEDDED ITEMS

A. Examine Contract Documents to provide inserts, ties, bolts, hangers, conduits, steps, castings, and other items shown on Drawings or as specified and furnished by others.

B. Construct opening and recesses shown on Drawings or needed to accommodate the work of others.

C. Place inserts before pouring. Brace to prevent movement during pouring. Install items level and plumb.

3.5 FORM REMOVAL

A. Forms for non-structural work and flat work shall remain in place for at least 24 hours.

B. Do not remove forms until concrete has cured and has developed sufficient strength to safely support its own weight and any superimposed loads.

C. Do not remove forms for support of structural work until one of the following has been met:
   1. Four cylinders, field cured according to ASTM C31, reach 75 percent of the specified concrete strength.
   2. Four laboratory cured cylinders reach 100 percent of specified concrete strength, and concrete has cured in the field the same length of time. Field cure time excludes any day, or fraction thereof, when air temperature is less than 50 degrees F.

3.6 CLEANING

A. Clean forms as part of the installation process. Ensure water and debris drain to exterior through clean out ports.

B. During cold weather, remove ice and snow from forms. Do not use water to clean completed forms, unless formwork and construction are within heated enclosures.

END OF SECTION
SECTION 03 20 00

CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes reinforcing for cast-in-place concrete.
   1. Epoxy Coated steel bar and welded steel wire fabric

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. A82 - Steel Wire, Plain, for Concrete Reinforcement
   2. A185 - Specification for Welded Steel Wire Fabric for Concrete Reinforcement
   3. A497 - Specification for Welded Deformed Steel Wire Fabric for Concrete Reinforcement
   4. A615 - Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
   5. A775 - Epoxy-Coated Reinforcing Steel Bars
   6. A884 - Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement

B. American Concrete Institute (ACI)
   2. 318 - Building Code Requirements for Structural Concrete.

C. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice

1.3 SUBMITTALS

A. Follow Section 01 33 00, Submittal Procedures, for reinforcing steel Shop Drawings including:
   1. Proposed construction joint locations
   2. Bar schedule with sizes, bending and fabrication details.
   3. Placement drawings prepared according to ACI 315.

1.4 QUALITY ASSURANCES

A. Follow recommended practices of ACI and CRSI.
1.5 DELIVERY, HANDLING AND STORAGE

A. Deliver reinforcing steel bundled, marked for identification, and tagged with mill run, bar grade and bar number.

B. Store materials off the ground. Cover to prevent damage and accumulation of dirt and rust.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel Bars and Stirrups: ASTM A615, Grade 60.

B. Epoxy-Coated Reinforcing Bars: ASTM A775.

C. Steel Wire: ASTM A82.


E. Deformed Steel Welded Wire Fabric: ASTM A497

F. Epoxy-Coated Welded Wire Fabric: ASTM A884, Class A.

G. Reinforcing bar supports and spacers: CSRI approved. Use precast concrete bricks with sand plates for bottom mats on grade. For vertical Work at permanently exposed or submerged wall faces, use all-plastic wheel spacers.

H. Dowel bar splicers: Grade 60
   1. Richmond Screw Anchor Company dowel bar splicer.
   2. Williams Form Engineering Company rebar flange coupler.

2.2 REINFORCING BAR FABRICATION

A. Shop fabricate to dimensions shown. Bend cold following ACI 318 standards. Use standard ACI hooks and bends unless shown otherwise. Do not use twisted or kinked bars. Do not heat bars.

B. Obtain Engineer’s approval for field bending of reinforcing by an approved method.

PART 3 - EXECUTION

3.1 STEEL BAR PLACEMENT

A. Follow CRSI recommended practices. Accurately position reinforcing. Support reinforcing using supports, spacers, chairs and bolsters in sufficient number to prevent
movement of reinforcing during concrete placement. Secure at least 50 percent of reinforcing intersections with tie wire.

B. Support wall mats with sideform spacers.

C. Do not cut or puncture vapor retard/barrier during reinforcement placement. Repair damage before placing concrete.

D. Unless Drawings show otherwise, place reinforcing to provide the following minimum concrete coverages:
   1. Concrete placed against the ground: 3 inches
   2. Formed surfaces exposed to weather or in ground contact: 2 inches
   3. Formed surfaces not exposed to weather or not in ground contact: 1½ inches

E. Obtain Engineer’s approval of reinforcing installation before placing concrete.

3.2 WIRE FABRIC PLACEMENT

A. Install wire fabric in lengths as long as possible. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

END OF SECTION
SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. The Work covered under this Section of these Specifications consist of furnishing all plant, labor, supervision, equipment, appliances and materials and in performing all operations in connection with the installation of reinforced concrete for all aspects of the project, all in strict accordance with the Contract Documents. This specification applies to cast-in-place concrete, as well as grout used for sealing proposes.

B. Work in this Section Includes
1. Cast-in-place concrete materials and work.
2. Concrete admixtures.
3. Cleaning and finishing of formed surfaces.
4. Required testing and submittals.

C. Allowances
1. If so stated in Specification Section "Allowances," installation testing will be paid as an allowance. All other testing shall be incidental to the work.
2. If there is no reference in the specification section "Allowances" to Cast-In-Place Concrete, then testing costs shall be included in the cost for Cast-In-Place Concrete.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)
1. ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field
2. ASTM C33 Standard Specification for Concrete Aggregates
3. ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
4. ASTM C42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
5. ASTM C94 Standard Specification for Ready-Mixed Concrete
6. ASTM C143 Standard Test Method for Slump of Hydraulic-Cement Concrete
7. ASTM C150 Standard Specification for Portland Cement
8. ASTM C171 Standard Specification for Sheet Materials for Curing Concrete
9. ASTM C172 Standard Practice for Sampling Freshly Mixed Concrete
10. ASTM C173 Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
11. ASTM C231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
14. ASTM C494 Standard Specification for Chemical Admixtures for Concrete
15. ASTM C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
17. ASTM C989 Standard Specification for Slag Cement for Use in Concrete and Mortars
18. ASTM C1064 Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
20. ASTM C1315 Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
22. ASTM E1155 Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers
23. ASTM E1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs

B. American Concrete Institute (ACI)
   1. ACI 211.1 Recommended Practice for Selecting Proportions for Normal and Heavy Weight Concrete.
   2. ACI 301 Specifications for Structural Concrete.
   3. ACI 302.1 Guide for Concrete Floor and Slab Construction.
   4. ACI 304 Measuring, Mixing, Transporting, and Placing Concrete.
   5. ACI 305 Recommended Practice for Hot Weather Concreting.
   6. ACI 306 Recommended Practice for Cold Weather Concreting.
   7. ACI 318 Building Code Requirements for Reinforced Concrete.

1.3 SUBMITTALS

A. Producer's certification that supplied materials meet applicable specification requirements.

B. Design mix for each class of concrete furnished. The concrete mix design submittal shall consist of at least the following:
   1. Type of cement.
   2. Dry weight of cement.
   3. Saturated surface-dry weights of fine and coarse aggregates.
   4. Specific gravity of fine and coarse aggregates.
5. Quantities, type, name and producer of admixtures, as applicable.
6. Total weight of water, including the water that is absorbed by and on the surface of the aggregates.
7. Water to cement ratio.
8. Slump: Maximum slump, taken at the truck, will be determined based on the pump hose length. The mix designs shall include the anticipated loss of slump per 100-foot length of specified hose size.
9. Strength test data of the proposed mix design as specified herein.

C. Details and location of construction joints in addition to those shown on the Drawings.

D. Curing and protection procedures: including product data on materials proposed for use.

E. Submit concrete batch tickets for each truck delivered to site. Each ticket shall note at least the following data: design mix strength; batch proportions including actual water and aggregate moisture contents; date and batch time; arrival time at site; discharge time; concrete volume; and any change to concrete made at the site.

1.4 QUALITY ASSURANCE

A. Obtain an independent testing laboratory, approved by the Owner, to provide quality control testing.

B. Acceptable test results do not relieve the Contractor from making corrections to the tested work during the warranty period.

1.5 DELIVERY, STORAGE AND HANDLING

A. Comply with Section 01 10 00, Summary, and as follows:
1. Storage of concrete components shall conform to recommended practices of ACI 304 and manufacturer's instructions.
1. ASTM C150, Type II.
2. Use only one brand of approved cement for exposed concrete throughout any one structure or composite elements.

C. Admixtures
1. Air-entraining Admixtures: ASTM C260
2. Calcium Nitrite Corrosion Inhibitor: AASHTO M-194
3. Fly Ash: ASTM C618, type C or F
4. Ground Granulated Blast Furnace Slag: ASTM C989, Grade 100 or 120
5. Chemical Admixtures: ASTM C494
   a. Type A, water-reducing.
   b. Type B, retarding.
   c. Type D, water-reducing and retarding.
   d. Type E, water-reducing and accelerating.
   e. Type F or G, high range water-reducing.

D. Normal Weight Aggregate: ASTM C33

E. Lightweight Aggregate: ASTM C330

F. Water: Potable

2.2 CURING MATERIALS

A. Liquid Applied
1. Liquid Membrane - Forming Compounds: ASTM C1315, Type 1, Class A, with a maximum of 700 grams per liter VOCs. Product shall restrict the loss of water to not more than 0.40 kg/m² in 72 hours when applied at a rate of 300 square feet per gallon.

B. Sheet or Membrane
1. Plastic film, ASTM C171:
   a. 10 mil thickness
   b. White during warm weather.
   c. Black during cold weather.

2.3 CONCRETE SPECIALTIES

A. Epoxy Bonding Agents
1. ASTM C881, two-component material suitable for use on dry or damp surfaces.

B. Finishing Grout
1. Non-reemulsifiable bonding admixture.
2. Non-yellowing, high solids modified acrylic polymer.

C. Non-Shrink Grout
1. ASTM C1107.
2. Materials:
   a. Premixed, non-metallic compound.
   b. 5,000 psi minimum compressive strength (7 days).
   c. 7,500 psi minimum compressive strength (28 days).

D. Colored Wear-Resistant Finish
1. Packaged dry combination of materials consisting of Portland cement, graded quartz aggregate, coloring pigments, and plasticizing admixture.
2. Use coloring pigments that are finely ground nonfading mineral oxides interground with cement.
3. Color as selected by Architect from manufacturers' standards unless otherwise indicated.

E. Evaporation Control
1. Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.

F. Floor Sealer
1. Clear, transparent, non-yellowing acrylic polymer formula.
2. ASTM C309, Type I, Class B.

G. Non-slip Aggregate
1. Fused aluminum oxide granules or crushed emery as the abrasive aggregate for a nonslip finish, with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide.
2. Use material that is factory-graded, packaged, rustproof, nonglazing and unaffected by freezing, moisture and cleaning materials.

H. Metallic Hardener
1. Graded, iron aggregate based compound.
2. Natural metallic surfacing for heavy duty traffic.

I. Vapor Barrier
1. ASTM E1745, Class A.

2.4 CONCRETE MIXES

A. Test Mixes
1. Have an approved commercial testing laboratory prepare design mixes for each class of concrete specified for use on job.
   a. Design mixes in accordance with ACI 318 and ACI 211.1.
   b. Laboratory shall make, cure, and test all specimens required by the applicable standards.
   c. Design job-mixed concrete on the basis of water - cement ratio.
   d. Mixes shall be homogeneous, readily placeable, and uniformly workable.
2. Submit concrete mix design, with known test results, to the Engineer for review. The concrete mix design submittal shall consist of at least the following:
   a. Type of cement.
   b. Dry weight of cement.
   c. Saturated surface-dry weights of fine and coarse aggregates.
   d. Specific gravity of fine and coarse aggregates.
   e. Quantities, type, name and producer of admixtures, as applicable.
   f. Total weight of water, including the water that is absorbed by and on the surface of the aggregates.
   g. Water to cement ratio.
   h. Slump: Maximum slump, taken at the truck, will be determined based on the pump hose length. The mix designs shall include the anticipated loss of slump per 100-foot length of specified hose size.
   i. Strength test data of the proposed mix design as specified herein.
3. Distribute reviewed mix design to testing laboratory, batch plant, and job site.
4. Concrete which is to have a trowel-finished surface, maximum air content shall be 3%.
5. Fly ash may be substituted for cement on an equal weight basis up to a maximum of 20%.
6. Ground granulated blast furnace slag may be substituted for cement on an equal weight basis up to a maximum of 50%.
7. Combined fly ash and ground granulated blast furnace slag may be substituted for cement on an equal weight basis up to a maximum of 50%, provided the fly ash content does not exceed 20%.

B. Structural Concrete Mix Proportioning

1. Proportions of aggregate to cement shall be such as to produce a readily workable mixture with method of placement employed on job, but without allowing materials to segregate, or excess free water to collect on surface.
2. Maximum size for coarse aggregate.
   a. Not larger than one-fifth of narrowest dimension between sides of forms.
   b. Not larger than one-third depth of slab.
   c. Not larger than three-fourths of minimum clear spacing between reinforcing bars.
   d. Not larger than 1½ inch.
3. Concrete shall be proportioned by the Contractor in accordance with ACI 301. The proposed design mix, together with all the Test Records, or Trial Mix Data, as required by ACI 301, shall be submitted to the Engineer for review at least two weeks prior to the first intended placement. Submit a separate pump mix if different from concrete mix placed by conventional methods.
4. Concrete shall be normal weight with a minimum compressive strength of 4,000 psi or 5,000 psi at 28 days as defined in the drawings.
5. Concrete shall have a maximum water to cement ratio of 0.40.
6. Concrete shall be proportioned to have a slump of 6 inches, + 1 inch, at the discharge end of the pump hose. Use a water reducing agent as required to achieve the desired slump range. Addition of water at site will not be permitted.
7. Concrete shall contain 6% to 7.5% entrained air.
C. Concrete Usage
   1. Class A4: Coating hardened concrete at construction joints, coating precast concrete plank prior to placement of bonded concrete topping, and optional first lift in forms with congested reinforcement.
   2. Class A: All locations except where Class B is specified.
   3. Class B: Slabs reinforced with welded wire fabric, equipment bases, fence post footings, fillets in tanks, and where specifically stated in plans or specifications.

D. Mixing
   1. Measure materials by weight in conformance with ASTM C94 and ACI 304.
   2. Mix and deliver concrete in ready-mix equipment conforming to ASTM C94 and ACI 304.

PART 3 - EXECUTION

3.1 PLACEMENT OF CONCRETE

A. Environmental Requirements
   1. Hot Weather Concreting:
      a. Follow ACI 305 whenever mean surrounding air temperature equals or exceeds 80 degrees F (27 degrees C).
      b. Do not place concrete whenever air temperature equals or exceeds 90 degrees F (32 degrees C).
   2. Cold Weather Concreting:
      a. Follow ACI 306 whenever mean surrounding air temperature is below 40 degrees F (4.5 degrees C).
   3. Do not place concrete during rain, sleet, or snow, unless protection is provided.

B. Placement of Concrete
   1. Conveying Concrete:
      a. Convey concrete from mixer to place of final deposit by methods that will prevent separation or loss of materials.
      b. Equipment for chuting, pumping, or pneumatically conveying concrete shall be capable of providing a supply of concrete at site of Work without separation of ingredients and without interruptions sufficient to permit loss of plasticity between successive placements.
      c. Unless otherwise approved, conform to ACI 304.
   2. Depositing Concrete:
      a. Free-fall of concrete during placement greater than eight feet is prohibited. The Contractor shall place concrete with a tremie tube for drops greater than eight feet.
      b. Deposit concrete as nearly as practicable to its final position to avoid segregation due to rehandling or flowing.
      c. Carry on concreting at such a rate that concrete is at all times plastic, and flows readily into spaces between reinforcing.
d. Deposit concrete in horizontal layers not deeper than 24 inches, and avoid inclined construction joints.
e. Remove temporary spreaders in forms when concrete has reached the elevation of the spreaders.
f. After concreting is started, it shall be carried on as a continuous operation until placing of a panel or section is completed.
g. Top surfaces of vertically formed lifts shall be generally level.
h. Thoroughly consolidate concrete by suitable means during placement, and thoroughly work concrete around reinforcement and embedded fixtures, and into corner of forms.
i. Vibrators may be used to aid placement, provided they are used under experienced supervision and forms have been designed to withstand their action.
j. Unless otherwise approved, conform to ACI 304.

3.2 CONSTRUCTION JOINTS

A. Use and Location
   1. Use and location of construction joints shall be as shown on plans or subject to prior approval of Engineer.
   2. Construction joints not indicated on plans shall be so made and located as not to impair the strength of structure. Make provisions for transfer of shear and other forces through construction joints, only where shown on approved shop drawing.
   3. Cast beams, girders, column capitals, and haunches monolithically with slab system, unless approved otherwise.

B. Preparation
   1. Clean surface of hardened concrete and remove laitance and standing water.
   2. Wet construction joints and coat with Class A4 concrete immediately before new concrete placement.

3.3 CURING

A. Maintain concrete surfaces moist for the first 7 days after placement.

B. Under hot weather conditions, conform to ACI 305.

C. Under cold weather conditions, conform to ACI 306.

D. When a liquid-membrane-forming compound is used, protect exposed steel, key-ways or concrete to be surfaced from curing compound.

E. During curing period, protect concrete from damaging mechanical disturbances, water flow, loading, shock, and vibration.

F. Formed Surfaces
1. Ceilings, walls, columns and beam sides may be cured by leaving forms in place, by wet cure, or by use of a liquid curing compound.
2. Spray surface of forms left in place during curing period as frequently as drying conditions may require to keep concrete surfaces moist. For vertical surfaces, apply water to run down on inside of forms, if necessary, to keep concrete surfaces moist.

G. Flatwork
1. Start curing activities as soon as free water has disappeared from surface of concrete after placing and finishing.
2. Wet cure flatwork which is to be covered with ceramic tile, quarry tile, resilient tile, or bonded concrete topping.
3. Cure other flatwork using a liquid curing compound or wet cure.

3.4 FINISHING FORMED SURFACES

A. Inspection and Repair
1. Immediately after removing forms, inspect concrete surfaces and repair tie holes, poor joints, voids, stone pockets, and other defective areas.
2. Make repairs before concrete is thoroughly cured.
3. Chip away defective areas to a depth not less than one inch, with edges perpendicular to surface.
4. Wet area to be patched and surrounding area, to prevent absorption of water from patching mortar.
5. Make patch of same material and proportions used for concrete, except that coarse aggregate is to be omitted, and white cement substituted for approximately 20% of grey cement to match color of surrounding concrete.
6. Use as little water in mixing the mortar as is consistent with requirements of handling and placing.
   a. Retemper mortar without addition of water by allowing it to stand for a one-hour period during which time it shall be mixed with a trowel to prevent setting.
7. Compact mortar into place and screed off allowing for shrinkage.
   a. Perform final finishing after shrinkage has occurred.
   b. Finish patch in such a manner as to match adjoining surface.
8. Fill holes left by withdrawal of rods or by removal of ends of ties, solidly with mortar.

B. Surface finishes as defined in ACI 301:
1. Rough form finish.
2. Smooth form finish.
3. Smooth rubbed finish.
4. Grout cleaned finish.
5. Cork floated finish.

C. Utilize finishes as follows:
1. Rough form finish for concrete surfaces not exposed to view.
2. Grout cleaned or cork floated finish for:
   a. Interior surfaces exposed to view.
   b. Surfaces to receive protective coatings.
3. Smooth rubbed finish for exterior surfaces exposed to view.
4. As an alternate to smooth rubbed finish, use the following procedure.
   a. Use smooth form finish.
   b. Apply heavy coat of finishing grout.
   c. After first coat has set, apply finish coat.
   d. When finish coat has set, float to uniform texture.
   e. Follow finishing grout manufacturer's instructions.

3.5 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. Sampling and testing for quality control during concrete placement shall conform to ASTM E329 and shall include the following:
   1. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
      a. Slump: ASTM C143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
      b. Air Content: ASTM C173, volumetric method for lightweight or normal weight concrete; ASTM C231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
      c. Concrete Temperature: ASTM C1064; one test hourly when air temperature is 40 degrees F (4 degrees C) and below, when 80 degrees F (27 degrees C) and above, and one test for each set of compressive-strength specimens.
      d. Compression Test Specimen: ASTM C31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
      e. Compressive-Strength Tests: ASTM C39; one set for each day's pour exceeding 5 cu. yd. plus additional sets for each 50 cu. yd. more than the first 25 cu. yd. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
      f. Additionally sets may be taken to confirm concrete strength after 7 days but before 28 days at no additional cost to the Owner.
   2. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
   3. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
   4. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi.
B. Test results will be reported in writing to Architect, Structural Engineer, ready-mix producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.

C. Nondestructive Testing
   1. Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection

D. Additional Tests
   1. The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed

3.6 GROUTING STRUCTURAL STEEL

A. Grout the following with non-shrink grout:
   1. Column Base Plates: Grade A or B
   2. Bearing Plates for Beams, Girders and Similar Members: Grade A or B
   3. Setting Machinery: Grade C

B. Perform grouting prior to placing superimposed loads.

END OF SECTION
SECTION 05 50 00

METAL FABRICATIONS

PART 1 - GENERAL

1.1 WORK SPECIFIED

A. The Work covered under this Section of these Specifications consists of providing all plant, labor, supervision, equipment, appliances and materials, and in performing all operations in connection with the installation of metal fabrications (miscellaneous steel), all in strict accordance with the Contract Documents. The Work covered under this Section included, but is not necessarily limited to: rough hardware; pipe supports; railings and related connections; expanded metal mesh; grating; steel plate; steel diamond plate; mooring bollards; and fasteners. Provide accessories as shown in the Contract Documents specified herein, and needed for a complete and proper installation.

B. This Section shall apply to the following components:
   1. Embedded steel shapes, anchors and plates as shown on plans.
   2. Walers, struts, accessories, splice plates, hardware, and steel tie-back assemblies
   3. Hardware for mooring bollards.
   4. Pipe bollards.
   5. Hardware for fenders.
   6. Galvanized emergency ladders (2 Types).
   7. Plates and hardware at expansion joints,
   8. Structural steel framing, hardware, plates, grating, etc. for utility trench,
   9. Guard rail, guard rail connections and expansion joints.
 10. Anode attachment hardware.
 11. Steel pile to slab connections wide flange pile reinforcement with cover plates.
 12. All other structural and miscellaneous steel framing shown on Contract Drawings but not specifically listed above.

1.2 SUBMITTALS

A. The Contractor shall submit Shop Drawings detailing fabrication and erection of each metal fabrication indicated. Include material and grade, material strength, plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other Sections.

B. Product data for gratings, shop paint products, anchor bolt systems, and grout.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Quality Assurance
   1. Use adequate number of skilled workmen who are thoroughly trained and
      experienced in the necessary crafts and who are completely familiar with the
      specified requirements and the methods needed for proper performance of the
      Work of this Section.
   2. The Owner reserves the right of approval of any Subcontractor selected for this
      portion of the Work by the Contractor. Approval will be based, in part, on:
      a. Documented successful experience in performing work of a similar nature.
      b. Acceptable schedule of unit prices for measurement and payment in event of
         changes in the Work of this Section.
   3. Fabricator Qualifications: Firm experienced in producing metal fabrications
      similar to those indicated for this Project with a record of successful in-service
      performance, and with sufficient production capacity to produce required units
      without delaying the Work.
   4. Perform welding with electric arc process and in accordance with “Structural
      Welding Code-Steel” (ANSI/AWS D1.1). All structural welds shall be performed
      by American Welding Society (AWS) welders certified for the appropriate
      welding application.
   5. In addition to complying with pertinent codes and regulations, comply with:
      a. The American Institute of Steel Construction, AISC, “Steel Construction
   6. All connections shall be designed by the steel fabricator except those specifically
      detailed on the Contract Documents. Submit design calculations for review, if
      requested by Owner.
   7. All references to “SSPC” shall be interpreted as “Steel Structures Painting
      Council Manual, Systems and Specifications.”

B. Ferrous Metals
   1. Steel Plate
   3. Welding Rods and Bare Electrodes: Select according to AWS specifications for
      the metal alloy to be welded. Grade of rods is designated on plans and is generally
      E80xxx.

C. Protective Coating
   1. Steel Sections: Coating requirements, including limits of application, shall be in
      accordance with the requirements specified on the Contract Drawings.
   2. Where noted on drawings, miscellaneous metal shapes, plates or pipe shall be
      galvanized in accordance with ASTM A123.
   2. Bolts, Nuts, and Washers: All bolts, nuts, and washers shall be hot dipped
      galvanized in accordance with ASTM A153.
   3. Field Touch-Up of Hot-Dipped Galvanized Items: Touch-up shall be performed
      with Tnemec 90-97 Tneme-Zinc primer or equivalent accepted by the Engineer.
Surface preparation and coating application shall be in strict accordance with manufacturers written instructions.

D. General Fabrication
1. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on Shop Drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each fabrication.
2. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
3. Remove sharp or rough areas on exposed traffic surfaces.
4. Weld corners and seams continuously to comply with the following:
   a. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   b. Obtain fusion without undercut or overlap.
   c. Remove welding flux immediately.
   d. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matches those adjacent.
5. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flathead (countersunk) screws or bolts. Locate joints where least conspicuous.
6. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
7. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
8. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
9. Fabricate joints that will be exposed to weather in a manner to prevent water entry, or provide weep holes where water may accumulate.
10. Apply protective coating as specified.

E. Rough Hardware
1. Furnish bent, or otherwise custom-fabricated, bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures.
2. Modifications may be made on or off site, but there will also need to a level of field “fit-up” required to assure that the final installation is properly aligned and at the required elevations. One final certified survey will be required to assure that the installation, alignments and specified grades are correct.
3. Furnish and install pre-manufactured 60-ton capacity bollards as manufactured by Zalda or equal. Bollards that are to be installed shall be attached as called for on plans and in accordance with manufacturer requirements for anchorage and installation.

4. Fabricate items to sizes, shapes, and dimensions required.

F. Miscellaneous Steel Trim
1. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and bars of profiles shown with continuously welded joints, and smooth exposed edges. Miter corners and use concealed field splices wherever possible.

2. Provide cutouts, fittings, and anchorages as required to coordinate assembly and installation with other work. Provide anchors, welded to trim, for embedding in concrete or masonry construction, spaced not more than 6 inches from each end, 6 inches from corners, and 24 inches on center, unless otherwise indicated.

3. Galvanize miscellaneous steel trim at all exterior locations and as indicated.

G. Steel Finishes
1. Wherever coating is not required as per drawings, rust-inhibitive, Alkyd Primer: Product to be per Section 2.02-A of this Specification. Apply one coat minimum 2.0-2.5 mils dry film thickness; color to be selected by Owner.

2. Galvanizing: For those items indicated for galvanizing, apply zinc coating by the hot-dip process complying with the following requirements:
   a. ASTM A153 for galvanizing iron and steel hardware.
   b. ASTM A123 for galvanizing both fabricated and un-fabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch thick or thicker.
   c. Mooring bollards and pipe bollards shall receive two coats of oil based safety yellow paint after final placement.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Field Measurements
1. Check actual locations to which metal fabrications must fit by accurate field measurements before fabrication. Show recorded measurements on final Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating products without field measurements. Coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

B. Preparation
1. Coordinate and furnish anchorages, setting Drawings, diagrams, templates, instructions, and directions for installing anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to
be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.
2. Set sleeves in concrete with tops flush with finish surface elevations. Protect sleeves from water and concrete entries.

C. General Installation
1. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction. Include threaded fasteners for concrete inserts, toggle bolts, through-bolts, and other connectors as required.
2. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
3. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
4. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.
5. Field Welding shall comply with the following requirements:
   a. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   b. Obtain fusion without undercut or overlap.
   c. Remove welding flux immediately.
   d. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matches those adjacent.

END OF SECTION
PART 1 – GENERAL

1.1 Work Included

A. The work shall consist of furnishing and installing waterproof expansion joints in accordance with the details shown on the plans and the requirements of the specifications. The expansion joint shall be a blockout-mounted chemically anchored extruded rubber gland/nosing system.

B. Related Work
   1. Division 03 30 00, Cast-in-Place Concrete

1.2 Submittals

A. General – Submit the following in accordance with Section 01 33 00 Submittal Procedures.

B. Standard Submittal Package – Submit typical expansion joint drawings(s) indicating pertinent dimensions, general construction, expansion joint opening dimensions and product information.

C. Sample of material is required at time of submittal.

1.3 Product Delivery, Storage and Handling

A. Deliver products to site in Manufacturer’s original, intact, labeled containers. Handle and protect as necessary to prevent damage or deterioration during shipment, handling and storage. Store in accordance with manufacturer’s installation instructions.

1.4 Basis of Design

A. All joints shall be designed to meet the specified performance criteria of the project as manufactured by: (USA & International) EMSEAL JOINT SYSTEMS, LTD 25 Bridle Lane, Westborough, MA 01581-2603, Toll Free: 800-526-8365. (Canada) EMSEAL, LLC 120 Carrier Drive, Toronto, Ontario, Canada M9W 5R1 Toll Free: 800-526-8365. www.emseal.com

B. Alternate manufacturers must demonstrate that their products meet or exceed the design criteria. Submittal of alternates must be made three weeks prior to bid opening to allow proper evaluation time.
1.5 Quality Assurance

A. The General Contractor will conduct a pre-construction meeting with all parties and trades involved in the treatment of work at and around expansion joints including, but not limited to, concrete, waterproofing, and other finish trade subcontractors. All superintendents and foremen with responsibility for oversight and setting of the joint gap must attend this meeting. The General Contractor is responsible to coordinate and schedule all trades and ensure that all subcontractors understand their responsibilities in relation to expansion joints and that their work cannot impede anticipated structural movement at the expansion joints, or compromise the achievement of water tightness or life safety at expansion joints in any way.

B. The General Contractor shall provide a field report that summarizes the project conditions and any remedial action necessary to correct field conditions (substrate, joint size, blockout, vertical offsets, etc.) that may affect expansion joint system performance.

C. Warranty – Manufacturer’s standard warranty shall apply.

PART 2 – PRODUCT

2.01 General

A. Provide traffic durable, watertight, expansion joint by EMSEAL JOINT SYSTEMS for expansion joints and isolation joints in decks. Typical locations include, but are not limited to the following: applications for joints over occupied space, parking deck joints, stair tower perimeters, elevator perimeters, stadium tread and risers, stadium concourses, and solid slab structural expansion joints. System shall perform waterproofing, traffic bearing and movement-accommodation functions.

B. Provide THERMAFLEX TM or TCR as manufactured by EMSEAL JOINT SYSTEMS LTD and as indicated on drawings for horizontal expansion joint locations.

C. Expansion joint system shall be comprised of:
   1. a heat-weldable, santoprene, thermoplastic-rubber, double-celled or multi-celled, extrusion with perforated flanges and
   2. manufacturer’s cold applied elastomeric nosing.

D. Elastomeric nosing shall be a two-part polyurethane material (epoxies not permitted) mixed with aggregate with sand particles not to exceed 30-mesh. Nosing material shall be pourable grade material capable of encapsulating the perforated flanges in a single pour without the laying of a setting-bed or tack coat. The material shall flow so as to fill voids or irregularities in concrete blockouts.
and beneath the perforated flanges of the gland. Material shall cure to flexible (non-rigid) state. So as to ensure proper mixing, flow ability, and consolidation, mixed nosing material shall have an aggregate loading ratio by weight of liquid resin to aggregate not exceed 1:2.

E. System to be installed into blockouts on each side of the joint-gap prepared to the dimensions of ¾” deep x 3” wide (20mm deep x 75 mm wide) for TM and ¾” deep x 3 1/2” wide (20mm deep x 90mm wide) for TCR.

F. Final selection of the seal size to be coordinated between manufacturer, designer, and contractor(s) in consideration of expected movements as a product of structural design and expected temperature variations, taking into account as-built joint-gap sizes and temperatures at expected installation time. Width of joint-gaps at time of casting or cutting to be adjusted, if necessary, from baseline temperature used and specified by designer in determining system suitability.

G. Manufacturer’s Checklist must be completed by expansion joint subcontractor and returned to manufacturer at time of ordering material.

2.02 Fabrication

A. Directional changes and terminations into vertical plane surfaces (walls, parapets, ends of decks, etc.) as well as to transition the material through curbs, treads and risers or other in-slab plane changes to be provided by factory-manufactured assemblies that preserve continuity of seal. Transitions between THERMAFLEX and any other of Manufacturer’s joint systems in the vertical plane to be executed according to Manufacturer’s details and to be warranted as watertight.

PART 3 – EXECUTION

3.01 Installation

A. Preparation of the Work Area

1. The Contractor shall provide properly formed and prepared expansion joint openings constructed to the exact dimensions and elevations shown on manufacturer’s standard system drawings or as shown on the contract drawings. Deviations from these dimensions will not be allowed without the written consent of the engineer of record.

2. The Contractor shall clean the joint opening of all contaminants immediately prior to installation of expansion joint system. Repair spalled, irregular or unsound joint surfaces using accepted industry practices for repair of the substrates in question. Remove protruding roughness to ensure joint sides are smooth. Refer to Manufacturer’s Installation Guide for detailed step-by-step instructions.
3. System to be installed by qualified sub-contractors only according to detailed published installation procedures and/or in accordance with job-specific installation instructions of manufacturer’s field technician. Bids must include for presence of paid-for manufacturer’s field technician to be present during initial preparation, inspection, and material installation.

3.02 Clean and Protect

A. Protect the system and its components during construction. Subsequent damage to the expansion joint system will be repaired at the general contractor’s expense. After work is complete, clean exposed surfaces with a suitable cleaner that will not harm or attack the finish.

END OF SECTION
SECTION 31 01 00

EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. The work covered by this specification consists of furnishing all plant, labor, equipment and materials and performing all operations in connection with excavation, subgrade preparation, and placement and compaction of fill materials required for the fill placement within the cellular cofferdams and adjoining fill areas.

B. The intent of the project is to place engineered fill material in the cellular cofferdams. The fill material is specified in the Contract Drawings. Fill placed below water level must be densified in place by vibro-compaction per this specification. It should be noted that material with excessive fines content may be difficult to use, and may require extensive working, including dewatering, spreading, drying, and working with sheepsfoot rollers. It may also be difficult to dry material with these higher fines contents in the winter months.

C. Refer to Drawings for final grades.

1.2 CODES AND STANDARDS

A. ASTM D422-63(R90) Standard Test Method for Particle-Size Analysis of Soils

B. ASTM D1556-92 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

C. ASTM D1557-91 Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft (2700 kN-m/m))

D. ASTM D2216-92 Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock

E. ASTM D2922-91 Standard Test Methods for Density of Soil and Rock in Place by Nuclear Methods (ShallowDepth)

F. ASTM D3017-88 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (ShallowDepth)

H. ASTM D4643-93 Standard Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method

1.3 SUBMITTALS

A. Earthwork Operation and Sequence Plan
   1. Submit the following in accordance with Section 01 33 00, Submittal Procedures: an Earthwork Operation and Sequence Plan outlining types of equipment, daily volumes, and grading, excavation, subgrade preparation, proof compacting, backfilling, and compaction sequence to the Engineer for review at least 10 working days prior to commencement of construction. The earthwork operations plan shall include details of material handling operations such as material segregation procedures, temporary stockpile locations, and material processing operations.
   2. Plan to include sequencing of backfilling cofferdams, when fill is placed above and below mean high water, vibro-compaction, and verification testing.

B. Shoring and Bracing Plan
   1. If the Contractor selects to use shoring and bracing, submit the following in accordance with Section 01 33 00, Submittal Procedures: a Shoring and Bracing Plan to the Engineer for review at least 10 working days prior to commencement of construction. The Plan shall be prepared by a Professional Engineer registered in Wisconsin.

C. Vibro-Compaction Plan
   1. Contractor shall submit the following in accordance with Section 01 33 00, Submittal Procedures: a Vibro-Compaction Plan for densification of fill placed in-the-wet, for review at least 10 working days prior to commencement of construction. Include types of equipment including vibratory hammer, vibratory probe or vibratory pile dimensions (24” x 5/8” wall minimum with horizontal ribbing plates attached), spacing of probes and number of drops per probe. Specify methodology and probe spacing for inside cofferdams as well as outside of cofferdams. Final approvals will be based on field performance soil density tests (Standard Penetration Tests), performed by the Contractor and witnessed by the Engineer.

1.4 DEFINITIONS

A. SOURCE shall mean those areas from which any material brought to the site is derived. All material brought to the site shall be certified in writing as clean and free from environmental contaminants. The sources and test results shall meet with the approval of the Engineer before any material is delivered to the project.

B. ORGANIC MATERIAL shall mean fibrous mats of roots, decaying vegetation, organic silt, peat, timber piles, planks, wharf or fendering, garbage and sanitary wastes.
C. UNSTABLE MATERIAL shall mean organic debris, frozen materials, and organic silts.

1.5 RELATED WORK SPECIFIED ELSEWHERE

A. Additional requirements relative to handling, placement and compaction of cofferdam cell fill materials are specified in Section 31 62 16.13, Steel Sheet Piles.

B. Reference Specifications 31 05 10, Soils and Aggregates for Earthwork.

1.6 PREPARATION

A. Examine the site thoroughly and determine the existing conditions and difficulty of work to be performed.

B. Before commencing earthwork operations, determine that preparatory work has been completed.

C. Perform field surveys required to accomplish the work.

1.7 DEGREE OF COMPACTION

A. Expressed as a percentage of the maximum dry density obtained by the test procedure presented in ASTM D1557 Modified Proctor Test.

B. Abbreviated in this specification as a percent of laboratory maximum dry density.

1.8 FIELD QUALITY CONTROL

A. Quality control compaction testing of material placed during construction will be provided by the Engineer. The Engineer shall be notified 48 hours prior to any excavation, fill, backfill, or compaction operations.
   1. Permit the Engineer to observe all subgrades for each layer of fill or backfill. Additional fill or backfill should not be placed unless the Engineer has approved the subgrade and/or previous layer of fill.
   2. When required or requested by the Engineer, the Contractor shall provide field elevations of the compacted subgrade or fill layer.

B. Compacted materials that are below specified density shall be re-compacted at no additional expense to the Owner.

C. The Contractor shall bear the cost of removal of all unsuitable material placed without approval by the Engineer that fail to conform to the specifications.
PART 2 - PRODUCTS

2.1 STRUCTURAL SAND FILL / GRANULAR FILL

A. STRUCTURAL SAND FILL shall consist of hard, durable sand and gravel, and shall be free from ice and snow, roots, sod, rubbish, and other deleterious or organic matter. It shall conform to the following gradation requirements:
   1. Sand fill – Soil class B-3 (ASTM C-33) in fine aggregate; Soil class B-4 Masonry sand (ASTM C144), or if Soil, Class D-3.

2.2 OTHER ENGINEERED FILL

A. OTHER ENGINEERED FILL shall be free from ice and snow, roots, sod, rubbish, and other deleterious or organic matter. It shall conform to the gradation requirements cited in the previous section for Structural Sand Fill.

2.3 CRUSHED ROCK

A. CRUSHED ROCK shall consist of one or the other of the following material:
   1. Durable crushed rock consisting of the granular fragments obtained by breaking and crushing solid or shattered natural rock, and free from a detrimental quantity of thin, flat, elongated*, or other objectionable pieces.
      * Thin or elongated pieces are defined as follows: Thin stones shall be considered to be such stones whose average width exceeds 4 times their average thickness. Elongated stones shall be considered to be such stones whose average length is in excess 4 times their average width.
   2. Durable crushed gravel stone obtained by artificial crushing of cobbles or boulders with a minimum diameter before crushing of 8 inches.
   3. The crushed stone shall be reasonably free from clay, loam or deleterious material and not more than 1.0% of satisfactory material passing a No. 200 sieve will be allowed to adhere to the crushed stone.
   4. Crushed stone shall be uniformly blended according to the following grading requirements:
      a. All crushed rock referred to in the Drawings shall be crushed stone conforming to ASTM C-33 for 3/4-inch stone unless otherwise specified. Crushed stone is to be screened, but washing is not required.

PART 3 - EXECUTION

3.1 PROTECTION

A. Contact all utility companies and property owners, which might have installations in the area to determine location of all utilities and structures.

B. Protect above and below grade utilities which are to remain.
C. Protect plant life, trees, lawns, and other features remaining as a portion of final landscaping.

D. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.

E. Implement temporary erosion control measures such as silt fencing, hay bales, sediment traps, etc. as required to minimize the effects of erosion and sedimentation in excavations. Refer to Section 31 25 00, Erosion and Sedimentation Controls, for additional requirements.

3.2 DISPOSAL

A. Remove all unsuitable and organic materials (as determined by the Engineer) from the property and dispose offsite as required by local, State and Federal codes, rules and regulations. Remove existing foundations, demolition debris, slabs, pavements, and other debris encountered in areas of construction. Dispose of excess or unsuitable material as part of the Contract price.

3.3 DRAINAGE

A. Direct surface water away from excavations, existing buildings, roadways and construction sites to prevent erosion and undermining of foundations.

B. Provide diversion ditches, dikes and grading and maintain as required during construction.

C. Protect excavated slopes and backfill surfaces to prevent erosion and sloughing.

D. Perform excavation so that the site and the area immediately surrounding the site shall be continually and effectively drained.

3.4 DUST SUPPRESSION

A. Engineer shall determine if dust generated at the site is significant enough to require dust suppression.

B. Contractor shall at all times keep machinery, and a sufficient supply of water onsite to suppress dust generated at the site, as necessary.

C. Contractor shall suppress dust as necessary throughout construction, and until vegetation or other surface treatments have been established, if necessary.

D. Uniformly apply water to surface, subgrade or layer of soil material requiring dust suppression.
3.5 COMPACTION

A. Heavily surface compact subgrade in upland area with a minimum of 6 passes of a vibratory roller having a drum weight of at least 10,000 pounds and a dynamic force of at least 20,000 pounds prior to placing fill.

B. Soft areas shall be excavated and filled with compacted granular fill.

C. Subgrade shall be uniform throughout. There shall not be hard spots or soft spots.

D. Prevent free water from appearing on surface during or subsequent to compaction operations.

E. Soil material too wet to permit compaction to specified density shall be removed and replaced or scarified and air dried.

3.6 FILLING AND BACKFILLING IN-THE-DRY OR ABOVE WATER LEVEL

A. Material placement shall begin after approval of the subgrade by the Engineer.

B. Use satisfactory materials to replace unsatisfactory materials.

C. Place “Structural Sand Fill” as backfill.

D. Place satisfactory materials in horizontal layers not exceeding 12 inches in loose thickness where self-propelled or towed mechanical compaction equipment is used, or 9 inch loose lift thickness when hand-operated compactors are used.

E. Do not begin backfilling until construction below finish grade has been approved and the excavation is clean of trash and debris.

F. Place and compact fill and backfill to indicated finish grade within a tolerance of one foot horizontally and 1 inch vertically.

G. Do not place successive layers of earth fill material until the compaction requirements of the previous layer have been satisfied.

H. Maintain positive drainage on the surface of unfinished earth fills. Blade the unfinished surfaces smooth to a crown at the conclusion of each day’s work.

I. Uniformly grade the finished earth fill surfaces such that they are smooth, compacted, and free from irregular surface changes.

J. Unless otherwise noted compact fill and backfill material to a minimum of 95% of the maximum dry density per ASTM D1557 Modified Proctor.

K. Moisture control:
   1. Where subgrade or layer of soil material must be moisture-conditioned before
compaction, uniformly apply water to surface of subgrade or layer of soil material as needed to obtain optimum moisture content.

2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

L. The Contractor shall use extra care when compacting adjacent to walls. Where walls are buried on both sides, backfill and compaction shall proceed on both sides of the wall so that the difference in top of fill level on either side of the wall shall not exceed 2 feet at any stage of construction. Where backfill of a buried wall is only on one side, only hand-operated roller or plate compactor shall be used within a lateral distance of 5 feet of back of wall.

M. In freezing weather, a layer of fill shall not be left in an uncompacted state at the close of a day's operations. Prior to terminating operations for the day, the final layer of fill, after compaction, shall be rolled with a smooth-wheeled roller to eliminate ridges of soil left by tractors, trucks and compaction equipment.

N. The Contractor shall not place a layer of compacted fill on snow, ice or soil that was permitted to freeze prior to compaction. Removal of these unsatisfactory materials will be required as directed by the Owner.

3.8 FILLING AND BACKFILLING BELOW WATER LEVEL

A. Below Mean High Water, place Engineered Fill or Sand. Densify Granular Fill placed in-the-wet and in-place sandy material with vibro-compaction.

B. Vibro-compaction shall be completed with the use of Vibratory Probe Compaction or approved alternate method. The contractor shall submit the proposed method of vibro-compaction.

C. The ultimate design and implementation of the vibro-compaction program is the responsibility of the Contractor. The Contractor shall have met the vibro-compaction criteria if a minimum N-value of 15 is achieved for all Standard Penetration Tests (SPT). However, as a courtesy to the Contractor, one potential procedure for Vibratory Probe Compaction is as follows:

1. A minimum 24-inch diameter pipe pile with 1/2 inch by 6-inch plate ribs placed 5 feet on center along entire length of probe.
2. Spacing approximately 8 foot center-to-center spacing, but may vary due to radial pattern anticipated inside cell.
3. Minimum number of probe locations per cell to be 38.
4. Minimum number of probe locations between cells to be 19.
5. Minimum spacing of probes behind cells to be 6 feet center-to-center.
6. Maintain probe location a minimum distance of 8 feet from sheet piles.
7. Probe shall be lowered until refusal on dense material.
8. Perform a minimum of four up and down cycles per location. Fewer cycles may be used depending on apparent results as noted by settlement of the fill in the field.
9. Contractor to account for compaction of the material (on the order of several feet), when placing the material in the wet, in order to allow for subsequent filling and compacting in-the-dry after vibro-compaction.

D. The contractor shall take confirma tory borings (one boring in each major cell and one in each minor cell). SPT tests will be taken continuously through the granular material. Minimum N-value after vibro-compaction shall be 15. Contractor to provide access to Engineer to witness confirmatory borings, and provide 2 weeks’ notice. Additional vibro-compaction shall be provided by the Contractor at no cost to the Owner until the minimum N-value is obtained. Additional confirmatory borings and/or more than one mobilization of the drill rig due to failure to meet the minimum density, shall be at the cost of the Contractor.

E. Material placed above Water Level shall be placed in-the-dry using conventional compaction methods, and as noted in Part 3.7. Materials and compaction as noted on the Drawings and in this specification.

F. Material placed in cellular cofferdam shall be densified and/or compacted prior to placing material behind the cellular cofferdams.

3.9 MAINTENANCE

A. Protect newly graded areas from traffic and erosion, and keep free of trash and debris. Repair and reestablish grades in settled, eroded and rutted areas to specified tolerances.

B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, remove to sound material, reshape and compact to required density prior to further construction.

3.10 EROSION CONTROL

A. Protect disturbed areas from erosion.

3.11 DAMAGE

A. Any damage resulting from excavation, backfill and compaction shall be repaired by the Contractor to the satisfaction of the Engineer and at the Contractor’s expense.

END OF SECTION
SECTION 31 05 10

SOILS AND AGGREGATES FOR EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Engineered soils and aggregates materials
   2. Bank Run materials

1.2 RELATED SECTIONS
   1. Section 35 31 23, Armor Stone Breakwater

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. ASTM C33 Spec. for Concrete Aggregates.
   2. ASTM C88 Test for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
   4. ASTM C144 Spec. for Aggregate for Masonry Mortar.
   5. ASTM C207 Spec. for Hydrated Lime for Masonry Purposes.
   8. ASTM D75 Sampling Aggregates.
   10. ASTM D1140 Test for Amount of Material in Soils Finer than the No. 200 Sieve.
   16. ASTM D6913-17 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
17. ASTM D7928-17 Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis

B. State of Wisconsin Department of Transportation (WisDOT) Construction and Material Specifications.
3. ASTM D3740 (2012a) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used
4. ASTM D4992 (2014; E 2015) Evaluation of Rock to be Used for Erosion Control
5. ASTM D5312/D5312M (2012; R 2013) Evaluation of Durability of Rock for Erosion Control under Freezing and Thawing Conditions
7. ASTM D5519 (2014) Particle Size Analysis of Natural and Man-Made Riprap Materials

1.4 SUBMITTALS

A. Provide test reports showing the results of required material testing.

B. Daily delivery tickets for each load of material delivered to the site.

1.5 QUALITY ASSURANCE

A. An independent testing laboratory approved by the Engineer shall be obtained by the Contractor and provide quality control testing.

PART 2 - PRODUCTS

2.1 ENGINEERED SOILS AND AGGREGATES (SOIL CLASS A)

A. General
1. Material shall be clean, sound, hard, dense, durable, field or quarry stone which is free from seams, cracks, or other structural defects. It shall be angular material from shot rock (blasted) or crushed rock having substantially all face of which have resulted from artificial crushing.
2. Loss due to sulfate soundness test shall not exceed 10 percent.
3. Loss due to abrasion test shall not exceed 40 percent.
4. Material shall not be frozen.

B. Gradation of Materials
1. Armor Stone “A” 3-5 Ton Quarried Armor Stone
2. Boulder Stone or Armor Stone “B” WisDOT Extra Heavy Rip Rap

<table>
<thead>
<tr>
<th>Size of Stone</th>
<th>% In-Place Volume of Stones 0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;30 in.</td>
<td>100</td>
</tr>
<tr>
<td>22-25 in.</td>
<td>86-90</td>
</tr>
<tr>
<td>18-22 in.</td>
<td>52-58</td>
</tr>
<tr>
<td>8-18 in.</td>
<td>29-37</td>
</tr>
<tr>
<td>&lt;8 in.</td>
<td>7-9</td>
</tr>
<tr>
<td>&lt;1 in.</td>
<td>2</td>
</tr>
</tbody>
</table>

3. Soil Class A-1 (Heavy Riprap Rock)

<table>
<thead>
<tr>
<th>Size of Stone</th>
<th>% Total Weight Smaller Than the Given Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 lbs.</td>
<td>100</td>
</tr>
<tr>
<td>400 lbs.</td>
<td>90</td>
</tr>
<tr>
<td>150 lbs.</td>
<td>50</td>
</tr>
<tr>
<td>40 lbs.</td>
<td>20</td>
</tr>
</tbody>
</table>

4. Soil Class A-MR (Medium Riprap Rock)

<table>
<thead>
<tr>
<th>Size of Stone</th>
<th>% Total Weight Smaller Than the Given Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 lbs.</td>
<td>100</td>
</tr>
<tr>
<td>200 lbs.</td>
<td>90</td>
</tr>
<tr>
<td>80 lbs.</td>
<td>50</td>
</tr>
<tr>
<td>15 lbs.</td>
<td>20</td>
</tr>
</tbody>
</table>

5. Soil Class A-2 (Light Riprap Rock)

<table>
<thead>
<tr>
<th>Size of Stone</th>
<th>% Total Weight Smaller Than the Given Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 lbs.</td>
<td>100</td>
</tr>
<tr>
<td>60 lbs.</td>
<td>80</td>
</tr>
<tr>
<td>20 lbs.</td>
<td>20</td>
</tr>
<tr>
<td>2 lbs.</td>
<td>10</td>
</tr>
</tbody>
</table>
6. Soil Class A-3 or FILTER STONE (Breaker Run Rock or 6" Crushed Rock)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 inch</td>
<td>100</td>
</tr>
<tr>
<td>6 inch</td>
<td>90</td>
</tr>
<tr>
<td>4 inch</td>
<td>75</td>
</tr>
<tr>
<td>3 inch</td>
<td>10</td>
</tr>
</tbody>
</table>

7. Soil Class A-4 (3½ inch Crushed Rock - ASTM D448-No. 1)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 inch</td>
<td>100</td>
</tr>
<tr>
<td>3 1/2 inch</td>
<td>90-100</td>
</tr>
<tr>
<td>2 1/2 inch</td>
<td>25-60</td>
</tr>
<tr>
<td>1 1/2 inch</td>
<td>0-15</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>0-5</td>
</tr>
</tbody>
</table>

8. Soil Class A-5 (2½ inch Crushed Rock - ASTM D448-No.2)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 inch</td>
<td>100</td>
</tr>
<tr>
<td>2 1/2 inch</td>
<td>90-100</td>
</tr>
<tr>
<td>2 inch</td>
<td>35-70</td>
</tr>
<tr>
<td>1 1/2 inch</td>
<td>0-15</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>0-5</td>
</tr>
</tbody>
</table>

9. Soil Class A-6 (1½ inch Crushed Rock - ASTM D448-No. 4)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 inch</td>
<td>100</td>
</tr>
<tr>
<td>1 1/2 inch</td>
<td>90-100</td>
</tr>
<tr>
<td>1 inch</td>
<td>20-55</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>0-15</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>0-5</td>
</tr>
</tbody>
</table>

10. Soil Class A-7 (3/4 inch Crushed Rock - ASTM D448-No. 67)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>90-100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>20-55</td>
</tr>
<tr>
<td>No. 4</td>
<td>0-10</td>
</tr>
<tr>
<td>No. 8</td>
<td>0-5</td>
</tr>
</tbody>
</table>
11. Soil Class A-8 (3/8 inch Crushed Rock Chips - ASTM D448-No. 8)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>85-100</td>
</tr>
<tr>
<td>No. 4</td>
<td>10-30</td>
</tr>
<tr>
<td>No. 8</td>
<td>0-10</td>
</tr>
<tr>
<td>No. 16</td>
<td>0-5</td>
</tr>
</tbody>
</table>

2.1 ENGINEERED SOILS AND AGGREGATES (SOIL CLASS B)

A. General
1. Aggregate shall be hard, strong, durable particles free from seams, cracks, and other structural defects.
2. Rounded to subangular.
3. Free from organic impurities and debris.
4. Material shall not be frozen.

B. Gradation
1. Soils Class B-1 (Coarse Aggregate - ASTM C33 - No. 3)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ½ inch</td>
<td>100</td>
</tr>
<tr>
<td>2 inch</td>
<td>90-100</td>
</tr>
<tr>
<td>1 ½ inch</td>
<td>35-70</td>
</tr>
<tr>
<td>1 inch</td>
<td>0-15</td>
</tr>
<tr>
<td>1/2 inch</td>
<td>0-5</td>
</tr>
</tbody>
</table>

2. Soil Class B-2 (Coarse Aggregate - ASTM C33 - No. 7)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4 inch</td>
<td>100</td>
</tr>
<tr>
<td>1/2 inch</td>
<td>90-100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>40-70</td>
</tr>
<tr>
<td>No. 4</td>
<td>0-15</td>
</tr>
<tr>
<td>No. 8</td>
<td>0-5</td>
</tr>
</tbody>
</table>
3. Soil Class B-3 (Fine Aggregate - ASTM C33)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8 inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>95-100</td>
</tr>
<tr>
<td>No. 8</td>
<td>80-100</td>
</tr>
<tr>
<td>No. 16</td>
<td>50-85</td>
</tr>
<tr>
<td>No. 30</td>
<td>25-60</td>
</tr>
<tr>
<td>No. 50</td>
<td>10-30</td>
</tr>
<tr>
<td>No. 100</td>
<td>2-10</td>
</tr>
</tbody>
</table>

4. Soil Class B-4 (Masonry Sand - ASTM C144)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
<th>Natural Sand</th>
<th>Manufactured Sand</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 4</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>No. 8</td>
<td>95 to 100</td>
<td>95 to 100</td>
<td></td>
</tr>
<tr>
<td>No. 16</td>
<td>70 to 100</td>
<td>70 to 100</td>
<td></td>
</tr>
<tr>
<td>No. 30</td>
<td>40 to 75</td>
<td>40 to 75</td>
<td></td>
</tr>
<tr>
<td>No. 50</td>
<td>10 to 35</td>
<td>20 to 40</td>
<td></td>
</tr>
<tr>
<td>No. 100</td>
<td>2 to 15</td>
<td>10 to 25</td>
<td></td>
</tr>
<tr>
<td>No. 200</td>
<td>---</td>
<td>0 to 10</td>
<td></td>
</tr>
</tbody>
</table>

2.2 ENGINEERED SOILS AND AGGREGATES (Soil Class C)

A. General
1. Stone shall be hard, durable, granular material of uniform quality resulting from crushed rock or crushed bank run sand and gravel.
2. Material shall be free from clay lump, organic matter, shale, excess, elongated or flat pieces, and other deleterious substances.
3. 45 percent of the particles retained on a No. 4 sieve shall have at least one fractured face.
4. Wear shall not exceed 50 percent.
5. Loss due to sulfate soundness test shall not exceed 18 percent by weight.
6. Total moisture content shall not exceed 7 percent.
7. Filler for blending shall have a maximum liquid limit of 25 percent and a maximum plasticity index of 6.
8. Material shall not be frozen.
B. Gradation

1. Soil Class C-1 (Crushed Stone)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ½ inch</td>
<td>100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>30-65</td>
</tr>
<tr>
<td>No. 4</td>
<td>25-55</td>
</tr>
<tr>
<td>No. 10</td>
<td>15-40</td>
</tr>
<tr>
<td>No. 200</td>
<td>2-12</td>
</tr>
</tbody>
</table>

2. Soil Class C-2 (Crushed Stone)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>40-75</td>
</tr>
<tr>
<td>No. 4</td>
<td>25-60</td>
</tr>
<tr>
<td>No. 10</td>
<td>15-45</td>
</tr>
<tr>
<td>No. 200</td>
<td>3-12</td>
</tr>
</tbody>
</table>

3. Soil Class C-3 (Crushed Stone)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>95-100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>50-90</td>
</tr>
<tr>
<td>No. 4</td>
<td>35-70</td>
</tr>
<tr>
<td>No. 10</td>
<td>15-55</td>
</tr>
<tr>
<td>No. 200</td>
<td>5-15</td>
</tr>
</tbody>
</table>

4. Soil Class C-4 (Crushed Gravel)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ½ inch</td>
<td>100</td>
</tr>
<tr>
<td>1 inch</td>
<td>75-100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>40-75</td>
</tr>
<tr>
<td>No. 4</td>
<td>30-60</td>
</tr>
<tr>
<td>No. 10</td>
<td>20-45</td>
</tr>
<tr>
<td>No. 40</td>
<td>10-30</td>
</tr>
<tr>
<td>No. 200</td>
<td>3-10</td>
</tr>
</tbody>
</table>
5. Soil Class C-5 (Crushed Gravel)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>50-85</td>
</tr>
<tr>
<td>No. 4</td>
<td>35-65</td>
</tr>
<tr>
<td>No. 10</td>
<td>25-50</td>
</tr>
<tr>
<td>No. 40</td>
<td>10-30</td>
</tr>
<tr>
<td>No. 200</td>
<td>3-10</td>
</tr>
</tbody>
</table>

6. Soil Class C-6 (Crushed Gravel)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>95-100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>50-90</td>
</tr>
<tr>
<td>No. 4</td>
<td>35-70</td>
</tr>
<tr>
<td>No. 10</td>
<td>20-55</td>
</tr>
<tr>
<td>No. 200</td>
<td>8-15</td>
</tr>
</tbody>
</table>

2.3 BANK RUN SOILS

A. Soil Class D-1 and D-2

1. Materials shall be rounded or subangular material resulting from pit run or crushed material.
2. Materials shall be free from clay lumps, organic matter, and deleterious substances.
3. 100 percent by weight shall pass a 3-inch sieve.
4. Maximum liquid limit shall be 25 percent and maximum plasticity index shall be 6.
5. Material shall not be frozen.
6. The portion of material which passes a No. 4 sieve shall conform to the following gradation:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Maximum</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 4</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>No. 40</td>
<td>75</td>
<td>---</td>
</tr>
<tr>
<td>No. 100</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>No. 200</td>
<td>8</td>
<td>15</td>
</tr>
</tbody>
</table>
B. Soil Class D-3 (Sand)
   1. Well graded, unwashed bank run or crushed bank run which is free from clay lumps, organic matter, and other deleterious substances with gradation as follows:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>¾-inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>90-100</td>
</tr>
<tr>
<td>No. 10</td>
<td>45-90</td>
</tr>
<tr>
<td>No. 40</td>
<td>15-45</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-10</td>
</tr>
</tbody>
</table>

C. Soil Class E-1 (Clay Soil)
   1. Minimum 50 percent by weight passing the No. 200 sieve.
   2. For the fraction passing the No. 40 sieve, the minimum plasticity index shall be 15.
   4. Free from organic material, boulders, cobbles, excessive amounts of gravel (greater than ¾-inch), and other deleterious substances.

D. Soil Class F-1 (Topsoil)
   1. Topsoil shall meet the definition and specification stated in ASTM D5268 and meets one of the following SCS (Soil Conservation Service) soil textures:
      a. Loam.
      b. Sandy loam.
      c. Silt loam.
      d. Silty clay loam.
      e. Clay loam.
   2. The topsoil shall consist of adequate mineral content to support the growth of the intended vegetation and shall not contain herbicides which would be detrimental for the intended use.
   3. The topsoil shall have adequate fertility for quick establishment of vegetation.
   4. The pH of the topsoil shall be between 6.0 and 7.0.
   5. Topsoil shall be free from deleterious substances.
   6. Pulverize and screen the topsoil such that 100 percent passes the 1-inch (25 mm) sieve and at least 90 percent passes the No. 10 (2.00 mm).

E. Soils Class F-2 (Compost/Topsoil)
   1. Same as F-1 above except topsoil shall be defined as a mixture of topsoil and soil that is a byproduct of composting (compost).

F. Soil Class G-1 (Clean Earth Fill)
   1. Soil Class G-1 shall be any soil material excavated on the project site or obtained from borrow areas.
2. Soil materials unsuitable and, therefore, not approved for this classification are:
   a. Soils with high organic contents such as: topsoil, peat, muck, organic silts, and clays, marls, etc.
   b. Manmade or rubble filled soils containing such materials as: foundry sand, fly ash cinders, asphalt, and concrete rubble, etc.
   c. Silty soils such as: rock flour, loess, etc.
   d. Soils with gravel larger than 3-inch.
   e. Silty clay or clays with a high plasticity (CH soils as defined in ASTM D2487).
   f. All soil contaminated with hazardous waste materials as defined by the Environmental Protection Agency.

G. Soils Class G-2 (Clean Earth Fill)
   1. Same as G-1 above except shall not contain gravel larger than 1½-inch.

2.4 SOURCE QUALITY CONTROL

A. To establish acceptability of material, perform tests for each soils class in accordance to the following standards:
   1. Soils Class A and C:
      a. ASTM C88.
      b. ASTM C131 (for coarse aggregates smaller than 1½ inches).
      c. ASTM C535 (for coarse aggregates 1½ inches and larger).
      d. ASTM D6913-17
      e. ASTM D7928-17 (use when aggregate contains materials finer than No. 200 sieve).
   2. Soils Class B:
      a. ASTM C88.
      b. ASTM C535 (for coarse aggregates 1½ inches and larger).
      c. ASTM D6913-17
      d. ASTM D7928-17 (use when aggregate contains materials finer than No. 200 sieve).
   3. Soils Class D:
      a. ASTM D1241.
      b. ASTM D2487.
      c. ASTM D6913-17
      d. ASTM D7928-17 (use when aggregate contains materials finer than No. 200 sieve).
   4. Soils Class E:
      a. ASTM D1140.
      b. ASTM D2216.
      c. ASTM D4318
      d. ASTM D6913-17
      e. ASTM D7928-17
   5. Soils Class F:
      a. ASTM D2487.
   6. Soils Class G:
      a. ASTM D2487.
B. In addition to the above, furnish a soil analysis of Soil Class F:
   1. Analyze for the following:
      a. pH
      b. Phosphorus
      c. Potassium
      d. Soluble Salts
      e. Calcium
      f. Magnesium

C. Source sample all soils and aggregates in accordance with ASTM D75.

D. Perform one (1) acceptable test for each type of material at each source.

PART 3 - EXECUTION

3.1 APPLICATION

A. Use the soil classification as specified or stated on Drawings.

B. Place material in accordance with the Drawings and appropriate Specification Sections for the type of work being performed.

END OF SECTION
SECTION 31 23 01

EXCAVATION AND FILL FOR ROADWAY AND CELLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Excavation.
   2. Test rolling.
   3. Filling and compacting.
   5. Finish grading.
   6. Materials testing.

B. Allowances
   1. If so stated in specification section "Allowances," installation testing will be paid as an allowance. All other testing shall be incidental to the work.
   2. If there is no reference in the specification section "Allowances" to trenching, backfilling and compacting testing, then testing costs shall be included in the cost for trenching, backfilling and compacting.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)
   2. D1140 Test for Amount of Material in Soils Finer than the No. 200 Sieve
   3. D1556 Test for Density of Soil in Place by the Sand-Cone Method
   4. D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54 kg) Rammer and 18 in. (457 mm) Drop
   5. D2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
   6. D6938-07 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.3 SUBMITTALS

A. Submit 2 copies of the results of quality control testing (include location where test was done).
1.4 DENSITY TESTING

A. The Contractor shall contract with an independent testing laboratory to provide testing services required by this section.

B. The laboratory selection shall be subject to the approval of the Owner's Representative.

C. Testing Requirements
   1. Source Testing:
      a. Test all select soils and aggregates for acceptance as required by Section 31 05 10, Soils and Aggregates for Earthwork.
   2. Installation Testing:
      a. Determine maximum density and optimum moisture content for compaction in accordance with ASTM D1557 (one test for each type of material for each source).
      b. Conduct field density tests in accordance with ASTM D1556 and/or D6938.
      c. Minimum frequency for field density testing shall be two (2) acceptable tests per project or as follows, whichever number is greater:
         1) One moisture/density test per 100 feet of roadway.
   3. Additional Density Testing:
      a. Perform under following circumstances:
         1) Soil density does not meet project requirements.
         2) Change in method of compaction.
         3) Change in source or quality of soil or aggregate.
         4) Disturbed cut areas.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Soil used for borrow, fill, and backfilling shall meet the requirements of soil class as called for on plans or in specifications.

B. As a minimum, all soil shall meet the requirements of Soil Class G-1.

C. All soil classes shall be as per Section 31 05 10, Soils and Aggregates for Earthwork.

PART 3 - EXECUTION

3.1 EXCAVATION

A. Excavate to subgrade elevation shown on Drawings.
B. Excavate soil material determined to be unsuitable when directed by Owner's Representative.

3.2 SUBGRADE COMPACTION IN CUTS

A. Compact subgrade to 90 percent modified proctor density to a minimum depth of 6 inches.

3.3 SUBGRADE COMPACTION IN FILLS

A. Compact fill in layers not exceeding 8 inches in thickness.

B. Compact to 90 percent modified proctor density.

3.4 MOISTURE REQUIREMENTS

A. Proper soil moisture contents for compaction shall be maintained in all soils.

1. Optimum moisture content as determined by Modified (ASTM D1557) Proctor shall be used to determine acceptance moisture contents for soil compaction.

2. Following guidelines shall be used to determine moisture content range for compaction of various soils:

**MOISTURE REQUIREMENTS FOR COMPACTION OF VARIOUS SOILS**

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Soil Class</th>
<th>Tolerable Range of Moisture Content About Optimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse grained, cohesionless soils with less than 4% P200 or with less than 8% uniform gradation (i.e., clean sand or gravel).</td>
<td>&quot;A&quot; and &quot;B&quot;</td>
<td>Highest practical moisture content (saturation may be required)</td>
</tr>
<tr>
<td>Sandy clays, silty clay silts, and clays</td>
<td>&quot;E&quot; and &quot;G&quot;</td>
<td>-2 to +4</td>
</tr>
<tr>
<td>All other soil types</td>
<td>All other soil classes</td>
<td>-1 to +3</td>
</tr>
</tbody>
</table>

Note: The above requirements are general guidelines for soil moisture content which may or may not apply to a specific soil material. In some circumstances, the required density may be attained at moisture contents outside the ranges indicated above.

3.5 TEST ROLLING

A. Test roll finished cut or fill subgrades by rolling with a pneumatic-tire roller or a heavy weight loader rubber tire vehicle.

1. Method and equipment used shall be suitable for intended use.

2. Take necessary precautions to protect existing structures from damage during test rolling.

3. Test roll an area equal to the area of the proposed construction plus a minimum of 3 feet on each side.
B. Treat areas showing yielding or rutting under test rolling as follows:
   1. Replace and/or recompact as necessary to stabilize the area.
   2. Retest soil areas replaced or recompacted.

3.6 MATERIAL DISPOSAL

A. Provide a disposal site and haul and dispose of all surplus and unsuitable material.

3.7 FINISH GRADING

A. Grade, trim, and shape subgrade to required grade and section.
   1. Adjust slopes by grading so that transition is smooth and gradual.
   2. The crests of cut banks shall be rounded and shaped.
   3. Washouts and ruts shall be refilled, regraded, and properly compacted.
   4. Remove all stones 3 inches or larger from grading limits.

B. Vertical Grading Tolerances
   1. Rough grading tolerance.
      a. Areas to be topsoiled - rough grade to within 0.2 foot of finish grades.
   2. Areas having paved surfaces (i.e., concrete, asphalt, etc.).
      a. Maximum allowable variation from correct profile and section shall not be more than ¼ inch in 10 feet.

END OF SECTION
SECTION 31 25 00

EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work in this Section includes the work necessary for the installation of any structures and measures for the prevention and control of soil erosion.

B. The Contractor shall furnish all material, labor and equipment necessary for the proper installation, maintenance, inspection, monitoring, reporting, and removal (where applicable) of erosion prevention and control measures.

1.2 RELATED SECTIONS

A. Not Used

1.3 REFERENCES

A. Refer to Wisconsin Department of Transportation (WisDOT) Standard Specifications, where required.

B. Refer to Wisconsin Department of Natural Resources (WDNR) Technical Practice Standards, where required.

1.4 REQUIREMENTS

A. Runoff from all disturbed areas and sediment-laden groundwater encountered during trenching, boring or excavation must be routed through a silt control structure or sediment trapping device prior to discharge from the construction area and prior to entering a receiving stream or other water body.

B. Acceptable sediment trapping devices include, but are not limited to silt fence, diversion berms and swales, inlet protection, check dams, silt basins, silt traps, stabilized construction entrances, and vegetative cover.

C. Pump around flow diversions may be used when construction activity is required within a flowing stream, creek, ditch, or piped system.

D. Stockpiles shall be located away from streams, ponds, swales, and catch basins. Soil stockpiles shall be seeded, mulched and contained through the use of approved perimeter controls.

E. Temporary stabilized construction entrances must be used at access points where construction traffic will enter onto public roadways or streets. These are used to
reduce silt and mud tracking onto pavement. Construction rock entrances must be kept in good condition and may require cleaning, additional rock, or replacement. Any mud and silt tracked onto public roads must be removed immediately.

F. Floating erosion control booms shall be deployed and maintained around the work area (including all equipment) as designated in Permit documents. Trapped floating debris shall be removed and disposed of on a daily basis. Bubble curtains may also be considered best management practice to control the resuspension of sediment from in water construction activities.

G. The construction schedule adopted by the Contractor will impact the placement and need for specific devices required for the control of erosion. The Contractor shall develop and implement such additional techniques as may be required to minimize erosion and off-site sedimentation. The location and extent of erosion and sedimentation control devices shall be revised at each phase of construction that results in a change in either the quantity or direction of surface runoff from constructed areas. All deviations from the erosion and sedimentation control provisions shall have the prior written acceptance of the Engineer.

H. Erosion and sediment controls shall be removed at the completion of construction, as required by the Engineer.

I. Land disturbance activities are not authorized to begin until after all required erosion and sediment control permits are obtained. Contractor shall comply with requirements specified in the Contract Documents or as directed by the Engineer. Contractor shall also comply with all other laws, rules, regulations, ordinances and requirements concerning soil erosion and sediment control.

1.5 SUBMITTALS

A. Prior to commencement of work, the Contractor shall submit for approval the following in accordance with Section 01 33 00 Submittal Procedures: product data for perimeter controls, such as silt fence, filter sock, coir log, or other sediment and erosion controls, along with a proposed work schedule, sequence of operations, and coordination of other work.

B. Prior to commencement of work, the Contractor shall submit for approval the following in accordance with Section 01 33 00 Submittal Procedures:

1. Potential erosion and sediment pollution problems and measures to be taken to control those problems.
2. Erosion and sediment control practices to be employed are dependent on their location, size, maintenance requirements and design calculations.
3. The schedule, phasing, and coordination of construction operations and erosion and sediment control practices.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials for use in erosion and sedimentation control devices shall be in accordance with WisDOT’s Standard Specifications Section 628 unless otherwise instructed by the Engineer.

B. Acceptable sediment control devices include, but are not limited to, silt fence, silt curtain, filter sock, coir log, erosion control blanket, seed and straw, check dams, turbidity curtain, etc. Sediment control devices shall be constructed in accordance with WisDOT’s Standard Specifications Section 628, unless otherwise instructed by the Engineer. The sediment control methods and materials shall be approved, in writing by the Engineer, prior to commencement of work.

PART 3 - EXECUTION

3.1 INSTALLATION AND MAINTENANCE

A. Erosion and sedimentation control devices shall be established prior to clearing operations in a given area. Erosion and sediment control measures shall be applied to all disturbed areas. In addition, Contractor shall identify all site access, staging and stockpile areas in the field, and apply appropriate erosion and sediment control measures, prior to initiating any land disturbing activities.

B. The Contractor shall furnish the labor, materials and equipment required for routine maintenance of all erosion and sedimentation control devices. Maintenance shall include but not be limited to:
   1. The removal and satisfactory disposal of accumulated sediment from traps or silt barriers.
   2. Replacement of filter fabrics used for silt fences and stone used in temporary sediment traps, stone filters, and gravel construction entrances, etc.

3.2 INSPECTIONS AND MAINTENANCE

A. Erosion and sediment control devices shall be inspected daily and within 24 hours after each rainfall event of 1/2 inch or more of precipitation. During inspection, the Contractor shall check for areas where runoff has breached, bypassed, or otherwise caused the device to fail or compromise its function. If an erosion and sediment control device becomes ineffective due to weathering, decomposition or damage, then the Contractor shall replace the affected section immediately.

B. Floating silt curtains or other in-water control devices shall be inspected on a daily basis.

C. Accumulated sediment must be removed when it reaches approximately 1/3 of the height of the silt fence or check dam.
D. The Contractor shall take immediate action will be taken to correct deficiencies to Best Management Practices (BMP). The Engineer reserves the right to stop all construction activities not related to maintaining BMPs until such deficiencies are repaired.

E. In areas that have been permanently stabilized, inspections and, if necessary, maintenance by Contractor, will occur at least once per month for the duration of the contract or project, whichever is longer.

F. During inspections the following will be observed and appropriate maintenance procedures taken:
   1. The conformance to specifications and current condition of all erosion and sediment control structures.
   2. The effectiveness and operational success of all erosion and sediment control measures.
   3. The presence of sediments or other pollutants in storm water runoff at all runoff discharge points.
   4. If reasonably accessible, the presence of sediments or other pollutants in receiving waters.
   5. Evidence of off-site tracking at all locations where vehicles enter or exit the site.

3.3 REMOVAL OF TEMPORARY SEDIMENT CONTROL STRUCTURES

A. At such time that temporary erosion and sediment control structures are no longer required under this item, the Contractor shall notify the Engineer of their intent, schedule for the removal of the temporary structures, and obtain the Engineer’s approval in writing prior to removal.

B. Once the Contractor has received written approval from the Engineer, the Contractor shall remove the temporary structures and all accumulated sediments.

C. Final permanent stabilization will include finished grading per plan contours or the Engineer’s approval.

END OF SECTION
SECTION 31 62 00

STEEL PILES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

Work included: The work covered by this section of these Specifications consists of furnishing all plant, labor, supervision, equipment, appliances and materials to perform all operations in connection with the installation of the steel piles all in strict accordance with this Section of the Specifications and the applicable Drawings and subject to the terms and conditions of the Contract.

Note that “laydown” space is limited at the project site. The contractor may need to locate other temporary storage space near the site for the storage of steel piles. The contractor shall access the available space and schedule deliveries in such a way as to avoid shipyard operations. All costs associated with temporary storage, rehandling, etc. shall be considered as incidental to the installation of the steel piles and sheet piles, and no additional compensation above the contract pricing will be considered.

1.2 SUBMITTALS

A. The Contractor shall submit for approval the following in accordance with Section 01 33 00, Submittal Procedures:

1. A list of any subcontractors and the proposed schedule of unit prices to the Engineer for review.
2. Technical data for all pile driving equipment proposed for use.
3. No later than the time of delivery of materials to the site, steel certificates for review.
4. Details for splices in piles, if used.
5. Provide a minimum of 5 days notice to the Engineer prior to driving any piles. Notify the Engineer of any changes in the schedule.

1.3 PRODUCT DELIVERY AND STORAGE

A. The Contractor shall notify the Engineer 24 hours in advance of delivery of steel piles. Contractor guarantees that steel piles shall be handled in such a manner as to not induce stresses, which will damage the materials, and shall be sorted in a safe manner within designated areas provided at the site.
PART 2 - PRODUCTS

2.2 STEEL SECTIONS

A. Steel Pipe Pile
   The pipe pile size and material shall be as specified on the Drawings or equivalent as accepted by the Engineer. Steel material shall be ASTM 572, Grade 50 with a minimum yield strength (Fy) of 50 ksi. Pile length shall be as shown on the Drawings.

B. Steel HP Piles
   The steel HP pile material shall be as specified on the Drawings or equivalent as accepted by the Engineer. Steel material shall be A572, Grade 50. Pile length shall be as shown on the Drawings.

C. Steel Pile Reinforcement
   Where called for, steel pile reinforcement cages shall be furnished and installed in accordance with notes on Drawings. Bars used for cages shall be deformed billet (60 ksi), or high strength cold or hot formed threaded bar (70 to 80 ksi – as noted on Drawings), epoxy coated. Cages shall be shop fabricated using steel centering/spacer plates of the thickness indicated, and spaced according to Drawings. Deformed bar cages shall be welded to the centering/spacer plates enough to secure them for handling and installation, threaded bars shall be attached to centering/spacer plates using appropriate nuts on each side of the plate.

D. Welding shall conform to AWS D1.1 Structural Code - Steel.

2.3 SPLICES

A. No more than one splice per pile.

B. No splice in lower 40 feet.

C. Both upper and lower sections of pipe ends shall have machined tapers for but welding, machined ends shall be smooth, square and flat prior to splicing.

D. For Pipe or HP Piles:
   1. Full penetration groove weld, which will develop adequate strength to transmit the vertical and lateral loads and moments at the splice during driving and under maximum design loading. Piles shall be furnished in full order lengths only; field splicing will be limited to extending pile lengths should they drive deeper.

2.4 PILE POINTS & CUTTING SHOES

A. Where called for – hardened cutting points/shoes shall be furnished and installed, as manufactured by Skyline, Foster or equal. Points/shoes shall be designed to fit
H Piles, sheet piles, and pipe piles as appropriate, and welded to the driven end of the piles. Points may be shop or field welded to the piles. Cutting shoes for pipe piles shall be of open ended design.

2.5 PROTECTIVE COATING

A. Piles that fall outside of the cells to be coated from top to 5 ft below dredged mudline. Additionally, two cathodic protection anode will be installed on piles that fall outside of the cells as called for in the drawings. In such cases the anodes shall be supplied with tabs and extension cabling to allow attachment to the steel components either before or after installation.

B. Aluminum anodes for passive cathodic protection of steel structures in marine environments shall provide initial, mean, and end of life current density of 180 milliampere per square meter (mA/m²), 90 mA/m², and 120 mA/m², respectively. Anodes shall be installed by an experienced contractor, minimum 5 years of experience, under the supervision of a corrosion specialist certified by NACE. Cathodic protection system shall be tested after installation. Submit test results in a report to the engineer for review and acceptance. Contractor shall submit, for the review of the engineer, installer and tester qualifications, NACE international corrosion certifications, methods, and procedures for testing corrosion control system, including description of instruments and equipment to be used. Anodes shall be Rotometals Alumanode ahc20 (2" x 4" x 24") or equivalent accepted by the engineer. Anodes bolted & installed on all piles that fall outside of the cells.

C. Material used for factory epoxy coating of all scheduled surfaces shall be bar-rust 235 multi-purpose epoxy coating as manufactured by Devoe coatings or equivalent accepted by the engineer. Field touch-up coating shall be identical to factory coating and applied in accordance with the manufacturer’s requirements. Protective coating top coat shall be black. Surfaces shall be prepared in strict accordance with the protective coating system manufacturer’s written instructions. The protective coating shall be installed in strict accordance with manufacturer’s written instructions. Coating is to be applied in two coats to achieve a minimum overall dry film thickness of 15 mils. All imperfections in the coating shall be removed or repaired at the contractor’s expense prior to final acceptance of the work.

PART 3 - EXECUTION

3.1 EQUIPMENT

A. Drive piles with a vibratory, air or diesel operated impact hammer with sufficient energy and energy transfer characteristics to drive the piles to the required toe elevations and capacity without damaging the pile head. If load bearing piles are driven using a vibratory hammer, they shall be proofed using an approved impact hammer. Use care not to damage piles by over driving as would be indicated by rebound of hammer or staggering of pile. Cut off heads of piles accurately in accordance with the Contract Documents after completion of driving.
B. Rig the pile driver with fixed leads to guide the hammer from highest to lowest points of travel in a manner permitting free vertical movements of the hammer, and with leads laterally braced to assure firm support of the piles during driving.

C. The pile is to be located by temporary frames containing members of adequate size to guide and stabilize placement of the pile prior to driving. The frames shall be rigidly located such as to keep the pile plumb and in correct position while being driven.

3.2 PILE DRIVING

A. Drive the piles straight and true at indicated locations, with deviation from the longitudinal axis of not more than 1/4 inch per foot.

B. Locate the piles within 2 inches or less of the positions indicated on the Drawings.

C. Continuously drive each pile to reach the capacity and/or full embedded length called for on the Drawings.
   1. Lengths shown on the Drawings are considered average values, and the actual lengths may vary when so accepted by the Engineer.
   2. Drive piles to achieve driving resistance penetration and refusal values as specified and as accepted by the Engineer.

D. Use suitable cushions or driving heads to avoid damage to the piles, developing proper total driving energy, and directing the energy along the longitudinal center of gravity of the pile.
   1. Drive piles to their full penetration without bending, rupturing, or severely damaging the piles.
   2. If failure in any of the above respects is encountered, pull the pile and drive a new pile at no additional cost to the Owner.
   3. If a replacement pile fails to develop full driving resistance, pull the replacement pile and drive a new pile with larger diameter at no additional cost to the Owner.

E. Where piles are pushed up by pressure from driving of adjacent piles, re-drive as required and at no additional cost to the Owner.

F. The Contractor will record pile driving information, including date of installation, pile number, pile type and installed length, type of hammer and rated energy, date of installation, blow counts, and final tip elevation.

G. Obstructions encountered in steel pile locations shall be dealt with as follows:
   1. All rocks or other obstructions at the ground surface (either above or under water) which interfere with driving of piles shall be removed at no additional cost of the Owner.
   2. In the case of an apparent obstruction below the ground surface but above anticipated full depth, which prevents appreciable penetration of a steel pile, the abnormal condition will receive further consideration by the Engineer.
Depending on the depth and resistance of the obstruction, the Engineer will decide whether to consider the steel pile acceptable or order the obstruction removed. The decision may be deferred until the driving of adjacent piles indicates the obstruction to be isolated or extending over the area of several piles. When the Engineer determines that the removal of rock or other type of obstruction is necessary, one of the following conditions will be applied.

3. If the obstruction is less than one half cubic yard (0.5 cy), and shallower than 5 feet from the top of the obstruction below existing grade (at the time of removal) it shall be excavated and removed by the contractor at no additional cost to the Owner (i.e., included in the lump sum for the pile work item);

4. If the obstruction is larger than one half cubic yard (0.5 cy) or deeper than 5 feet below grade, removal shall be measured and paid for under the optional bid item for “Obstruction Removal by Dredging.” Dispose of all excavated materials in accordance with contract specifications and local, state, and federal regulations.

5. Care shall be taken in driving to avoid subjecting piles to excessive or undue stress. Any pile driven in the wrong position or damaged by reason of defects, or by driving, shall be withdrawn and replaced by a new pile, or supplemented by a second pile adjacent to the first. In either case, no payment shall be made for the unacceptable pile.

3.3 SAFE LOAD CALCULATION

A. Bearing Pipe Piles: Drive without interruption to the required ultimate load capacity. Piles shall be driven to ultimate capacity based on the minimum working capacity specified in the Contract Drawings. Ultimate capacity shall be 2.0 times the minimum working load capacity. If obstructions are encountered that continually cause certain critical piles along the outer face to walk out of acceptable position, the Engineer may opt to terminate the pile driving at a depth where the pile remains in an acceptable position.

B. Bearing HP Piles: Drive without interruption to the required ultimate capacity based on the minimum working capacity specified in the Contract Drawings. Ultimate capacity shall be 2.0 times the minimum working load capacity.

C. All piling operations, including test piles (wave equation load tested) and production piles shall be witnessed by the on-site Engineer’s representative.

D. Driving Formula: The allowable pile load shall be computed by means of the following driving formula:

\[ R = \frac{2E}{S + C} \]

\[ S = \frac{2E}{R} - C \]

where,

\[ R = \text{allowable pile load in pound} \]
E = energy per blow in foot-pounds
S = penetration of last blow or average penetration of last few blows experienced in inches
C = constant equal to 1.0 for drop hammer and 0.1 for steam or air hammer

1. The value of "S" must be determined with the hammer operating at 100% of the rated number of blows per minute for which the hammer is designed.
2. Any driving resistance developed in strata overlying the bearing material shall be discounted.
3. If the driving of the pile has been interrupted for more than 1 hour, the value of "S" shall not be determined until the pile is driven at least an additional 12 inches, except when it encounters refusal.

3.4 HANDLING, CUTTING AND FRAMING

A. Handle piles carefully, without sudden dropping or excessive bending.

3.5 LENGTH AND LOAD REQUIREMENTS

A. Drive piles to practical refusal as indicated on the Drawings.

END OF SECTION
PART 1: GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Specification sections, apply to work of this section.

1.02 SUMMARY

A. The work includes labor, materials, equipment and services required for completion of the work under this Section; all as shown on the drawings and as specified herein.

B. The steel sheet piling work generally consists of the following:
   1. Construction of steel sheet pile cells, sized as shown on Drawings;
   2. Construction of steel sheet pile platforms, sized as shown on the Drawings;
   3. Transitional “PS or AZ” pile closures returns and custom sheet pile closure pieces at the extreme ends of the project;
   4. Structural Cell backfill (Refer to Drawings, Sections 31 01 00, Earthwork; 31 05 10, Soils and Aggregates for Earthwork; 31 23 01, Excavation and Fill for Roadway and Cells for backfill of cells);
   5. Preliminary Probing of sheet pile perimeters and existing bulkhead, (refer to Drawings and Section 01 71 23, Field Engineering).
   6. Removal of obstructions identified during probing or pile installation.
   7. Aluminum anodes (RotoMetals AlumAnode AHC20 (2"x 4" x 24") or similar) bolted / installed one on every other sheet pile, spaced as shown on the contract drawings.

C. The work to be done under this Section consists of furnishing all supervision, materials, labor, tools and equipment, and performing all operations necessary for driving, fitting, and connecting all sheet piles, as shown on the Drawings and as herein specified.

1.03 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

B. In the event of a conflict between pertinent codes and regulations and the requirements of the referenced standards or these specifications, the Owner’s Engineer shall be notified and shall render a decision as to which requirements govern. The Contractor shall comply with the requirements selected by the Owner’s Engineer as if they were the sole requirements of the contract. The Contractor shall not receive additional compensation for the requirements selected.
C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 307 (2010) Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
ASTM A 325 (2010) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A 328/A 328M (2010) Steel Sheet Piling
ASTM A 490 (2010) Heat-Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength
ASTM A 502 (2009) Steel Structural Rivets
ASTM A 514/A 514M (2009) High Yield Strength, Quenched & Tempered Alloy Steel Plate, Suitable for Welding
ASTM A 572/A 572 M (2007) High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM A 588/ A 588 M (2010) High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 in. Thick
ASTM A 690/ A 690 M (2007) High-Strength Low-Alloy Nickel, Copper, Phosphorous Steel H-Piles and Sheet Piling with Atmospheric Corrosion Resistance for Use in Marine Environments

D. AMERICAN WELDING SOCIETY (AWS)


E. THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC-SP1 (2004) Solvent Cleaning
SSPC-SP3 (2004) Power Tool Cleaning
SSPC-SP6 (2007) Commercial Blast Cleaning
SSPC-SP7 (2007) Brush-off Blast Cleaning

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00 Submittal Procedures.

B. Steel sheet piles:

1. PS Flat Sheets: A 572 Grade 60 (60,000 psi yield) steel sheet piles. An interlock strength of 24 kips/in shall be achieved.
2. AZ Sheets: A 572 Grade 60 (60,000 psi yield) steel sheet piles.
4. Fabricators of special piling components.

5. Minimum section modulus and Moment of Inertia per foot of wall shall be as called for on the Manufacturer’s Specifications based on the shapes identified on the Contract Drawings.


7. Certificates of Compliance.

8. Shop drawings, standard details, mill certifications, and coating certification.

9. Shop drawings of walers, special closures, and junction piles as called for on Drawings. All fabrication of these components shall be detailed by the fabricator under the direction of a licensed professional engineer, and final shop drawings shall be certified and sealed by a Wisconsin licensed professional engineer.

10. Welding methods, procedures, rods, qualification of welder, inspection and test reports, specifically as it relates to welding of types and grades of specified steel.

11. Interlock testing by independent laboratory (flat sheets and junction piles only). A certified report of interlocked joint in material properties, performance, and chemical compositions showing results based on approved testing procedures including the tension and Charpy v-notch test conforming to the industry standard and the piling manufacturer’s standard tests.

12. The contractor shall submit installation drawings for sheet piling including fabricated sections, which shall show complete dimensions and details of piling and the driving sequence and location of piling. Include details and dimensions of templates and other temporary guide structures for installing the piling. Provide details of the method of handling piling to prevent permanent deflection, distortion or damage to piling interlocks and coating.


C. Test Reports.

D. Material certificates.

E. Sacrificial Anodes.

F. Pile driving equipment and installation procedures: List of equipment shall include crane capabilities and driving leads, hammer types, operation and size.

G. Details of cell falsework, including temporary support systems, designed and stamped by a civil and/or structural engineer licensed in the State of Wisconsin.

H. Data for proposed pile driving cushions.

I. Interlock tension test procedure.

J. Pile driving record.

K. As built locations of installed sheet piles and tieback anchors.

L. Welding procedure, electrodes, and certifications.
1.05 DELIVERY AND STORAGE

A. Handle piling using handling holes or lifting devices. Handle long length piles with care to prevent damage. Support on level blocks or racks spaced not more than ten-feet (10’) apart and not more than two-feet (2’) from the ends. Supports between multiple lifts shall be in a vertical plane. Protect piling to prevent damage to coatings and to prevent corrosion prior to installation.

1.06 QUALITY ASSURANCE

A. Material Certificates - Submit for each shipment certificates and identification with specific lots prior to installing piling. Identification data should include piling type, dimensions, chemical composition, mechanical properties, section properties, heat number, and mill identification mark.

B. Qualifications

1. The contractor shall retain a supervising engineer or superintendent with at least 10 years of experience, as well as supervisory experience installing at least one steel cellular cofferdam project (with multiple cells).
2. Before Contract award, the Contractor shall submit documentation that company and project personnel have appropriate qualifications. Inadequate proof of the qualifications of the aforementioned personnel, as judged by the Owner, shall be cause for withholding contract award and rejection of the bid.

1.07 PILE DRIVING EQUIPMENT

A. Submit descriptions of any and all pile driving equipment to be employed in the work. Descriptive information includes manufacturer's name, year of manufacture, model numbers, weight of hammer, RPM, vertical amplitude, capacity, rated energy, hammer details, cushion material, helmet, and templates. For vibratory hammer also provide equivalent driving capacity.

1.08 SITE CONDITIONS

A. The Contractor shall anticipate encountering interfering subsurface obstructions while driving piles. The Contractor shall employ accepted obstruction clearing methods as required to install sheet piles without damage, and allow for proper alignment and location. Maintaining the integrity of the cell walls and interlocks is of prime importance for this project. It is generally known from the soil borings and test pits taken that the underground conditions of the site contain a dense soil layer and/or boulders of varying sizes and at varying depths. For this reason, the contractor shall conduct a preliminary investigation of the site using an approved probe to determine if any boulders large enough to be of concern exist within the planned alignment of the cell walls. Details of the scope of the underground investigation are included elsewhere in this document (Field Engineering) and on Drawings.

B. Geotechnical Data

1. Geotechnical data used in the design are based on information available for review through the Owner’s Engineer.
2. Neither the Owner’s Engineer nor the Engineer can warrant that subsurface conditions will not vary in areas immediately adjacent to those that have been assessed. The Contractor is to make his own risk assessment based on the available
soils information presented in the data and his own interpretation, deduction, or conclusion regarding the nature of the materials and subsurface conditions that may be indicated or implied by the Drawings, specifications, and geotechnical data.

C. Varying Driving Conditions: The Contractor shall make his own determinations and conclusions regarding the methods and procedures to be used in performing the work. There will be no extra compensation for accommodations required due to piles moving post-installation because of subsequent pile driving.

1. There will be no extra compensation for obstruction dislodging or any additional operations that should be required (such as excavation) for their removal if obstructions are encountered during pile driving except as specifically described herein.

1.09 PILE ORDER LENGTHS

A. The Contractor should coordinate lead time with the sheet piling manufacturer, and place sheet pile orders such that the progress of construction will not be impacted by the sheet pile lead time.

PART 2: PRODUCTS

2.01 STEEL SHEET PILES

A. Meet the requirements specified herein. Heavy gage hot-rolled sheet piling shall conform to ASTM A572 Grade 60 (60,000 psi yield) or better for Sheet piles. Provide sheet piling with standard lifting holes.

B. Sheet piling including special fabricated sections shall be full-length sections of the dimensions shown. Fabricated sections shall conform to the requirements herein and the piling manufacturer's recommendations for fabricated sections.

C. Fabricated sections connecting cofferdam cells and adjacent arcs shall be Y-sections fabricated from the respective manufacturer’s piling. Fabricated tees, wyes and cross pieces shall be fabricated of piling sections with a minimum web thickness of ½ inch. Sheet piling to be placed in a circular cell or a connecting arc shall be of the same manufacturer.

D. Interlock sections of all flat sheets used for the cell walls shall be sampled from each manufacturing run and tested during the manufacturing process. Tests shall be performed by an independent testing laboratory suitably equipped to perform such tests in accordance with the procedures established by the manufacturer. In each case the interlock will be tested to yield then failure and the interlock resistance computed. Results will be submitted to the Owner’s Engineer for evaluation prior to acceptance of the manufactured lot. Interlocks shall be tested to a minimum strength per length of interlock equal to 4200 KN/m (24,000 lb/inch).

E. Special attention shall be paid to heat distribution and warping that might occur during the fabrication process. The steel fabricator will take whatever precautions that may be necessary to prevent warping of the steel sections during the welding and cooling process.
Any sections that are delivered that are warped beyond the standard mill tolerances will be rejected and replace by the supplier at no additional charge to the Owner.

F. Coat requirements shall be in accordance with the Contract Drawings.

2.02 MISCELLANEOUS METALS & STEEL PLATES

A. Structural steel shapes and plates (other than King Piles) for use in the wale system and/or closure sections shall be shop fabricated. Shapes shall conform to ASTM A572, Grade 50. The minimum thickness requirement for all steel members shall be at least 3/8-inch thickness. All fabricated metals shall be in accordance with ASTM standards.

B. Structural steel plates for splices and other fabrication appurtenances shall conform to ASTM A 572, Grade 50. All miscellaneous metals and steel plates provided by the Contractor shall be coated as outlined in this specification. This additional material supplied by the Contractor shall provide for any cut-off, waste, damage or the like that might occur during the execution of the contract.

2.03 CORROSION PROTECTION AND SACRIFICIAL ANODES

A. Sheet piles that are up to 15 ft from the lake side in plan (see drawings) shall be coated from top to 5 ft below dredged mudline or -32 ft LWD at installation. Material used for factory epoxy coating of all scheduled surfaces shall be bar-rust 235 multi-purpose epoxy coating as manufactured by Devoe coatings or equivalent accepted by the Engineer. Field touch-up coating shall be identical to factory coating and applied in accordance with the manufacturer's requirements. Protective coating top coat shall be black. Surfaces shall be prepared in strict accordance with the protective coating system manufacturer’s written instructions. The protective coating shall be installed in strict accordance with manufacturer’s written instructions. Coating is to be applied in two coats to achieve a minimum overall dry film thickness of 15 mils. All imperfections in the coating shall be removed or repaired at the contractor’s expense prior to final acceptance of the work.

B. Aluminum anodes (RotoMetals AlumAnode AHC20 (2"x 4" x 24") or similar) shall be bolted: one on every other sheet pile. Aluminum anodes for passive Cathodic protection of steel structures in marine environments shall provide initial, mean, and end of life current density of 180 milliampere per square meter (mA/m²), 90 mA/m², and 120 mA/m², respectively. Anodes shall be installed by an experienced contractor, minimum 5 years of experience, under the supervision of a corrosion specialist certified by NACE. Cathodic protection system shall be tested after installation. Submit test results in a report to the engineer for review and acceptance. Contractor shall submit, for the review of the engineer, installer and tester qualifications, NACE international corrosion certifications, methods, and procedures for testing corrosion control system, including description of instruments and equipment to be used.

2.04 BOLTS, NUTS, AND WASHERS

A. ASTM A325, Type B. All bolts and clips shall be hot dipped galvanized.
2.05 WELDING

A. Arc welding electrodes. AWS Series E-80 as required for conditions of intended use; use equivalent rods in corrosion resistant alloy for welds to A572 Grade 50 steel.

PART 3: EXECUTION

3.01 EXISTING UTILITIES AND EARTHWORK

A. Contractor shall locate and protect any existing utilities along the alignment of the proposed bulkhead as required to locate and remove obstructions prior to commencing installation.

B. Refer to Sections 31 01 00, Earthwork; 31 05 10, Soils and Aggregates for Earthwork; 31 23 01, Excavation and Fill for Roadway and Cells for backfill of cells.

3.02 INSTALLATION

A. Pile Hammer - Use a pile hammer having a delivered force or energy suitable for the total weight of the pile and the character of subsurface material to be encountered. Operate hammer at the rate(s) recommended by the manufacturer throughout the entire driving period. Repair damage to piling caused by use of a pile hammer with excess delivered force or energy. Vibratory hammers are acceptable provided they do not cause sloughing of the existing banks, or cause displacement or damage to the existing structures. Hammers shall be capable of developing the required pile embedment depth considering the hammer impact velocity, cross section, length, and total weight of pile, and characteristics of subsurface conditions to be encountered. The Engineer’s review and acceptance of pile driving equipment does not relieve the Contractor of the responsibility to use pile driving equipment capable of developing the required pile embedment. All pile driving equipment shall be designed, constructed and maintained in a manner suitable for the work to be performed in this Contract. If, in the opinion of the Owner, the driving equipment is inadequate or deficient, it shall be removed from the job site.

B. Sheet piles for the cellular cofferdams shall be installed utilizing vibratory hammers. Use of non-vibratory equipment for sheet pile installation requires the prior approval of the Owner. In areas where sheet piles are to be driven in close proximity to existing structures, vibration monitoring shall be employed to be sure that the vibratory pile hammer does not approach levels that would cause settlement or movement of adjacent structures or interfere with the Owner’s operations. If excessive vibrations are reported by the monitoring operations, throttling back of the pile hammer during startup and shut down of the hammer may be required to reduce ground movement to acceptable levels.

C. Steel Cellular Cofferdam Driving Procedures/Recommended Construction Sequence:

1. Install turbidity curtain around proposed work area.
2. If cell construction extends into the “fish window” from March 15 to June 15; install and maintain an approved bubble curtain as called for in project permits.
3. Field locate existing utilities and structures that conflict with proposed cellular cofferdam bulkhead. Protect and/or relocate as required.
4. Prior to setting the driving template and driving sheet piles, the contractor shall perform a preconstruction investigation of each cell wall’s alignment. Details are included in the Section on Field Engineering. If the investigation encounters any obstruction, which in the Engineer’s opinion will damage the sheet piles during the driving, or will prevent them from being driven to proper grade, the obstructions shall be either cleared by pre-driving of “spuds” to break or dislodge the obstruction, or excavated and removed prior to the setting of the driving template as determined by the Engineer. When the Engineer determines that the removal of rock or other type of obstruction is necessary, one of the following conditions will be applied.

   a. If the obstruction is less than one half cubic yard (0.5 cy), and shallower than five-feet (5’) (from the top of the obstruction) below existing grade (at the time of removal) it shall be excavated and removed by the contractor at no additional cost to the Owner (i.e. included in the lump sum for the sheet pile work item);

   b. If the obstruction is larger than one half cubic yard (0.5 cy) or deeper than five-feet (5’) below grade, removal shall be measured and paid for under the optional bid item for “Obstruction Removal by Excavation”. Dispose of all excavated materials in accordance with contract specifications and local, state, and federal regulations.

5. All the sheeting shall be installed using a template. The template shall have at least two independent movable (2) guiding levels, when setting and driving sheets the lower template shall be as close to the ground or bottom level as is practically possible. The template design, placement, separation between support levels and driving procedures shall conform to the recommendations of the latest manual for installing sheet pile cellular cofferdams as set forth in “Design & Execution Manual – AS-500 Straight Web Steel Sheet Piles” by Arcelor Mittal (or equal). Where the provisions of this specification and the aforesaid manual are in conflict, the more stringent condition shall apply. Templates should be supported securely on a temporary platform to allow location adjustments of the template. When the template has been adjusted into proper location (plus or minus two-inches (2”) of design location) it shall be securely supported in place with a minimum of four (4) spud piles and welded in place. Piles shall be sized so as to prevent lateral movement of the template under normal pile placement and driving conditions.

6. To reduce the chance of interlock “popping out” it is important that all sheets be driven progressively from the start such that each sheet pile driven never advances more than 5 feet ahead of the adjacent pile. The closing sheets shall be between the two wyes of the arc cell. The direction of the pile hammer should be reversed with each driving pass to insure the piles are driven plumb.

7. Unless specifically directed otherwise, set all sheet piles for first cell before starting to drive sheets. Begin setting sheets at each wye-pile in both directions, meeting at a closure pile at the center of each quadrant. Shake out sheets until closure pile fits smoothly between adjacent piles. When the entire cell is completely set, begin driving sheets working around the circumference of the cell. Do not drive any sheet pile more than five feet (5’) below the bottom of adjacent
sheets. Subsequent driving passes around the cell shall take place in opposite directions (clockwise – counterclockwise). Tip of steel sheet piles are to be seated to the required tip elevation. Plumb, secure, and mark each sheet pile after driving.

8. Set first two (2) sheets of intersecting arcs on both sides of cell prior to driving cell piles.

9. Set and drive all sheets for adjacent circular cells as described above.

10. Set and drive sheets for interconnecting arcs between adjacent cells. Tip of steel sheet piles are to be seated to the required tip elevation. Plumb, secure, and mark each sheet pile after driving.

11. Consider flow of water due to fluctuation of lake level when closing the cellular cofferdam.

12. All sheet piles for cells shall be driven to the depths shown on Drawings or to practical refusal using the approved vibratory pile hammer. Refusal shall be determined in the field by the Owner’s representative. Practical refusal shall mean zero penetration for five minutes of driving (this factor may be adjusted if it becomes apparent that the piles are being damaged during this process).

13. If any pile within a cell reaches a premature refusal and it is expected that an unanticipated boulder has been encountered, the driving shall stop and the Contractor shall notify the Engineer. This shall be followed by either insertion of a minimum 4” jet probe into the location and the dislodging of the obstruction, or by direct excavation and removal if the obstruction is within 15 feet of the surface.

14. Attempting to drive sheet piling through the till or into decomposed/weathered rock may cause the interlocks to “pop out”. Thus, it is essential that top of obstruction is properly identified and obstructions removed prior to driving sheets down to specified level.

15. The interlocks shall not be greased during construction; this will lower the interlock friction below the design assumptions.

16. The main cells on either side of an arc cell should be driven and filled prior to driving the sheets for the arc cell. However, at least the first two sheets of the connecting arc cells should be driven prior to filling the adjacent main cell. If this is not done the barreling of the main cell during filling will make it difficult to impossible to drive the arc cell sheets.

17. The template should remain in place when filling a cell to at least 2/3 of the cell height prior to removing the template. In order to prevent unbalancing the cell, fill the cell from the middle. The filling can be done hydraulically or by placing with clamshell buckets. Hydraulic filling has a disadvantage of being very quick and may impart high hydraulic loads, which have been known to burst cells. Cells shall be carefully monitored for alignment and lateral shifting during the filling process, using procedures that are acceptable to the engineer. If any shifting is encountered during the filling process – the filling procedures shall be modified as required to prevent further movement.
18. Check to assure that all piles are at or below required tip elevation.

19. Cut steel sheet piles to the elevation shown on the drawings after calculating the tip elevations of each pile.

20. Place backfill in center of cells of cofferdam up to 2 feet above Lake Elevation.

21. Perform vibratory probe compaction at the backfilled cell as called for in specifications. Top of backfill elevation inside cells is expected to drop by approximately 2 feet to Lake Elevation.

22. Perform vibratory probe compaction at the installed interconnecting arc backfill after adjacent cells have been completed. Top of backfill elevation inside arcs is expected to drop by approximately 2 feet to Lake Elevation.

23. Allow for confirmatory boring to be completed by Owner in densified sandy fill.

24. Add and compact additional backfill material as called for to top of main cells and interconnecting arcs in accordance with the earthwork specification. Keep backfill levels in cells at least 4 feet above backfill in the adjacent arcs.

D. Protection: Use all means necessary to protect the steel sheet piles before, during and after pile driving.

E. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer at no additional cost to the Owner.

F. Remobilizing: All costs for remobilizing, removing, or replacing inadequate, defective or deficient equipment shall be at no cost to the Owner and no time extension to the contract.

G. Contractor shall be responsible for keeping a complete and current record of each pile driven in a daily log and record.

H. Daily Log and Record: The Contractor shall provide documentation for each pile showing as minimum the following:
   1. Pile dimensions/identification/location
   2. Weather/tidal conditions at start of driving
   3. Mudline elevation
   4. Date and time start and end of continuous driving and at beginning of re-strike
   5. Respective depths of penetration
   6. Pile tip elevations
   7. Elevation of splices if used
   8. Pile cushion thickness at the beginning and end of driving, including replacement of cushions during driving.
   9. Equipment used
   10. Installation method
   11. Nature and locations of obstructions encountered
   12. Equipment malfunction or delays in driving
   13. Record the driving energy for hydraulic hammers and strokes (blows) per minute for impact hammers.
   14. Record of driving time at one-foot increments for vibratory pile hammers.
15. Changes to stroke settings for impact hammer.

I. Contractor shall mark the steel sheets at one-foot intervals beginning at the tip and the length shall be marked clearly at each five-foot division. During striking the pile marking shall be at 1-inch intervals for each foot of penetration. At all times during driving the marked portion of the pile shall remain visible to the Engineer.

J. It is the Contractor’s responsibility to install in an acceptable condition and location all the piles to a minimum tip elevation.

K. No piles shall be driven until the Engineer’s review of proposed equipment is complete and an authorization to proceed is given.

L. Protection of structures - The contractor shall take whatever precautions they deem necessary to protect existing structures from damage during the pile driving operations.

3.03 PILE PROTECTION

A. Use a protecting cap during driving to prevent damage to the top of the sheet piling.

3.04 TEMPLATES

A. Details of cell falsework, including temporary support systems, shall be designed and stamped by a civil and/or structural engineer licensed in the State of Wisconsin and shall be submitted to the Engineer for approval 30 days prior to the start of any planned work.

3.05 PILE DRIVING

A. Maintain piling vertical during driving. Drive piles in such a manner as to prevent damage to the piles and to provide a continuous closure. Preferred driving direction shall be performed as recommended by the manufacturer. If an open socket is leading, a bolt or similar object placed in the bottom of the interlock will minimize packing material into it and ease driving for the next sheet. Incrementally sequence driving of individual piles such that the tip of any sheet pile shall not be more than five (5) feet below that of any adjacent sheet pile. When the penetration resistance exceeds five blows per inch, the tip of any sheet pile shall not be more than 2 feet below any adjacent sheet pile.

B. The Contractor shall be responsible for the replacement of any damaged materials. No additional compensation shall be provided to the Contractor for any waste or additional material required to complete the project as designed. The Contractor shall supply all equipment, bolts and hardware necessary to perform the work described.

3.06 PRELIMINARY INVESTIGATIONS (refer to Section 01 71 23, Field Engineering)

3.07 JETTING OF PILES

A. Jetting will not be permitted for the driving of piles on this project except as provided herein for the dislodging of obstructions that may be encountered in the driving of the flat cell sheet piles only – and then only as approved on a case by case basis by the Engineer. In addition, if areas of dense soils are encountered that are of such density that excessively difficult pile driving is occurring that is damaging the flat cell sheet piles, the engineer may conditionally approve water jetting in such areas on a selective basis to ease the severity of driving. Once any such areas of difficult driving are cleared the
jetting shall be terminated and the normal pile driving resumed. This allowance is reserved only for selective areas where flat cell sheet piles are being driven, and in no way shall be construed as a blanket allowance to allow the jetting of piles throughout the project.

3.08 CUTTING AND SPLICING

A. Piles designated to be driven to refusal or the point where additional penetration cannot be attained or in other cases where the piles are extending above the required top elevation in excess of the specified tolerance shall be cut off to the required elevation. Piles driven below the required top elevation and piles damaged by driving and cut off to permit further driving shall be extended as required to reach the top elevation by splicing when directed by the Owner’s Engineer. If directed by the Owner’s Engineer, splice piles as required to drive them to depths greater than shown on the drawings and extend them up to the required top elevation. Piles adjoining spliced piles shall be full length unless otherwise approved. Welding of splices shall conform to the AWS standards. Ends of piles to be spliced shall be squared before splicing to eliminate dips or camber. Splice piles with concentric alignment of the interlocks so that there are no discontinuities, dips or camber at the abutting interlocks. Spliced piles shall be free sliding and able to obtain the maximum swing with contiguous piles. The Contractor shall trim the tops of piles excessively battered during driving, when directed at no cost to the Owner. Pile cut-offs shall become the property of the Contractor and shall be removed from the site. Use a straight edge in cutting by burning to avoid abrupt nicks. Bolt holes shall be drilled and reamed by approved methods which will not damage the surrounding metal and coatings. Holes other than bolt holes shall be reasonably smooth and the proper size for rods or other items to be inserted. Do not use torches for cutting holes or fabricating.

B. No splicing shall be allowed on cell piles exposed to the water. The Contractor shall replace short sheet piles with longer sheets and shall use the short piles on the backside of the cell, but only as called for specifically on Drawings.

3.09 WELDING

A. Shop and field welding, qualification of welding procedures, welders, and welding operators shall be in accordance with AWS D1.1/D1.1M.

3.10 TOLERANCES IN DRIVING

A. Drive all piles with a variation from vertical of not more than 1/4 inch per foot. Place the pile so the face will not be more than 6 inches from vertical alignment at any point. Top of pile at elevation of cut-off shall be within 1/2 inch horizontally and 2 inches vertically of the location indicated. Manipulation of piles to force them into position will not be permitted. Check all piles for heave. Re-drive all heaved piles to the required tip elevation.

3.11 OBSTRUCTIONS ENCOUNTERED IN SHEET PILE LOCATIONS

A. All rocks, timbers, pile stubs, or other obstructions at the ground surface (either above or under water) which interfere with driving of piles shall be removed at no additional cost to the Owner, except as specifically allowed for herein.

B. In the case of sheet pile installations an apparent obstruction below the ground surface but above anticipated full depth, which prevents appreciable penetration of a sheet pile,
the problematic condition will receive further consideration by the Engineer. Depending on the depth and resistance of the obstruction, the Engineer will make a decision whether to consider the sheet pile acceptable or order the obstruction removed, or drill a pile pin. The decision may be deferred until the driving of adjacent sheets indicates the obstruction to be isolated or extending over the area of several sheets.

D. Care shall be taken in driving to avoid subjecting sheets to excessive or undue stress. Any sheet pile driven in the wrong position or damaged by reason of defects, or by driving, shall be withdrawn and replaced by a new sheet, or supplemented by a second sheet pile adjacent to the first. In either case, no payment shall be made for the unacceptable sheet pile installation and the Contractor shall be responsible for the actual replacement of the sheet at no additional costs to the Owner.

3.12 INSPECTION

A. Perform continuous inspection during pile driving. Inspect all piles for compliance with tolerance requirements. Bring any unusual problems which may occur to the attention of the Project Engineer.

3.13 INSPECTION OF DRIVEN PILING

A. The Contractor shall perform a complete inspection of the interlocks for the portion of driven piles that extend above ground. If any interlock separations, or any other condition is encountered during this inspection it shall be brought immediately to the attention of the inspecting Engineer. Results of the inspection shall be provided in a written inspection report. The report shall include written documentation of any issues encountered during the inspection, including identification of areas of compromised coating.

B. Prior to final acceptance of the sheet pile cells, the Contractor shall perform a detailed underwater inspection of the sheet piles, which shall include all exposed interlocks. To facilitate this inspection, the Contractor shall perform a preliminary inspection of the piles and shall remove any caked mud or other soil from the sheets that might prevent proper inspection. The Inspecting Engineer may also choose to have an independent third party diver attend the inspection to be sure that no areas of the sheet pile cells are omitted from the inspection. The inspection will begin by marking the pile number at the top of each sheet above water where it can be viewed, then the diver will video tape that number and will proceed down the pile to the bottom, continuously taping the interlock. The inspection shall be performed during conditions when water clarity is optimal enough that the face of the sheet piles can be video recorded by the diver. Taping of multiple, adjoining interlocks is acceptable providing water clarity and video image are acceptable to the Inspecting Engineer. The rate of decent shall be such that the video image remains clear and focused, with adequate lighting. The Engineer will also have a representative on the dive vessel during this inspection, and he/she shall have full access to the top-side video display during the inspection. The focus of the inspection shall be to determine if any of the interlocks or junction piles have been compromised in any way. If any interlock separations, or any other condition is encountered during this inspection it shall be brought immediately to the attention of the inspecting Engineer. The Inspecting Engineer may direct a more detailed inspection of any suspect areas. At the conclusion of the inspection the underwater videos shall be copied in DVD format and passed on to the Engineer, along with a written log of the start time or other reference for the start of each
pile inspection. The report shall also include written documentation of any issues encountered during the inspection, including identification of areas of compromised coating.

3.14 PULLING AND RE-DRIVING

A. The Contractor may be required to pull selected piles after driving to determine the condition of the underground portions of piles. The pile pulling method must be approved by the Owner’ Engineer. Remove and replace at the Contractor's expense any pile pulled and found to be damaged to the extent that its usefulness in the structure is impaired. Re-drive piles pulled and found to be in satisfactory condition.

3.15 INSTALLATION RECORDS

A. Maintain a pile driving record for each sheet pile. Indicate on the installation record installation dates and times, type and size of hammer, rate of operation, total driving time, driving time when approaching and reaching refusal, dimensions of driving helmet and cap used, pile locations, tip elevations, ground elevations, cut-off elevations, and any reheading or cutting of piles. Record any unusual pile driving problems during driving. Submit complete records at the conclusion of each shift to the Owner’s Engineer.

3.16 PILE ACCEPTANCE CRITERIA

A. Piles may be rejected by the Engineer if any one of the following conditions exists.

1. Piles are determined to be damaged, regardless of cause.

2. Piles have not been installed to the minimum tip elevation and minimum penetration resistance as determined by the Engineer.

3. Piles are not installed within the specified tolerances for plan location, orientation, or cut-off elevation.

4. Piles that are found to be damaged or have interlock issues

B. If piles are found to be damaged, the Contractor shall suspend pile-driving activity and make changes to the fabrication methods, handling or installation methods, and/or equipment as needed to install subsequent piles without damage.

C. If, as determined by the Engineer, a particular pile is too far out of tolerance, then that pile is rejected and the Contractor shall, at no additional cost to the Owner, remove the out of tolerance pile and re-drive within tolerance.

D. Any piles that are found to be damaged or have interlock issues shall be corrected at the discretion of the Engineer. If unseated interlocks are encountered they shall be repaired by welding, at no additional cost to the Owner. In such cases the Contractor shall submit a plan certified by a professional engineer, registered in the State of Wisconsin which outlines the method of welding repair (such as plating), and how the area in need of repair will be dewatered to allow the welding to be accomplished in the dry. Any use of three sided chambers to accomplish this shall meet with full OSHA approval and the means and methods of obtaining a safe workplace shall be included in the submittal.

3.17 INTERLOCK JOINT SEALANT
A. All sheet pile interlocks facing the interior (away from Lake Michigan) of the dredged material management facility (DMMF) shall be sealed using RoxanPlus or AKILA, or an approved equivalent.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Base aggregate dense base and surface courses.
   2. HMA pavement binder and surface courses.
   3. Concrete pavement.
   4. Concrete curb and gutter.
   5. Concrete sidewalks and driveways.

1.2 REFERENCES

A. Wisconsin Department of Transportation (WisDOT)
   1. Standard Specifications for Highway and Structure Construction, current edition,
      including all Addenda, hereinafter referred to as WisDOT Standard
      Specifications.

B. Wisconsin Department of Transportation Facilities Development Manual, Chapter 16,

1.3 SUBMITTALS

A. Quality Control Submittals
   1. Provide results of quality control testing requirements of WisDOT referenced
      Standard Specifications.

1.4 QUALITY CONTROL

A. Regulatory Requirements
   1. Meet requirements of WisDOT referenced Standard Specifications
   2. Meet the requirements of local laws and standards of practice.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Base Aggregate Dense
   1. Provide Base Aggregate Dense material using 3-inch, 1 ¼-inch, or ¾-inch
      Gradations.
2. Materials shall conform to Section 301 and Section 305 of WisDOT Standard Specifications.

B. Aggregate Surface Course
1. Provide Base Aggregate Dense material using 3/4-inch Gradations.
2. Materials shall conform to Section 301 and Section 305 of WisDOT Standard Specifications.

C. HMA Pavement
1. Provide materials conforming to Part 4 of WisDOT Standard Specifications.
2. Provide HMA Pavement Type E-1 or E-3.
   a. Urban Projects
      1) Upper Layer to consist of 12.5mm nominal aggregate size, PG 64-28 Asphaltic Material, layer thickness to conform to Section 460 of WisDOT Standard Specifications.
      2) Lower Layer to consist of 12.5mm or 19.0mm nominal aggregate size, PG 64-22, layer thickness to conform to Section 460 of WisDOT Standard Specifications.
   b. Rural Projects
      1) Upper layer to consist of 12.5mm nominal aggregate size, PG 58-28, layer thickness to conform to Section 460 of WisDOT Standard Specifications.
      2) Lower layer to consist of 19.0 mm nominal aggregate size, PG 58-28, layer thickness to conform to Section 460 of WisDOT Standard Specifications.

D. Concrete Pavement
1. Provide concrete pavement in accordance to Section 415 and Section 416 of WisDOT Standard Specifications.
   a. Construction concrete pavement to match adjacent existing pavement, unless otherwise indicated.
2. Jointing, Dowel Bars, and Tie Bars shall conform to Section 415 and Section 416 of WisDOT Standard Specifications, and Chapter 16 of the Facilities Development Manual.

E. Concrete Driveway
1. Provide concrete driveway in accordance to Section 416 and Section 501 of the WisDOT Standard Specifications.

F. Curb and Gutter
1. Provide concrete curb and gutter in accordance to Section 501 and Section 601 of the WisDOT Standard Specifications.

2.2 SOURCE QUALITY CONTROL

A. Tests
1. Provide quality control tests in accordance with WisDOT Standard Specifications.
PART 3 - EXECUTION

3.1 REMOVAL OF EXISTING SURFACE

A. Remove existing pavement to the limits shown on the Drawings or stated in the Specifications or as required for installation of below grade conduit.

B. Remove existing pavement in accordance to Section 204 and Section 205 of WisDOT Standard Specifications.

C. Saw cut asphalt pavement, concrete pavement, curb and gutter, and sidewalk to the limits of removal and where replacement pavement will abut existing pavement.

3.2 TEMPORARY SURFACE

A. Wherever conduits are constructed under traveled roadways, driveways, sidewalks, traveled alleys, or other traveled surfaces, provide a temporary surface placed over the top of the trench as soon as possible after compaction has been satisfactorily completed.

B. Provide 12 inches thick base aggregate dense material.

C. The top of the temporary surface shall be placed smooth and meet the grade of the adjacent undisturbed surface.

D. Maintain the temporary surface until final pavement restoration preparation.

3.3 PREPARATION

A. Remove and dispose of temporary surface.

B. Re-grade and re-compact the underlying backfill to depth required for permanent pavement.

3.4 CONSTRUCTION

A. General
   1. The restored surface shall be of equal quality or better than the surface removed.
   2. Remove and restore surfaces in accordance to this specification not designated to be removed, but damaged by the Contractor's operations.
   3. Restore all removed or damaged permanent type pavements, sidewalks, driveways, curbs, gutters, fences, poles and other property and surface structures removed or disturbed during or as a result of construction operations to a condition which is of equal quality or better than the condition that existed before the work began.
   4. The replaced surface shall be of the same type surface as existed prior to removal.
   5. Construct replaced surfaces to the original lines, grades, slopes, and dimensions.
6. Construction of surfaces shall generally be in accordance with the appropriate WisDOT Standard Specifications.
7. Complete the surface restoration as soon as possible after compaction of the backfill has been completed.

B. Base Aggregate Dense
1. Provide at the thickness of the existing or as specified elsewhere, whichever is greater.
2. Construct in accordance to Section 301 and Section 305 of the WisDOT Standard Specifications.

C. Base Aggregate Dense Surface Course
1. Provide at the thickness of the existing or as specified elsewhere, whichever is greater.
2. Construct in accordance to Section 301 and Section 305 of the WisDOT Standard Specifications.

D. HMA Pavement
1. Provide at the thickness of the existing or as specified elsewhere, whichever is greater.
2. Construct in accordance to Part 4 of the WisDOT Standard Specifications.

E. Concrete Pavement
1. Provide at the thickness of the existing or as specified elsewhere, whichever is greater.
2. Construct in accordance to Part 4 and Section 501 of the WisDOT Standard Specifications.

F. Concrete Curb and Gutter
1. Provide at the thickness, size and shape of the existing or as specified elsewhere, whichever is greater.
2. Construct in accordance to Section 501 and Section 601 of the WisDOT Standard Specifications.

G. Portland Cement Concrete Sidewalks and Driveways
1. Provide at the thickness, size and shape of the existing or as specified elsewhere, whichever is greater.
   a. Construct sidewalks to minimum 4 inches thick.
   b. Construct sidewalks which cross driveways or alleys to minimum 6 inches thick.
   c. Construct driveways to minimum 6 inches thick.
2. Construct driveways in accordance to Section 416 and Section 501 of the WisDOT Standard Specifications.
3. Construct sidewalk in accordance to Section 501 and Section 601 of the WisDOT Standard Specifications.

END OF SECTION
SECTION 32 13 13

PORTLAND CEMENT CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Sampling and testing requirements.
   2. Surface preparation.

B. Allowances
   1. If so stated in specification section "Allowances" Portland cement concrete installation testing will be paid as an allowance. All other testing shall be incidental to the work.
   2. If there is no reference in the specification section "Allowances" to Portland cement concrete pavement testing, then testing costs shall be included in the cost for Portland cement concrete pavement.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. ASTM A184 Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
   2. ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
   3. ASTM A617 Standard Specification for Axle-Steel Deformed And Plain Bars For Concrete Reinforcement
   4. ASTM A1064 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
   5. ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field
   6. ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
   7. ASTM C94 Standard Specification for Ready-Mixed Concrete
   8. ASTM C143 Standard Test Method for Slump of Hydraulic-Cement Concrete
   9. ASTM C172 Standard Practice for Sampling Freshly Mixed Concrete
   10. ASTM C231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
   12. ASTM C1315 Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete


15. ASTM D6690 Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

16. ASTM E329 Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

B. American Association of State Highway and Transportation Officials (AASHTO)
   1. AASHTO M148 Liquid Membrane-Forming Compounds for Curing Concrete
   2. AASHTO M153 Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
   3. AASHTO M171 Sheet Materials for Curing Concrete
   4. AASHTO M182 Burlap Cloth Made from Jute or Kenaf
   5. AASHTO M213 Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
   6. AASHTO M254 Corrosion Resistant Dowel Bars

1.3 SUBMITTALS

A. Design Mixes
   1. Submit 3 copies of the composition and strength testing results for design mix for each type of concrete.

B. Certificates
   1. Provide producer's certification that the supplied materials meet the applicable specification requirements.
   2. Provide the material content per cubic yard for each class of concrete furnished.
      a. Dry weight of concrete.
      b. Saturated surface-dried weights of fine and coarse aggregates.
      c. Quantity, type, and name of any admixtures used.
      d. Weight of water.
   3. Provide delivery tickets for each batch in accordance with ASTM C94.
      a. Delivery tickets are not required for job-mixed concrete.

C. Samples
   1. Provide all material samples needed for the required testing.

1.4 QUALITY ASSURANCE

A. Employ independent testing laboratory approved by the Owner to provide quality control testing.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete
   1. Conform to ASTM C94 and the following:
      a. 28 day compression strength (psi) 4,000.
      b. Maximum Aggregate Size: 1 1/2 inches.
      c. Minimum Cement Content: 6 bags/c.y.
      d. Air Content (percent): 6.0 percent ± 1.5 percent.
      e. Slump:
         1) Slip-Formed Concrete Pavement: 2.5 inches or less.
         2) Not Slip-Formed with Surface Vibration Concrete Pavement: 1.5 to 3 inches.
         3) Not Slip Formed with Internal Vibration: 1 to 3 inches.
   2. Admixtures to lower freezing point of concrete are not permitted.

B. Reinforcement
   1. Joint Dowel Bars: Plain steel bars, ASTM A615, Grade 60.
      a. Cut true to length with ends square and free of burrs or deformations.
   2. Tie Bars: Deformed steel bars, ASTM A617, Grade 40.
   3. Dowel and Tie Bar Coatings:
      a. Type "B" conforming with AASHTO M254.
      b. Bent dowel and tie bars shall be bent prior to applying coating.
   4. Fabricated Bar Mats: Welded or clip-assembled steel bar or rod mats, ASTM A184.
      a. Use ASTM A615, Grade 60 steel bars, unless otherwise indicated.
   5. Metal Expansion Caps: Furnish for one end of each dowel bar in expansion joints.
      a. Design caps with one end closed and a minimum length of 3 inches to allow bars movement of not less than 1 inch unless otherwise indicated.

C. Joint Fillers
   1. AASHTO M153 or M213.
   2. Alternative joint fillers that may be required on plans:
      a. ASTM D1751.
      b. ASTM D1752, Type I or II.

D. Joint Sealers
   2. Cold-poured Silicone Type: ASTM C920.

E. Curing Materials
   1. Liquid Membrane-forming Curing Compound: AASHTO M148, Type 2 (white pigmented).
2. Burlap: AASHTO M182, Jute or Kenaf, Class 3 or 4.
   a. Two layers of Class 1 or 2 may be used in lieu of one layer of Class 3 or 4.
   a. Polyethylene Film: White opaque.

F. Forms
1. Shall be metal and of a cross-section to ensure rigidity under impact, thrust, and weight of the equipment operating on them.
2. Each 10-foot section shall have a minimum of three flange braces and three stake pockets with pin anchoring keys.
3. Vertical face height of form shall be equal to thickness of concrete.
4. Form sections shall interlock to form a rigid uniform surface.
5. Forms shall be within the following maximum tolerances:
   a. Top: 1/8 inch per 10 feet.
   b. Face: 1/4 inch per 10 feet.

2.2 EQUIPMENT

A. Concrete Spreader
1. Shall be capable of striking off the surface of the concrete in a longitudinal direction of the slab at any required elevation.

B. Slip-Form Paver
1. Shall be designed to consolidate, screed, and float-finish freshly placed concrete in one complete pass.
2. Shall be equipped to vibrate the concrete for the full width and depth of course.
3. Machine design shall prevent the spreading or slumping of the concrete.

C. Finishing Machine (for Formed Pavement)
1. Shall be of the screeding and troweling type, equipped with at least two oscillating transverse screeds, adjustable tilt, and crown.
2. Machine shall be capable of striking off and consolidating concrete.

D. Vibrators
1. May be pan type or the internal type with immersed tube or multiple spuds.
2. Frequency Requirements:
   a. Pan Type: 4,000 impulses per minute minimum.
   b. Internal Type:
      1) Tube Vibrators: 5,000 impulses per minute minimum.
      2) Spud Vibrators: 7,000 impulses per minute minimum.

2.3 SOURCE QUALITY CONTROL

A. Material Acceptance Testing
1. Design mix.
B. Perform additional testing under the following circumstances:
   1. Material failure.
   2. Change in ready-mix source.
   3. Design mix changes requested by Contractor.

PART 3 - EXECUTION

3.1 BASE PREPARATION

A. Prepare in accordance with section "Crushed Aggregate Base Course."

B. Before placing concrete:
   1. Remove loose material from compacted base.
   2. Proof-roll prepared base surface to check for unstable areas and the need for additional compaction.
   3. Correct any deficiencies prior to paving.
   4. Adjust all fixtures (i.e., castings, frames, inlets, and valve boxes):
      a. Method of adjustment shall be approved by Owner's Representative.
   5. Moisten the compacted base as required to prevent the base from removing water from the placed concrete.

3.2 FORM SETTING

A. Set forms to required grade and alignment.

B. Forms shall be placed on a tamped base and securely anchored:
   1. Vertical or horizontal movement of forms from paving activities will not be permitted.

C. Wood forms may be used to form fillets, widening strips at intersections and curves of less than 100-foot radius.
   1. Form lumber shall be sound and free of cracks and blemishes.

D. Forms shall be clean and oiled prior to placing concrete.

3.3 PLACING CONCRETE

A. Deposit concrete the full width of pavement in a manner that minimizes spreading and segregation of the mix.

B. Consolidate concrete against the faces of forms by vibrating or spreading to eliminate formation of voids:
   1. Do not over vibrate causing segregation of mix.

C. Place concrete continuously between transverse joints.
D. In the event of a temporary shutdown conform with the following:
   1. Protect unfinished slab end with wet burlap.
   2. If delay causes initial set or lasts longer than 30 minutes, install a construction joint.
   3. Pavement sections less than 10 feet in length will not be permitted.

E. Terminate placement of concrete whenever finishing and curing cannot be kept within their time sequence.

F. Place concrete at each side of expansion joints simultaneously.

3.4 PLACING REINFORCEMENT

A. Steel Fabric
   1. Place concrete in two lifts.
   2. Place first lift to the elevation that the reinforcement will occupy and strike off.
   3. Place fabric directly on first lift and secure.
   4. Place second lift of concrete to finished elevation of slab.
   5. If any portion of the first lift has been in place for more than 30 minutes without being covered by the second lift, it shall be removed and replaced with fresh concrete at the Contractor's expense.
   6. Unless shown otherwise, fabric shall be placed at mid-depth of slab.
   7. Use two paving machines when slip-form paving, one for each lift.

B. Dowel Bars, Tie Bars, and Two Piece Connectors
   1. Place as shown on details.
   2. Repair damaged coating:
      a. Apply coating to clean dry surfaces.
      b. When damage to coating exceed 2 percent of the bar surface area, the bar shall be rejected.
   3. No bonded longitudinal bars or reinforcement shall extend through transverse expansion or contraction joints.

3.5 LONGITUDINAL JOINTS

A. Unless shown otherwise, conform with the following:
   1. Two-Lane Pavement: Construct joints along pavement centerline.
   2. Multi-Lane Pavement: Construction joints along edges of traffic lanes and taper lanes.
   3. Longitudinal joints may be construction joints when joining existing pavements, all other longitudinal joints shall be sawcut.
   4. Sawing of joints shall occur no later than 36 hours after concrete placement.
   5. When covered for cold weather protection, sawing time may be extended to preclude damage from exposure to freezing conditions.
3.6 TRANSVERSE JOINTS

A. Unless shown otherwise, conform with the following:
1. Install joints perpendicular to pavement surface and continuous through adjacent lanes and contiguous curb and gutter.
2. Complete initial sawing on contraction joints for each day's pour by midnight of the same day when normal or rapid concrete setting conditions prevail.
3. When cool weather or other conditions retard setting of concrete, initial sawing of joints may be delayed.
4. Sawing may be either a single or double phase sawing operation.
5. When a double phase operation is used, the initial cut shall be made as soon as the saw can be operated without damaging the concrete and before random cracking occurs. Make the second cut upon completion of the pavement curing period.

3.7 FINISHING

A. General
1. Sequence of Operations:
   a. Strike-off.
   b. Consolidation.
   c. Screeding.
   d. Finishing.
   e. Straightedging.
   f. Final finishing
2. Place concrete accurately struck off and screeded to the crown and cross-section shown on plans.
3. Hand strike-off, consolidation, and finishing may be permitted when machine methods are impractical.
4. Coordinate the rate of concrete delivery and finishing operations so work is performed in their proper time sequence.

B. Formed Paving
1. Pass finishing equipment over each area of pavement as many times and at intervals which will provide proper consolidation and uniform surface texture, true to grade, and contour.
2. Keep tops of forms clean to prevent lifting or wobbling of finishing equipment.
3. On strike-off pass, forward screed on machine shall carry a uniform load of concrete extending a minimum of 4 inches above the finished pavement surface.
4. Operate machine so it will not overrun the forward limit of the puddled concrete or pass over partially filled areas.
5. Stop machine when forward screed is within 12 inches from preinstalled transverse expansion joints:
   a. Excess concrete which has accumulated ahead of the screed shall be moved ahead of the joint location.
   b. Screed shall be lifted, brought directly above the joint, set down, and continue screeding operation.
c. Lift second screed over joint when excess mortar in front of it flows onto joint.
d. On subsequent passes of finishing machine, it will not be necessary to lift screeds over joints.
e. Coarse aggregate may not be deposited on joint.

6. Fill low areas with fresh concrete brought back from the puddle and distributed ahead of the first screed of the finishing machine.

7. The last trip of the finishing machine shall be a minimum run of 40 feet for a given area:
   a. Delay run sufficiently to correct irregularities in settling or differential in shrinkage.
   b. Do not delay run to a point which will cause tearing or marring of concrete surface.

8. Perform vibratory consolidation between the strike-off and screeding operation.

C. Slip-Formed Paving
   1. Spreading, consolidating, and finishing shall be a continuous operation.
   2. Frequent starting and stopping may result in stopping of construction.
   3. When it is necessary to stop forward motion of the paver, stop vibratory, and tamping components immediately, and not restart until the forward motion of paver is resumed.

D. Hand Method Paving
   1. Spread concrete and level with shovels or straightedge.
   2. Surface type vibratory screeds may be used for strike-off.
   3. Screed shall operate along the top of the forms.
   4. Screed shall be limited to two passes with only a small amount of concrete in front of screed on final pass to smooth out irregularities.
   5. Screed shall not be operated in a stationary position.

E. Float Finishing Formed Pavement
   1. Float concrete surface with a mechanical (longitudinal or transverse type) or hand operated float.
      a. Finish pavement to the required cross-section and elevation.
   2. Mechanical Longitudinal Float:
      a. Adjust so a small amount of mortar is carried ahead of the screed.
      b. Operate machine at a speed which will permit the screed to pass transversely over each section of pavement a minimum of twice.
   3. Mechanical Transverse Float:
      a. Adjust screeds and float pans to conform to required grade and crown of pavement.
      b. Produce a smooth, dense surface free of waves or porous areas.
   4. Hand Float: Operate from a foot bridge or use long handled floats.
   5. When low areas appear during floating operations, add fresh concrete from puddle, spread, consolidate, level, and refloat.
F. Straightedging
1. Test for trueness of finished concrete.
2. Required Tolerances: 1/8 inch in 10 feet.
3. If concrete is still plastic, deviations may be corrected by refinishing.
4. If concrete has set, correct deviations in the following manner:
   a. Grind down high spots exceeding 1/8 inch.
   b. Remove and replace concrete when high spots exceed 1/2 inch.
5. When removal and replacement is necessary, it shall be done in minimum lengths of 10 feet for the full width of the lane at the Contractor's expense.

G. Joints and Edging
1. After concrete has set sufficiently to prevent slumping, lift metal channel caps for prefabricated expansion joints so top edge extends above the surface of pavement.
2. Remove excess concrete from each side of joint and float, edge, and finish.
3. Remove temporary joint devices.
4. Straightedge joints and correct deviations.
5. Radius edges of slab 1/4 inch.

H. Final Finish
1. Provide a final finish with an artificial turf drag conforming to the following:
   a. Molded polyethylene with synthetic turf blades approximately 0.85 inch long, 7,200 blades per square foot.
   b. Drag shall be a seamless strip the full width of pavement.
2. During finishing operation approximately 2 feet of drag (measured parallel to centerline of pavement) shall be in contact with surface.
3. Operate drag in longitudinal direction.
4. Apply a broom finish to small areas of pavement where drag is impractical to use.

3.8 CURING

A. Cure concrete with one of the following methods:
1. Membrane-forming cure.
3. Polyethylene sheeting.

B. Membrane Forming Cure
1. Apply liquid membrane-forming curing compound (white pigmented) after finishing operation as soon as free water has disappeared.
2. Apply in accordance with manufacturer’s recommendations to limit loss of water to not more than .40 kg/m2 in 72 hours.
3. When forms are used, apply to pavement sides within 30 minutes after form removal.

C. Wet Fabric Method
1. Place wetted burlap on the concrete surface when concrete is firm enough to support burlap without marring.
   a. Extend wet burlap down on pavement sides and keep in contact.
2. Overlap each strip of burlap a minimum of 6 inches.
3. Keep burlap wet by applying water with a fine spray.
4. Add a second layer of burlap on the day following concrete placement and keep wet for 72 hours.
5. Apply a sufficient amount of water to burlap which will create the presence of free water beneath the burlap.

D. Polyethylene Sheeting
1. Wet concrete surface and exposed sides with a fine spray of water as soon as concrete has set sufficiently to resist marring.
2. Cover surface and sides with polyethylene sheeting immediately after applying water.
3. Lap sheeting a minimum of 12 inches.
4. Sheet ing shall remain in place for a minimum of 72 hours.

3.9 SEALING JOINTS

A. Seal contraction, expansion and longitudinal sawn, and poured joints with a poured sealant.

B. Joint Cleaning
1. Clean joints of slurry, dust, debris, curing compound, and moisture.
2. Install backer rod or bond breaker.

C. Applying Hot Poured Sealant
1. Heat sealant to manufacturer's recommended maximum safe heating temperature.
2. Pour joints when sealant is at required temperature:
   a. Maintain uniform temperature during pouring operations.
   b. Pour will not be permitted when sealant is more than 10°F below recommended temperature.
3. Fill joint to approximately 1/4 inch below finished surfaces.

D. Applying Cold Poured Sealant
1. Apply in accordance with manufacturer's recommendations.
2. Fill joint to approximately ¼ inch below finished surfaces.

3.10 COLD WEATHER CONCRETING

A. Terminate concrete operations when descending air temperatures fall below 35°F.

B. Do not begin or resume concreting operations until the air temperature is at least 30°F and rising.

C. Prior to May 15 and after October 1, temperature of concrete mix shall not be less than 50°F or more than 80°F.
1. Water and aggregates may be heated when method of heating is controlled and uniform.
2. Heated water and aggregate shall not exceed 100°F when placed together with cement in mixer.
3. Heating of cement is not permitted.
4. Concrete may not be placed on frozen subgrade.

D. Cover Requirements
   1. Use polyethylene sheeting or an equivalent cover which offers water resistance, strength and insulation properties.
   2. Lap covering a minimum of 12 inches and extend to protect sides of pavement.
   3. Cover material shall remain in place for 7 to 14 days from date of placement.
   4. Use materials required for the actual or 24 hour predicted temperatures:
      a. 22°F to 28°F: 1 layer polyethylene
      b. 17°F to 22°F: 2 layers polyethylene
      c. <17°F: 6 inches loose, dry straw between 2 layers of polyethylene.

3.11 FIELD QUALITY CONTROL TESTING

A. Installation Testing
   1. Slump.
   2. Air-entrainment.
   3. Compressive strength test.

B. Perform sampling and testing requirements in accordance with following:

C. Perform two tests daily or one per 5,000 square yards placed, whichever number is greater.

D. Compressive strength test shall consist of four standard test cylinders made from a single batch of concrete:
   1. Test one cylinder at 7 days.
   2. Test two cylinders at 28 days.
   3. Remaining cylinder shall be tested in the event prior tests fail.
   4. Compressive strength tests shall be considered satisfactory when 28-day tests meet the following:
      a. Test results equal or exceed specified compressive strength.
      b. No individual test falls more than 500 psi below specified compressive strength.
   5. Failure of compressive strength tests shall result in the following additional testing:
      a. Provide two core samples of each portion of work affected and perform compressive strength tests.
b. Replace work if core samples do not equal or exceed specified compressive strength.

END OF SECTION
SECTION 32 31 00
CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Providing of chain link fences.
   2. Providing chain link gates.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. ASTM A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
   4. ASTM F567 Standard Practice for Installation of Chain-Link Fence
   5. ASTM F626 Standard Specification for Fence Fittings

1.3 SUBMITTALS

A. Shop Drawings
   1. Provide assembly and installation drawings including:
      a. Gates
      b. Post spacing.
      c. Location of gate, corner, end and pull posts.

B. Product Data
   1. Chain-link fencing components
   2. Accessories

C. Quality Assurance/Control Submittals
   1. Provide certification that the material was manufactured, sampled, tested, and inspected in accordance with the referenced ASTM specification.
   2. Provide copy of standard manufacturer’s warranty
1.4 QUALITY ASSURANCE
   A. Fencing material shall be supplied by one manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING
   A. Deliver material in manufacturer's original packaging with tags and labels intact.
   B. Deliver materials to the site in an undamaged condition.
   C. Store materials off the ground to protect against oxidation caused by ground contact.

PART 2 - PRODUCTS

2.1 MATERIALS
   A. Chain Link Fabric
      1. Zinc-Coated Steel in accordance with ASTM A392 with Class 2 weight class
      2. Aluminum-coated steel in accordance with ASTM A491.
      3. Mesh Size
         a. Non-Slatted Fence: 2-inch diamond pattern.
         b. Diagonally wood slatted fence: 2-inch diamond pattern.
         c. Vertically wood slatted fence: 3½-inch by 5-inch diamond pattern.
      5. Selvages: Knuckle top and bottom.
      6. Fabric shall be one piece for heights to 12 feet
   B. Fence Posts, Rails and Braces
      1. Provide round steel pipe in conformance with ASTM F1043, Material Group IC - Industrial Fence.
      2. For fence requiring slats or screening provide round steel schedule 80 pipe in accordance with ASTM F1083.
      3. Provide ASTM F1043 Type A zinc coating external and internal.
      4. Pipe sizes
         a. Top Rail: 1.660 inches outside diameter.
         b. Line Post: 2.375 inches outside diameter
         c. End Corner and Pull Post: 2.875 inches outside diameter
   C. Barbed Wire
      1. Provide zinc-coated steel Class 3 coating.
      2. Two strand 12½ gauge.
      3. Fourteen gauge, 4 point barbs, 5 inches on center.
   D. Tension Wire
      1. Provide 9 gage zinc-coated steel, Class 3 coating.
E.  Fittings
   1. Provide materials, coatings and inspections in accordance with ASTM F626.
   2. Fitting material and coatings shall match the material and protective coatings for fence posts, rails and braces.

F.  Gates
   1. Swing gates shall be in accordance with ASTM F900.
   2. Slide gates shall be in accordance with ASTM F1184.
   3. Fabric shall be same as fence fabric.
   4. Hardware:
      a. Provide pressed steel or malleable iron.
      b. Galvanize in accordance with ASTM A153.
      c. Hinges shall be non-lift type, 180° swing, one pair per leaf.
      d. Provide fork or plunger type hatch with padlock eye.
      e. Provide keeper with automatic engagement when gate is open and manual release.
      f. Provide mushroom or flat plate stops anchored in concrete and accept center drop or plunger bar with padlock eye.

2.2  ACCESSORIES

A.  Zinc coated in accordance with ASTM A153.

B.  Stretcher Bars
   2. Length: One piece equal to fabric height.

C.  Barbed Wire Support Arms
   1. Material: Steel.
   2. Load: Support 250 pounds at outer end of arm.
   3. Integral with post top weather cap.
   4. Accepts three rows of barbed wire and a top rail.

D.  Diagonal Truss
   1. 3/8 inch diameter rod with adjustable take-up.


2.3  CONCRETE

A.  Class "B" concrete conforming to following Section:
   1. Section 03 30 00, Cast-in-Place Concrete
2.4 PRIVACY SLATS

A. Wood Slats
   1. Redwood, clear, all-heart wood, uniform color.
   2. 5/16-inch minimum thickness.
   3. Shall be woven diagonally or vertically into fabric and secured with approved fasteners.

B. Metal Slats
   1. 0.020-inch thick galvanized steel or 30 gauge aluminum minimum.
   2. Dark green factory finish.
   3. Shall be woven diagonally or vertically into fabric and secured with approved fasteners.

PART 3 - EXECUTION

3.1 GENERAL

A. Install fence in accordance with ASTM F567 except as modified herein.

B. Unless indicated otherwise, provide a top rail and bottom tension wire.

C. When barbed wire is required, provide three rows.

3.2 INSTALLATION

A. Corner, Pull, End and Gate Posts
   1. Corner, pull, end and gate posts shall be set in concrete.
   2. Drill footing holes vertical and smooth in undisturbed or compacted soil.
   3. Post holes shall be four times the largest cross section of the post.
      a. Post depth:
         1) Minimum 60 inches for gate, corner, end, and pull posts.
         2) Minimum 42 inches for stops and keepers.
         3) Add 3 inches of depth for each foot over 6 feet.

B. Line Posts
   1. Drive line posts in place to a minimum depth of 42 inches.

C. Post Spacing
   1. Maximum Spacing: 10 feet.
   2. Install corner posts where fence changes direction more than 15 degrees.
   3. Install pull posts at maximum spacing of 300 feet on straight runs of fence.

D. Framing
   1. Provide an expansion and contraction joint in top rail a minimum of every 100 feet.
2. Provide bracing and diagonal trusses at all corner, end, pull, and gate posts.
3. Diagonally truss all gate leaves wider than 4 feet.

E. Fabric and Tension Wire
1. Install on security side of fence and pull taut before fastening.
2. Tie tension wire to all posts.
3. Fasten fabric as follows:
   a. Line Posts: Tie wire 14 inches on center.
   b. Top Rails and Bracing: Tie wire 24 inches on center.
   c. Tension Wire: Hog rings 24 inches on center.
4. Provide stretcher bars at following locations:
   a. One per gate post and end post.
   b. Two per corner and pull post.
   c. Two per gate leaf.
   d. Thread through fabric and attach to posts or framing with steel bands 15 inches on center.

F. Barbed Wire
1. When required, barbed wire shall be installed [inward] [outward] of fence.

G. Adjusting and Finishing
1. Finished fence shall be level and plumb.
2. Gates shall be adjusted to operate smoothly.

3.3 SCHEDULE

<table>
<thead>
<tr>
<th>Location</th>
<th>Height</th>
<th>Gates (Single or Double)</th>
<th>Privacy Slats</th>
<th>Barbed Wire (Slanted Inward, Outward or Vertical)</th>
</tr>
</thead>
</table>

END OF SECTION
SECTION 33 00 10

HDPE PIPE AND FITTINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
1. Pressure pipe and fittings for Dredge Slurry Distribution

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)
  2. ASTM D1238 Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
  3. ASTM D1505 Standard Test Method for Density of Plastics by the Density-Gradient Technique
  8. ASTM D2837 Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials

B. American Water Works Association (AWWA)
  1. AWWA C901 Standard for Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in. (13 mm) Through 3 in. (76 mm) for Water Service
  2. AWWA C906 Standard for Polyethylene (PE) Pressure Pipe and Fittings, 4 in. (100 mm) Through 63 in. (1,575 mm), for Water Distribution and Transmission

C. National Sanitation Foundation
  1. NSF No. 14 Plastics Piping Components and Related Materials
1.3 **SUBMITTALS**

A. **Product Data**
   1. Provide product data on pipe and fittings including dimensions.

B. **Quality Assurance/Control Submittals**
   1. Certification that the tests required by this specification section were performed and meet the stated minimum requirements.
   2. Evidence from the pipe manufacturer that the personnel completing joints is qualified to perform the thermal butt fusion.
   3. Manufacturer’s instructions and procedures for joining the pipe and pipe fittings.

1.4 **QUALITY ASSURANCE**

A. Pipe shall be available to Owner's representative for inspection.

B. Material manufacturer, pipe diameters and pressure classes shall not be mixed.

C. Personnel completing the joints shall be certified by the pipe manufacturer as being qualified to perform the thermal butt fusion.

1.5 **DELIVERY, STORAGE AND HANDLING**

A. Upon delivery inspect pipe and fittings for damage, cracks, holes, or foreign inclusions.

B. Check date of production to verify the pipe will be installed within 6 months of date of production.

C. Store pipe and accessories on flat level ground with no rocks or other objects under the pipe.

**PART 2 - PRODUCT**

2.1 **MATERIALS**

A. **Pipe Sizes 4 inch and Larger**
   1. Pipe and fittings shall be high density polyethylene (HDPE) meeting AWWA C906 standards.
   2. Materials used for the manufacture of the HDPE pipe and fittings shall be made from a PE 3408 resin compound meeting the minimum cell classification of PE 345434C in accordance with ASTM D3350 and the hydrostatic design basis of 1,600 psi determined in accordance with ASTM D2837.
   3. Provide ductile iron outside diameter of nominal size shown on the Drawings or stated in the Bid Schedule.
4. Provide pipe with a dimension ratio (DR) of 11, pressure class 160 unless stated otherwise on the Drawings or in the Bid Schedule.
5. Pipe shall be installed within 6 months of the production date.

B. Fittings
   1. Fittings shall meet the requirements of AWWA C901 or AWWA C906 whichever applies.
   2. Fittings for pipe greater than 3 inches diameter shall be HDPE molded fittings and HDPE fabricated fittings of the same equivalent dimension ratio, pressure rating and outside diameter as the connecting pipe.
      a. The pipe manufacturer shall mold or fabricate and supply all HDPE molded fittings, fabricated fittings, accessories and adapters required to perform the Work. No Contractor fabricated fittings shall be used.
      b. Molded fittings shall be manufactured with thermal butt-fused joints meeting the requirements of ASTM D3261.
      c. Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings.

2.2 PIPE IDENTIFICATION

A. Mark the pipe and fittings with the appropriate standard AWWA C901 or AWWA C906 whichever is applicable to affirm the product was manufactured, inspected, sampled, and tested in accordance with the standard.

B. Pipe and fittings shall be marked with the following at intervals between markings of no greater than 5 feet:
   1. Nominal size and OD base of DIOD.
   2. Standard material code designation of PE 3408.
   3. Dimension ratio.
   4. Pressure class
   5. AWWA C901 or AWWA C906, whichever is applicable.
   6. Manufacturer’s production code to include day, month, year produced.

2.3 JOINTS

A. HDPE Pipe and Pipe Fittings Greater than 3 inches Diameter
   1. Pipe and pipe fittings shall be designed for joining by thermal butt fusion.
   2. Joining method shall be capable of conveying water at the pressure designated by the pressure class.
   3. Joints shall be pipe end to pipe end and pipe end to fitting.

B. Transition from HDPE to Ductile Iron Pipe or PVC Pipe
   1. Provide a molded flange connector adapter with a ductile iron back-up flange for making a flange to flange connection. If the connecting pipe is plain end then use an EBAA Iron Inc. Megaflange 2100 Restrained Flange Adaptor on the connecting pipe.
2. For buried connections use a mechanical joint connection adaptor with a mechanical joint flange backup connecting to a mechanical joint pipe ductile iron pipe and when connecting to a plain end PVC pipe provide an EBAA Iron Inc. use the series 15PF00 for Restraint for C900 PVC Pipe.
   a. Provide extended T-bolts for the connection.
   b. Provide stainless steel stiffener inserted in the pipe.

3. From the transition joint pipe restrains shall be provided at all joints within the following distances of the transition joint:
   a. 6 inch diameter pipe - 15 linear feet.
   b. 8 inch diameter pipe - 19 linear feet.
   c. 10 inch diameter pipe - 24 linear feet.
   d. 12 inch diameter pipe - 28 linear feet.
   e. 14 inch diameter pipe - 33 linear feet.
   f. 16 inch diameter pipe - 36 linear feet.

2.4 SOURCE QUALITY CONTROL

A. The following tests shall be performed on the production pipe:
   1. Measurement of pipe dimensions in accordance with ASTM D2122.
      a. Pipe dimensions shall be within the tolerances stated in AWWA C906 or AWWA C901 whichever is applicable.
      b. Wall thickness variability in any diametrical cross section of the pipe shall not exceed 12%.
      c. The outside diameter measured at the cut-end of the pipe length shall not be more than 1.5% smaller than the average outside diameter specified in AWWA C906 or AWWA C901, whichever is applicable, when measured at any point not closer than 12 inches to the squarely cut-end of the pipe length.
   2. Thermal stability of a pipe specimen from mid-wall area in accordance with the method described in ASTM D3350. The minimum induction temperature shall be 220ºC.
   3. Ring-tensile strength test of pipe specimens tested in accordance with ASTM D2290. Tensile strength shall be not less than 2,900 psi.
   4. Quick burst test of pipe specimens in accordance with ASTM D1599. The test pressure at failure shall not be less than that which results from the minimum hoop stress value of 2,900 psi.
   5. Elongation at break test of 5 pipe specimens cut equally spaced around the circumference of the pipe in the longitudinal direction tested in accordance with ASTM D638 using a cross-head separation of 2 inches per minute. The elongation at break for each test specimen shall not exceed 400%.
   6. Five-second pressure test of a section of pipe tested in accordance with ASTM D1598. The pipe shall not burst, crack, spit, or otherwise fail a test pressure four times the pipe pressure class applied for 5 seconds. This test is also required for fittings.
   7. Melt index of pipe specimens tested in accordance with ASTM D1238. The resultant index shall be less than 0.15.
   8. Density of pipe specimens tested in accordance with ASTM D2839. The result shall be minimum 0.955 grams per cubic centimeter.
9. Bend-back test in accordance with AWWA C901 or AWWA C906 whichever is applicable. Any indication of cracking or crazing shall reject the pipe.

B. Test the PE compounds by an accredited testing agency in accordance with the applicable requirements of NSF No. 14 to demonstrate the materials are suitable for use with potable water.

PART 3 - EXECUTION

3.1 POLYETHYLENE PIPE INSTALLATION

A. In addition to the applicable sections for installing piping, conform to the following:
   1. Thermal butt fuse all joints as per ASTM D2657.
   2. Utilize certified personnel for jointing operation.
   3. Laterals shall be connected to liner with a polyethylene saddle compatible to the liner.
      a. Saddle to be secured by heat fusion.
      b. If extreme conditions prevent the use of heat fusion, saddle may be secured with stainless steel bands and neoprene gasket.
         1) Engineer's approval is required for this method.

END OF SECTION
SECTION 35 20 23
DREDGING AND DEBRIS REMOVAL

PART 1 - GENERAL

1.1 SUMMARY

A. Work covered by this Section includes:
   1. Mechanical dredging of sediments.
   2. Turbidity Controls
   3. Dredged material offloading.
   4. Dredged material hauling and disposal.

1.2 SUBMITTALS

A. Dredging Plan:
   1. Contractor shall submit no later than 30 days prior to mobilization a Dredging Plan that includes, but is not limited to:
      a. Mechanical Equipment Detail (e.g., mechanical backhoe or crane size/capacity and manufacturer; mechanical bucket type and capacity; number and size of barges and scows, etc.).
      b. Sequencing of dredging operations and timing with respect to other activities including, but not limited to, cellular cofferdam construction.
      c. Cycle times and duration estimates for dredging and offloading material barges.
      d. Proposed Dredged Material Disposal Location and any sediment testing or other measurements to be made by Contractor to support regulatory approval of the use of the Proposed Dredged Material Disposal Location. Use of the adjacent U.S. Army Corps of Engineers/Port Milwaukee Dredged Material Disposal Facility for this purpose may be considered but approval has not been obtained for said use by Owner.
      e. Measures to contain dredged sediments and related residuals in the water column.
      f. Anticipated dredging production rates on an hourly and daily basis.
      g. Plan for large debris management.
      h. Procedures for removal and management of debris and other non-sediment material encountered in dredge area.
      i. Methods for achieving specified dredging depth.
      j. Method of quality control (QC) bathymetric surveys.

B. Daily Dredging Reports:
   1. Contractor shall submit reports summarizing daily dredging operations to the Owner covering the prior day’s dredge work. Reports shall contain:
      a. Day and date of report;
      b. Project name;
      c. Weather conditions;
d. Location/area of dredging (e.g., a figure);
e. Crew size, assignments, and hours worked;
f. Time and duration of any dredging work delay or shutdown and reason for the delay or shutdown.
g. Approximate volumes and character of material dredged (including debris), particularly any changes in or other unusual observations of sediment characteristics or debris encountered;
h. Daily off-load quantities;
i. QC depth soundings taken and other quantity measurements;
j. Accidents, spills, and mishaps, etc. and actions taken to respond to these incidents;
k. Name of individual making report.

C. Weekly Reports:
1. In addition to the Daily Dredging Reports, Contractor shall also submit weekly reports summarizing weekly progress and productivity.
2. Construction drawings shall be utilized to reflect progress.

D. Survey:
1. Submit to the Engineer a listing of benchmarks and/or control points established (or occupied) at the site by Contractor and their horizontal and vertical positions.
2. Submit preconstruction QC bathymetric survey to Engineer for information.
3. Engineer may opt to audit the preconstruction QC bathymetric survey of the Contractor in lieu of performing a separate preconstruction quality assurance (QA) bathymetric survey.
4. All QC bathymetric surveys used to document existing conditions will be single-beam with surveying transect grids located no further than 5 feet apart. Contractor may submit for Engineer’s approval an alternate method for obtaining QC bathymetric data.
5. Submit for Engineer’s QC bathymetric surveys of completed Work with quantity calculations.
6. Survey submittals shall include electronic files (raw and processed data with 1x1 foot gridded data interpolation) in a format compatible with Engineer.

1.3 QUALITY ASSURANCE
A. Personnel Requirements:
1. Provide competent personnel to perform the Work. Personnel shall be trained and have prior experience using all of the equipment, meeting environmental requirements, and achieving dredging tolerance limits.

B. Marine Requirements:
1. Contractor shall provide or make arrangements for all marine equipment and facilities, including staging areas, docks, and transportation of equipment, material, and personnel to and from offshore operations.
2. Contractor shall provide marine equipment that complies with all regulatory and safety requirements.
3. Contractor will provide Notice to Mariners to appropriate agencies one week prior to starting marine construction activities.

4. All offshore operations shall comply with all applicable laws, rules, and customs, including those regarding lights, day signals, markers, etc. Offshore equipment shall comply with the requirements of the U.S. Coast Guard and U.S. Army Corps of Engineers.

C. Regulatory Requirements: Comply with conditions and substantive requirements of all applicable permits and permit equivalencies, including any conditions necessary to allow disposal at the Proposed Dredged Material Disposal Location.

D. Dredge cut monitoring: Dredging shall be performed utilizing a real time positioning system capable of monitoring the position of the dredge bucket in relation to the dredge design elevations. Specific equipment and tolerances are specified in Article 3.4 of this Section.

E. Post-Dredge QA Bathymetric Survey:
1. Contractor will perform post-dredging QC bathymetric survey(s) that will serve as the initial basis for approval of achieving target dredge elevations.
2. Engineer may opt to audit the post-dredge QC bathymetric survey of the Contractor in lieu of performing a separate post-dredge QA bathymetric survey.
3. All QA bathymetric surveys will be single-beam with surveying transect grids located no further than 5 feet apart. Grid lines occupied are to be the same lines occupied for preconstruction surveys.

1.4 FIELD CONDITIONS

A. Debris including timber, rock, and marine equipment may be present with the sediments. Contractor shall be prepared to remove and manage debris in the sediment during dredging, and consider the effect of debris on dredge production rates.

1.5 TURBIDITY CONTROL

A. Permit conditions may require turbidity control during active dredging. Contractor may select means, methods, and equipment for turbidity control provided those controls are in conformance with Wisconsin Department of Natural Resources (WDNR) standard specifications and this Section. Contractor’s turbidity control shall meet approval of WDNR and Engineer during use.

PART 2 - PRODUCTS

2.1 TURBIDITY CONTROLS

A. Silt Curtain: Silt curtain used for turbidity control shall meet requirements of Wisconsin Department of Natural Resources Conservation Practice Standard 1070.
B. Turbidity Barrier: Turbidity barrier used for turbidity control shall meet requirements of WDNR Conservation Practice Standard 1069.

C. Other turbidity control equipment deployed by the Contractor to meet permit conditions shall meet applicable WDNR Conservation Practice Standards and be approved by the Engineer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide facilities as necessary to protect structures from damage during the dredging and debris removal operations.

B. Install turbidity controls prior to executing debris removal or dredging activities.

C. Environmental Protection:
   1. Wherever possible, use biodegradable hydraulic oil.
   2. Provide necessary facilities/equipment to comply with Federal, State and local requirements concerning air, noise and water quality.
   3. Protect against discharge of any oils, fuels, bitumens, garbage, trash, sewage, or other materials which may be harmful to fish, wildlife, or vegetation into the waters of the State. Should the Subcontractor spill, dump, lose, throw off the dredge or sink any material, plant, machinery or appliance, which in the opinion of the Contractor, may be dangerous to the environment or hazardous to navigation, the Subcontractor shall promptly recover or correct any such spills or dangerous discharges from equipment at Subcontractor expense.

3.2 GENERAL DREDGING REQUIREMENTS

A. Perform work in a manner so that the structural integrity of structures are not damaged during activities.

B. Dredging Limits and Target Depth:

   1. Dredge Area limits are to be based upon pre-construction surveys and as approved by Engineer.
   2. Subcontractor is allowed up to 1.0 foot of dredge overcut beyond the target elevations measured on the floor of the dredge cut only (excluding side slopes).
   3. Sediment Dredging may be considered complete when sediments have been removed to target elevations (or a maximum of 1 foot below target elevation) and QA bathymetry surveys have been performed to document removal to target elevations over at least 90% of the subject area.
   4. If it is determined by post-dredge QA bathymetric survey that dredging has not achieved the target design elevation in at least 90% of the work area, additional dredging will be performed to reach the target elevation.
5. Those areas that remain above the target design elevation shall be relatively isolated (i.e., non-contiguous). No areas remaining above the target elevation shall exceed the target elevation by greater than 0.5 foot, unless such areas are verified to the satisfaction of Engineer as being native hard lakebed material (i.e., rock, stiff clay, dense sand, gravel, etc.).

6. Overcut Penalty: Contractor shall pay for transportation and disposal costs of material dredged beyond the 1-foot vertical overcut allowance at an estimated unit rate to be determined at time of Contract award. Measurement of material dredged beyond the 1 foot overcut allowance shall be based on the volumetric difference, determined by Engineer, between the Engineers’ Post-Dredge QA Bathymetric Survey and approved target elevations (including sideslope areas). This volumetric difference will be divided by the design dredge area (including sideslope areas) to determine the actual average overcut thickness that occurred, and then be compared to the 1 foot overcut allowance.

C. Dredging Operations:
   1. Dredging operations may be performed within the work hours specified in the contract.
   2. When working at night, Subcontractor shall provide and maintain adequate lighting from sunset to sunrise to allow for safe and proper observation and control of dredging operations.
   3. Do not disturb sediments outside the dredge area.
   4. Immediately stop dredging and notify the Contractor in the event that something is encountered which is unanticipated or outside the scope of this specification.
   5. An Owner’s Representative must be present on site during dredging activities.
   6. Control dredge speed and operations to minimize re-suspension of sediment into the water column and to minimize the settling out of re-suspended solids in areas previously dredged.
   7. Overlap dredge cuts to avoid leaving ridges or windrows of sediment between adjacent cuts.

3.3 DEBRIS REMOVAL

A. Large debris removal shall be conducted using an excavator equipped with a grapple, thumb, or rake attachment, a standard dredge bucket, or an environmental bucket, as appropriate.

B. Large debris shall be removed prior to sediment when necessary to facilitate handling.

3.4 SEDIMENT DREDGING

A. Sediment Dredging shall be performed by wet excavation. Means and methods shall be provided to move dredged sediments to the offload area.

B. Dredge Monitoring Equipment: Dredging equipment shall be equipped with a real-time kinematic global positioning system (RTK-GPS) in conjunction with inclinometers and DREDGEPACK® software manufactured by HYPACK, Inc. (or
equivalent) that continuously measures and records the horizontal and vertical position of the bucket in accordance with the following tolerance requirements:

1. **Horizontal Tolerance**: 3.0 ft.
2. **Vertical Tolerance**: 0.2 ft.
3. Site control points shall be established and be accurate within 0.05 ft horizontally and 0.1 ft vertically as determined by GPS equipment using static observations or by kinematic techniques.
4. Site control points shall be clear of obstacles that may cause GPS multi-path problems or radio signal interference such as fences, buildings, and radio masts to the extent possible.
5. Contractor shall demonstrate compliance daily with specified tolerance intervals as directed by Engineer, by calibration with a site benchmark or control point.

### 3.5 OFFLOAD OF DREDGED MATERIAL

A. The Contractor will manage material from barge offloading to final disposal.

B. Contractor will provide a plan for offloading of material and transport to the Proposed Dredged Material Disposal Facility.

### 3.6 HAULING OF DREDGED MATERIAL

A. Hauling of Dredged Material: All transport and conveyance methods and systems shall be operated, loaded and unloaded in such a manner as to prevent overflow, spills, leaks, waste, or other loss of material between point of pick-up and point of deposition within the disposal site. Hauling equipment shall have sufficient sidewall height and integrity to prevent drainage over or through the sides and bottom during hauling.

B. Video Documentation: Contractor shall document existing conditions of the offload site(s), haul route, and disposal site prior to commencement of work. Video shall include narrative or other reference feature to determine the location as it changes. Contractor may need to video document existing conditions multiple time during execution of the work.

C. Hauling Restrictions: The method employed by the Contractor in conveying debris materials to the disposal site shall be as approved by the Engineer at all times. Temporary dumping or placement of materials for subsequent re-handling is prohibited or as otherwise approved by the Engineer.

D. Haul Route Restrictions:
   1. **ALL PUBLIC ROADS SHALL REMAIN FREE OF DIRT AND DEBRIS AT ALL TIMES.** The contractor shall at all times keep the work area, including storage areas, off-load site, and haul roads free from accumulations of waste materials. The trucks shall have watertight containers and be loaded in a manner to prevent spillage. The contractor shall be responsible for the means and methods used to ensure roadways remain clean.
3.7 DISPOSAL OF DREDGED MATERIAL

A. General Requirements
   1. Dredged material shall be disposed at an approved facility.
   2. Contractor shall arrange disposal of the dredged material, and obtain acceptance from the regulatory agencies.

3.8 QUALITY CONTROL

A. Subcontractor QC Bathymetric Surveys:
   1. Contractor to provide the following QC bathymetric surveys:
      a. Pre-dredge: Establish baseline from which to quantify work.
      b. Post-dredge: Establishes final condition for verification of work and quantities.
   2. All bathymetric surveys will be single-beam with survey grid transects located no further than 5 feet apart or other method as approved by Engineer. If there are portions of the project area that are not accessible for the marine survey equipment (i.e., water is too shallow), bathymetric measurements may be collected using conventional survey methods (e.g., a survey rod and total station).
   3. QC survey data (point files as specified in Section 1.5 D) shall be provided to Engineer. Engineer may independently generate surfaces and volume take-offs as a check on Contractor's calculations.
   4. Engineer may audit Contractor’s QC bathymetric survey.

END OF SECTION
SECTION 35 31 23

ARMOR STONE BREAKWATER

PART 1 - GENERAL

1.1 WORK INCLUDES

A. Furnish labor, materials, equipment and transportation to construct the breakwater
   connector berm and scour protection as shown on the Drawings.

B. Furnish for the approval of the Engineer suitable laboratory tests, visual inspections
   and service records to demonstrate the acceptability of stone material. All laboratory
   tests shall be for stone from the immediate area(s) and lift(s) of the quarry where stone
   will be supplied for this project. Generalized test results will not be acceptable. Visual
   inspection for cracks, fractures, seams, defects, and deterioration shall be made.
   Service records will include documentation to show the stone has performed
   satisfactorily on similar structures.

C. Furnish for the approval of the Engineer data showing methods and equipment
   proposed for performing the work, scales to weigh materials transported by truck and
   gauging table certifications if barges are to be used.

D. Furnish for the use of the Engineer, a laydown inspection area at the quarry for
   inspection of the Armor Stone materials.

1.2 RELATED SECTIONS

A. Section 31 05 10, Soil and Aggregates for Earthwork

1.3 APPLICABLE PUBLICATIONS

A. State of Wisconsin Department of Transportation (WisDOT) Construction and
   Material Specifications.
      (Specific Gravity), and Absorption of Coarse Aggregate
      and Coarse Aggregates
   3. ASTM D3740 (2012a) Minimum Requirements for Agencies Engaged in the
      Testing and/or Inspection of Soil and Rock as Used
   4. ASTM D4992 (2014; E 2015) Evaluation of Rock to be Used for Erosion Control
      Erosion Control under Freezing and Thawing Conditions
      Erosion Control Under Wetting and Drying Conditions
7. ASTM D5519 (2014) Particle Size Analysis of Natural and Man-Made Riprap Materials

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: The materials required for construction shall consist of armor stone. The stones shall be durable, sound, free from cracks, seams, and other defects which tend to increase deterioration from natural causes. Stone shall be highly resistant to weathering and disintegration under freezing, thawing, wetting and drying as evidenced by laboratory tests and/or service records. The Engineer at any time during the contract may reject any materials, at the source or job site, not meeting the requirements of these specifications. Materials which have been delivered to the project site and are rejected shall be removed from the project site at the Contractor's expense. No payment shall be made for rejected materials.

2.2 QUALITY

A. Specific gravity of armor stone shall be as determined by ASTM C127 for Bulk Specific Gravity (Saturate-Surface-Dry Basis) and water having a weight of 62.5 pounds per cubic foot.

B. The maximum elongation of any stone shall not be more than 1/3 which shall mean the ratio of its least dimension to its greatest dimension, 1 to 3.

C. Quarry Operations and Handling: Quarry operations shall be conducted in a manner that will produce stone conforming to the requirements specified and may include selective quarrying, handling, processing, blending and loading as necessary. Blasting and handling of rock shall be controlled to produce rock of the size ranges and quality specified. Techniques such as the use of proper hole diameter, hole depth, hole angle, burden and spacing distances, types and distribution of explosives, delay intervals and sequence, removal of muck piles between each shot, and special handling techniques will be required as necessary to produce the specified materials. All aspects of blasting operations shall be specifically designed so that the product is not damaged from the blasting technique.

D. Stones shall be laid out in a laydown area at the quarry for Quality inspection by a representative of the Engineer. The Engineer reserves the right to reject stones that do not meet the quality standards of the project. Stones that do not meet standards will be marked with a red X for return to the quarry stock.
2.3 GRADATION OF MATERIALS

A. Armor stone “A” shall consist of 3-5 ton quarried stone, as shown on the Drawings. The armor stone shall be sorted at the quarry or onsite. Large stones should be utilized near the base of the slope of the breakwater as practical. All armor stone shall be placed as shown on the Drawings.

B. Armor Stone “B” shall consist of quarried stone meeting the specifications of WisDOT Extra Heavy Riprap. All armor stone shall be placed as shown on the Drawings.

C. Toe stone for the proposed breakwaters shall consist of 10- to 12-ton quarried stone with a median stone weight of 11 tons, as shown on the Drawings.

D. Core stone shall consist of quarried stone conforming to the graduation requirements of A1-Heavy Riprap Rock as described in Section 31 05 10, Soils and Aggregates for Earthwork.

E. Road Base shall consist of Soil Class A-4 3 ½ inch Crushed Rock as described in Section 31 05 10, Soils and Aggregates for Earthwork.

F. Contractor shall submit certified weight tickets for all stone delivered to the site.

PART 3 - EXECUTION

3.1 STONE PLACEMENT

A. General: The stone materials specified above shall be placed to the lines and grades indicated on the Drawings and as further specified herein.

B. Prior to performing any work under this Section, coordinate all operations with the Engineer so that check surveys (excess volume surveys) will be made at the appropriate time.

C. Check surveys shall be performed prior to placement of each stone layer. The surveys shall be used to verify the quantity of stone placed in the previous layer and as a baseline for verifying stone quantities for subsequent layers. Survey work and measurements for verification of stone quantities shall be performed in the presence of the Engineer. The Engineer shall be notified a minimum of 3 days prior to each survey. In the event of unavailability of the Engineer, the survey may be performed but shall be certified to comply with these specifications. A description of survey methods and equipment shall be submitted to the Engineer a minimum of 10 days prior to the survey. Above water survey may be performed by conventional methods or alternate methods upon prior written approval of the Engineer. Bathymetric surveys may be performed with sounding rods, sonar or alternate methods upon prior written
approval of the Engineer. Elevations and soundings shall be taken on lines 100 feet apart corresponding to the stationing in the Drawings with the readings at 5-foot intervals and at breaks in the grade along the line. Other survey intervals and readings may be used if deemed appropriate or advisable by the Engineer. Additional cross sections, elevations, and soundings may be taken if determined necessary by Engineer. Surveys shall be submitted to the Engineer in electronic CAD format.

D. Core Stone: Core Stone shall be placed in an even layer in accordance with the details shown on the Drawings. A tolerance of 2/3 the average stone diameter shall be allowed in the finished surface of the structure core. Placing of core stone by methods which tend to segregate the particle sizes within the structure core (or cause mixing of the separate layers) will not be permitted. Placement shall begin at the bottom of the area to be covered and continue up slope. Subsequent loads of material shall be placed against previously placed material in such a manner as to ensure a relatively homogenous mass. Any damage to the surface of the underlying layer during placing of the material shall be repaired before proceeding with the work. Compaction of material placed on the prepared base will not be required, but each layer shall be finished to present an adequately even surface.

E. Armor Stone: Armor stone layers “A” and “B” shall be placed individually to produce a full layer thickness in one operation in a manner to avoid displacing or placing undue impact force on underlying material and to minimize chipping of stones. Armor stone shall be placed in a manner to produce a resultant mass of rock with the minimum practicable percentage of voids, and the maximum practicable interlocking and stone to stone contact. Rehandling of individual stones after initial placement may be required as necessary to achieve this result. Mechanical means proposed for armor stone placement shall be approved by the Engineer. Generally, equipment shall be capable of placing stone near its final position before release and capable of moving the stone if necessary. Dragline buckets and skips shall not be acceptable for placement of armor stone. Placement shall begin at the bottom of the slope with the placement of the toe stones and then proceed upward. Casting or dropping of stone over 2 feet or moving by drifting and manipulating down the slope shall not be permitted. Stone shall not be stockpiled on completed sections of the armor stone structure. Final finishing of slopes shall be done as the material is placed.

F. Toe Stone: Toe stone shall be placed individually as shown on the Drawings. Toe Stone shall be placed by means capable of placing stone near its final position before release. Casting or dropping of stone over 2 feet or moving by drifting and manipulating down the slope shall not be permitted.

G. Road Base: Road Base shall be placed to limits and grades as indicated on the Drawings. Road base shall be compacted into the pore spaces of the underlying stones to create a uniform driving surface.
PART 4 - PAYMENT

4.1 ARMOR STONE AND TOE STONE

A. Payment for armor stone will be made at the applicable contract unit prices. Price(s) and payment(s) shall include all costs of furnishing, hauling, and placing the armor stone.

B. Material will be measured for payment by the ton (2,000 pounds) for armor stone acceptably placed in the work as determined by certified truck weight tickets. If delivered by barge (or vessel) armor stone may be measured for payment by vessel displacement. Displacement tables shall be furnished to the Engineer not less than 10 work days prior to delivering materials and with each pay application. Each table submitted shall show the name and/or number of the barge/vessel owner, the name of the fabricator, and the certification and date of certification of the person or firm preparing the table. Furnish with the barge/vessel displacement tables a drawing or sketch of each barge/vessel, dimensioned in sufficient detail to permit checking of the tables. The drawings shall show, as a minimum, the length, width, depth of the barge/vessel, and dimensions of the rake or rakes. Each such table shall have its accuracy certified by a person or firm, other than the Contractor, customarily performing this service. The displacement will be determined before and after being unloaded and the difference between these values shall be the quantity delivered.

C. Material placed beyond the tolerance limits specified for each type of material will not be paid for except where authorized by the Engineer. Any material wasted or used by the Contractor for other purposes and any material not placed in the work in accordance with the requirements of the specifications will not be measured or paid for.

4.2 CORE STONE

A. Payment for core stone will be made at the applicable contract unit prices for the type and size range listed. Price(s) and payment(s) shall include all costs of furnishing, hauling, placing the stone and maintaining the breakwater core until the cover layer is installed and accepted.

B. Material will be measured for payment by the ton (2,000 pounds) for Core Stone acceptably placed in the work as determined by certified truck weight tickets. If delivered by barge (or vessel) Core Stone may be measured for payment by vessel displacement. Displacement tables shall be furnished to the Engineer not less than 10 work days prior to delivering materials and with each pay application. Each table submitted shall show the name and/or number of the barge/vessel owner, the name of the fabricator, and the certification and date of certification of the person or firm preparing the table. Furnish with the barge/vessel displacement tables a drawing or sketch of each barge/vessel, dimensioned in sufficient detail to permit checking of the tables. The drawings shall show, as a minimum, the length, width, depth of the barge/vessel, and dimensions of the rake or rakes. Each such table shall have its accuracy certified by a person or firm, other than the Contractor, customarily performing this service.
accuracy certified by a person or firm, other than the Contractor, customarily performing this service. The displacement will be determined before and after being unloaded and the difference between these values shall be the quantity delivered.

C. Material placed beyond the tolerance limits specified for each type of material will not be paid for except where authorized by the Engineer. Any material wasted or used by the Contractor for other purposes and any material not placed in the work in accordance with the requirements of the specifications will not be measured or paid for.

4.3 ROAD BASE

A. Payment for Road Base crushed rock will be made at the applicable contract unit prices for the type and size range listed. Price(s) and payment(s) shall include all costs of furnishing, hauling, placing the stone and maintaining the breakwater core until the cover layer is installed and accepted.

B. Material will be measured for payment by the ton (2,000 pounds) for Road Base acceptably placed in the work as determined by certified truck weight tickets. If delivered by barge (or vessel) Road Base may be measured for payment by vessel displacement. Displacement tables shall be furnished to the Engineer not less than 10 work days prior to delivering materials and with each pay application. Each table submitted shall show the name and/or number of the barge/vessel owner, the name of the fabricator, and the certification and date of certification of the person or firm preparing the table. Furnish with the barge/vessel displacement tables a drawing or sketch of each barge/vessel, dimensioned in sufficient detail to permit checking of the tables. The drawings shall show, as a minimum, the length, width, depth of the barge/vessel, and dimensions of the rake or rakes. Each such table shall have its accuracy certified by a person or firm, other than the Contractor, customarily performing this service. The displacement will be determined before and after being unloaded and the difference between these values shall be the quantity delivered.

C. Material placed beyond the tolerance limits specified for each type of material will not be paid for except where authorized by the Engineer. Any material wasted or used by the Contractor for other purposes and any material not placed in the work in accordance with the requirements of the specifications will not be measured or paid for.

PART 5 - FINAL SURVEY

5.1 FINAL SURVEY

A. A final survey shall be performed within 15 days of completion of the armor stone layer. The survey shall be used to document as-built conditions and verify final quantities. Survey work and measurements required for determination of excess volume computations for stone materials shall be performed in the presence of the
Engineer. Notify the Engineer not less than 3 days in advance of each survey. In the event of unavailability of the Engineer, the survey may be performed but shall be certified to comply with the specifications. Cross section surveys shall be taken perpendicular to the axis of the structures from the Survey Baseline. Elevations and soundings shall be taken on lines 25 feet apart corresponding to the stationing in the plan drawings with the readings at 5-foot intervals and at breaks in the grade along the line. Other survey intervals and readings may be used if deemed appropriate or advisable by the Engineer. Additional cross sections, elevations, and soundings may be taken if determined necessary by Engineer.

B. Determination of quantities will be made by the Engineer and having once been made, will not reopen, except on evidence of collusion, fraud or obvious error.

C. The Check Surveys may be used when deemed appropriate by the Engineer, as part of the surveys required herein. Stone quantity computations shall be based entirely upon weights of new stone as determined from carrier displacement or certified scale weight tickets. Existing stone placed in lieu of new stone from off-site sources is excluded from measurement and payment.

D. Final survey documents and CAD files shall be submitted to the Engineer.

END OF SECTION
SECTION 35 43 29

CONCRETE GROUT FILLED BAGS FOR SHORELINE PROTECTION

PART 1 - GENERAL

1.1 WORK INCLUDES

A. Furnish labor, materials, equipment and transportation to construct the concrete grout filled fabric bags (Grout Mattress) along the connector berm and existing DMDF slope as shown on the Drawings.

B. Furnish for the approval of the Engineer data showing methods and equipment proposed for performing the work, including all staging and laydown areas.

C. Furnish for the use of the Engineer the mix design for the concrete grout, and include two test breaks performed by an independent testing lab.

D. Furnish for approval the layout of the bags, including anchor rod dowel placement.

1.2 RELATED SECTIONS

A. Section 31 31 23, Armor Stone Breakwater

1.3 APPLICABLE PUBLICATIONS

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: The materials required for construction shall consist of fabric bags or forms, and concrete grout. The Engineer at any time during the contract may reject any materials, at the source or job site, not meeting the requirements of these specifications. Materials, which have been delivered to the project site and are rejected, shall be removed from the project site at the Contractor's expense. No payment shall be made for rejected materials.

B. Fabric Bags: The materials or forms shall be self-sealing woven fabric suitable for casting concrete grout in/or under water. Acceptable products include:
   1. Fabriform Erosion Control Bags; Construction Techniques Inc. Cleveland OH
   2. IVI Self-Sealing Grout Bag Indian Valley Industries Inc. Johnson City, NY

Substitute products that meet the requirements can be requested during the review process.
3. The size of the bags or forms shall be determined by the Contractor.

C. Concrete Grout: The Concrete Grout shall consist of a mixture of Portland cement, fine aggregate (Sand) and water, so proportioned and mixed to provide a pumpable grout. Pozzolan, grout fluidifier or pumping aid conforming to this specification may be used at the option of the Contractor.

2.2 QUALITY

A. The hardened concrete grout shall exhibit a compressive strength of 2,500 psi at 28 days in accordance with ACI 214. The mix design for the concrete grout, and include two test breaks performed by an independent testing lab.

B. The cured concrete grout shall have a hydraulic conductivity of $10^{-8}$ cm/s or less.

PART 3 - EXECUTION

3.1 Concrete Grout Filled Bag Installation

A. General: The Concrete Grout Filled Bags specified above shall be placed within the limits denoted on the drawings, extending from the mudline to +12 LWD (589.5 ft. IGLD85) The concrete grout filled bags shall be placed with a minimum of two layers of bags depending on thickness of the bags, to achieve an overall mattress thickness of 4 feet.

B. Prior to performing any work under this Section, coordinate all operations with the Engineer so that check surveys will be made at the appropriate time.

C. Before placement of the concrete grout filled fabric bags, all loose material and debris shall be removed from the location of work and properly disposed of by the Contractor.

D. The concrete grout filled fabric bags shall be placed such that there are overlapping seams, with no gaps between the bags. Bags shall be placed to stagger joints between rows. If necessary rows shall be anchored together with reinforcing rod dowels.

E. Concrete grout filling shall be completed in a manner that will prevent the possibility of discharge of grout or cement into the water. Concrete grout injection shall be performed in a manner that will avoid rupture of the fabric bags or forms, or the formation of cold joints. A cold joint is defined as one in which the pumping of the concrete grout into a given fabric bag or form is discontinued or interrupted for an interval of 45 or more minutes.

F. If the concrete grout filled fabric bags are used as a form, placement of required injection and vent pipes shall be accomplished during bag installation. These pipes shall be positioned to ensure that the enclosed volume can be completely filled and the
enclosed water (if necessary) displaced. A four-foot maximum spacing of the vent/fill pipes is recommended.

G. Abutting fabric bag or form units, if placed laterally, may be installed immediately after placement of the preceding unit(s). If a fabric bag or form unit is to bear on previously installed units, the lower units shall have been allotted a sufficient set time to support the succeeding, vertically adjacent course of form units.

PART 4 - PAYMENT.

4.1 The work will be measured as the number of cubic yards of concrete grout actually placed into production and used to fill the fabric bags or forms.

4.2 Fabric bags, forms, and/or rebar are considered incidental to the work and will be included in the Unit Price for the Concrete Grout.

4.3 Unit price per cubic yard shall also include all labor, materials and equipment necessary to satisfactorily complete the work, including the use of underwater video systems and divers as necessary.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This section includes the furnishing of all labor, equipment, materials, plant, hardware, and incidentals necessary for the design, fabrication, testing, and delivery of new marine fenders including all fender elements, fender panels, inserts, fasteners, anchor bolts, and chains, as indicated on the Contract Drawings and/or herein specified.

B. Marine Fender System along cells and dolphins shall consist of buckling column rubber fender elements, frontal panel with polyethylene UHMW-PE protective facing, system restraints, and connection hardware.

C. Fender system at Offloading Platform shall consist of rubber fender, stud, and connection hardware.

D. Fender system at Pile Cluster shall consist of rubber fender, stud, and connection hardware.

1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced the publications are referred within the text by the basic designation only


3. American Society for Testing and Materials (ASTM) Standard Specifications and Test Methods (some titles listed below have been abbreviated):
   a. ASTM A36 Specification for Carbon Structural Steel
   b. ASTM A123 Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
   c. ASTM A153 Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
   d. ASTM A276 Standard Specification for Stainless Steel Bars and Shapes
   e. ASTM A307 Standard Specification for Carbon Steel Bolts and Studs
f. ASTM A325 High-Strength Bolts for Structural Steel Joints, Including Suitable Nuts and Plain Hardened Washers

g. ASTM A449 Standard Specification for Hex Cap Screw Bolts and Studs, Steel, Heat Treated, 120 / 105 / 90 KSI Minimum Tensile Strength, General Use

h. ASTM D256 Test Methods for Determining Izod Pendulum Impact Resistance of Plastics

i. ASTM D395 Test Methods for Rubber Property Compression Set

j. ASTM D412 Test Methods for Vulcanized Rubber and Thermoplastic Rubber and Thermoplastic Elastomers-Tension

k. ASTM D429 Standard Test Methods for Rubber Property – Adhesion to Rigid Substrate

l. ASTM D471 Test Method for Rubber Property, Effects of Liquids

m. ASTM D573 Test Method for Rubber-Deterioration in Air Open

n. ASTM D624 Test Method Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers

o. ASTM D638 Test Method for Tensile Properties of Plastics


q. ASTM D785 Test Method Rockwell Hardness of Plastics and Electrical Insulating Material

r. ASTM D792 Test Method for Density and Specific Gravity of Plastics

s. ASTM D1044 Test Method for Resistance of Transparent Plastic to Surface Abrasion

t. ASTM D1149 Test Method for Rubber Deterioration – Surface Ozone Cracking in a Chamber

u. ASTM D1171 Test for Rubber Deterioration – Surface Ozone Cracking

v. ASTM D1894 Test Method for Static and Kinetic Coefficients of Friction of Plastic Film and Sheeting

w. ASTM D2000 Standard Classification System For Rubber Products In Automotive Application

x. ASTM D2137 Test Methods for Rubber Property – Brittleness Point of Flexible Polymers and Coated Fabrics

y. ASTM D2240 Rubber Property – Durometer Hardness

z. ASTM D4020 Ultra-High-Molecular-Weight Polyethylene Molding and Extrusion Materials

aa. ASTM F1554 Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength


a. ANSI/AWS A5, latest editions of applicable sections

b. ANSI/AWS D1.1 – 2006, Structural Welding Code – Steel


d. ANSI/AWS D1.6 – 1999, Structural Welding Code – Stainless Steel

e. AWS D19.0 – 1972, Welding Zinc Coated Steel

5. Steel Structure Painting Council (SSPC) Standards:

a. Surface Preparation Standard, VIS-1 / VIS-3
1.3 SUBMITTALS

A. Submit the following for approval in accordance with Section 01 33 00, Submittal Procedures:
1. Scope of supply
2. Fender system and component dimensional drawings.
3. Rubber fender element reaction-energy-percent compression curve - normal compression.
4. Rubber fender element material specifications
5. UHMW PE facing material specifications
6. Design calculations verifying fender system energy capacity/reaction force, fender system undeflected/deflected standoff, panel strength, anchor bolt strength, and chain strength. Calculations shall be signed and sealed by a Professional Engineer, licensed in Wisconsin, hired at the Contractor’s expense.
7. Fender front panel welding procedures.
8. Fender front panel coating procedures.
9. References of at least 3 installations over 5 years old of the same fender model proposed.
10. Manufacturer published technical literature for all products proposed.
11. 5 year written guarantee for the rubber fender.
12. The Fender Manufacturer shall provide the Owner with a guarantee for the fenders against defects in materials and workmanship for a period of 5 years from the date of final acceptance of the work.

B. Submit the following for acceptance in accordance with Section 01 33 00 Submittal Procedures:
1. Final as built shop drawings and scope of supply
2. Fender material and performance test certificates.
3. Certificates of quality for fender panels, UHMW PE pads, hardware, and chains.
4. Fender system quality certificate covering all as built system components from ABS (American Bureau of Shipping).
5. Detailed installation/maintenance procedures for the supplied fender system.

1.4 MANUFACTURER’S QUALIFICATIONS

A. The supplier of fender system shall be fully experienced in fender design, manufacture and fender testing and familiar with PIANC requirements. Supplier shall submit qualifications to the Owner.

B. The manufacturer shall have an experienced engineering and production staff with more than 10 years’ experience in the manufacture of this product.

C. Approved Manufacturers
1. For Cell Fenders Fender Panels - Zalda Technology Corporation of Hayward, CA (www.zaldatechnology.com)
2. For Rubber Strip Fenders – Schuyler Companies of Woodinville, WA (www.schuylerco.com/)
3. Or approved equal

1.5 FENDER SYSTEM DESIGN CRITERIA

A. Design Vessels

<table>
<thead>
<tr>
<th>Design Vessel 1</th>
<th>Design Vessel 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vessel Type: Ore Carrier</td>
<td>Vessel Type: Bulk Carrier</td>
</tr>
<tr>
<td>Full Draft Tonnage: 100,000 ton</td>
<td>Full Draft Tonnage: 30,000 ton</td>
</tr>
<tr>
<td>Length: 248 m</td>
<td>Length: 176 m</td>
</tr>
<tr>
<td>Beam: 37.9 m</td>
<td>Beam: 26.1 m</td>
</tr>
<tr>
<td>Draft Range: 14.8 m</td>
<td>Draft Range: 10.3 m</td>
</tr>
<tr>
<td>Hull Pressure Limit: 200 kPa</td>
<td>Hull Pressure Limit: 200 kPa</td>
</tr>
<tr>
<td>Freeboard: 5.9 m</td>
<td>Freeboard: 4.1 m</td>
</tr>
<tr>
<td>Berthing Speed: 0.2 m/s</td>
<td>Berthing Speed: 0.24 m/s</td>
</tr>
<tr>
<td>Berthing Method 1/5 point berthing</td>
<td>Berthing Method 1/5 point berthing</td>
</tr>
<tr>
<td>Abnormal Safety Factor 1.5</td>
<td>Abnormal Safety Factor 1.5</td>
</tr>
</tbody>
</table>

B. Berth Condition
1. Structure Type: Berth and Dolphin
2. Allowable Reaction: 122 metric tons
3. Water Level Range: 0.0’ MLLW to +4.0’ OHWL

C. Design the fender systems such that a single unit fender assembly is capable of absorbing vessel kinetic energy under worst case scenario with a safety factor of 1.0 without exceeding the reaction force of 122 metric tons.

D. Design the frontal panel and low friction facing for the following requirements:
1. Minimum height of the front panel shall be 9.5 feet. Minimum width of the front panel shall be 8 feet.
2. Fender panel top elevation shall be +10.5 feet LWD, fender panel bottom elevation shall be +1 feet LWD.
3. The maximum height for the top of the panel shall not extend above the top of the bull rail.
4. Fender system panel contact surface shall be covered with low friction Virgin UV-Stabilized Ultra High Molecular Weight Polyethylene (UHMW-PE) pads
5. Bevel all edges of the frontal panel so that the panel will not catch on the vessel hull.
6. Design the fender system panel contact area so that vessel hull pressures do not exceed the limits of 200 kPa based on the maximum reaction force for each fender system. Bevel area of the fender system panel is not considered as contact area.

E. Design the fender system to withstand horizontal and vertical shear force resulting from friction between ship and frontal panel using chains or other devices approved by the Engineer. Design friction factor shall be 0.3.
1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver material in manufacturer's original packaging with tags and labels intact.

B. Deliver materials to the site in an undamaged condition.

C. Store materials off the ground to protect against oxidation caused by ground contact.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Rubber Fender Element
   1. The proposed fender shall be a modern buckling type elastomeric buckling cell fender with a fabricated steel frontal panel complete with restraint chains, if necessary. Every single fender system shall be capable of absorbing design vessel energy capacity without exceeding the reaction force and standoff range.
   2. Energy Capacity and Reaction Force
      a. Design Deflection
      b. Minimum Energy Capacity = 689 kNm
      c. Maximum Reaction = 1085 kN
      d. Fender Deflection = 55%
      e. Rated fender performance after adjustment for 10 degree berthing angle and 5-degree vessel flare angle

B. Fender Rubber Material
   1. The rubber for the proposed fender to be used must be of vulcanized natural or synthetic rubber or a mixture of same. These shall be reinforced with carbon black and resistant to aging, seawater, abrasion, and ultraviolet rays.
   2. The rubber must be homogenous in quality and free from foreign materials, bubbles, cracks and other defects.
   3. The embedded fixing steel plates shall be firmly bonded into the rubber body through the process of vulcanization, and completely encapsulated so that no steel is exposed.
4. Rubber Material Specifications:

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min. Tensile Strength</td>
<td>ASTM D-412</td>
<td>16 Mpa (2320 psi)</td>
</tr>
<tr>
<td>Min. Elongation</td>
<td>ASTM D-412</td>
<td>300%</td>
</tr>
<tr>
<td>Hardness-Shore A Durometer</td>
<td>ASTM D-2240</td>
<td>72 + / - 5</td>
</tr>
<tr>
<td>Heat Resistance</td>
<td>ASTM D-573</td>
<td>A14, 70 hr at 100 °C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. Change in Hardness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. Change in Tensile Elongation</td>
</tr>
<tr>
<td>Compress Set</td>
<td>ASTM D395B</td>
<td>B13, 22hr at 70°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25% Max</td>
</tr>
<tr>
<td>Ozone Resistance</td>
<td>ASTM D-1171</td>
<td>C12, 400 C at 50 pphm, 70 hr.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Cracks</td>
</tr>
<tr>
<td>Water Resistance</td>
<td>ASTM D-471</td>
<td>EA14, 70 hr at 1000 C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 % Max Swell v / v</td>
</tr>
<tr>
<td>Low Temperature Brittleness</td>
<td>ASTM D-2137</td>
<td>F17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non brittle after 3min at -40°C</td>
</tr>
<tr>
<td>Load Deflection</td>
<td>ASTM D-575A</td>
<td>Z1, 20% Deflection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2± 0.5 Mpa (300 +/- 70 Psi)</td>
</tr>
<tr>
<td>Tear Resistance</td>
<td>ASTM D-624</td>
<td>Z2, DieB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 70 N / mm (0.4 kip / inch)</td>
</tr>
<tr>
<td>Rubber / Steel Adhesion Strength</td>
<td>ASTM D-429</td>
<td>K21 Method B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 7 N / mm (0.04 kip / inch)</td>
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<tr>
<td>Abrasion Resistance</td>
<td>BS 903 A9 Method B</td>
<td>1000 Revolutions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>≤0.5 cc</td>
</tr>
</tbody>
</table>

5. Fender Element Identification
a. Each fender unit shall be given a unique serial number, which can be traced back to manufacturing and testing records.

6. Fender Element Performance Verification
a. The performance capabilities of the rubber fender units must be demonstrated by testing of actual full size fender. Testing should be performed according to PIANC 2002 - Guidelines for the Design of Fender Systems or ASTM F2192-Determining and Reporting the Berthing Energy and Reaction of Marine Fenders. Test results shall not be adjusted for rate of loading different from...
that used in testing nor extrapolated from prototypical or scaled representations of the proposed fender unit. Test performance for the fenders showing energy and reaction as a function of displacement, including performance characteristics of the fenders under angular berthing condition shall be verified and endorsed by ABS.

7. Rubber Fender Element Performance – Material Specification Sampling

a. The specimen for testing and inspection of the materials, dimensions, and performance shall be sampled as specified below. The specimen to be used for the material test shall be taken directly from the product or from the rubber prepared in the quality check and under the condition of the same vulcanization as the products.

<table>
<thead>
<tr>
<th>Test Item</th>
<th>Number of Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubber Material</td>
<td>1 sample from each lot</td>
</tr>
<tr>
<td>Dimensions</td>
<td>All fenders</td>
</tr>
<tr>
<td>Performance</td>
<td>10% of scope of supply</td>
</tr>
</tbody>
</table>

8. Approved Products

a. SC1450, Zalda Technology Corporation, of Hayward, CA
   Tel. 510 487 2289 (www.zaldatechnology.com)
   or approved equal

9. Front Panel

a. Material: Panel material shall be ASTM A36 structural steel or equal. Plate thickness shall be greater than 3/8 inch for closed box design, 1/2 inch for open rack design.

b. Construction: The proposed panel shall be rectangular in shape with bevels at the top, bottom, and sides to prevent snagging. The vertical length of the panel, inclusive of the bevels, shall be 9.5 feet. The horizontal width of the panel, inclusive of the bevels, shall be 8 feet. The angle for each edge bevel shall be a 45 degree slope with the shallow end of the slope extending into the panel a minimum of 3 inches.

The panel shall be designed to limit the hull pressure acting on the vessel to a maximum of 200 kPa. The area to be considered for the hull pressure calculations shall only include the face of the fender panel contacting the vessel and exclusive of the bevels.

The panel shall be designed and constructed according to AISC ASD 9th ed. Steel Construction Manual. All welding shall be in accordance with AWS D1.1 latest edition standards. The panel shall be of the closed box type. All external welds shall be seal welds to prevent water from entering the closed box panel. The panel shall be designed for at least 3x safety factor against, bending under the worst case scenario

Manufacturer shall supply current welding procedures as part of their submittal documentation.
For air tight panels, all connections shall be made with cap nuts; all welds shall be tested for defects with ultrasonic method. All panels shall be pressure tested to 5 PSI at 2 hour without noticeable pressure drop. Any leaks found shall be repaired and the pressure test shall repeat until no further leaks can be found.

10. Coating
   a. The proposed panel shall be coated with one coat of zinc rich primer and two coats marine epoxy. Surface preparation shall be by abrasive blast to SSPC-SP10 "Near White Blast Cleaning" with an anchor profile of 50 to 75 microns. All coating preparation and application shall be in compliance with the coating manufacturer's recommendations for splash zone service. Minimum total coating DFT shall be 400 microns.

11. UHMW (Virgin Ultra High Molecular Weight) PE Face Pads
   a. UHMW PE face pads shall cover the entire front face of the panel including the faces of the bevels. The pads shall be made of 100% virgin UHMW PE, 1 1/4" minimum thick and black in color. The proposed UHMW must be UV stabilized. The minimum wear thickness shall be 1/2 inch. All front edges of the UHMW-PE shall include 3/4 inch X 3/4 inch chamfers. UHMW materials must meet the following minimum standards.

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Standards</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultimate Tensile Strength</td>
<td>ASTM D638</td>
<td>4,000 Psi. Min.</td>
</tr>
<tr>
<td>Ultimate Elongation</td>
<td>ASTM D638</td>
<td>300% Min.</td>
</tr>
<tr>
<td>Izod Impact (Double Notch)</td>
<td>ASTM D256A</td>
<td>18 ft-lbs /in. Min.</td>
</tr>
<tr>
<td>Abrasion Wear (Carbon Steel = 100)</td>
<td>Sand Slurry</td>
<td>18 max</td>
</tr>
<tr>
<td>Water Absorption</td>
<td>ASTM D570</td>
<td>Nil</td>
</tr>
<tr>
<td>Coefficient of Friction (vs. Steel)</td>
<td>ASTM D1894</td>
<td>.20 max</td>
</tr>
</tbody>
</table>

b. The UHMW-PE panels shall be secured to the fender panel using M16 AISI 316 stainless steel hardware.

12. Sacrificial Anodes
   a. Each fender panel should be equipped with sacrificial anodes. The sacrificial anodes shall be removable for future replacement. Sacrificial anodes shall conform to ASTM B418-95a, with minimum 2-year capacity based on the condition of the application.

13. Lifting Lugs
   a. Fender system panel shall be equipment with lifting lugs.

14. Fender System Panel Quality Verification
   a. Fender front panel geometry, fabrication, coating, pressure test as well as virgin UHMW PE pad and hardware quality shall be verified and endorsed by ABS according to the requirement of this specification.
C. Hardware
1. Fender Fastener
   a. All fender fasteners for mounting of the fender to the pier structure and panel shall be supplied by the fender manufacturer. Anchor bolt design shall be suitable for new concrete structure installation. All mounting hardware shall be hot-dipped galvanized or, stainless steel. Any female type embedment shall have a stainless steel female socket. The size and grade of the mounting hardware shall be according to the fender manufacturer’s recommendations. All stainless steel components shall conform to AISI SS316. All galvanized components shall be hot dip galvanized per ASTM A153.

2. Chains and Restraints
   a. Rubber fenders are designed to be compressed towards the pier. The proposed chain system shall be provided to prevent excessive tension, weight, and friction induced shear deflection of the rubber fender. All hardware such as shackles and tensioners required for attaching the chains shall be included and supplied by the fender manufacturer. All items shall be hot-dipped galvanized. The chains and related hardware shall be sized for at least 3x safety factor under worst case scenario.
   b. Shearing forces act the fender system shall be calculated from the rated reaction force of the rubber fender. The coefficient of friction of the UHMW face pads used in such calculations shall be 0.3. Sizing of the weight chains shall include the shearing force from friction as well as the weight of the fender system. Rubber fender shear resistance can be considered but limited to 1/3 of the fender rated reaction force.
   c. Chains and restraints shall be designed such that they will not interfere with the rubber fender before or during the entire compression - decompression process under worst case scenario.

3. Chain Anchors
   a. All chain anchors for attaching the proposed chains to the concrete face shall be included and supplied by the fender manufacturer. All hardware for attaching the anchor plates including anchor bolts, hex bolts, nuts, and washers shall be provided. All hardware shall be hot-dipped galvanized. Any female type embedment shall have a stainless steel female socket.

4. Spare Parts
   a. Fender manufacturer should supply following spare parts one set for every 10 units shipped.
   b. One (1) full set of UHMW PE pads and attachment hardware for one fender panel
   c. One (1) full set of sacrificial anodes

D. DELIVERY, HANDLING, STORAGE
1. Fenders shall be undamaged when delivered and shall be handled and stored so as to prevent damage, such as bending or abrading end fittings, cutting of the rubber, or damage to coating of hardware, and necessary care to protect fenders from exposure to damaging liquids, oils, greases and extended exposure to harsh sunlight.
E. MANUFACTURER’S SERVICE

1. Provide a minimum of 1 day of supervision at the jobsite, during or just prior to installation of first rubber fender unit(s), by a representative of the rubber fender vendor and qualified to provide technical direction to workers on proper installation techniques and procedures.

2. Provide a minimum of 1 day at the jobsite, following conclusion of fender installation (all units), by a representative of the rubber fender vendor and qualified to provide visual inspection of completed installations for conformance with prior vendor directives and installation recommendations. Within 5 working days of site visit, provide written documentation from vendor that all rubber fender units have been installed in accordance with the contract documents and to satisfaction of the vendor.

END OF SECTION