BID & CONTRACT DOCUMENTS

ITB #15-12
SWAN LAKE HARBOR
FACILITY IMPROVEMENTS

Kotzebue, Alaska

City Manager
Derek J. Martin

Issued for Bid
December 30, 2014

Prepared By:

AECOM / URS ALASKA
700 G Street, Suite 500
Anchorage, AK 99501

City of Kotzebue
Swan Lake Harbor Facility Improvements

Contract Documents

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Swan Lake Harbor Facility Improvements

Section 1

Bidding Requirements and Documents

1. INVITATION FOR BIDS

NAME AND LOCATION OF PROJECT CITY OF KOTZEBUE

Swan Lake Harbor Facility Improvements, Kotzebue, Alaska

CONTRACTING OFFICER Derek Martin City Manager

DESCRIPTION OF WORK: To furnish, install and provide all materials, labor and equipment necessary to construct a new small boat harbor in Swan Lake. The work includes, providing a new float system, providing a chain and driven pile anchor float restraint system, providing a sheet pile bulkhead, and other work. The work also includes electrical and lighting for the harbor.

PRE-BID CONFERENCE:
A pre-bid conference will be held on **January 20, 2015 at 2:00 PM** at the office of the Engineer URS/AECOM located at 700 G Street, Suite 500, Anchorage AK 99501. 907-562-3366. All bidders are required to attend. Bidders are encouraged to attend in person; however teleconference attendance may be arranged in advance. Bidders will need to check in with Building security for access.

BID DOCUMENTS:
Bid documents are available for purchase at "The Plans Room" at 4831 Old Seward Hwy 201, Anchorage, AK 99503 Phone: (907) 563-2029; or with prior arrangement at the office of the Engineer : (907) 562-3366 AECOM/ URS Alaska 700 G Street, Suite 500, Anchorage, Alaska 99501, contact Robin Krumm or Elizabeth Greer. A copy reproduction fee (plus postage for mail requests), will be charged for hardcopies of bid documents. Electronic copies will be available on the City Website at no charge at **www.cityofkotzebue.com**

BID OPENING:
Bids will be opened publicly on **February 16, 2015 at 2:00 pm** at the office of the Engineer URS/AECOM located at 700 G Street, Suite 500, Anchorage AK 99501. 907-562-3366.

Bids, amendments, or withdrawals **must be received no later than 30 minutes prior to the scheduled time of bid opening** at the above specified address. Faxes of bids, amendments, or withdrawals will not be accepted.

SUBMISSION OF BIDS:
All bids including any amendments or withdrawals must be received prior to bid opening. Bids shall be submitted on the forms furnished and must be in a sealed envelope marked as follows:

BID FOR:
Swan Lake Harbor
Facility Improvements

City of Kotzebue
c/o AECOM/URS Alaska
700 G Street, Suite 500
Anchorage, AK 99501

The estimated price range for this contract is less than $4,000,000.

The City of Kotzebue intends to award the full contract. However, if all bids exceed the funds available, the City may reduce the scope of work and re-bid the project on short notice and bid time with those qualified bidders that responded to the initial Invitation for Bids.

Bidders are encouraged to consider **Value Added Alternatives** in accordance with the Special Provision Section 4.3 The City will consider modifications to the design and or details which will enhance the performance, reduce the maintenance or facilitate operations of the Harbor. An allowance is included in the contract to facilitate implementation of approved change. Similarly, the Contractor may propose cost saving alternatives for approval

Bids shall not discriminate on the basis of race, color, national origin, or sex in the solicitation of subbids, award of subcontracts, or performance of work.

Provisions of **Alaska Title 36,** Public Contracts, Labor and Mechanics Minimum Rates of Pay, AS 36.05.010 and AS 36.05.030, are applicable to this contract.

All questions relating to bid procedures or other aspects of this project should be directed Elizabeth Greer, AECOM/URS at **Elizabeth.Greer@URS.com** ; 907-261-6750. Emails shall include the name of the Project in the Subject Line.

PLAN HOLDER REGISTRATION:

All interested parties are encouraged to register as a Plan Holder to receive notifications of any Addendums. **Bidders are required to register as a Plan Holder.**

To register,
Email the following information to **Robin.Krumm@URS.com**

SWAN LAKE HARBOR FACILITY IMPROVEMENTS, PLAN HOLDER REGISTRATION:

COMPANY NAME:
CONTACT PERSON:
ADDRESS:
CITY, STATE, ZIP:
PHONE:
FAX:
EMAIL:

2. INFORMATION TO BIDDERS

The City of Kotzebue, Alaska, is concerned over the manner in which Bids are submitted. Bidders are requested to study and follow the bid assembly instructions as to the method and form for submitting bids so there will be no reason to reject a bid.

1.01 EXAMINATION OF CONTRACT REQUIREMENTS

Bidders are expected to examine carefully all documents incorporated in the contract to determine the requirements thereof before preparing bids.

Any explanation desired by bidders regarding the meaning or interpretation of any provisions must be requested in writing and with sufficient time allowed for a reply to reach them before the submission of their bid. Oral explanations or instructions given before the award of the contract will not be binding. Any interpretation made will be in the form of an addendum to the specifications or drawings and will be furnished to all bidders and its receipt by the bidder must be acknowledged.

1.02 CONDITIONS AT SITE OF WORK

Bidders are expected to visit the site to ascertain pertinent local conditions such as the location, accessibility and character of the site, labor conditions, the character and extent of the existing work within or adjacent thereto, and any other work being performed thereon.

1.03 PREPARATION OF BIDS

(a) Bids shall be submitted on the forms furnished or copies thereof, and must be manually signed in ink. If erasures or other changes appear on the forms, each such erasure or change must be initialed by the person signing the bid.

(b) The bid schedules will provide for the quotation of a lump sum bid for price or as otherwise specified in the schedules.

As required on the bid form, bidders must quote on all items and THEY ARE WARNED that failure to do so will disqualify them.

(c) The bidder shall specify all numbers in words and figures, for each required bid item total. The words and figures shall be in ink or typed. In case of a discrepancy between the prices written in words and those in figures, the prices written in words shall govern.

(d) Conditional bids will not be considered. Alternative bids will be considered if they comply with requirements of a Lump sum bid or as otherwise specified in the bid schedules.

(e) Unless specifically called for, telegraphic or facsimile bids will not be considered. Telegraphic or facsimile modifications of bids already submitted will be considered, provided they are received prior to the time set for opening. Telegraphic or facsimile modifications shall not reveal the amount of the total original or revised bids.

(f) All bids, except telegraphic or facsimile bids, if called for, or modifications shall be submitted as one original and two copies.

1.04 BID SECURITY

Bid shall be accompanied by a bid security in the form of an acceptable Bid Bond, or certified check, cashier's check or money order made payable to the City of Kotzebue. The amount of the bid security is 5% of the total amount bid, not to exceed $50,000. (Alternate Bid items as well as supplemental bid items appearing on the bid schedule shall be included as part of the total amount bid when determining the amount of bid guaranty for the project.)

BID BONDS MUST BE ACCOMPANIED BY A LEGIBLE POWER OF ATTORNEY

If the bidder fails to furnish an acceptable bid security with the bid, the bid shall be rejected as non-responsive. Telegraphic notification of execution of a Bid Bond does not meet the requirements of bid security accompanying the bid. No individual surety will be accepted in lieu of Bid Bond, Certified Check, Cashier's Check or Money Order.

The bid securities of the two lowest bidders will be held by the City until the contract has been executed, after which such bid securities will be returned. All other bids securities will be returned as soon as practicable.

If all bids are rejected, all bid securities will be returned as soon as practicable.

1.05 BIDDER'S QUALIFICATIONS

The bidder is to include a statement of facts, in detail, as to his previous experience in performing comparable work, his business and technical organization, as outlined in the Statement of Qualifications, required with the Bid Section. The purpose of this information is to help establish that the bidder and their subcontractors are responsible and qualified to perform the work.

1.06 SUBMISSION OF BIDS

Bids must be submitted as directed on the Invitation for Bids. Do not include in the envelope any bids for other work.

1.07 ADDENDA REQUIREMENTS

The bid documents provide for acknowledgment individually of all addenda to the bidding documents on the signature page of the Bid. All addenda shall be acknowledged on the Bid or by telegram or facsimile prior to the scheduled time of bid opening. If no addenda are received by the bidder, the work "None" should be shown as specified.

1.08 RECEIPT AND OPENING OF BIDS

(a) All bids, including any Amendment, must be received by the City prior to the schedule time of the applicable bid opening. Any bid, Amendment, or withdrawal which has not been actually received by the City prior to the time of the scheduled bid opening will not be considered.

(b) No responsibility will be attached to any officer or employee of the City for the premature opening of, or failure to open, a bid improperly addressed or identified.

(c) The City reserves the right to waive any technicality in bids received when such waiver is in the interest of the City.

1.09 WITHDRAWAL OF BIDS

Bids may be withdrawn by written or telegraphic request received from the bidders prior to the time fixed for opening. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of bid after it has been opened.

1.10 BIDDERS PRESENT

At the time fixed for bid opening, each bid will be opened and be made public.

1.11 REJECTION OF BIDS

The City reserves the right to reject any and all bids or not to award a contract when such rejection is in the best interest of the City; to reject the bid of a bidder who has previously failed to perform properly, or complete on time, contracts of similar nature; to reject the bid of a bidder who is not, in the opinion of the Contracting Officer, in a position to perform the contract; and to reject a bid as non-responsive where the bidder fails to furnish the required documents, fails to complete required documents in the manner directed, makes unauthorized alterations to the bid documents or is deemed non-responsive to performance criteria.

1.12 AWARD OF CONTRACT

(a) The Award will be based on the Lowest Bid proposal inclusive of all Additive Alternatives.

(b) The City will provide the successful bidder a notice of intent to award a contract within 15 calendar days after the bid opening.

(c) The contract award is also contingent upon receiving all city, borough, state and federal permits.

(d) (Following notice of intent to award, the contract will be awarded to the successful bidder following receipt by the City of all required documents, properly executed within 10 days following notice. Failure to enter into a contract within the 10 day period shall be grounds for forfeiture of the bid security and consideration of the second low bid for award.

1.13 PAYMENT AND PERFORMANCE BONDS

Contractor payment and performance bonds for the construction work are required. The successful bidder shall furnish these bonds using the forms either provided or approved by the City and in the amount stated on the bid.
Payment and Performance Bonds may be either of the following:

(a) Corporate Surety. (Bonding Company) or:

1.13 PAYMENT AND PERFORMANCE BONDS (continued)

(b) Individual Surety.

Adequacy of individual surety will be determined by the Contracting Officer. Where individual sureties are used, two individual sureties must each provide the City of Kotzebue with security equal to the amount of each bond by one, or a combination of, the following methods:

1. Escrow account in the name of the City of Kotzebue, Alaska, for the duration of the contract, and for 90 days after final acceptance and settlement of all outstanding claims. Acceptable securities should include, but not necessarily be limited to cash, treasury notes, bearer instruments having a specific value and money market certificates.

2. First Deed of Trust, with the City of Kotzebue, Alaska, as beneficiary, against the unencumbered value of real property located within the State of Alaska, or an agreement by any second party, including deeds of trust, mortgage, lien or judgment interests to subrogate their interest to that of the City of Kotzebue in the real property which has been offered by the individual surety.

   A title search and current (within 3 months) professional appraisal or assessed valuation will be required to ascertain the true value of the property offered as collateral. This Deed of Trust must be recorded in the land office where the property was originally recorded. The Deed of Trust must remain in effect for 90 days after final acceptance of the project and settlement of all outstanding claims.

Any costs incurred by the Contractor or individual surety shall be borne by the Contractor.

An individual surety may be replaced by a Corporate Surety during the course of the contract period. If the surety desires to dispose of the collateral posted, the City may, at its option, accept substitute collateral.

1.14 REQUIRED INSURANCE

(a) The successful bidder must submit a certificate of insurance, showing the types of coverage and limits of each, to the City before award can be made. Insurance coverage must contain worker's compensation (AS 23.30.45) and any other policies specifically listed in the contract general and/or special condition provisions. The certificate of insurance must contain the stipulation that the City shall be given not less than 30 days written notice in the event of any material change, cancellation or expiration of the insurance coverage listed.

1.15 INTERPRETATION OF CONTRACT DOCUMENTS PRIOR TO BIDDING

If any person submitting a bid is in doubt as to the true meaning of any part of the Bid Document, he may submit to the Manager of Engineering & Utilities a written request for interpretation thereof not later than ten days before the bids are to be opened:

(a) The person submitting the request shall be responsible for its prompt delivery.
(b) Interpretation or correction of the Bid Document will be made only by Addendum, and will be mailed or delivered to each bidder of record.
(c) The City will not be responsible for any other explanations or interpretations of the Bid Documents.

1.16 REGISTRATION

The bidder and his subcontractor(s) must be properly licensed and registered in the State of Alaska to perform the work. A current business license is required from the State of Alaska and City of Kotzebue.

1.17 TITLE 36

Provisions of Alaska Title 36, Public Contracts, Labor and Mechanics Minimum Rates of Pay, AS 36.05.010 and AS 36.05.030, are applicable to this contract.

1.18 LIQUIDATED DAMAGES

Provisions for liquidated damages are set forth in the contract.

1.19 WORK PLAN

The bidder shall submit a Work Plan and schedule describing how he intends to pursue completion of the work with the Bid Package. This plan is intended to demonstrate that the contractor has sufficient knowledge and revenues to complete the work within the scheduled time. The City will allow changes in the work plan where the Contractor can show the change is reasonable and will not delay completion of the work.

3. REQUIRED DOCUMENTS

1.01 Required With Bid (all signed as required)

A. The following forms are included with in the *Bidding Requirements and Documents* section (Section 1) of these Contract Documents:

1. Bid Form
2. Bid Schedule
3. Bid Bond
4. Non-Collusion Affidavit
5. Statement of Qualifications
6. Work Plan

1.02 REQUIRED FOR AWARD

In order to be awarded the contract, the successful bid must be completely filled out and the following documents submitted within the time specified in the notice of award letter.

A. The following forms are included with in the *Contract Forms* section (Section 2) of these Contract Documents:

1. Contract
2. Payment Bond
3. Performance Bond
4. Business License (if a corporation, must be registered in Alaska)
5. Tax Compliance Certificate
6. Current Alaska General Contractor's license,
7. Certificate of Insurance.

1.03 FORMS REQUIRED FOR CONTRACT CLOSEOUT

After execution of the contract, and prior to application for final payment, the contractor must submit all required documents and comply with all closeout requirements as specified in the General Conditions and Special Provisions of these contract documents. The following closeout forms copies of which are included in the *Contract Forms* section (Section 2) of these Contract Documents:

1. Certificate of Completion
2. Contract Release

END OF SECTION

4.0 BID MODIFICATION

City of Kotzebue, Alaska
Swan Lake Harbor Facility Improvements

Modification Number: _____

Note: All revisions shall be made to the unadjusted bid amount(s)
Changes to the adjusted bid amounts will be computed by the Owner or Owner's Representative.

PAY ITEM NO.	PAY ITEM DESCRIPTION	REVISION TO UNIT BID PRICE +/-	REVISION TO BID AMOUNT +/-

TOTAL REVISION: $_____

_____
Name of Bidding Firm

_____
Responsible Party Signature **Date**

This form may be duplicated if additional pages are needed. **Page _____of_____**

5.0 BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,_____ as Principal, and _____as Surety, are hereby held and firmly bound unto _____ as owner in the penal sum of for the payment, of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Signed, this _____ day of _____, 2015.

The condition of the above obligation is such that whereas the Principal has submitted to a certain bid, attached hereto and hereby made a part hereof to enter into a contract in writing for:

Swan Lake Harbor Facility Improvements

NOW, THEREFORE,

(a) If said Bid shall be rejected or in the alternate,

(b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____
Principal

_____
Surety

By: _____ SEAL

6. NON-COLLUSION AFFIDAVIT

UNITED STATES OF AMERICA
STATE OF ALASKA

I, _____, of _____
being duly sworn, do depose and state:

That I, of the firm, association or corporation of which I am a member, a bidder on the agreement to be awarded by the City of Kotzebue, Alaska, for the:

Swan Lake Harbor Facility Improvements project

have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such agreement.

Signature _____

Subscribed and sworn to me this _____ of _____, 2015.

Notary Public

My Commission Expires _____

7. BIDDING & CONTRACT REQUIREMENTS STATEMENT OF QUALIFICATIONS

Swan Lake Harbor Facilities Improvement Project

This form will be basis of establishing the qualifications of the Contractor for undertaking the above construction project for the City of Kotzebue.

This questionnaire forms a part of the bid and failure to submit is a basis for rejection of the bid. If space for answering questions is insufficient, attachments are permitted.

GENERAL:

1. Legal Name and Address of Bidding Organization

_____

_____

_____

_____

2. Name, title, and telephone number of Bidder's representative for project:

_____

_____

_____

_____

3. Organization Status (Check One)

_____ Corporation _____ Partnership, or _____Individual

If Organization is a Corporation:

Date of Incorporation:

State in which Incorporated:

Principal Officers:

Name: Title: Date: Position:

_____

_____

_____

_____

_____

FINANCIAL

4. Have you ever failed to complete a contract due to insufficient resources?
Yes _____No _____ If yes, explain:

_____
_____
_____
_____
_____

5. Describe any arrangements you have made to finance this work:

_____
_____
_____
_____
_____

2. EQUIPMENT

1. Describe in detail the equipment you have available for this work.

Item	Quantity	Make	Model	Size/Capacity	Present/Market

2. Do you understand that if you are awarded this contract, you may be required to use some or all of the equipment listed above on the work covered by this contract? Yes _____No_____

3. Do you propose to purchase any equipment for use on this project? Yes _____ No _____

If yes, describe type, quantity, and approximate cost:

_____
_____
_____
_____
_____

4. Do you propose to rent any equipment for this work? Yes _____ No _____
If yes, describe type and quantity:

_____
_____
_____
_____
_____

5. Is your proposal based on firm offers for all materials necessary for this project?
Yes _____ No_____

6. Do you intend to subcontract any of the work contained in this project?
Yes _____ No_____ If yes, describe:

_____
_____
_____
_____

3. EXPERIENCE

1. Have you had previous construction contracts or subcontracts with the City of Kotzebue?

Yes _____ No _____ Describe the most recent contract, completion date, and scope of work:

_____
_____
_____
_____
_____

2. List, as an attachment to this questionnaire, other construction projects you have completed; the dates of completion, scope of work, and total contract amount, for each project completed in the past 12 months.

4. SUBCONTRACTORS / MATERIAL SUPPLIERS

List below all Subcontractors and major material suppliers. This listing does not fulfill the requirements of paragraph 6.13.1 of the GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT, award of a contract does not constitute approval of the Subcontractors.

	Name/Address	Subcontractor/Material Supplier	Specialty
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

Dated at _____, this _____ day of , 2015.

I hereby certify that the above statements are true and complete:

_____
Name of Contractor

_____
Signature Title of Person Signing

8.0 BID SCHEDULE

Base Bid Items					
Item No.	Work Description Written Unit or Lump Sum Price	Qty	Unit	Unit Bid Price	Total Price For Item
1	Mobilization / Demobilization _____Per Lump Sum	1	LS		
2	Construction Surveying _____Per Lump Sum	1	LS		
3	Erosion Control and Pollution Prevention Plan _____Per Lump Sum	1	LS		
4	Furnish and Install Float Landing Slabs _____Per Each	5	EA		
5	Furnish and Install Sheetpile Bulkhead. _____Per Lineal Foot	165	LF		
6	Furnish Steel Anchor Piles _____ Per Each	50	EA		
7	Install Steel Anchor Piles _____ Per Each	50	EA		
8	Furnish and Install Mooring Float Modules _____ Per Each	65	EA		
9	Furnish and Install Aluminum Transition Ramps _____ Per Each	5	EA		
10	Furnish Anchor Chain _____ Per Lineal Foot	5,000	LF		
11	Install Anchor Chain _____ Per Lineal Foot	5,000	LF		
12	Furnish Spare Parts _____ Per Lump Sum	1	LS		
13	Furnish/Install Electrical/Lighting Improvements -Harbor _____ Per Lump Sum	1	LS		
14	Furnish an Install Lighting on DOT Bridges _____ Per Lump Sum	1	LS		
SUBTOTAL BASE BID ITEMS 1-14 AMOUNT (Numbers):		$			

Additive Bid Items					
15	Furnish and Install Beach Sand _____Per Cubic Yard	2100	CY		
16	Furnish and Install Swim Area Barrier Anchor _____Per Each	2	EA		
17	Allowance for Value Added Alternatives _____ Per	1		$300,000.00	$300,000.00
	SUBTOTAL ADDITIVE BID ITEMS 15-17 AMOUNT (Numbers):	$			

A. SUBTOTAL BASE BID ITEMS 1-14 AMOUNT (Numbers): $_____

B. SUBTOTAL ADDITIVE BID ITEMS 15-17 AMOUNT (Numbers): $_____

C.TOTAL BID AMOUNT A+B (Numbers) $_____

(Words)_____

Section 2

Contract Forms

CITY OF KOTZEBUE
CONSTRUCTION CONTRACT

Swan Lake Harbor Facility Improvements

This CONTRACT ("Contract"), between the City of Kotzebue, herein called the City, acting by and through the Contracting Officer, and

_____
Company Name

_____
Company Address (Street or PO Box, City, State, Zip)

a/an ☐ Individual ☐Partnership ☐Joint Venture ☐Sole Proprietorship ☐Corporation incorporated under the laws of the State of _____, its successors and assigns, herein called the Contractor, is effective the date of the signature of the Contracting Officer on this document.

The Contractor, for and in consideration of the payment or payments herein specified and agreed to by the City, hereby covenants and agrees to furnish and deliver all the materials and to do and perform all the work and labor required in the construction of the above-referenced project as bid by the Contractor, which bid and prices named, together with the Contract Documents (as hereinafter defined) are made a part of this Contract and accepted as such. It is distinctly understood and agreed that no claim for additional work or materials, done or furnished by the Contractor and not specifically herein provided for, will be allowed by the City, nor shall the Contractor do any work or furnish any material not covered by this Contract, unless such work or materials is ordered in writing by the City. In no event shall the City be liable for any materials furnished or used, or for any work or labor done, unless the materials, work, or labor are required by the Contract or on written order furnished by the City. Any such work or materials which may be done or furnished by the Contractor without written order first being given shall be at the Contractor's own risk, cost, and expense and the Contractor hereby covenants and agrees to make no claim for compensation for work or materials done or furnished without such written order.

The bid amount accepted by the City is $_____. Notwithstanding the foregoing, payment under this Contract shall not exceed _____ dollars ($_____) for all base items, additional work, and change orders.

The Contractor further covenants and agrees that all materials shall be furnished and delivered and all work and labor shall be done and performed, in every respect, to the satisfaction of the City, on or before: _____ _____. It is expressly understood and agreed that in case of the failure on the part of the Contractor, for any reason, except with the written consent of the City, to complete the furnishing and delivery of materials and the doing and performance of the work before the aforesaid date, the City shall have the right to deduct from any money due or which may become due the Contractor, or if no money shall be due, the City shall have the right to recover _____ dollars ($_____) per day for each calendar day elapsing between the time stipulated for the completion and the actual date of completion in accordance with the terms hereof; such deductions be made, or sum to be recovered, not as a penalty but as liquidated damages.

The bonds given by the Contractor in the sum of $_____ Payment Bond, and $_____ Performance Bond, to secure the proper compliance with the terms and provisions of this Contract, are submitted herewith and made a part hereof.

The Contractor further covenants and agrees that the entire construction will be done under the administration of and to the complete satisfaction of the City subject to the inspection at all times and approval by any regulatory agency of the Local, State, or Federal Government of the United States of America, and in accordance with the laws of the

State of Alaska and the City of Kotzebue.

For purposes of this Contract, Contracting Officer means City Representative, Engineer, Owner's Representative or any other person designated by an officer of the City.

The Contractor is an independent contractor and not an employee or agent of the City.

Contract Documents shall have the meaning ascribed by the General Conditions of the Construction Contract, and include but are not limited to this Contract, associated Bid Documents and Contract Forms, the General Conditions of the Construction Contract, the Supplementary Conditions, and the following listed documents:

(1) Bid Schedule; (2) Special Provisions; (3) Technical Specifications, (4) Drawings, and (5) any Addendums to the Contract Documents issued during the bidding period.

IN WITNESS WHEREOF the parties hereto have executed this Contract and agree to its terms and conditions.

CONTRACTOR

_____
Company Name

_____
Signature of Authorized Company Representative

_____
Typed Name and Title

_____
Date

City of Kotzebue

_____
Signature of Contracting Officer

_____
Typed Name

_____
Date

ATTEST

_____
Agent, City of Kotzebue

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

_____
(Name of Company)

_____
(Name of Corporation)

a _____ , hereinafter called Principal and

_____
(Name of Surety)

hereinafter called Surety, are held and firmly bound unto _____

_____
(Name of Grantor)

_____
(Address of Grantor)

hereinafter called Owner, in the penal sum of
Dollars, $(_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 2015, a copy of which is hereto attached and made a part hereof for the procurement of:

_____
_____
_____

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each
(Numbers)
one of which shall be deemed an original, this the _____ day of _____,2015.

_____
Principal

ATTEST:_____ By_____
(Principal's Secretary)
(SEAL)

_____ _____
(Witness as to Principal) (Address)

_____ _____
(Address)

_____ _____
Surety

ATTEST:_____
(Surety's Secretary)
(SEAL)

_____ By_____
(Witness as to Surety) Attorney in Fact

_____ _____
(Address) (Address)

_____ _____

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the state where the PROJECT is located.

Payment Bond

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

_____
(Name of Company)

_____
(Name of Corporation)

a _____, hereinafter called Principal and

_____
(Name of Surety)

hereinafter called Surety, are held and firmly bound unto _____

_____
(Name of Grantor)

_____
(Address of Grantor)

hereinafter called Owner, in the penal sum of _____ Dollars, $(_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 2015, a copy of which is hereto attached and made a part hereof for the procurement of:

_____
_____
_____

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK

to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each
(Numbers)
one of which shall be deemed an original, this the _____ day of _____,2015.

_____
Principal

ATTEST:

_____ By _____
(Principal's Secretary)
(SEAL)

_____ _____
(Witness as to Principal) (Address)

_____ _____
(Address)

_____ _____
Surety

ATTEST:

_____
(Surety's Secretary)

(SEAL)

_____ By _____
(Witness as to Surety) Attorney in Fact

_____ _____
(Address) (Address)

_____ _____

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the state where the PROJECT is located.

City of Kotzebue
CONTRACTOR CERTIFICATE OF COMPLETION

PROJECT TITLE: **Swan Lake Harbor Facilities Improvements**

OWNER PROJECT NO. _____ CONTRACT NO. _____.

CONTRACTOR: _____

_____

This is to certify that I, _____, am a duly authorized official of the said CONTRACTOR working in the capacity of _____ _____, and in my official capacity representing said CONTRACTOR do hereby certify as follows:

1. The Work of the subject Contract above has been performed, and materials used and installed in every particular, in accordance with and in conformity to, the Contract Drawings and Specifications.
2. The Contract Work is now complete in all parts and requirements.
3. I understand that neither the determination by the Engineer-Architect that the work is complete nor the acceptance thereof by the Owner shall operate as a bar to claim against the Contractor under the terms of the guarantee provisions of the Contract Documents.
4. The Work to which this Certificate applies has been properly inspected and that Work is hereby declared to be complete in accordance with the Contract Documents.
5. The date of Completion is the date upon which all guarantees and warranties begin.
6. The Owner accepts the Project or specified area as described under "REMARKS," of the Project as complete and will assume full possession of the Project or specified area of the Project at_____ (time) on _____ (date).

CONTRACTOR

By: _____

_____
Title

Date: _____

CITY OF KOTZEBUE, OWNER

By: _____.
. Project Manager
Date: _____.

By: _____.
Contracting Officer
Date: _____.

REMARKS:

City of Kotzebue
CONTRACT RELEASE

The undersigned, _____ for itself, its successors in interest, assigns trustees, administrators, subcontractors, suppliers, and laborers do hereby release and forever discharge the CITY OF KOTZEBUE, ALASKA, a municipal corporation, from all actions, causes of actions, suits, controversies, claims, damages and demands of every kind and nature, mature or to mature in the future, for and by reason of any matter, thing or claim arising out of the following Contract:

Project Name: Swan Lake Harbor Facilities Improvements

Project Number: _____

Contract Number: _____

The undersigned also intends hereby to discharge the City of Kotzebue from all liability for any and all damages or injuries presently undiscovered or unanticipated. The undersign's intention hereby is to waive any right it may subsequently have to set aside this release under the doctrine of Witt V. Watkins, 579 P.2d 1065 (Alaska 1978).

The undersigned further agrees to defend, indemnify and hold harmless the City of Kotzebue against any claims, liens, or causes of action arising under or by virtue of this Contract, including, but not limited to, any claim that the undersigned, any successor in interest, assignee, trustee, administrator, subcontractor, supplier or laborer of the undersigned or any other person might make or claim that he could possibly make against the City of Kotzebue.

The undersigned certified that he has not assigned any amounts payable under this Contract to anyone.

The undersigned hereby acknowledges receipt of the amount of $_____ as full and final payment in consideration for all services, materials and labor rendered in connection with this Contract.

The undersigned hereby declares that the terms of this RELEASE have been completely read and are fully understood, and said terms are voluntarily accepted for the purpose of making a full and final release of any and all claims, disputed or otherwise, arising under or by virtue of this Contract.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 201____ .

_____
Company

_____
Signature

_____
Title

STATE OF ALASKA
THIRD JUDICIAL DISTRICT

THIS IS TO CERTIFY that on this _____ day of _____, 201__, before me, Notary Public in and for the State of Alaska, personally appeared _____ of _____ and acknowledged to me that he has read the foregoing RELEASE and knew the contents thereof to be true and correct to the best of his knowledge and belief, and that he signed the same freely and voluntarily for the uses and purposes therein mentioned, and that he was duly authorized to execute the foregoing document according to the Bylaws or by Resolution of said corporation.

WITNESS my hand and notarial seal this _____ day of _____, 201 ___.

_____
Notary Public in and for Alaska
My Commission expires_____

Section 3

General Conditions for Construction Contracts

Engineers Joint Documents Committee
Design and Construction Related Documents
Instructions and License Agreement

Instructions

Before you use any EJCDC document:

1. Read the License Agreement. You agree to it and are bound by its terms when you use the EJCDC document.

2. Make sure that you have the correct version for your word processing software.

How to Use:

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2. Similarly, your software may change the font specification if the font is not available in your system. It will choose a font that is close in appearance. In this event, the pagination may not match the control set.

3. If you modify the document, you must follow the instructions in the License Agreement about notification.

4. Also note the instruction in the License Agreement about the EJCDC copyright.

License Agreement

You should carefully read the following terms and conditions before using this document. Commencement of use of this document indicates your acceptance of these terms and conditions. If you do not agree to them, you should promptly return the materials to the vendor, and your money will be refunded.

The Engineers Joint Contract Documents Committee ("EJCDC") provides **EJCDC Design and Construction Related Documents** and licenses their use worldwide. You assume sole responsibility for the selection of specific documents or portions thereof to achieve your intended results, and for the installation, use, and results obtained from **EJCDC Design and Construction Related Documents**.

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2. Use **EJCDC Design and Construction Related Documents** in printed form for bona fide contract documents.

3. Copy **EJCDC Design and Construction Related Documents** into any machine readable or printed form for backup or modification purposes in support of your use of **EJCDC Design and Construction Related Documents**.

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Term:

The license is effective until terminated. You may terminate it at any time by destroying **EJCDC Design and Construction Related Documents** altogether with all copies, modifications and merged portions in any form. It will also terminate upon conditions set forth elsewhere in this Agreement or if you fail to comply with any term or condition of this Agreement. You agree upon such termination to destroy **EJCDC Design and Construction Related Documents** along with all copies, modifications and merged portions in any form.

Limited Warranty:
EJCDC warrants the CDs and diskettes on which **EJCDC Design and Construction Related Documents** is furnished to be free from defects in materials and workmanship under normal use for a period of ninety (90) days from the date of delivery to you as evidenced by a copy of your receipt.

There is no other warranty of any kind, either expressed or implied, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose. Some states do not allow the exclusion of implied warranties, so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

EJCDC does not warrant that the functions contained in **EJCDC Design and Construction Related Documents** will meet your requirements or that the operation of **EJCDC Design and Construction Related Documents** will be uninterrupted or error free.

Limitations of Remedies:
EJCDC's entire liability and your exclusive remedy shall be:

1. the replacement of any document not meeting EJCDC's "Limited Warranty" which is returned to EJCDC's selling agent with a copy of your receipt, or

2. if EJCDC's selling agent is unable to deliver a replacement CD or diskette which is free of defects in materials and workmanship, you may terminate this Agreement by returning EJCDC Document and your money will be refunded.

In no event will EJCDC be liable to you for any damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use or inability to use **EJCDC Design and Construction Related Documents** even if EJCDC has been advised of the possibility of such damages, or for any claim by any other party.

Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you.

General:
You may not sublicense, assign, or transfer this license except as expressly provided in this Agreement. Any attempt otherwise to sublicense, assign, or transfer any of the rights, duties, or obligations hereunder is void.

This Agreement shall be governed by the laws of the State of Virginia. Should you have any questions concerning this Agreement, you may contact EJCDC by writing to:

Arthur Schwartz, Esq.
General Counsel
National Society of Professional Engineers
1420 King Street
Alexandria, VA 22314

Phone: (703) 684-2845
Fax: (703) 836-4875
e-mail: aschwartz@nspe.org

You acknowledge that you have read this agreement, understand it and agree to be bound by its terms and conditions. You further agree that it is the complete and exclusive statement of the agreement between us which supersedes any proposal or prior agreement, oral or written, and any other communications between us relating to the subject matter of this agreement.

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by

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Endorsed by

CONSTRUCTION SPECIFICATIONS INSTITUTE

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.

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. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

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

6. *Bidder*—The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*—A document recommended by Engineer 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, issued on or after the Effective Date of the Agreement.

10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

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12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*—See Paragraph 11.01 for definition.

17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

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

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

21. *General Requirements*—Sections of Division 1 of the Specifications.

22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

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

25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

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27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*—A written notice given 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 under the Contract Documents.

29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*—Polychlorinated biphenyls.

31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *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.

33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.

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

38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

39. *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.

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40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

41. *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 for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

43. *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 at the Site.

44. *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.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.

47. *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 Subcontractor.

48. *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 those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

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

50. *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, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

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addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F 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 Paragraph 9.09 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 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

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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. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

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. 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 Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *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 Agreement 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 Agreement. 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 Agreement, whichever date is earlier.

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2.04 *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 the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), 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 Documents;

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.

2.06 *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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *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 2.05.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

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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 component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, 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. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, 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, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement 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, 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 Contract Documents. 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 Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

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1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, 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) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

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 Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

   a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); 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 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

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3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier 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

2. 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.

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.

3.06 *Electronic Data*

A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *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. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the

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Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

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 the Work is to be performed 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.

4.02 *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 contiguous to the Site; and

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited 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. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed 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 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

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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 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition 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 meet any one or more of the categories described in Paragraph 4.03.A; and

   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 Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

   a. Contractor knew of the existence of such conditions at the time Contractor made a final 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

   b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

   c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other

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professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous 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 shall not be responsible for 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 such information and data;

   b. locating all Underground Facilities shown or indicated in the Contract Documents;

   c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and

   d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, 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 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price

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or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *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.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

B. *Limited 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. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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 any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by

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Paragraph 6.16.A); and (iii) 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 4.06.E.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. 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, either party may make a Claim therefor as provided in Paragraph 10.05.

F. 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. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. 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: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. 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 a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. 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 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds 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 each bond.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, 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 requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

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B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

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

D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.

E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which 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:

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

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

   a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

   b. by any other person for any other reason;

5. 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; and

6. 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.

B. The policies of insurance required by this Paragraph 5.04 shall:

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1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and 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;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

6. include completed operations coverage:

    a. Such insurance shall remain in effect for two years after final payment.

    b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, 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.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full 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:

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1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

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, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.

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

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property

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insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies 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 of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their 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 Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (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 as trustee 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 utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.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

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against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, 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. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

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ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *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. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

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.

6.02 *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. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *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.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, 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.

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6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 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 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "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 specification or description 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 or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion 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, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, 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; and

3) it has a proven record of performance and availability of responsive service.

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.

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2. *Substitute Items:*

   a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

   b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

   c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.

   d. 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:

      1) shall certify that the proposed substitute item will:

         a) perform adequately the functions and achieve the results called for by the general design,

         b) be similar in substance to that specified, and

         c) be suited to the same use as that specified;

      2) will state:

         a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,

         b) 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

         c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

      3) will identify:

         a) all variations of the proposed substitute item from that specified, and

         b) available engineering, sales, maintenance, repair, and replacement services; and

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4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. 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.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or

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other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. 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 any right of Owner or Engineer to reject defective Work.

C. 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. 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 moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. 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.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (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 such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

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6.07 *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.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, 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 opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *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 knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all

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court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. 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 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 by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other 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

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shall remove from the Site 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 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 property to stresses or pressures that will endanger it.

6.12 *Record Documents*

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

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. 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, 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 owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

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.

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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 6.13.A.2 or 6.13.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 (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 for protection of the Work 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 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *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.

6.15 *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.

6.16 *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.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

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1. *Shop Drawings:*

    a. Submit number of copies specified in the General Requirements.

    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 6.17.D.

2. *Samples:*

    a. Submit number of Samples specified in the Specifications.

    b. 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 6.17.D.

B. 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. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

    a. reviewed and coordinated each 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 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 and approval of that 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 both a written communication separate from the Shop

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Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

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 (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval 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 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

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.

6.18 *Continuing the Work*

A. 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, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *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 representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

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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 or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. 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 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 6.20.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,

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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 6.20.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.

6.21 *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 law.

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, Shop Drawings 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 6.21, 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 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

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ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, 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.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

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7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.

C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

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

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

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8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *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.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *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.

8.12 *Compliance with Safety Program*

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 pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *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 Documents.

9.02 *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

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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 9.09. 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.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. 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.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which 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. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

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B. In connection with 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, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. 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 Paragraph 10.05.

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

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents 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.

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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 14.07.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 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *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 as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

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10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. 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; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *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.

10.05 *Claims*

A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The

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opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part;

2. approve the Claim; or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs 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 11.01.B, 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, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on

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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 11.01.

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.

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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 5.06.D), 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 telegrams, long distance telephone calls, telephone 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 Contractor is required by the Contract Documents to purchase and maintain.

B. *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 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which 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 Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work 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 or when a Claim for an 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 12.01.C.

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D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, 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.

11.02 *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:*

1. Contractor agrees that:

a. 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

b. 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:*

1. 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.

11.03 *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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

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.

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D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 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; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that Contractor 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 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for 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, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* 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 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

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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 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

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 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, 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 Price or the Contract Times, or both. 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.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the

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control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is 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 described in this Paragraph 12.03.C.

D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests 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.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

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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 and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. 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.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, 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, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, 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 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 Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. 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, Contractor may make a Claim therefor as provided in Paragraph 10.05.

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13.05 *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, 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.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. 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 removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *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 land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or

2. correct such defective Work; or

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 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. 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

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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) will be paid by Contractor.

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 13.07, 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 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. 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) 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 pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *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 in accordance with Paragraph 13.06.A, 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, 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 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and

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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 (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) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. 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 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A 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.

14.02 *Progress Payments*

A. *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 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

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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.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, 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 9.07, 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 Documents; 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

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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 moneys 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 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. 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;

c. there are other items entitling Owner to a set-off against the amount recommended; or

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d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action 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, when Contractor remedies the reasons for such action.

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 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *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 (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

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 tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities

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pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. 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 tentative list.

14.05 *Partial Utilization*

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. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and 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 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and 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 14.04 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 5.10 regarding property insurance.

14.06 *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 is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

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14.07 *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, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;

   b. consent of the surety, if any, to final payment;

   c. a list of all Claims against Owner that Contractor believes are unsettled; and

   d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) 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.

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 Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. 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 14.09. 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. *Payment Becomes Due:*

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1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *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 notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

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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 established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. 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

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.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 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) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed 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.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. 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. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

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F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *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;

3. 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) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) 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 15.03.

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 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 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.

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ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *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 to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents 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.

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17.03 *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 Documents. 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.

17.04 *Survival of Obligations*

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

17.05 *Controlling Law*

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

17.06 *Headings*

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

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Section 4

Special Provisions

SECTION 4
SPECIAL PROVISIONS
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SECTION 4
SPECIAL PROVISIONS

4.01 General Statement

The Special Provisions set forth conditions and requirements unique to this Project and are supplemental to, and supersede, the City of Kotzebue General Conditions of the Construction Contract.

It shall be the responsibility of the Bidder to prepare his/her bid so all materials and/or different arrangements of connections or fittings shall harmoniously conform with the intent of the Contract Drawings, City of Kotzebue General Conditions of the Construction Contract and the Special Provisions.

4.02 Scope of Work

The Scope of Work: for this contract encompasses furnishing, installing and providing all materials, labor and equipment necessary to construct a new small boat harbor in Swan Lake. The work includes furnishing and installing a new float system, a chain and driven pile anchor float restraint system, a sheet pile bulkhead, and other work. The work also includes electrical and lighting for the harbor.

4.03 Value Added (VA) Alternatives

a. Alternatives with Increased Cost

The City will consider modifications to the design and or details which will enhance the performance, reduce the maintenance, or facilitate operations of the Harbor while meeting the design criteria and intent. A stipend of up to $300,000 is budgeted in the contract to facilitate implementation of approved VA Alternatives. This may include modifications to the floats, anchoring system and bulkhead. Modifications to general layouts will not be permitted. Payments from the budgeted stipend Bid Item will not be made unless the City adopts a Proposed VA Alternative. The City may consider VA Alternatives in excess of the $300,000 stipend.

b. Cost Saving Alternatives

The Contractor may propose cost saving alternatives for approval. Savings shall generally be shared equally between the Contractor and City.

c. Submission of Value Added (VA) Proposals.

Contractor is encouraged to submit VA Alternatives. Questions may be submitted on these during Bidding; however, the Contract Bid Schedule items shall not include cost for value added proposals. Value Added Alternatives will be reviewed with the lowest responsible bidder Contractor as a part of a pre-award conference to review the bid, scope of work and contract to assure full understanding between the bidder and City. Mutually agreed to VA Alternatives will be added to the Contract.

4.04 Time of Completion

All work shall be completed in accordance with the Contract Documents by **August 20, 2016.**

- Contractor shall submit a detailed Work Plan to the Owner's Representative describing proposed schedule, sequencing, and methods to accomplish the Work while meeting the specified criteria. The Updated Work Plan must be submitted within 10 days after Notice To Proceed (NTP) is issued and prior to beginning Work.
- Substantial project completion shall occur on or before **August 6, 2016**. *Substantial completion* is defined as all Work completed to make all of the docks available for public use in accordance with the contract documents, except final grading, final inspection and associated repairs/corrections.
- Final project completion shall occur on or before **August 20, 2016** *Final project completion* is defined as all Work completed. This includes repairs/correction items identified at Substantial completion. If any additional repairs are required, the Contractor shall make these repairs immediately

upon notification and prior to final application for payment.

4.05 Liquidated Damages

Liquidated damages will be assessed in the sum of **$1,500 (one-thousand-five-hundred dollars) for each calendar day** after the completion date during which the Project remains substantially incomplete for those items scheduled for completion as noted above.

Substantial Completion: Substantial completion shall be defined as the stage in the progress of the work when the work is sufficiently complete in accordance with the Contract Documents so the Owner (City of Kotzebue) can occupy or use the facilities, or that which is the subject of the contract, for its intended use.

The Contractor acknowledges that the daily amount of the liquidated damages is not a penalty but rather is a reimbursement for damages that the Owner will sustain by reason of delayed completion. The Contractor further acknowledges that the daily amount of liquidated damages is a reasonable alternative to the complex calculations that would otherwise be necessary to determine such damages.

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the Owner of any of its rights under the Contract.

4.06 Special Site Conditions

The project location is sited within a constricted harbor basin. The contractor will closely coordinate all work with the Engineer and the City. The Contractor shall provide the City with 24 hour advance Notice of work areas within the Harbor area for the purpose of moving boats that may impact work activities. The City of Kotzebue will provide notification of boat owners and subsequent movement/relocation of existing boats, which may be necessary to complete the Work. **Contractor shall provide access to boaters for landing and anchoring on the West (Ted Stevens) Shoreline**.

The Contractor shall make his/her own arrangements for areas and facilities needed for storage of materials, supplies and equipment, parking and other activities. Snow removal, security, and fencing for the provided staging area shall be the sole responsibility of the Contractor. The Contractor shall hold the Owner harmless from all claims or complaints arising from the use of such areas. Public streets in or outside this project will not be used for any storage activities (equipment and materials) and/or exclusive vehicle parking without prior written approval from the Engineer.

Hours of Work shall be limited to 7am to 9pm unless approved by the City.

4.07 Hazardous Waste Generation

Every effort to minimize or eliminate the generation of hazardous waste shall be used by the Contractor in the performance of the work of this Contract in accordance with the Section entitled Temporary Erosion and Pollution Control. Unless there is no substitute, no hazardous materials shall be used in the performance of the work of this Contract. The Contractor will take all necessary precaution to avoid to release of petroleum based or other hazardous materials into the water and surrounding environment. The Contractor will be held responsible for any and all such spills and shall be liable for all associated clean-up work at no additional cost to the City.

4.08 Authority of the Engineer

The Engineer shall be the Owner's representative and shall observe the work in progress on behalf of the Owner and will be identified at the time the Notice to Proceed is issued. The Engineer shall not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the work. Visits and observations made by the Engineer shall not relieve the Contractor of his obligation to conduct comprehensive inspections of the work and to furnish materials and perform acceptable work, and to provide adequate safety precautions, in conformance with the intent of the Contract. The Contractor shall at all times carry out and fulfill the written instructions and written directions of the Engineer regarding the Contract Documents.

The Engineer shall in all cases make determinations on any and all questions which may arise concerning the quality, quantity, and acceptability of materials furnished, the Work performed, the rate of progress of the Work and the interpretation of Contract Documents.

4.09 Coordination and Schedule

The Contractor shall submit to the Engineer a schedule as required in General Conditions, Article 6.04, Anticipated Schedules and SECTION 013300 - SUBMITTALS. Updated schedules shall be submitted with Progress Payment requests.

If requested by the Engineer, and at no additional cost to the City, the Contractor's designated field Superintendent will be required to attend meetings of the City of Kotzebue City Council, or other meeting where the public is invited to attend. The purpose of attendance will be to inform the City and public members the current status and scheduling of events concerning the project.

A pre-construction conference will be held in Kotzebue following the Notice To Proceed. At that time the contractors anticipated work plan and schedule, shop drawing submittals, coordination with the Engineer and Harbormaster, safety requirements and procedures, dispute resolution, changes and/or modifications and other administrative and construction related items will be discussed.

4.10 Site Preservation, Restoration, Cleanup and Environmental Reporting

The Contractor shall be solely responsible for damage to public or private property caused by construction operations. The contractor shall take all precautions necessary to control dust. Contractor shall notify the City of any claims of damage, and shall clean and restore any property so damaged at the sole expense of the Contractor. All spills or releases of any oil or hazardous substance shall be reported to the appropriate governmental agency as well as notice to the City. Contractors shall be responsible for all associated clean-up costs and fines.

At all times during the work, keep the premises clean and orderly. Upon completion of the work, repair all damage caused by equipment and leave the Project free of rubbish or excess materials of any kind.

4.11 Permits

The Contractor will adhere to the provisions and stipulations set forth in all applicable permits. The following permit documents are included in Appendix B of the Contract Documents for reference and the final permits will be considered part of the Contract Documents:

4.12 Payment

Payments shall be in accordance with General Conditions, Payments to Contractor and Completion. All invoices for payment must include project name, project number, and contract number. If these are not included payment may be delayed. All invoices must reflect the information listed in the table below. Example:

Item #	Item	Unit	Unit Price	Plan		Previously Invoiced		This Invoice		Total To Date	
				Quantity	$ Amt	Quantity	$ Amt	Quantity	$ Amt	Quantity	$ Amt
1	Fill	CY	$5.00	100	$500	20	$100	10	$50	30	$150

A 5% retainage from each Payment will held pending Final Payment.

Final Payment: Final payment will be made after all requirements for final completion as specified above and in Section 01700—*Contract Closeout* have been met.

4.13 Public Convenience and Access

The Contractor shall take all precautions necessary and install protective barriers, warning buoys, and/or warning signs to ensure public safety and continued access to adjacent areas to the project site.

4.14 Street Closures

If required, street closures and traffic control measures shall be made to offer the least possible interference to vehicular traffic. A Traffic Control Plan shall be delivered to the Engineer five (5) working days in advance of the closure or partial closure. Placement and design of signs, barricades and other devices to be furnished and used by the Contractor shall conform to the standards specified in the latest edition of the "Manual of Uniform Traffic Control Devices."

4.15 Utilities

Whenever the Contract Documents require permanent connections to be made to utility lines, the Contractor shall be responsible for making the connection to the utility line, or have the Utility Company make the connection, at the point(s) indicated on the Drawings. The Contractor shall be responsible for making all necessary applications to the Utility Company, for paying all fees and for performing any work associated with making the connections which is not performed by the Utility Company. The Contractor shall pay all costs for utility service prior to the Date of Substantial Completion.

The Contractor shall provide and pay all costs for temporary utilities including gas, water, telephone and electricity necessary to perform the work. The Contractor shall pay for these costs during periods of suspensions of work. The Owner does not represent that utility service is available to the site.

The Contractor shall provide and maintain temporary toilets and shall furnish drinking water, as required.

4.16 Shop Drawings and Submittals

The Contractor shall submit two copies of Shop Drawings required by the contract for review. One copy shall be produced on reproducible media such as vellum and one universal electronic media (e.g., such as, pdf, latest version of AutoCAD, etc.). The other copy may be of standard paper or bond materials. The Engineer will mark the reproducible copy in ink which will be returned to the Contractor for subsequent copying and distribution by the Contractor to suppliers and fabricators. Where feasible and legible in the opinion of the Engineer, shop drawings may be submitted on "reduced-size" media which is no greater in size than 11-inches by 17-inches to facilitate copying and expediting of marked shop drawings.

4.17 Superintendence by Contractor

The proposed Superintendent shall have documented experience on at least three similar projects. The Contractor shall submit a resume, statement of qualifications and reference names and telephone numbers for the proposed Superintendent for approval by the Engineer. Lack of suitable qualifying experience will be cause for rejection of the proposed Superintendent.

The approved Superintendent shall not be replaced without written approval of the Engineer. The Superintendent shall be on site (i.e. @ Kotzebue) when construction work is in progress.

4.18 Extensions Due to Delays and Suspension of Work

Kotzebue is located in a region that has a high potential for adverse winter weather conditions. It is possible that the work may be suspended due to adverse weather conditions. If this should occur, the Contractor may request a suspension of the work. Construction beyond the contract completion date as described in the section entitled, Time of Completion, will not be allowed. Where the work is suspended due to adverse weather conditions, the Contractor shall not be entitled to additional compensation. Bids shall be premised on the specified contract completion dates as defined in these documents.

If the Contractor requests and is granted a suspension in the work, the construction site will be left in a condition that does not impede the safety of the general public. Cautionary signs and barricades will be erected as required. The Contractor shall be solely responsible for the protection of all stored materials

(not incorporated into the work) against heavy snow loads and snow removal operations.

4.19 Operation and Maintenance Manuals

Along with the final Record Documents, the Contractor shall provide to the Engineer prior to the pre-final inspection three (3) sets of Operations and Maintenance Manuals for all items of material and equipment as required by the Technical Specifications. In addition to any requirements in the Technical Specifications the Manuals shall contain an Index; a key plan, which graphically locates items of equipment; a list of manufacturers, suppliers and distributors with addresses and telephone numbers; and a list of local representatives with addresses and telephone numbers.

4.20 Responsibility for Damages

The Contractor shall be responsible for all damages to property, injury to persons, and loss, expense, inconvenience, and delay that may be caused by or that may result from any act, omission, or neglect of the Contractor, his Subcontractors, or his employees in the performance of the Work.
Minimum Insurance Limits:

- General Liability $1,000,000
- Automotive Liability $1,000,000
- United States Harbor Workers & Compensation Coverage
- Provide Additional Insured Endorsement for City and Engineer.

It is specifically understood between the parties executing the Contract that the Contract Documents do not make anyone a third-party beneficiary, nor does the Contract authorize anyone not a party to maintain a lawsuit for personal injuries or property damage.

4.21 Repair of Damages Caused by Contractor

All damage and injury to property that is caused by or that results from the carrying out of the Work, or from any act, omission, or neglect of the Contractor, his Subcontractors, or his employees, shall promptly be remedied by the Contractor either by the repairing, rebuilding, or replacing of the property damaged or in some other manner satisfactory to the owner of such property. In case of failure on the part of the Contractor to promptly and satisfactorily remedy such damage or injury, the City of Kotzebue may proceed to repair, rebuild, or replace such property as required and the cost thereof will be deducted from any monies due or which may become due the Contractor.

In applying the above provisions, the repairing, rebuilding, or replacing of damaged property shall be understood to include the providing of any temporary facilities that may be needed to maintain normal service until the required repairing , rebuilding or replacing is accomplished.

4.22 Use of Completed or Uncompleted Portions

The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, prior to the date specified for completion, and such action and use shall not be considered an acceptance of that Work. If such use by the Owner causes additional expense to the Contractor and/or delay in the Work, the Contractor may be entitled to additional compensation and/or an extension of time. Claims for additional compensation or time extension shall follow the procedures set forth in General Conditions, Article 15, Claims and Disputes. The Owner shall be responsible for routine maintenance or damages caused by its use of such portions of the Work.

4.23 Dispute Resolution

The court venue shall be Second Judicial district, Kotzebue Alaska for dispute resolution.

4.23 Order of Award of Alternative Bids

Award will be based on the sum of the base items as shown in the Bid Schedule **including all Alternative bid items**. At the time of Award, the City may choose to include or deduct the Additive Alternate items from the Contract.

END OF SECTION

Section 5

Technical Specifications

TECHNICAL SPECIFICATIONS
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SECTION 013300

SUBMITTALS

PART 1 - GENERAL

1. 1 SECTION INCLUDES

A. Submittal procedures for all Contractor Submittals including but not limited to administrative Submittals, shop drawings and product data, samples, quality control, construction permits, manufacturer's instructions, construction photographs, and contract close-out Submittals.

1.2 DEFINITIONS

Work-related Submittals of this Section are categorized for convenience as follows:

A. Product Data: Product Data include standard printed information on materials, products and systems not specially prepared for the Work, other than designation of selections from among available choices printed therein.

B. Shop Drawings: Shop Drawings include specially prepared technical data for the Work, including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form for general application to other contracts.

C. Samples: Samples include both fabricated and unfabricated physical examples of materials, products and units of Work; both as complete units and as smaller portions of units of Work; either for limited visual inspection or (where indicated) for more detailed testing and analysis.

D. Quality Control: Quality Control Submittals include certificates of compliance, qualifications to perform work, successful testing, field samples, test reports, inspections and other documentation to substantiate the quality of work.

E. Miscellaneous Submittals: Miscellaneous Submittals related directly to the Work (non-administrative) include construction permits, warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical Work records, copies of industry standards, records, drawings, field measurement data, operation and maintenance materials, overrun stock; and similar information, devices and materials applicable to the Work and not processed as Product Data, Shop Drawings, Samples, or Quality Control Submittals.

1.3 GENERAL SUBMITTAL PROCEDURES

A. Shop drawings, product data, samples and similar Submittals are not Contract Documents. The purpose of their Submittal is to demonstrate for those portions of the Work for which Submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.

B. Unless otherwise noted provide one hard copy and an electronic copy in PDF format of all submittals. The electronic copy shall have a descriptive file name that identifies the project and submittal subject.

C. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Engineer's approval of shop drawings, product data, samples, or similar Submittals unless the Contractor has specifically informed the Engineer in writing of such deviation at the time of Submittal and the Engineer has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in shop drawings, product data, samples or similar Submittals by the Engineer's approval thereof.

D. The Contractor shall perform no portion of the Work requiring Submittal and review of shop drawings, product data, samples or similar Submittals until the respective Submittal has been approved by the Engineer. Such work shall be in accordance with approved Submittals.

E. Direct inquiries regarding procedure, purpose, or extent of Submittal to the Engineer.

F. Required Submittals are specified herein. Additional Submittals may be established during the pre-construction conference.

G. At any time, the City may authorize changes to procedures and requirements for Submittals, as necessary to accomplish specific purpose of each Submittal. Such authorization will be by Field Order or Request for Information.

H. The Contractor shall schedule and make submissions in accordance with requirements of individual Specification sections and in such sequence as to cause no delay in Work or in work of other contractors.

I. Identify variations from the Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

J. The Contractor shall provide a log of all submittals at the preconstruction conference. Contractor shall keep the submittal log up to date with all submittals as they are sent for approval.

K. Identification of Submittals:

1. All Submittals shall be transmitted with a pre-printed letter of transmittal form (attached) or other form approved by the Engineer, dated and signed, with the job title and Sections(s) of the Specification requiring the Submittal clearly indicated.

2. By signing the Submittal, the Contractor shall certify that review, verification of products required, field dimensions and coordination of information is in accordance with the Work as specified in the Contract Documents.

3. Number each transmittal as in the following example: 027000-01-02

    a. "027000" indicates Specification section reference.

    b. "01" indicates Submittal number or reference paragraph for the particular Specification section.

    c. "02" indicates number of times the particular Submittal has been submitted (i.e., revisions).

4. Show date of submission and dates of previous submissions.

5. Submit only information pertaining to one Specification section on each transmittal form.

6. Show Project title and Owner’s contract identification and contract number.

7. Show names of Contractor, Subcontractor or Supplier, and manufacturer as appropriate.

L. Schedule Submittals to expedite the project and deliver to Owner.

M. Coordinate submission of related items.

N. Incomplete Submittal Submissions:

1. At Engineer’s sole discretion, Engineer will either (a) return the entire Submittal for Contractor's revision/correction and resubmission, or (b) retain portions of the Submittal and request submission/resubmission of specified items or as noted thereon.

2. Submittals which do not clearly bear Contractor's specific written indication of Contractor review and approval of Submittal or which are transmitted with an unsigned or uncertified submission form or as may otherwise be required under Contract Documents, will be

returned to Contractor unreviewed for resubmission in accordance with Contract Documents.

3. Delays, resequencing, or other impact to Work resulting from Contractor's submission of unchecked or unreviewed, incomplete, inaccurate or erroneous, or nonconforming Submittals, which will require Contractor's resubmission of a Submittal for Engineer's review, shall not constitute a basis of claim for adjustment in Contract Price or Contract Times.

O. Nonspecified Submissions: Submissions not required under these Contract Documents and not shown on submissions list will not be reviewed and will be returned to Contractor.

P. Disposition of Submittals, Except Shop Drawings and Samples: Engineer will review, stamp, and indicate requirements for resubmission or acceptance on Submittal as follows:

1. Accepted: Contractor may proceed to perform Submittal related Work.

2. Rejected as Noted (Revise/Correct or Develop Replacement and Resubmit):

Q. In the event of conflict between this Section and the General Conditions, the more restrictive requirements shall apply.

R. Promptly identify variation from contract documents and product or system limitations which may be detrimental to successful performance or the completion of work.

S. Distribute copies of reviewed Submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

T. Contractor’s Review

1. Before submission to Engineer, the Contractor shall review all Submittals and verify all dimensions, quantities, field measurements, field construction criteria, materials, catalog numbers and similar data, satisfy himself that adequate information is contained in the Submittal to fulfill the purpose intended, and shall check and coordinate the Submittal data with the requirements of the Work and the Contract Documents.

2. All calculations and details shall be checked and signed off before being submitted for review. The Contractor is ultimately responsible for the correctness of the calculations and resulting drawings generated by himself or a subcontractor.

3. After the above review, Contractor shall affix a dated notation (rubber or plastic inking stamp) over his signature to the effect that the above action has been taken and the Submittal is approved by him. Unsigned Submittals will be returned unapproved.

U. Engineer’s Review

4. The Engineer will review and approve Shop Drawings, Project Data and Samples with reasonable promptness so as to cause no delay, but only for conformance with the design concept of the Project and with the information given in the Contract Documents. The approval of a separate item shall not indicate approval of an assembly in which the item functions.

5. When professional certification of performance criteria for materials, systems or equipment is required by the Contract Documents, the Engineer shall be entitled to rely upon the accuracy and completeness of such calculations and certifications. When a design professional or third party designer is required to provide specific design services for a portion of the Work, the designer shall be responsible for the adequacy of the design and the Engineer will rely upon such certification or notification by the designer that performed the Work.

1.4 ADMINISTRATIVE SUBMITTALS

A. Administrative Submittals shall be provided to the Engineer. Administrative Submittals include Submittals required by Contract Documents that are not Shop Drawings or Samples, or that do not reflect quality of product or method of construction. Administrative Submittals may include, but will not be limited to, those Submittals identified below.

1. Applications for Payment: Meet requirements of *General Conditions* and Measurement and Payment sections of the individual Specification sections.

2. Construction Progress Schedules

   a. Initial Progress Schedule: Submit initial progress schedule for review within five (5) days after date of Notice to Proceed. At a minimum the Progress Schedule shall include two bar charts or preliminary network analysis diagrams as follows:

      1). 30-Day Plan: Show major initial activities including, but not limited to, mobilization, Submittals for early product procurement and long lead time items, initial site work, and other activities anticipated in the first 30-day period after notice to proceed.

      2). Project Overview Plan: Show major components of the Work and the sequence relations between major components and subdivisions of major components. The chart shall indicate the relationship and time frames in which each phase will be substantially completed and placed into service in accordance with the Project Parts and Milestones. Sufficient detail shall be included for the identification of subdivisions of major components.

   b. Adjust, revise and resubmit the Progress Schedule as required. Submit revised with each Application for Payment, identifying changes since previous version.

   c. Weekly Schedule Submissions: Include overall percent complete, projected and actual; and percent completion progress for each listed activity

   d. The Schedule shall be a detailed graphic representation of all activities that affect the progress of the Work. The level of detail shall be such that no activity shall have a duration longer than fifteen (15) calendar days, except for procurement and General Conditions activities or except as otherwise approved by the Engineer.

   e. For all major equipment and materials fabricated or supplied for this Project, the schedule shall show a sequence of activities including:

      1). Shop fabrication and delivery

      2). Erection or installation

      3). Testing of equipment and materials

      4). Required dates of completion

      5). Procurement

   f. The schedule shall indicate an early completion date for each Part of the Project that is no later than the required completion date(s) specified in the *Special Provisions*. All activity durations shall be given in calendar days.

   g. The Construction network shall be in a bar chart timeline format with a clearly identified schedule.

   h. Indicate the beginning and completion date of each line item.

   i. Indicate estimated percent of completion for each item of work at each submission.

3. Schedule of Submittals:

   a. Within 5 days of contract award, prepare and submit (hardcopy and electronic format) a preliminary list of Submittals that identifies each Submittal required, the planned

date of Submittal and the required date of return to maintain the construction schedule.

b. Allow 5 working days of review by the Engineer from the time of receipt of the Submittal to the time of mailing of the Submittal by the Engineer.

c. Submit to Engineer weekly (a) updated list if changes have occurred, otherwise submit a written communication confirming existing list, and (b) adjusted submissions reflecting submission activity planned for forthcoming time period. Coordinate with progress schedule updates.

4. Submittals Required by Laws and Regulations and Governing Agencies:

a. Submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.

b. Transmit to Engineer for Owner's records one copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and any governing agency.

5. Proposed Product List: Within 30 days from execution of the agreement between Owner and Contractor, submit a complete list of products proposed for use, with name of manufacturer, trade name, and model number of each product. For products specified only by reference standards, give manufacturer, trade names, model or catalog number, and reference standards.

1.5 SHOP DRAWINGS AND PRODUCT DATA

Unless otherwise noted, for each item below, Submittals shall be submitted to the engineer. See section 1.3 B. for submittal procedures.

A. Shop Drawings: Reproducible will be returned with approval affixed and any changes marked up.

B. Product Data: In manufacturer's brochures and catalogs, items being proposed for use are to be clearly marked. If not marked, this material will be returned for Resubmittal. An electronic copy will be returned to Contractor approved or with comments.

C. Substitute and "Or-Equal" Items: The Engineer's approval of Shop Drawings or Product Data does not relieve the Contractor of responsibility for any deviation from the Contract Documents unless the Contractor has informed the Engineer in writing of the specific deviation and the Engineer has approved the specific deviation in writing. Errors and omissions that may occur in the Shop Drawings are the responsibility of the Contractor. The Contractor is not relieved of this responsibility by the Engineer's approval of the Shop Drawings. Product Data for equipment approved by the Engineer shall not in any case supersede the Contract Documents. The approval by the Engineer shall not relieve the Contractor from responsibility to correct deviation from Drawings or Specifications, unless he has in writing called the Engineer's attention to such deviations at the time of submission and secured the Engineer's written approval, nor shall it relieve him from responsibility to correct errors of any sort in the items submitted.

D. Submit Shop Drawings and Product Data to Engineer as specifically required by individual Specification sections for equipment and materials to be furnished under these Contract Documents.

E. Collect required data into one Submittal for each unit of Work or system; and mark each copy to show which choices and options are applicable to Work. Include manufacturer's standard printed recommendations for application of labels and seals, notation of field measurements which have been checked, and special coordination requirements.

F. Identify and indicate:

1. Applicable products, models, options, and other data. Supplement manufacturer's standard data to provide all information unique to this project.
2. Pertinent drawing sheet(s) and detail number(s), products, units and assemblies, and system or equipment identification or tag numbers.
3. Critical field dimensions and relationships to other critical features of Work.
4. Each deviation or variation from Contract Documents.

G. Resubmissions:

1. Clearly identify each correction or change made.
2. Shop Drawings:
   a. Revise initial drawings as required and resubmit as specified for initial Submittal.
   b. Indicate on drawings any changes which have been made other than those requested by Engineer.
3. Indicate on the drawings a sequential number or letter which corresponds to the revision number of the drawing.

H. Preparation:

1. Format: Whenever possible, schedule for and combine Shop Drawings and Product Data required for submission in each Specification section or division into a single Submittal package. Also combine product data for like items into a single Submittal package.
2. Present in a clear and thorough manner and of sufficient detail to show kind, size, arrangement, and function of components, materials, and devices and compliance with Contract Documents. Identify details by reference to sheet and detail, and schedule shown on Drawings.
4. Product Data: Clearly mark each copy to identify pertinent products or models and show performance characteristics and capacities, dimensions and clearances required, diagrams and controls, and external connections, anchorages, and supports required.
5. Equipment and Component Titles: Identical to title shown on Drawings.
6. Manufacturer's standard schematic drawings and diagrams as follows:
   a. Modify to delete information that is not applicable to Work.
   b. Supplement standard information to provide information specifically applicable to Work.

I. Disposition: Engineer will review, mark, and stamp Shop Drawings and Product Data as appropriate and distribute marked-up copies as noted.

1. Approved as Submitted (for incorporation in Work):

   Contractor may begin to implement (a) activities to incorporate specific product(s) or (b) Work covered by Shop Drawing and Product Data as shown on approved Shop Drawing and Product Data.

2. Approved as Noted (for incorporation in Work):

   Contractor may begin to implement (a) activities to incorporate product(s) or (b1) Work covered by Shop Drawing and Product Data and in accordance with Engineer's notations on Shop Drawing and Product Data.

   d. Revise copies of Submittal data in operation and maintenance manuals according to exceptions as noted.

3. Disapproved:

a. Revise/Correct and Resubmit or Develop Replacement and Submit:

Contractor is responsible to revise, correct, and to resubmit Shop Drawing (in same manner and quantity as specified for original submission).

b. Shop Drawing and Product Data are not approved.

4. Incomplete:

a. Complete and Submit or Resubmit Missing Portion(s):

1) Engineer will retain copies of incomplete Submittal and transmit a written list of deficiencies.

2) Contractor shall submit specified item(s) to correct the incomplete Submittal

b. Shop Drawing and Product Data not approved.

1.6 SAMPLES

A. Samples: Submit two samples, unless otherwise specified in individual Specification section or in sufficient quantity and of size to enable examination as required and to establish quality or equality thereof.

B. Provide units identical with final condition of proposed materials or products for the Work.

C. Include “range” samples (not less than three units) where unavoidable variations must be expected, and describe or identify variations that must be expected, and describe or identify variations between units of each set.

D. Provide full set of optional samples where Engineer’s selection is required. Prepare samples to match Engineer’s sample where so indicated.

E. Contractor is responsible for safe and proper delivery of Samples and to prepay cartage charges. Submit additional Samples as may be required.

F. Identification: Clearly indicate Specification section, generic description, source or product name and manufacturer limitations, limitations, compliance with standards, certification as required and other appropriate information. Samples are submitted for review and confirmation of color, pattern texture, and kind/type by Engineer.

G. Engineer will not “test” samples (except as otherwise indicated) for compliance with other requirements, which are therefore the exclusive responsibility of the Contractor.

1.7 QUALITY CONTROL SUBMITTALS

A. Certificates:

1. Manufacturer's Certificate of Compliance:

a. When specified in individual Specification sections or where products are specified to a recognized standard or code, submit to Engineer for review prior to shipment of product or material to the site.

b. Engineer may permit use of certain materials or assemblies prior to sampling and testing if accompanied by accepted certification of compliance.

c. Signed by product manufacturer certifying that materials manufactured, and product specified conforms to or exceeds specified requirements and intent for which product will be used. Submit supporting reference data, affidavits, and certifications as appropriate.

d. May reflect recent or previous test results on material or product, but must be acceptable to Engineer. If these are outdated and/or not acceptable to Engineer, the Contractor shall submit to the Engineer the new certificates and test results on materials or product.

e. Indicate that material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

f. Contractor shall be responsible for removing and replacing unsuitable material with specified material if certification is inaccurate.

2. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in the individual Specification sections.

B. Manufacturer's Instructions: When specified in individual Specification sections, submit copies of manufacturer's printed instructions for delivery, storage, assembly, installation, adjusting and finishing.

C. Statements of Qualification: Evidence of qualification, within five (5) days of bid opening, certification, or registration. As required in these Contract Documents to verify qualifications of land surveyors, materials testing laboratories, specialty Subcontractors, trades, specialists, installers, and other professionals.

D. Field Samples: Provide as required by individual Specifications and as may be required by Engineer during progress of Work.

E. Written Test Reports and Inspection: As a minimum, include the following:

1. Classify each as either “project related” or Product Data, depending upon whether report is uniquely prepared for project or a standard publication of workmanship control testing at point of production, and process accordingly.

2. Date of test and date issued, Project title and number, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.

3. Date and time of sampling or inspection and record of temperature and weather conditions.

4. Identification of product and Specification section, location of Sample, test or inspection in the Project, type of inspection or test with referenced standard or code, certified results of test.

5. All test equipment used shall be verified to be in calibration at the time of each test and test reports shall so indicate. No test shall be made without such verification.

6. Compliance with Contract Documents, and identifying corrective action necessary to bring materials and equipment into compliance.

7. Provide an interpretation of test results, when requested by Engineer.

1.8 MISCELLANEOUS SUBMITTALS

A. Construction Permits: Acquire, maintain, and submit copies of all construction permits that are required by the agencies to execute the Work.

B. Contractor's Daily Field Report: Submit on a bi-weekly basis, and Include work force, equipment spread, work activity, weather, material shortages and schedule progress.

C. Manufacturer’s Instructions: When specified in individual Specification Sections, submit manufacturer’s printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing. Identify any conflicts between manufacturers’ instructions and Contract Documents.

D. Standards:

1. Where copy Submittal is indicated, and except where specified integrally with Product Data Submittal, submit a single copy for Engineer’s use.

2. Where workmanship at project site and elsewhere is governed by standards, furnish additional copies to fabricators, installers, and others involved in performance of the work.

E. Construction Photographs: Document, by digital photography, pre-construction conditions prior to arrival of equipment on site. Following completion of work, document post-construction conditions. Submit digital photographs on CD-Rom following completion of work.

1.9 CONTRACT CLOSEOUT SUBMITTALS

A. In accordance with the *General Conditions*, *Special Provisions*, Section 017000—*Contract Execution and Closeout*, and as may be further augmented by other Sections of this Contract.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

PART 4 - MEASUREMENT AND PAYMENT

Activities associated with Submittal of materials in accordance with these Specifications are incidental to the Work and no separate payment will be made under this Section.

END OF SECTION - 013300

TRANSMITTAL OF CONTRACTOR'S SUBMITTAL

(ATTACH TO EACH SUBMITTAL)

DATE:_____

TO:_____
_____
_____
_____

FROM:_____
Contractor
_____
_____
_____

Submittal No.:_____

☐ New Submittal ☐ Resubmittal

Previous Submittal No.:_____

Project:_____

Project No.:_____

Specification Section No.:_____

(Cover only one section with each transmittal)

Schedule Date of Submittal:

_____

SUBMITTAL TYPE: ☐ Shop Drawing ☐ Administrative ☐ Sample ☐ Quality Control ☐ Contract Closeout ☐ "Or-Equal"/Substitute ☐ Product Data

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes

CONTRACTOR hereby certifies that (i) CONTRACTOR has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By:_____

CONTRACTOR (Authorized Signature)

SECTION 015700

EROSION CONTROL AND POLLUTION PREVENTION

PART 1 GENERAL

1.1 SUMMARY

A. The work under this section consists of providing all labor and materials as required to provide erosion control and pollution prevention during construction and surrounding each construction area with means of protection from spills, contamination, pollution, hazardous materials contamination, erosion, and silt intrusion into the local water bodies. The work includes those items required to comply with State of Alaska Water Quality Regulations 18ACC70 and 19AAC70.010 through 18ACC70.032 and those items required to comply with ADEC water quality certification for the conditions of the construction permit.

B. The work includes the preparation and implementation of an Erosion Control and Pollution Protection Plan.

C. The work also includes preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) which complies with the APDES general permits for storm water discharge from construction activities as outlined in the Clean Water Act, 33, U.S.C. 1251 including all amendments and updates.

D. The SWPPP shall be submitted to the Engineer.

E. The Contractor shall also include provisions to minimize the risk associated with possible spills of petroleum products from the machinery, paint, solvents, fuel or other potentially hazardous materials used on this project.

F. The Contractor shall conduct all construction activities in accordance with the approved Erosion Control and Pollution Prevention Plan and shall keep a copy of the plan at the job site at all times.

1.2 REFERENCES

A. ADOT & PF Storm Water - Contractor Guidance for Preparing and Executing Stormwater Pollution Prevention Plans, most recent edition, from ADOT & PF, 3132 Channel Drive, Juneau, AK. 99801.

B. 40 CFR 117

C. 40 CFR 302

D. State of Alaska Water Quality Regulations 18ACC70 and 19AAC70.010 through e8ACC70.032

E. Clean Water Act, 33, U.S.C. 1251

1.3 SUBMITTALS

A. Ten days prior to any site work other than surveying, the Contractor shall submit an Erosion Control and Pollution Prevention Plan for acceptance. The plan shall include details for the prevention of spills, containment, cleanup, and disposal of hazardous waster material (see 40 CFR 117 and 302 for listing), including petroleum products generated by construction activities or equipment. Include a list of quantities and types of equipment and materials available onsite to be used for hazardous substance containment and cleanup. Comply with 18 AAC 75 and Title 46 of the Alaska Statutes. This plan shall, as a minimum, include the following:

1. Plan for installation of temporary erosion and sediment control measures, in accordance with the Alaska Department of Transportation and Public Facility's Storm Water Manual, including, but not limited to the following activities:

    a. Excavation and embankment construction

    b. Construction of temporary and permanent drainage features

    c. Construction and trenching in and around water bodies

    d. Haul roads and material sites.

    e. Disposal of waste material.

    f. Containment, cleanup, and disposal of such substances as well as the methods to be utilized for disposing of petroleum products or other hazardous substances generated by construction equipment or activities. The plan shall also include a list of the quantities and types of materials available on site to be utilized for hazardous substance containment and cleanup activities.

B. The Contractor shall submit a SWPPP that complies with APDES requirements.

C. The Contractor shall also prepare a Notice of Intent (NOI) for storm water discharge associated with construction. The Contractor shall deliver a copy of the NOI and SWPPP to the Alaska Department of Environmental Conservation (ADEC). The contractor shall prepare a Notice of Termination (NOT) once final stabilization of the site has occurred and shall deliver the NOT to the ADEC. Submit copies of each notice to the Engineer.

1.4 CONSTRUCTION REQUIREMENT

A. Limit the surface area of earth material exposed by clearing and earthwork operations. Provide immediate measures to prevent contamination of any adjacent water bodies. Use temporary erosion and pollution control Best Management Practices (BMP's), when required, to supplement permanent control features on the project.

B. Appropriate protection measures such as silt fences, intercepting embankments jute matting, seeding, sodding, and emergency oil absorption materials shall be installed and or stationed on site prior to commencing construction. Following construction each effected site shall be returned to its pre-construction condition.

C. The Contractor shall be responsible for the containment, cleanup, and disposal of all construction related discharges of petroleum fuels, oil, and/or other substances hazardous to the land and water. Performance of this activity shall comply with the requirements of 18 AAC 75 and Title 46 of the Alaska Statutes.

D. The Contractor shall limit the surface area of earth material exposed by clearing and grubbing, excavation, borrow, and fill operations. The Contractor shall provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams, lakes, ponds, or other areas of water impoundment. As necessary, such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, and use of temporary mulches, seeding or other control devices or methods as necessary to control erosion. Temporary pollution control measures shall be used to correct conditions that develop during construction, that are needed prior to installation of permanent pollution control features, but are not associated with permanent control features on the project.

E. The Contractor shall be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in his accepted schedule.

F. Where erosion is likely to be a problem, clearing and grubbing operations shall be so scheduled and performed that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise temporary erosion control measures may be required between successive construction stages.

G. The Contractor shall limit the area of excavation, borrow and embankment operations in progress commensurate with the Contractor's capability and progress in keeping the finish grading and other such permanent pollution control measures current in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 CONSTRUCTION

A. Contractor is responsible for maintenance of all graded areas for the duration of the project, whether protected or not. Developed or unprotected areas that remain unplanted shall receive erosion control protection.

B. Type and extent of erosion control will be as specified in the Erosion Control and Pollution Prevention Plan or as shown on the drawings. Contractor is responsible for maintenance of all graded areas for the duration of the project, whether protected or not.

C. Required erosion control measures shall be established within 48 hours before construction begins. Finish grade shall be free of vehicle ruts or displacement of gravel. Areas subjected to vehicle traffic shall be reworked to the satisfaction of the Engineer.

PART 4 MEASUREMENT AND PAYMENT

A. Measurement for this item shall be per lump sum and shall be full payment for all labor, equipment, materials, including planning and implementation to provide a complete written Erosion Control and Pollution Prevention Plan in accordance with all applicable laws and regulations and all labor, materials, and equipment associated with implementing all of the elements of the Plan. Implementation of the plan during construction should be considered incidental to the applicable portions of construction.

B. Payment will be made under the following bid items:

Item	Pay Unit
Erosion Control and Pollution Prevention Plan	Lump Sum

END OF SECTION

SECTION 017000
CONTRACT EXECUTION AND CLOSEOUT

PART 1 – GENERAL

1.1 DESCRIPTION

A. Administrative provisions and closeout submittals required for Substantial Completion and Final Acceptance.

1.2 SEQUENCE OF WORK

A. Sequence Work as follows:

B. Include the milestones and sequences of Work specified herein as a part of the Construction Progress Schedule required under Section 013300—Submittals, Paragraph ADMINISTRATIVE SUBMITTALS.

1. Substantial and final project completion shall occur as outlined in the special provisions.

c. Complete all work sufficient to make the float system available for public use in accordance with the paragraph TIME OF COMPLETION specified in the *Special Conditions*.

1.3 SUBSTANTIAL COMPLETION

A. When Contractor considers the work is substantially complete, he shall submit to the City's representative:

1. A written notice that the work, or designated portion thereof, is substantially complete and a letter of certification stating the Project has been constructed in accordance with the Contract Documents; and,

2. A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, the City's representative will determine the status of completion on the basis of his on-site observations.

C. Should the City's representative determine that the work is not substantially complete:

1. The City's representative will promptly notify the Contractor in writing, giving the reasons therefore;

2. Contractor shall remedy the deficiencies in the work and send a second written notice of substantial completion to the City; and,

3. The City's representative will re-evaluate the work.

D. When the City's representative concurs that the work is substantially complete, he will:

1. Prepare a Certificate of Substantial Completion accompanied by Contractor's list of items to be complete or corrected, as verified and amended by the City's representative; and

2. Submit the Certificate to Contractor for his written acceptance of the responsibilities assigned to them in the Certificate.

1.4 FINAL INSPECTION

A. When Contractor considers the work is complete, he shall submit written certification that:

1. Contract Documents have been reviewed;
2. Work has been inspected for compliance with Contract Documents;
3. Work has been completed in accordance with Contract Documents;
4. Equipment and systems have been tested in the presence of the Owner's Representative and are operational; and
5. Work is completed and ready for final inspection.

B. The City's representative will make an on-site visit to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should the City's representative consider that the work is incomplete or defective:

1. The City's representative will promptly notify the Contractor in writing, listing the incomplete or defective work;
2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the City that the work is complete; and
3. The City's representative will re-evaluate the work.

D. When the City's representative finds that the work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.5 CONTRACTOR'S CLOSEOUT SUBMITTALS TO THE CITY

A. General: Submit all Closeout Submittals prior to application for final payment. Complete payment will not be made to the Contractor unless accurate and complete closeout submittals are received as specified.

B. Project Record Documents:

1. Record documents shall be maintained in accordance with the General Conditions, Section 013300—Submittals, and Quality Control specified in the individual specifications sections and as may be further augmented by other Sections of this Contract.
2. Contractor shall maintain one record copy of:

   i. <u>Contract Drawings</u>: legibly mark in ink or indelible pencil, a record of actual construction including the following information:

      a. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
      b. Field changes of dimensions and details.
      c. Changes made by Change Order or Owner's Representative's Supplemental Instructions.
      d. Details not on original contract drawings.

   ii. <u>Specifications:</u> Mark up each section to record Manufacturer, model, catalog number, and supplier of each product and item of equipment actually installed as well as other matters not originally specified.

   iii. <u>Addenda</u>: Provide markups to all addenda, similar to other Contract drawings and specifications.

iv. Change Orders and Other Modifications to the Contract

v. Reviewed Shop Drawings, Product Data and Samples: After review, legibly annotate the shop drawings, product data, and samples to clearly specify what is included in the Work.

vi. Field Test Records

vii. Inspection Certificates

viii. Manufacturer's Certificates

B. The electrical drawings shall indicate exact locations of all junction boxes, conduit runs (routed, no home runs), wiring in each conduit, low voltage wiring, outlets, lights and system wiring; i.e., fire alarm, etc. Include a complete panel schedule with all loads shown by name and volt amp load for each circuit.

C. Survey data: Any survey data submitted electronically shall be plotted on a base map that will be provided by the Owner's Representative upon request.

D. Extra Materials: Provide all extra materials as specified in the individual technical specification sections.

E. Warranties and Bonds: To meet requirements in Paragraph WARRANTIES AND BONDS, below.

F. Evidence of Payment and Release of Liens: To meet requirements of General and Supplementary Conditions.

G. Certificate of Insurance for Products and Completed Operations.

H. Consent of Surety to Final Payment.

1.6 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final progress and quantity calculation sheet and application and certificate for payment to the City.

B. Statement shall reflect adjustments to the Contract Sum, if applicable, as follows:

1. The original Contract Sum;
2. Additions and deductions resulting from
   a. Previous change orders
   b. Deductions for uncorrected work
   c. Other adjustments;
   d. Total Contract Sum, as adjusted;
3. Previous payments; and
4. Sum remaining due.

1.7 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the conditions of the contract.

B. Final payment will not be paid until all items of Paragraph 1.5 in this section have been submitted to the satisfaction of the City.

1.8 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.9 CLOSEOUT OF CONTRACTOR'S RECORDS

A. Contractor shall turn all pertinent records for Contractor Quality Control, over to the City after final acceptance inspection and prior to final payment. Final payment shall be contingent upon properly completing this activity.

1.10 WARRANTIES AND BONDS

A. Provide duplicate notarized copies.

B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

C. Submit prior to final Application for Payment.

D. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. At completion of Work or of a part thereof and immediately prior to Contractor's request for certificate of Substantial Completion; or if no certificate is issued, immediately prior to Contractor's notice of completion, clean entire site or parts thereof, as applicable.

1. Leave the Work and adjacent areas affected in a cleaned condition satisfactory to the City’s Representative.
2. Repair, patch, and touch up marred surfaces to specified finish and match adjacent surfaces.
3. Repair or replace any damaged fences, gates, equipment, roads, etc.
4. Leave water courses and ditches open and in condition satisfactory to Owner’s Representative.

PART 4 - MEASUREMENT AND PAYMENT

All items involving material and equipment will be paid for within their respective Sections as applicable. All costs associated with Project Closeout will be incidental to the Work. No direct costs will be considered associated with Contract Closeout and no separate payment will be made under this Section.

END OF SECTION

SECTION 020000

CONSTRUCTION SURVEY

PART 1 – GENERAL

A. All survey work shall be performed by a third party Survey Subcontractor retained by the Contractor. All survey work performed shall be under the direct supervision of an Alaskan Registered Professional Land Surveyor working for the Survey Subcontractor.

B. The project base map is from a public records survey of the area provided by the US Army Corps of Engineers dated 2010.

C. The survey shall include pre and post earthwork surveys of sufficient quality and detail to base measurement and payment of the placement of Beach Sand item on. Progress surveys of the earthwork shall be submitted with progress pay applications. These surveys will be sealed and submitted to the owner's representative before and after the earthwork.

D. The survey shall include an as-built survey of the pile anchors for the float anchor chain. This shall include the northing, easting, and elevation of the top of each pile as well as a description of any deviation from the design position. Provide this survey within one week of competing the installation and prior to demobilizing the pile driving equipment from the site.

1.2 QUALITY ASSURANCE

A. It is the Contractor's responsibility to establish or check all survey control prior to starting any staking activity to ensure the project is properly located and constructed according to the construction documents. If discrepancies are found between the control and the construction documents, the Contractor shall notify the Engineer immediately.

B. The Contractor is responsible for preserving and protection all monuments, reference points, and hubs. In the event of their loss or destruction, the Contractor shall pay all costs for their replacement.

1.3 Submittals

A. Submit the name and registration number of the registered surveyor in responsible charge of the survey work. Surveyor must have a current Alaska registration.

B. Submit pre and post earthwork surveys as well as interim surveys in support of pay applications as described above.

C. Submit an as built survey of the final pile installation as described above

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

3.1 CONSTRUCTION SURVEY

A. The Contractor shall provide sufficient stakes for adequate control of all structures, grades, and incidental construction. The contractor shall ensure that the floats, piling, pile supported platforms, underground utilities and other items are correctly located and set to the correct elevations as shown in the drawings.

B. Any changes or alterations shall be recorded in the record drawings as required by the general conditions of the contract

PART 4 – MEASUREMENT AND PAYMENT

4.1 Measurement

The method of measurement for surveying services shall be a lump sum cost item on the bid schedule, to be measured at the completion of this project. The lump sum cost for Construction Survey Measurement shall include all project control, project staking, as built surveys, and quantities measurement for payment by unit price as required by the construction documents.

4.2 Payment

Payment shall be made under the following units:

ITEM	UNIT
Construction Survey	Lump Sum

END OF SECTION

SECTION 032000

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Reinforcing bars.
2. Reinforcement accessories.

B. Related Sections:

1. Section 033000 – Cast-in-Place Concrete
2. Section 034210 – Precast Structural Concrete

1.2 REFERENCES

A. American Concrete Institute:

1. ACI 301 – Specifications for Structural Concrete.
2. ACI 318 – Building Code Requirements for Structural Concrete.
3. ACI SP-66 – ACI Detailing Manual.

B. ASTM International:

1. ASTM A82 – Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
2. ASTM A615/A615M – Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

C. American Welding Society:

1. AWS D1.4 – Structural Welding Code – Reinforcing Steel.

D. Concrete Reinforcing Steel Institute:

1. CRSI – Manual of Standard Practice.
2. CRSI – Placing Reinforcing Bars.

1.3 SUBMITTALS

A. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel bending and cutting schedules.

B. Certificates: Submit AWS qualification certificate for welders employed on the Work.

C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1. Submit certified copies of mill test report of reinforcement materials analysis.
2. given and the design concept expressed in the contract documents.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

B. Prepare shop drawings in accordance with ACI SP-66.

C. Perform Work in accordance with City of Seward Public Work's standard.

D. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Welders: AWS qualified within previous 12 months.

1.6 COORDINATION

A. General Conditions – Article 6 Contractor's Responsibilities.

B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

2.1 REINFORCEMENT

A. Reinforcement shall conform to: ASTM A615 or A706; Grade 60 steel bars.

2.2 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gage annealed type.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor retarder puncture.

C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic-coated steel type; size and shape to meet Project conditions.

2.3 FABRICATION

A. Fabricate concrete reinforcement in accordance with ACI 318.

B. Form standard hooks for 90 degree bend, stirrup and tie hooks as indicated on Drawings.

C. Form reinforcement bends with minimum diameters in accordance with ACI 318.

D. Locate reinforcement splices not indicated on Drawings, at point of minimum stress.

PART 3 EXECUTION

3.1 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance.

1. Do not weld crossing reinforcement bars for assembly.

B. Accommodate placement of formed openings.

C. Space reinforcement bars according to the drawings and ACI 318.

D. Conform to ACI 318 or as indicated in the drawings for concrete cover over reinforcement.

3.2 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with ACI applicable codes.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Work of this section is included in combination with work of other sections

1. 033000 – Cast In Place Concrete
2. 033900 – Concrete Curing
3. 034210 – Precast Structural Concrete

B. Work of this section shall be limited to the concrete pads in the uplands area, and shall include the following items:

1. Concrete Float Landing Slabs

4.2 PAYMENT

A. No separate payment will be made for the work specified in this Section. Measurement and Payment shall be included in the Work of the specified Section to which it applies. Refer to Section 03300 – Cast-in-Place Concrete.

END OF SECTION

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. This section includes cast-in-place concrete for the following: Swim Area Barrier AnchoR.

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 301 – Specifications for Structural Concrete.
   2. ACI 318 – Building Code Requirements for Structural Concrete.
   3. ACI 306.1 Standard Specification for Cold Weather Concreting
   4. ACI 308.1 Standard Specification for Curing Concrete
   5. ACI SP-66 – ACI Detailing Manual

B. ASTM International:
   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

1.2 SUBMITTALS

A. Product Data: Submit data on admixtures.

B. Design Data:
   1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for air entrained concrete work.
   2. Identify mix ingredients and proportions, including admixtures.
   3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

B. Conform to ACI 306.1 when concreting during cold weather.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

A. Cement: ASTM C150, Type IA - Air Entraining, Type IIA - Air Entraining, Portland type

B. Normal Weight Aggregates: ASTM C33

C. Coarse Aggregate Maximum Size: 3/4 inches

MATERIAL AND PROPERTY	MEASUREMENT
Compressive Strength (28 day)	5000 psi
Cement Type	ASTM C150
Aggregate Type	Normal weight
Water-Cement Ratio (maximum)	0.4 by weight
Slump	4 inches plus or minus 1 inch

D. It is acceptable to use Quikrete 5000 or equal prepackaged mix. If a prepackaged mix is used it must be 5000 psi, 28-day compressive strength, high early strength, and the contractor must supply an air entraining admixture for 4% to 6% air entrainment. Provide a submittal for approval for both the prepackaged mix and the air entraining admixture.

2.2 ADMIXTURES

A. Air Entrainment: ASTM C260

2.3 CONCRETE MIX

A. Select proportions for normal weight concrete in accordance with ACI 301 Method 1.

B. Use accelerating admixtures in cold weather. Use of admixtures will not relax cold weather placement requirements.

C. Do not use calcium chloride nor admixtures containing calcium chloride.

D. Add air entrainment admixture to concrete mix for work exposed to freezing and thawing.

E. Ready Mixed Concrete: Mix and deliver concrete in accordance with ASTM C94/C94M.

F. Site Mixed Concrete: Mix concrete in accordance with ACI 318.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify requirements for concrete cover over reinforcement.

B. Verify anchors, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.2 PREPARATION

A. Remove debris and ice from formwork, reinforcement, and concrete substrates

3.3 PLACEMENT

A. Place concrete in accordance with ACI 301.

B. Notify testing laboratory and Engineer minimum 24 hours prior to commencement of operations.

C. Ensure reinforcement, inserts and embedded parts are not disturbed during concrete placement

3.4 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

3.5 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with ACI applicable codes.

B. Field Testing:
1. Slump Test Method: ASTM C143/C143M.
2. Air Content Test Method: ASTM C173/C173M.
3. Temperature Test Method: ASTM C1064/C1064M.
4. Measure slump and temperature for each compressive strength concrete sample.
5. Measure air content in air entrained concrete for each compressive strength concrete sample.

C. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Swim Area Anchors including reinforcement and hardware.

4.2 PAYMENT

A. This shall be considered full compensation including all hardware and equipment necessary. Payment will be made under the following bid items:

Item	Pay Unit
A. Furnish and Install Swim Area Barrier Anchor	Per Each

END OF SECTION

SECTION 033900

CONCRETE CURING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes initial and final curing of horizontal and vertical concrete surfaces.

B. Related Sections:
   1. Section 034210 – Precast Structural Concrete.

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 301 – Specifications for Structural Concrete.
   2. ACI 302.1 – Guide for Concrete Floor and Slab Construction.
   3. ACI 308.1 – Standard Specification for Curing Concrete.
   4. ACI 318 – Building Code Requirements for Structural Concrete.

B. ASTM International:
   1. ASTM C171 – Standard Specification for Sheet Materials for Curing Concrete.
   2. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
   3. ASTM C1315 – Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
   4. ASTM D2103 – Standard Specification for Polyethylene Film and Sheeting.

1.3 SUBMITTALS

A. Product Data: Submit data on curing compounds, film, compatibilities, and limitations.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 318.

B. Maintain one copy of each document on site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. General Conditions – Article 6 Contractor’s Responsibilities.

B. Deliver curing materials in manufacturer's packaging including application instructions.

PART 2 PRODUCTS

2.1 MATERIALS

A. Polyethylene Film: ASTM C171, 10 mil thick.

B. Water: Potable, not detrimental to concrete.

PART 3 EXECUTION

3.1 INSTALLATION – HORIZONTAL SURFACES

A. Cure concrete in accordance with applicable ACI specifications.

3.2 INSTALLATION – VERTICAL SURFACES

A. Cure concrete in accordance with ACI 308.1 using curing material method.

B. Non-Membrane Forming Curing Compound: Apply curing compound in one coat. Maintain surface wet with curing compound avoiding ponding for time recommended by manufacturer.

3.3 PROTECTION OF FINISHED WORK

A. General Conditions – Article 6 Contractor's Responsibilities.

B. Do not permit traffic over unprotected surface.

3.4 SCHEDULES

A. Storage Area Slabs: Absorptive mats, burlap-polyethylene type.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Work of this section is included in combination with work of other sections:
   1. 032000 – Concrete Reinforcement
   2. 033000 – Cast-In-Place Concrete
   3. 034210 – Precast Structural Concrete

4.2 PAYMENT

A. No separate payment will be made for the work specified in this Section. Measurement and Payment shall be included in the Work of the specified Section to which it applies.

END OF SECTION

SECTION 034210

PRECAST STRUCTURAL CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Drawings and general provisions of the Contract,.

B. Related Sections:
1. Section 033900 – Concrete Curing
2. Section 032000 – Concrete Reinforcement.

1.2 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. Most current edition applies.
1. ACI INTERNATIONAL (ACI)
   a. ACI 304R Measuring, Mixing, Transporting, and Placing Concrete
   b. ACI 305R Hot Weather Concreting
   c. ACI 309R Consolidation of Concrete
   d. ACI 318M/318RM Building Code Requirements for Structural Concrete
2. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
   a. ANSI A135.4 Basic Hardboard
3. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
   a. ASTM A 82 Steel Wire, Plain, for Concrete Reinforcement
   b. ASTM A 416/A 416M Steel Strand, Uncoated Seven-Wire for Prestressed Concrete
   c. ASTM A 615/A 615M Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
   d. ASTM A 706/A 706M Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
   e. ASTM C 33 Concrete Aggregates
   f. ASTM C 94 Ready-Mixed Concrete
   g. ASTM C 150 Portland Cement
   h. ASTM C 260 Air-Entraining Admixtures for Concrete
   i. ASTM C 494 Chemical Admixtures for Concrete
   j. ASTM C 595M Blended Hydraulic Cements (Metric)
   k. ASTM C 595 Blended Hydraulic Cements
   l. ASTM C 618 Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
   m. ASTM A 775 Standard Specification for Epoxy-Coated Steel Reinforcing Bars
   n. ASTM C 989 Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
   o. ASTM C 1107 Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
4. AMERICAN WELDING SOCIETY (AWS)
   a. AWS D1.4 Structural Welding Code - Reinforcing Steel
5. PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI)
   a. PCI MNL-116 Quality Control for Plants and Production of Precast Prestressed Concrete Products
   b. PCI MNL-120 Design Handbook - Precast and Prestressed Concrete

1.3 DESCRIPTION OF WORK

A. The work includes the provision of precast members. In the ACI publications, the advisory provisions shall be considered to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears; reference to the Building Official, the Structural Engineer and the Engineer shall be interpreted to mean the Contracting Officer.

1.4 SUBMITTALS

A. Submit the following in accordance with Section entitled Submittal Procedures.
   1. SD-02 Shop Drawings
      a. Drawings for precast concrete members
   2. SD-05 Design Data
      a. Precast concrete design calculations and drawings, including lifting and handling requirements, local zone reinforcement, and tendon load/elongation.
      b. Concrete mix design
   3. SD-06 Test Reports
      a. Pozzolan test
      b. Submit results of pozzolan tests performed within 6 months of submittal date
      c. Concrete test reports – mix design
      d. Concrete test reports - production
      e. Pre-cast dimensional tolerance measurements and certification
   4. SD-07 Certificates and procedures
      a. Quality control procedures and certificates
      b. Field Technician's certificate
   5. SD-11 Closeout Submittals
      a. Concrete batch ticket information

1.5 QUALITY CONTROL

A. Product Quality Control
   Plants shall be certified by the PCI Plant Certification Program for category C1 work or prepare and implement an detailed Quality Control Plan, as approved by the Engineer

1.6 DELIVERY, STORAGE, AND HANDLING

A. Lift and support precast members at the lifting and supporting points as determined by calculation and as indicated on the shop drawings. Store precast members off the ground and bunk in accordance with the manufacturer's written instructions. Separate stacked precast members by battens across the full width of each bearing point. Protect from weather, marring, damage, and overload.

1.7 QUALITY ASSURANCE

A. Certificates
   1. PCI Plant Certification

B. Procedures
   1. Submit quality control procedures established in accordance with PCI MNL-116 by the precast manufacturer.

C. Content of Drawings
   1. Submit drawings indicating complete information for the fabrication, handling, and erection of the precast. Drawings shall not be reproductions of contract drawings.

Design calculations and drawings of precast (including connections) shall be prepared and sealed by a registered professional engineer, and submitted for approval prior to fabrication. The drawings shall indicate, as a minimum, the following information:

a. Marking of members for erection
b. Connections for work of other trades, including electrical grounding. See Section 34 11 23.02, paragraph 2.2 J.
c. Connections between members, and connections between members and other construction
d. Joints between members, and joints between members and other construction
e. Reinforcing steel details
f. Material properties of steel and concrete used
g. Lifting and erection inserts
h. Dimensions and surface finishes of each member
i. Erection sequence and handling requirements
j. All loads used in design (such as live, dead, handling, and erection)
k. Layout of ducts for anchor rods and grouting, including those in cast-in-place splices between precast beams; coordinate with shop drawings for soleplates.

D. Design Calculations and drawings

1. Submit calculations for local zone reinforcement; lifting points and mild steel reinforcement for lifting and handling, storage and transportation. Design lifting points and mild steel for form suction, lifting, transportation, storage, and associated "impact" or dynamic effects. Do not use less than the mild steel reinforcement shown. Design calculations and drawings showing local zone reinforcement and mild steel) shall be prepared and sealed by a registered professional engineer, and submitted for approval prior to fabrication.

E. Mix Design

1. Thirty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Include a complete list of materials including type; brand; source and amount of cement, pozzolan, and admixtures; and applicable reference specifications.

F. Test Reports

1. Submit copies of test reports showing that the mix has been successfully tested to produce concrete with the properties specified and will be suitable for the job conditions. Obtain approval before concrete placement.
2. Submit copies of reports on test of production concrete.

G. Batch Test

1. ASTM C 94. Submit mandatory batch ticket information for each load of ready-mixed concrete.

PART 2 - PRODUCTS

2.1 CONCRETE

A. ACI 318M/318RM, for contractor-furnished mix design. The minimum compressive strength of concrete at 28 days shall be 5000 psi, unless otherwise indicated. Add air-entraining admixtures at the mixer to produce between 4 and 6 percent air by volume.

2.2 MATERIALS

A. Cement
   1. ASTM C 150, Type I, II, or III; or ASTM C 595M ASTM C 595 Type IP(MS) or IS(MS) blended cement, except as modified herein. The blended cement shall consist of a mixture of ASTM C 150 cement and one of the following materials: ASTM C 618 pozzolan or fly ash, or ASTM C 989 ground iron blast furnace slag. The pozzolan/fly ash content shall not exceed 25 percent by weight of the total cementitious material. For exposed concrete, use one manufacturer for each type of cement, ground slag, fly ash, and pozzolan.

B. Fly Ash and Pozzolan
   1. ASTM C 618, Type N, F, or C, except that the maximum allowable loss on ignition shall be 6 percent for Type N and F.

C. Ground Iron Blast-Furnace Slag
   1. ASTM C 989, Grade 100 or 120

D. Water
   1. Water shall be fresh, clean, and potable

E. Aggregates
   1. Grading and Composition
      a. ASTM C 33, Size 67, except as modified herein. Obtain aggregates for exposed concrete surfaces from one source. Aggregates shall not contain any substance which may be deleteriously reactive with the alkalis in the cement.

F. Admixtures
   1. Air-Entraining
      a. ASTM C 260
   2. Accelerating
      a. ASTM C 494, Type C or E
   3. Water Reducing
      a. ASTM C 494, Types A, E, or F

G. Reinforcement
   1. Reinforcing Bars
      a. ASTM A 615/A 615M, Grade 60
      b. Bars shall be epoxy coated for exterior elements where indicated, in accordance with ASTM A 775

H. Lifting anchors
   1. Lifting anchors shall be hot dip galvanized to ASTM A 153 Class A. Provide embrittlement relief, if necessary.

2.3 FABRICATION

A. PCI MNL-116, unless specified otherwise.

B. Forms

1. Brace forms to prevent deformation. Forms shall produce a smooth, dense surface. Chamfer or round exposed edges of beams as indicated. Provide threaded or snap-off type form ties.

C. Reinforcement Placement
1. ACI 318M/318RM for placement and splicing. Reinforcement may be preassembled before placement in forms. Provide exposed connecting bars, or other approved connection methods, between precast and cast-in-place construction. Remove any excess mortar that adheres to the exposed connections. Where required, provide curvature or drape of the post-tension ducts using approved hold-down devices.

D. Concrete
1. Concrete Mixing
   a. ASTM C 94. Mixing operations shall produce batch-to-batch uniformity of strength, consistency, and appearance.
2. Concrete Placing
   a. ACI 304R and ACI 309R, unless otherwise specified.
3. Concrete Curing
   a. Commence curing immediately following the initial set and completion of surface finishing. Provide curing procedures to keep the temperature of the concrete between 50 and 190 degrees F. When accelerated curing is used, apply heat at controlled rate and uniformly along the casting beds. Monitor temperatures at various points in a product line in different casts.
4. Concrete Testing and Reporting
   a. ASTM C 94.

E. Surface Finish
1. Repairs to honeycombed sections located in a bearing area shall be approved by the Contracting Officer prior to repairs. Precast members which contain honeycombed sections deep enough to expose reinforcement shall be rejected. Members containing hairline cracks which are visible and are less than 0.02 inches in width, may be accepted. However, precast members which contain cracks greater than 0.02 inches in width shall be approved by the Contracting Officer. When approved, the member shall be repaired.
2. Unformed Surfaces
   a. Provide a steel troweled finish.
3. Formed Surfaces
   a. PCI MNL-116 (Appendix A - Commentary), Chapter 3, for grades of surface finishes.
      1) Unexposed Surfaces: Provide a standard grade surface finish.
      2) Exposed Surfaces: Provide a standard grade surface finish.

F. Tolerances
1. Precast concrete members must conform to the following dimensional tolerances.
   a. Length: ±3/4 inch
   b. Girder width (overall): ±1/4 inch
   c. Depth: ±1/4 inch
   d. Horizontal and vertical alignment (deviation from straight line parallel to centerline of member): 1/4 inch

2. Submit certification that members conform to these tolerances together with a report showing results of measurements taken to confirm compliance for each precast section.

PART 3 - EXECUTION

3.1 SURFACE REPAIR

A. Prior to erection, and again after installation, check precast members for damage, such as cracking, spalling, and honeycombing. As directed by the Contracting Officer, precast members that do not meet the surface finish requirements specified in Part 2 in paragraph entitled "Surface Finish" shall be repaired, or removed and replaced with new precast members.

PART 4 - MEASUREMENT AND PAYMENT

A. No separate payment will be made for Precast Structural Concrete associated with other items of the work. Measurement and Payment shall be included in the Work of the specified Section to which it applies.

END OF SECTION

SECTION 035311

Concrete Planks

PART 1 GENERAL

1.1 SUMMARY

A. This work consists of the installation of Concrete Float Landing Slabs

1.2 REFERENCES

A. Sections 032000, 033900, 034210 of these specifications.

B. ACI INTERNATIONAL (ACI)

ACI 304R Measuring, Mixing, Transporting, and Placing Concrete
ACI 318M/318RM Building Code Requirements for Structural Concrete

C. FEDERAL HIGHWAY ADMINISTRATION

FHWA RD-89-199 (1989) Hydraulic Stability of Articulated Concrete Block Revetment Systems During Overtopping Flow

1.3 DEFINITIONS

Articulating Concrete Block (ACB) Revetment System: A matrix of interconnected concrete block units for float landing pad. Units are connected by geometric interlock and/or cables and steel connecting rods.

Interlocking Blocks: Each pair of abutting blocks shall have interlocking keys that limit lateral expansion. The key and key and keyholes shall have an interference fit such that the join movement has a minimum aperture at closure, and a maximum aperture when pulled apart. The joint freeplay shall allow articulation of each individual block.

Freeplay: shall be the maximum lateral joint movement for interlocking blocks (difference between maximum and minimum aperture).

1.4 SUBMITTALS

A. Submit product data, including technical data on the materials. Include all material properties specified under paragraph PART 2 PRODUCTS. Catalog cuts, technical data sheets, or test data shall be submitted showing that the products meet the specifications. The submittal shall also include a copy of any standard manufacturer's warranties for the products.
   1. Steel Connecting Rods

B. Provide complete, detailed fabrication and installation drawings for all ACB, steel hardware, and for all steel shapes, plates, bars and strips used.

C. Submit shop drawings for the following items:
   1. Fabrication Drawings
   2. Hardware
   3. Steel Connecting Rods

PART 2 PRODUCTS

2.1 MATRIX ASSEMBLY – CONNECTED BLOCKS

A. Cable tied concrete block shall be interconnected by steel connecting rods running through the blocks. Each block shall be penetrated by a steel connecting rods that connects the adjacent block and allows articulation of the blocks, but restrains removal of individual blocks. Void filler shall be placed to inhibit lateral movement.

PART 3 EXECUTION

3.1 INSTALLATION INSTRUCTIONS

A. Install landing slab on a prepared and compacted leveling course fill section. This shall include a minimum of 12 inches of compacted leveling course placed over geotextile fabric.

B. Place mat sections on prepared base and install tie rods. Tighten nuts on rods evenly and ensure no gaps between sections.

3.2 PROTECTION OF WORK

A. Work shall be protected against damage from subsequent operations. Displaced or broken blocks slabs or planks shall be removed and replaced to conform to all requirements of this section. Damaged material shall not be incorporated. Equipment shall not be allowed on the work that could crack, cause abrasion, or otherwise damage the blocks. Vehicles shall not operate on the work until (during or after) placement of void filler. Vehicle traffic on the ACB shall be restricted to light weight rubber tired vehicles, and where intermittent access is necessary to accomplish the work. Routine haul routes shall not be established on the ACB. These allowances shall not waive the Contractor's obligation to maintain the installation until acceptance, and verify that vehicle access does not crack, or in any way damage, the ACB.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement shall be per each and shall include all material, fabrication, labor, equipment, prepared and compacted base, and other items for the complete unit in place.

4.2 PAYMENT

A. The quantities, determined as provided above, shall be paid for at the contract price per unit of measurement, respectively, for each of the particular pay items listed below that is shown in the bid schedule:

Item	Pay Unit
Furnish and Install Concrete Float Landing Slabs	Per Each

END OF SECTION

SECTION 055000

METAL FABRICATIONS

PART 1 – GENERAL

This section specifies the fabrication of steel items for miscellaneous plates, blocking, supports, steel pile caps, float connections, transition plates, landing tracks, and ladders, and other miscellaneous shop and field fabricated metal items.

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. The version of the documents current at the time of bidding are to be used for the project.

AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)

ASTM A 36/A 36M	Carbon Structural Steel
ASTM A 123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153/A 153M	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 500	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A 653/A 653M	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated(Galvannealed) by the Hot-Dip Process
ASTM A 780	Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM B 429	Aluminum-Alloy Extruded Structural Pipe and Tube

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	Structural Welding Code – Steel
AWS C2.23	Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel.

1.2 SUBMITTALS

A. Shop drawings, material certifications and product data will be required for the following items in accordance with the *General Conditions, Special Provisions, Section 013300,* and these technical provisions.

B. Shop Drawings

1. Submit shop drawings indicating all shop and erection details, including cuts, copes, connections, holes, threaded fasteners and welds.

2. Indicate welds, both shop and field, in accordance with AWS A2.4.

C. Proof of Compliance

1. Submit CERTIFIED mill test report covering mechanical and physical tests conducted on structural steel.

2. Certificates for bolts, nuts, lag screws, and washers.

3. Certificates for galvanizing.

D. Welders Certificates

1. Submit current certificates indicating that welders are qualified for the type and position of weld they are performing.

E. Product Data

1. Submit standard manufacturer's product data and specifications for rubber and uhmw components such as marine hinge bushings.

PART 2 – PRODUCTS

2.1 GENERAL

All materials shall conform to the following specifications, and shall be from an acceptable source of materials from which test and service records are available to the Engineer.

F. Steel Shapes, Bars and Plates: ASTM A36.

G. Structural Steel Tubing: ASTM A500, Grade B.

H. Structural Steel Pipe: ASTM A53, Types E or S, Grade B, 35,000 psi minimum yield strength.

I. Aluminum: 6061-T6.

J. Standard Threaded Fasteners:

1. Standard bolts and nuts: ASTM A325 with a galvanized coating. Bolts and nuts shall be the heavy hex type unless otherwise noted on the plans.

2. Washers: Plain washers shall be ANSI B27.2, Type A. Provide malleable iron washers if connecting nut bears on timber member.

K. UHMW Polyethylene Attachments: Fabricate from virgin UHMW polyethylene, with a maximum of 20% reprocessed material by weight, and containing 0.6% carbon black to stabilize it against ultraviolet light and in accordance with ASTM D 4020. Color for transition plate wear edge shall be safety yellow other items shall be black.

L. Coatings

1. Hot dipped galvanize all structural steel and hardware after fabrication in accordance with ASTM A123 and A153.

PART 3 – EXECUTION

3.1 GENERAL

A. Fabricate structural steel in accordance with AISC S335 and per the additional requirements of this article. Workmanship and finish shall be equal to the best practice in modern fabrication shops. Portions of the work exposed to view shall be finished neatly. Shearings, flame cutting, and chipping shall be done carefully and accurately. Finished members shall be true to line and free from twists, bends, and open joints.

B. Fabricator shall have not less than three years experience in the fabrication of structural steel.

3.2 DELIVERY STORAGE AND HANDLING

A. Deliver and store the items on the jobsite under cover. Handle the items carefully to avoid damage and to avoid marring galvanized surfaces.

3.3 WELDED CONSTRUCTION

A. Welding procedures, welders, welding operations and tackers shall be performed in accordance latest edition of the American Welding Society Structural Welding Code (AWS D1.1 and D1.2) with all applicable addenda and interpretive rulings published by the American Welding Society. All welds shall be visually inspected by a qualified inspector prior to leaving the shop using AWS D1.1 criteria for tubular connections or cyclically loaded non tubular connections as appropriate for steel structures and use AWS D1.2 criteria for aluminum structures.

B. Use 5356 filler for aluminum welding.

3.4 HOLES FOR BOLTS

All holes for bolts shall be either punched or drilled as outlined below:

A. Punched Holes: The diameter of the die shall not exceed the diameter of the punch by more than 1/16 inch. If any holes must be enlarged to admit bolts, they shall be reamed. Holes must be clean cut, without torn or ragged edges. Poor matching of holes will be cause for rejection.

B. Reamed or Drilled Holes: Reamed holes shall be cylindrical, perpendicular to the member, and not more than 1/16 inch larger than the nominal diameter of the bolt. Where practicable, reamers shall be directed by mechanical means. Drilled holes shall be 1/16 inch larger than the nominal diameter of the bolt. Poor matching of holes will be cause for rejection. Reaming and drilling shall be done with twist drills.

C. Surfaces of metal parts to be bolted in contact shall be cleaned before assembling. The parts of a member shall be assembled, well-pinned and firmly drawn together. The members shall be free from twists, bends, and other deformation. Tighten all bolts by hand methods without excessive distortion or compression of adjoining timber members.

3.5 REPAIR GALVANIZED COATING

Repair all areas of damaged coating in accordance with ASTM A780, AWS C2.23, and Section 099626.

PART 4 – MEASUREMENT AND PAYMENT

No separate payment will be made for the Work specified in this Section. Measurement and Payment will be included in the Work of the other specified Section(s) to which it applies.

END OF SECTION

SECTION 055136

ALUMINUM TRANSITION RAMPS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Furnishing and installing new, high quality Aluminum transition ramps.

1.2 RELATED SECTIONS

A. Section 055000 – Metal Fabrications

B. Section 355113 – Timber Floats

1.3 SUBMITTALS

A. Shop drawings, material certifications, and product data will be required for the following items in accordance with Section 01300—Submittals and 055000 metal fabrications.

1. Structural Aluminum members
2. Aluminum transition plate
3. Transition ramp decking
4. Non- slip coating
5. Shop drawings for the transition ramp
6. Hinge bushings
7. Weld certificates

1.4 PRODUCT HANDLING

A. Care should be taken during delivery, storage, handling, and installation of the transition ramps. Damage to ramp components, and no slip surface should be repaired at the contractor's expense.

PART 2 – PRODUCTS

2.1 STRUCTURAL ALUMINUM

A. All aluminum shall be 6061-T6, 6061-T651, or 6061-T6511

2.2 DECKING

B. Decking shall be aluminum plate coated with a non- slip surface.

PART 3 – EXECUTION

3.1 FABRICATION

A. Fabricator shale have not less than three years' experience in the fabrication of structural aluminum components.

B. Fabricate in accordance with the current edition of the Aluminum Association Specification for Aluminum Structures and per the additional requirements of this article, and section 055000. Workmanship and finish shall be equal to the best practice in modern fabrication shops.

Portions of the work exposed to view shall be finished neatly. Finished members shall be true to line and free from twists, bends, and open joints.

C. All welding shall be done in accordance with AWS D1.2/D1.2M and with 5356 filler.

3.2 INSTALLATION

A. Install Transition ramps as shown on the plans.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Furnish and install Transition Ramp. Payment will be made for each ramp correctly installed. All labor, shipping, equipment and material costs associated with fabricating, shipping, and installing the ramps shall be included.

4.2 PAYMENT

A. The quantities, determined as provided above, shall be paid for at the contract price per unit of measurement, respectively, for each of the particular pay items listed below that is shown in the bid schedule.

B. This shall be considered full compensation for installing the transition ramps on the floats, including all hardware and equipment necessary.

Payment will be made under the following bid items:

Item	Pay Unit
Furnish and install Transition Ramp	Per Each

END OF SECTION

SECTION 099626

Thermal Spray Coating

PART 1 GENERAL

1.1 SUMMARY

A. Section covers the work necessary to furnish and apply Thermal Spray Coating(TSC) for repair of galvanized coatings and corrosion protection of steel structure as shown on the plans.

B. Related Sections:
   1. Section 316200 – Piles, section 055000 Metal Fabrications

1.2 REFERENCES

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4417 Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel

AMERICAN WELDING SOCIETY (AWS)

AWS C2.18 Guide for the Protection of Steel with Thermal Sprayed Coating of Aluminum and Zinc and Their Alloys and Composites

AWS C2.23 Specification for the Application of Thermal Spray Coating of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel.

AWS C2.25 Specification for Thermal Spray Feedstock-Solid and Composite Wire and Ceramic Rods

NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)

NACE NO.1-SSPC SP5 Joint Surface Preparation Standard: White Metal Blast Cleaning

NACE RP0287 Standard Recommended Practice – Field Measurement of Surface Profile of Abrasive Blast Cleaned Steel Surfaces Using a Replica Tape

1.3 SUBMITTALS

A. Product Data: Submit data for each component specified including data substantiating that the proposed materials comply with the specified requirements, and recommendations by the manufacturer covering all materials. blasting media, Thermal spray coating feedstock, and Sealer.
   1. Blasting Media
   2. Thermal Spray Coating Feedstock
   3. Sealer

1.4 QUALITY ASSURANCE

A. Perform all work in accordance with this section and applicable standards indicated in the section.

B. Maintain one copy of each document on site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. General Conditions – 6.5 Contractor's Responsibilities: Materials and Equipment.

PART 2 PRODUCTS

2.1 MATERIALS

A. Blasting Media. Use aluminum oxide 10-30 mesh or Angular steel grit G16-G40 angular blasting medial to produce the angular profile depth specified by 3.1 B. Aluminum oxide abrasives shall conform to SSPC-AB1. Angular steel grit abrasives shall conform SSPC-AB2.

B. Thermal spray coating. Use a W-Zn-1 Thermal Spray Zinc Coating. The minimum TSC thickness shall be 0.012 in. The Maximum TSC thickness shall be 0.015 in. The TSC thickness shall be measured using an SSPC-PA 2 type 2 fixed probe gauge or equivalent.

C. Sealer. All paint coatings shall be applied according to SSPC-PA1 and the paint manufacturer's instructions for the use of the product with a thermal sprayed coating system.

The contractor shall select a low viscosity sealer chemically compatible with the TSC and suitable for marine service. Follow the paint manufacture's instructions for applying the sealer on the TSC. The seal coat shall be thin enough to penetrate into the body of the TSC and seal the porosity. The sealer shall be applied to the TSC as soon as possible after spraying, preferably within 8 hours. If not sealed within 8 hours, the TSC must be inspected for contaminants, and verified to be dust free.

PART 3 EXECUTION

3.1 Surface Preparation

A. Surface Finish. The steel substrate shall be abrasive blasted to a white metal finish in accordance with SSPC-SP 5/NACE No. 1.

B. Blasting Angular Profile Depth. After blasting, the steel substrate shall have an angular profile depth of $\geq$ 2.5 mils (65 µm) with a sharp angular shape per NACE RP0287 or ASTM 4417, method B or C

C. The angular profile depth after blasting shall be measured according to NACE standard RP0287 or ASTM D 4417 method B or C.

3.2 Thermal Spray Coating Application

A. Flame or Arc spraying equipment shall be used to apply TSC. Use of arc spray equipment is encouraged as it produces a stronger bond with the substrate. Thermal spray equipment shall be set up, calibrated, and operated according to manufacturer's instructions. Spray parameters shall be set for spraying the TSC and be validated with a bend test.

B. Substrate condition after blasting. The steel surface temperature shall be verified to be at least 5 degrees Fahrenheit above the dew point.

C. The time between the completion of final anchor tooth blasting and the completion of thermal spraying should be no more than six hours. It may be necessary to reduce the allowable time window if rust bloom or degraded coating appears at any time during spraying.

D. The coating shall be applied in overlapping passes to the specified thickness. Thinner passes yield greater tensile bond strengths. Excessively thick spray passes increase the internal stresses within the TSC and decrease the ultimate tensile bonds strength. The thickness of passes shall be validated by either a bend or bond test as outlined in section 2.1 B.

E. Spraying. Spray perpendicular crossing passes to minimize thin areas. If rust bloom, blistering, or a degraded coating appears at any time during application of the TSC, the operator shall stop spraying. The Satisfactory area shall be marked off, and the unsatisfactory area shall be repaired, by removing the affected coating, preparing the surface, and re-applying the coating.

F. The TSC dry film thickness shall be measured using a SSPC-PA2 type 2 fixed probe gauge. On flat surfaces, use a measurement line, and take the average of readings taken in 1 inch intervals. This measurement method measures the peaks and valleys of the TSC. For complex geometries and transitions, spot measurement shall be performed in an approximately 1.5 square inch area. Peaks and valley shall not be measured when taking spot measurements.

3.3 Sealer Application

A. Apply the sealer according to SSPC-PA 1 and the manufacturer's recommendations for the use of the product with a TSC system.

PART 4 MEASUREMENT AND PAYMENT

All items involving thermal spray coatings will be paid for within their respective Sections as applicable. All costs associated with thermal spray coatings will be incidental to the Work. No direct costs will be considered associated with thermal spray coatings and no separate payment will be made under this Section

END OF SECTION

SECTION 260500

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General Requirements specifically applicable to Division 26, in addition to Division 01 provisions.

B. The electrical system equipment and installation shall comply with all provisions and requirements of this specification, as well as any and all applicable national, state and local codes and standards.

1.2 WORK SEQUENCE

A. Construct Work in sequence under provisions of Division 01.

1.3 COORDINATION

A. Coordinate the Work specified in this Division under provisions of Division 01.

B. Prepare drawings showing proposed rearrangement of Work to meet job conditions, including changes to Work specified under other Sections. Obtain permission of Architect prior to proceeding.

1.4 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code, latest adopted edition including all state and local amendments.

B. NECA - Standard of Installation.

C. NETA ATS – Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

D. Electrical Reference Symbols: The Electrical "Legend" on drawings is standardized version for this project. All symbols shown may not be used on drawings. Use legend as reference for symbols used on plans.

E. Electrical Drawings: Drawings are diagrammaticnot intended to show all features of work. Install material in a manner to provide a symmetrical appearance. Do not scale drawings for exact equipment locations. Review Civil and adjust work to conform to conditions shown thereon. Field verification of dimensions, locations and levels is directed.

1.5 REGULATORY REQUIREMENTS

A. Conform to ANSI/NFPA 70.

B. Obtain electrical permits, plan review, and inspections from authority having jurisdiction.

1.6 SUBMITTALS

A. Submit inspection and permit certificates under provisions of Division 01.

B. Include certificate of final inspection and acceptance from authority having jurisdiction.

C. Submittal review is for general design and arrangement only and does not relieve the Contractor from any requirements of Contract Documents. Submittal not checked for quantity, dimension, fit or proper operation. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provisions of a complete and satisfactory working installation is the sole responsibility of the Contractor.

D. In addition to requirements referenced in Division 01, the following is required for work provided under this division of the specification.

1. Provide material and equipment submittals containing complete listings of material and equipment shown on Electrical Drawings and specified herein, bound in hard cover, loose-leaf binders separate from work furnished under other divisions. Index and clearly identify all material and equipment by item, name or designation used on drawings and in specifications.

2. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics, and capacities; wiring diagrams and controls; component parts; finishes; dimensions; and required clearances.

3. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the work. Delete information not applicable.

4. Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.

5. Coordinate submittals with requirements of work and of Contract Documents.

6. Sign or initial each sheet of shop drawings and product data, and each sample label to certify compliance with requirements of Contract Documents. Notify Architect/Engineer in writing at time of submittal, of any deviations from requirements of Contract Documents.

7. Do not fabricate products or begin work which requires submittals until return of submittal with Architect/Engineer acceptance.

8. Equipment scheduled by manufacturer's name and catalog designations, manufacturer's published data and/or specification for that item, in effect on bid date, are considered part of this specification. Approval of other manufacturer's item proposed is contingent upon compliance therewith.

9. Submittals for Division 26 shall be complete and submitted at one time. Unless given prior approval, partial submittals will be returned unreviewed.

1.7 SUBSTITUTIONS

A. In accordance with the General Conditions and the General Requirements, Substitution and Product Options, all substitute items must fit in the available space, and be of equal or better quality including efficiency performance, size, and weight, and must be compatible with existing equipment.

1.8 PROJECT RECORD DRAWINGS

A. Maintain project record drawings in accordance with Division 01.

B. In addition to the other requirements, mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all electrical work which will become permanently concealed. Show routing of work in permanently concealed blind spaces within the building. Show complete routing and sizing of any significant revisions to the systems shown.

C. Record drawing field mark-ups shall be maintained on-site and shall be available for examination of the Owner’s Representative at all times.

1.9 OPERATION AND MAINTENANCE MANUALS

A. Provide operation and maintenance manuals for training of Owner's Representative in operation and maintenance of systems and related equipment. In addition to requirements referenced in Division 01, the following is required for work provided under this section of the specifications.

B. Manuals shall be hard cover, loose-leaf binders with pages reinforced to prevent pullout and shall be separate from work furnished under other divisions. Prepare a separate chapter for instruction of each class of equipment or system. Index and clearly identify each chapter and provide a table of contents.

C. Unless otherwise noted in Division 01, provide one copy of all material for approval. After approval, provide five corrected approved copies.

D. The following is the suggested outline for operation and maintenance manuals and is presented to indicate the extent of items required in manuals.

1. List chapters of information comprising the text. The following is a typical Table of Contents:

   a. Electrical power distribution

   b. Lighting

   c. Other chapters as necessary

2. Provide the following items in sequence for each chapter shown in Table of Contents:

a. Describe the procedures necessary for personnel to operate the system including start-up, operation, emergency operation and shutdown.

1) Give complete instructions for energizing equipment and making initial settings and adjustments whenever applicable.

2) Give step-by-step instructions for shutdown procedure if a particular sequence is required.

3) Include test results of all tests required by this and other sections of the specifications.

b. Maintenance Instructions:

1) Provide instructions and a schedule of preventive maintenance, in tabular form, for all routine cleaning and inspection with recommended lubricants if required for the following:

a) Lighting fixtures

b) Distribution equipment

2) Provide instructions for minor repair or adjustments required for preventive maintenance routines, limited to repairs and adjustments which may be performed without special tools or test equipment and which requires no special training or skills.

3) Provide manufacturers' descriptive literature including approved shop drawings covering devices used in system, together with illustrations, exploded views, etc. Also include special devices provided by the Contractor.

4) Provide any information of a maintenance nature covering warranty items, etc., which have not been discussed elsewhere.

5) Include list of all equipment furnished for project, where purchased, technical representative if applicable and a local parts source with a tabulation of descriptive data of all electrical-electronic spare parts and all mechanical spare parts proposed for each type of equipment or system. Properly identify each part by part number and manufacturer.

1.10 DEMONSTRATION OF ELECTRICAL SYSTEMS

A. During substantial completion inspection:

1. Conduct operating test for approval under provisions of Division 01.

2. Demonstrate installation to operate satisfactorily in accordance with requirements of Contract Documents.

3. Should any portion of installation fail to meet requirements of Contract Documents, repair or replace items failing to meet requirements until items can be demonstrated to comply.

4. Have instruments available for measuring light intensities, voltage and current values, and for demonstration of continuity, grounds, or open circuit conditions.

5. Provide personnel to assist in taking measurements and making tests.

1.11 WARRANTY

A. In addition to the requirements of Division 1, warrant all materials, installation and workmanship for one (1) year from date of acceptance.

B. Copies of manufacturer product warranties for all equipment shall be included in the operation and installation manuals.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. All Materials and Equipment shall be new and shall be listed by Underwriter's Laboratories or equivalent third party listing agency for the use intended.

B. Materials and Equipment shall be acceptable to the authority having jurisdiction as suitable for the use intended when installed per listing and labeling instructions.

C. No materials or equipment containing asbestos in any form shall be used. Where materials or equipment provided by this Contractor are found to contain asbestos such items shall be removed and replaced with non-asbestos containing materials and equipment at no cost to the Owner.

D. In describing the various items of equipment, in general, each item will be described singularly, even though there may be numerous similar items.

PART 3 EXECUTION

3.1 WORKMANSHIP

A. Install Work using procedures defined in NECA Standard of Installation and/or the manufacturer's installation instructions.

3.2 TESTS

A. Notify Contracting Officer at least 72 hours prior to conducting any tests.

B. Following completion of installation, test system ground in accordance with the requirements of NETA ATS 7.13. and all feeders in accordance with NETA ATS 7.3. Submit logs of values obtained, and nameplate data of instruments used

prior to final inspection. Include a copy of all data in the power distribution section of the Operation and Maintenance Manuals.

C. Perform additional tests required under other sections of these specifications.

D. Perform all tests in the presence of the Owner's authorized representative.

E. The Contractor shall provide written notification to the Owner's authorized representative and the State Electrical Inspector one week in advance of requests for rough-in and substantial completion inspections.

END OF SECTION 260500

SECTION 260519

LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Building wire.

B. Cable.

C. Wiring connections and terminations.

1.2 RELATED SECTIONS

A. Section 260553 – Identification for Electrical Systems

B. Division 31 – Trenching

C. Division 31 – Backfill

1.3 REFERENCES

A. Federal Specification FS-A-A59544 – Cable and Wire, Electrical (Power, Fixed Installation)

B. NEMA WC 5 - Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

C. NETA ATS – Acceptance testing specifications for Electrical Power Distribution and Systems.

D. NFPA 72 – National Electrical Code.

E. UL 83 – Thermoplastic Insulated Wire and Cable.

F. UL 1581 – Reference Standard for Electrical Wires, Cables and Flexible Cords.

PART 2 PRODUCTS

2.1 BUILDING WIRE

A. Thermoplastic-insulated Building Wire: NEMA WC 5.

B. Feeders and Branch Circuits Larger Than 6 AWG: Copper, stranded conductor, 600 volt insulation, XHHW-2 as indicated.

C. Feeders and Branch Circuits 6 AWG and Smaller: Copper conductor, 600 volt insulation, XHHW-2. 6 and 8 AWG, stranded conductor; smaller than 8 AWG, solid conductor.

D. Branch Circuit Wire Color Code:

1. Color code wires by line or phase as follows:

   a. Black, red, and white for 120/240V systems.

2. For conductors 8 AWG and smaller, insulation shall be colored. For conductors 6 AWG and larger, identify with colored phase tape at all terminals, splices, and boxes.

3. When two or more neutrals are installed in one conduit, identify each with the proper circuit number in accordance with Section 26 05 53.

4. Grounding conductors 8 AWG and smaller shall have green colored insulation. For 6 AWG and larger, use green tape at both ends and at all other visible points in between, including pull and junction boxes.

2.2 WIRING CONNECTIONS AND TERMINATIONS

A. For conductors 8 AWG and smaller:

   1. Wet or exterior: Spring wire connectors, pre-insulated “twist-on”, resin filled rated for direct burial per UL 486D.

B. For conductors 6 AWG and larger:

   1. Bus lugs and bolted connections: 600 V, 90 degrees C., two hole long barrel irreversible compression copper tin plated. Thomas & Betts or approved equal.

   2. Two way connector for splices or taps: 600 V, 90 degrees C., compression long barrel, copper tin plated. Thomas & Betts or approved equal. Insulate with Scotch 23 rubber insulating base covering and Scotch 33+ outer wrap.

PART 3 EXECUTION

3.1 GENERAL WIRING METHODS

A. Use no wire smaller than 12 AWG for power and lighting circuits.

B. Splice only in junction or outlet boxes.

C. Neatly train and lace wiring inside boxes, equipment, and panelboards.

D. Wiring in lighting fixture channels shall be rated for 90º C minimum.

E. Do not share neutral conductors. Provide a dedicated neutral conductor for each branch circuit that requires a neutral.

3.2 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Verify that raceway is complete and properly supported prior to pulling conductors. Use UL listed wire pulling lubricant for pulling 4 AWG and larger wires.

B. Do not install XHHW-2 conductors when ambient temperatures are below –5 degrees C.

C. Conductors shall be carefully inspected for insulation defects and protected from damage as they are installed in the raceway. Where the insulation is defective or damaged, the cable section shall be replaced at no additional cost to the Owner.

D. Place an equal number of conductors for each phase of a circuit in same raceway or cable.

E. No more than three current carrying conductors shall be installed in any homerun unless otherwise indicated on the drawings.

F. Completely and thoroughly swab raceway system before installing conductors.

3.3 WIRING CONNECTIONS AND TERMINATIONS

A. Splice only in accessible junction boxes.

B. Thoroughly clean wires before installing lugs and connectors.

C. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

D. Terminate spare conductors with twist on connectors or heat shrink insulation to proper voltage rating.

E. Do not exceed manufacturer's recommended pull tensions.

3.4 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Division 01.

B. Inspect wire and cable for physical damage and proper connection.

C. Torque conductor connections and terminations to manufacturer's recommended values.

D. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

END OF SECTION 260519

SECTION 260526

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Power system grounding.

B. Electrical equipment and raceway grounding and bonding.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements and Section 260500 – Basic Electrical Requirements.

B. Division 01 – Quality Requirements.

C. Section 260500 – Basic Electrical Requirements.

1.3 REFERENCE STANDARDS

A. ANSI/NEMA GR-1 – 2001, Ground Rod Electrodes and Ground Rod Electrode Couplings.

B. ANSI/NFPA 70 – 2005 National Electrical Code.

C. ASTM B 3 – 2001 Standard Specification for Soft or Annealed Copper Wire.

D. UL 467 – 2004 Standard for Grounding and Bonding Equipment.

1.4 SYSTEM DESCRIPTION

A. Provide a complete grounding system for services and equipment as required by State Codes, NEC, applicable portions of other NFPA codes, and as indicated herein.

1.5 COORDINATIONS

A. Division 01 – Administrative Requirements: Requirements for Coordination.

PART 2 PRODUCTS

2.1 MATERIALS

A. Solid Ground Rods: Copper-encased steel, ¾ inch diameter, minimum length 10 feet. Ground rods shall be clean and smooth.

B. Bonding Conductors: Solid bare copper wire for sizes No. 8 AWG and smaller diameter. Stranded bare copper wire for sizes No. 6 AWG and larger diameter. Conductors may be insulated conductors if used provide green insulation.

C. Grounding Conductors: Copper conductor bare or green insulated.

D. Mechanical Grounding and Bonding Connectors: Non-reversible crimp type lugs only. Use factory made compression lug for all terminations.

E. Exothermic Grounding and Bonding Connectors: Exothermic welded type. Welding procedure shall include the proper mold and powder charge and shall conform to the manufacturer's recommendations.

F. In external locations, clamping shall be used only where a disconnect type of connection is required. Connection device may utilize threaded fasteners. Device shall be constructed such that positive contact pressure shall be maintained at all times. Machine bolts with tooth-type lock washers shall be used.

PART 3 EXECUTION

3.1 INSTALLATION

A. Provide a separate, insulated equipment-grounding conductor in all feeder and branch circuits. Terminate each end on a grounding lug, bus, or bushing. Multiple conductors on single lug not permitted. Each grounding conductor shall terminate on its own terminal lug.

B. Supplementary Grounding Electrode: Use driven ground rod in main service equipment area. Bond together system neutrals, service equipment enclosures, exposed non-current carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, and receptacle ground connectors.

C. Grounding conductors for branch circuits shall be sized in accordance with NEC, except minimum size grounding conductor shall be No. 12 AWG.

D. Grounding conductor is in addition to neutral conductor and in no case shall neutral conductor serve as grounding means.

E. Ground rods shall be installed so that the top of the rod is not less than 12inches below finished grade.

3.2 FIELD QUALITY CONTROL

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

B. Upon completion of the ground installation and before connection to the permanent facility power the Contractor shall measure the ground resistance of the grounding electrode system. The Contractor shall immediately notify the Owner's representative if the measured ground resistance is above 20 ohms. The Contractor shall submit a copy of the test report to the Owner's representative within 10 days after testing and before the ground system becomes inaccessible.

C. Continuity Test: Continuity test shall be performed on all power receptacles to ensure that the ground terminals are properly grounded to the facility ground system.

END OF SECTION 260526

SECTION 260529

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDED

A. Conduit supports.

B. Formed steel channel.

C. Equipment bases and supports.

1.2 RELATED WORK

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, and Section 260500 – Basic Electrical Requirements.

1.3 QUALITY ASSURANCE

A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

B. Perform Work in accordance with State of Alaska Standard Specifications.

PART 2 PRODUCTS

2.1 CONDUIT SUPPORTS

A. Manufacturers:

1. Allied Tube & Conduit Corp.
2. Minerallac Fastening Systems.
3. O-Z Gedney Co.
4. Substitutions: per Division 01

2.2 FORMED STEEL CHANNEL

A. Manufacturers:

1. B-Line Systems
2. Allied Tube & Conduit Corp.
3. Unistrut Corp.

4. Substitutions: per Division 01.

B. Product Description: Galvanized 12 gage (2.8 mm) thick steel. With holes 1-1/2 inches (38 mm) on center.

PART 3 EXECUTION

3.1 EXAMINATION

A. Division 01: Verification of existing conditions before starting work.

3.2 INSTALLATION - GENERAL

A. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

B. Install surface-mounted cabinets and panelboards with minimum of four anchors.

C. Securely fasten fixtures and equipment to building structure in accordance with manufacturer's recommendations and to provide necessary earthquake anchorage.

END OF SECTION 260529

SECTION 260533

RACEWAY AND BOXES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Section includes:

B. Metal conduit.

C. Nonmetallic conduit.

D. Fittings and conduit bodies.

E. Pull and junction boxes.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions,

B. Division 01 - General Requirements, Summary, Administrative Requirements

C. Section 260500 – Basic Electrical Requirements

D. Section 260519 – Low Voltage Electrical Power Conductors and Cables.

E. Section 260526 – Grounding and Bonding for Electrical Systems.

F. Section 260529 – Hangers and Supports for Electrical Systems.

G. Section 260553 – Identification for Electrical Systems.

H. Section 262726 – Wiring Devices.

1.3 REFERENCES

A. American National Standards Institute (ANSI):

1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.

B. American Society for Testing and Materials (ASTM):

1. ASTM A 123 – Specification for Zinc Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strip.

C. National Electrical Manufacturers Association (NEMA):

1. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

2. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.

3. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).

4. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

D. National Fire Protection Association (NFPA):

1. NFPA 70 - National Electrical Code.

1.4 RACEWAY AND BOX INSTALLATION SCHEDULE

A. Raceway Minimum Size: All branch circuit conduits are sized on the drawings for copper conductors with 600-Volt type XHHW insulation, unless otherwise noted. Size all raceways not shown on the drawings to not exceed the percentage fill specified in the NEC Table 1, Chapter 9 using the conduit dimensions of the NEC Table 4, Chapter 9 and conductor properties of the NEC Table 5, Chapter 9. Where specific cable is not listed, use cable diameter provided by the manufacturer.

1. Below Grade: Provide 1 inch minimum, unless otherwise noted.

2. Above Grade or Slab on Grade: Provide 1/2 inch minimum, unless otherwise noted. Raceway may be reduced to ½ inch for final connection of raceway up to 6 feet for connection to fixture or device where maximum conduit entry size is ½ inch.

B. Box Minimum Size: Provide all boxes sized and configured per NEC Article 370 and as specified in this section.

C. Outdoor Above Grade, Damp or Wet Interior Locations:

1. Raceway: Provide rigid steel conduit.

2. Boxes and Enclosures: Provide weatherproof malleable iron for branch circuit junction and outlet boxes. Provide weatherproof NEMA 3R stainless steel sheet metal enclosures for safety and disconnect switches.

3. Fittings: Provide galvanized malleable iron with gaskets. Provide Myers threaded hubs for all conduit entries into top and side of sheet metal enclosures.

1.5 DESIGN REQUIREMENTS

A. Conduit Minimum Raceway Size: Conduit is sized on the drawings for copper conductors with 600-Volt type XHHW insulation, unless otherwise noted. Size all raceways not shown on the drawings to not exceed the percentage fill specified in the NEC Table 1, Chapter 9 using the conduit dimensions of the NEC Table 4, Chapter 9 and conductor properties of the NEC Table 5, Chapter 9. Where specific cable is not listed, use cable diameter provided by the manufacturer.

B. Box Minimum Size: Provide all boxes sized and configured per NEC Article 370 and as specified in this section.

1.6 SUBMITTALS

A. Section 013300 - Submittals and Section 260500 - Electrical General Provisions.

B. Product Data: Submit data for products to be provided.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

PART 2 PRODUCTS

2.1 RIGID METAL CONDUIT (RMC)

A. Rigid Steel Conduit: ANSI C80.1, UL 6.

B. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; Galvanized malleable iron with threaded hubs for all conduit entries. Provide threaded connections and couplings only. Set Screw and running thread fittings are not permitted. Provide insulated throat bushings at all conduit terminations.

2.2 PVC COATED RIGID METAL CONDUIT

A. Product Description: NEMA RN 1; rigid steel conduit with external 40-mil PVC coating and internal galvanized surface.

B. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with insulated throat bushings and external PVC coating to match conduit.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Product Description: UL 360, flexible metal conduit with interlocked steel construction and PVC jacket.

B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; liquid tight steel or malleable iron with insulated throat bushings. Die cast fittings are not acceptable.

2.4 RIGID NONMETALLIC CONDUIT (RNC)

A. Product Description: NEMA TC 2; Schedule 40 PVC, rated for 90º C cable.

B. Fittings and Conduit Bodies: NEMA TC 3.

C. Provide PVC-coated rigid steel factory elbows for bends in all plastic conduit runs, regardless of length.

2.5 HIGH DENSITY POLYETHYLENE CONDUIT (HDPE)

A. Conduit: NEMA TC 7; HDPE conduit rated for 90º C cable. Provide Schedule 40 conduit for trade sizes up to 2” and Schedule 80 conduit for trade sizes above 2”.

B. Provide conduit with pullstring installed.

C. Fittings and Conduit Bodies: NEMA TC 7.

2.6 FIBERGLASS REINFORCED EPOXY CONDUIT (FRE)

A. Conduit: NEMA TC-14: heavy wall FRE rated for 90º C cable with minimum wall thickness or 0.095", manufactured from E or E-CR glass and epoxy resin with no fillers and have a minimum resin content of 30%.

B. Fittings and Conduit bodies per manufacturer's recommendations.

2.7 ELECTRICAL NONMETALLIC TUBING (ENT)

A. Not approved for use on this project.

2.8 OUTLET BOXES

A. Cast Boxes: NEMA FB 1, Type FD, galvanized malleable iron. Furnish gasketed cover by box manufacturer. Furnish threaded hubs. "Bell" boxes are not acceptable.

2.9 PULL AND JUNCTION BOXES

A. Cast Metal Boxes for Outdoor and Wet Location Installations: NEMA 250, Type 4X; flat-flanged, surface mounted junction box, UL listed as raintight:

1. Material: Galvanized cast iron or copper-free cast aluminum.

2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover and screws.

B. Cast Metal Boxes for Underground Installations: NEMA 250, Type 4; flat-flanged, flush-mounted junction box, UL listed as raintight:

1. Material: Galvanized cast iron or copper-free cast aluminum.

2. Cover: Furnish with outside flange, neoprene gasket, and recessed stainless steel cover and screws.

C. Fiberglass Concrete composite Type 1A Handholes: Die-molded glass-fiber concrete composite hand holes with pre-cut 6 x 6 inch cable entrance at center bottom of each side:

1. Cover: Glass-fiber concrete composite, weatherproof cover with non-skid finish.

2. Cover Legend: "ELECTRIC"

D. Polymer Concrete Junction Boxes for Underground Installations: Polymer concrete consisting of sand and aggregate bound together with a polymer resin. Internal reinforcement shall be provided by means of steel, fiberglass or a combination of the two. The installed enclosure shall be rated for a minimum test load of 7500 pounds distributed over a 10 inch by 10 inch area and used in

occasional, non-deliberate vehicular traffic or pedestrian traffic application. All hardware shall be stainless steel.

2.10 EXPANSION FITTINGS

A. Galvanized malleable iron, galvanized with grounding bond jumper.

2.11 BUSHINGS

A. Non-grounding: Threaded impact resistant plastic.

B. Grounding: Insulated galvanized malleable iron/steel with hardened screw bond to raceway and conductor lug.

2.12 LOCKNUTS

A. Threaded Electro Zinc Plated Steel designed to cut through protective coatings for ground continuity.

B. Fittings and Accessories: Include factory couplings, offsets, elbows, adapters and support straps required for a complete system. Provide internal ground bonding jumper bonded to each section.

PART 3 EXECUTION

3.1 INSTALLATION

A. Ground and bond raceway and boxes in accordance with Section 260526.

B. Provide seismic support and fasten raceway and box supports to structure and finishes in accordance with Section 260529.

C. Identify raceway and boxes with origin and destination in accordance with Section 260553.

D. Unless otherwise noted, do not inter-mix conductors from separate panelboards or any other system in the same raceway system or junction boxes.

3.2 INSTALLATION - GENERAL RACEWAY

A. Install raceway for all systems, unless otherwise noted.

B. Install an equipment grounding conductor inside of all raceways containing line voltage conductors.

C. Raceway routing and boxes are shown in approximate locations unless dimensioned. Where raceway routing is not denoted, field-coordinate to provide complete wiring system.

D. Cut conduit square; de-burr cut ends. Bring conduit to the shoulder of fittings and couplings and fasten securely. Where locknuts are used, install with one inside box and one outside with dished part against box

E. Use threaded raintight conduit hubs for fastening conduit to cast boxes, and for fastening conduit to sheet metal boxes in damp or wet locations. Sealing locknuts are not acceptable.

F. Install no more than the equivalent of three 90-degree bends between boxes.

G. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2 inch size.

H. Provide protective plastic bushings or insulated throat bushings at each raceway termination not installed to an enclosure. Bushings shall be threaded to the raceway end or connector.

I. Provide weatherhead on all raceway stub ups which are outdoors and do not terminate into equipment

J. Use suitable caps to protect installed raceway against entrance of dirt and moisture.

K. Provide nylon "jet-line" or approved equal pull string in empty raceway, except sleeves and nipples.

3.3 INSTALLATION – GENERAL BOXES

A. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance. All electrical box locations shown on Drawings are approximate unless dimensioned.

B. Use multiple-gang boxes where more than one device are mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems and where normal and emergency power circuits occur in the same box.

C. Orient boxes to accommodate wiring devices oriented as specified in Section 262726.

D. Support boxes independently of conduit.

E. Provide blank covers or plates for all boxes that do not contain devices.

3.4 INSTALLATION – BURIED CONDUITS

A. Excavation and backfilling shall be in accordance with these specifications and the applicable portions of Division 31:

1. Excavate and backfill as necessary for proper installation or work.

2. Provide bracing and shoring as necessary or required.

3. Compact backfill under footings, floor slabs and paving using materials and methods specified under Division 31, Earthwork.

4. All conduits outside the building perimeter shall be buried a minimum of 30 inches below grade. Bottom of trench shall be smoothed and all rocks and cobbles 3 inches and larger shall be removed. Conduits shall be bedded in a minimum of 4 inches of sand and shall have a cover of 4

inches minimum of sand. Trench shall be backfilled with non-frost susceptible material and compacted.

5. Damage to existing underground utilities shall be repaired immediately by the Contractor at no cost to the Owner.

END OF SECTION 260533

SECTION 260553

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Nameplates.

B. Wire and cable markers.

C. Underground warning tape.

1.2 RELATED WORK

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, and Section 260500 – Basic Electrical Requirements.

B. Section 260519 – Cables: Wire and Cable.

C. Section 260533 – Raceway and Boxes.

D. Section 262416 – Panelboards

E. Section 262726 – Wiring Devices

1.3 SUBMITTALS

A. Division 01 and Section 260500 – Basic Electrical Requirements.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 PRODUCTS

2.1 NAMEPLATES

A. Product Description: Laminated three-layer plastic with engraved white letters on black background. Nameplate for service disconnect shall be engraved white letters on red background.

B. Letter Size:

1. 1/4-inch high letters for identifying individual panel or equipment.

2. 1/8-inch high letters for remaining lines with 1/8 inch spacing between lines.

C. Minimum nameplate size: 1/8 inch thick with a consistent length and height for each type of nameplate wherever installed on the project.

2.2 UNDERGROUND WARNING TAPE

A. Product Description: Red, 6-inch wide, detectable.

B. Wording to read “Caution – Buried Electric Line Below”.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION

A. Degrease and clean surfaces to receive nameplates.

B. Install nameplates parallel to equipment lines.

C. Underground Warning Tape Installation: Install underground warning tape along length of each underground conduit, raceway, or cable 6 to 8 inches below finished grade, directly above buried conduit, raceway, or cable.

3.2 NAMEPLATE INSTALLATION

A. Secure nameplates to equipment fronts using machine screws tapped and threaded into panelboard, or using rivets. The use of adhesives is not acceptable. Machine screws to not protrude more than 1/16 inch on back side.

B. Service Disconnect Nameplate: Provide nameplate on exterior service disconnect that reads “SERVICE DISCONNECT”.

C. Branch Panelboard Nameplates:

1. Provide nameplate for each panelboard with the following information:

   a. Line 1: Panelboard name.

   b. Line 2: Voltage, phase and wire configuration.

   c. Line3: AIC rating of the panelboard.

3.3 WIRE IDENTIFICATION

A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identification shall be as follows:

1. Markers shall be located within one inch of each cable end, except at panelboards, where markers for branch circuit conductors shall be visible without removing panel deadfront.

2. Each wire and cable shall carry the same labeled designation over its entire run, regardless of intermediate terminations.

3. Color code phases, neutral, and ground per NEC requirements and Section 260519.

4. For power and lighting circuits, identify with branch circuit or feeder number.

B. Provide pull string markers at each end of all pull strings. Marker shall identify the location of the opposite end of the pull string.

3.4 JUNCTION BOX IDENTIFICATION

A. Label each lighting and power junction box with the panelboard name and circuit number.

3.5 PANELBOARD IDENTIFICATION

A. Provide panelboard circuit directories in accordance with Section 262416.

END OF SECTION 260553

SECTION 262416

PANELBOARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Load centers.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, and Section 260500 – Basic Electrical Requirements.

B. Section 260526 – Grounding and Bonding for Electrical Systems.

C. Section 260553 – Identification for Electrical Systems.

1.3 REFERENCES

A. NEMA AB 1 - Molded Case Circuit Breakers.

B. NEMA PB 1 - Panelboards.

C. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

D. NEMA PB 2.2 - Application Guide for Ground-fault Protective Devices for Equipment.

E. UL 50 – Enclosures for Electrical Equipment

F. UL 67 – Panelboards

G. UL 489 – Molded Case Circuit Breakers and Circuit Breaker Enclosures

H. Federal Specification W-C-375B/Gen – Circuit Breakers, Molded Case, Branch Circuit and Service

1.4 SUBMITTALS

A. Submit data under provisions of Division 01 and Section 260500.

B. Product Data: Submit product data for all components provided which fall under this section showing configurations, finishes, and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.

C. Shop drawings: Submit shop drawings for each load center indicating features and device arrangement and size. Include outline and support point dimensions, voltage, main bus ampacity, and integrated short circuit ampere rating.

D. Submit final panel schedules in Microsoft Excel format with the O&M manuals.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site under provisions of Division 01.

B. Upon arrival at the site inspect equipment and report on any damage.

C. Handle carefully on site to avoid any damage to internal components, enclosures and finishes.

D. Store in a clean, dry environment. Maintain factory packaging and provide an additional heavy canvas or plastic cover to protect enclosures from dirt, water, construction debris and traffic.

1.6 OPERATION AND MAINTENANCE MATERIALS

A. Submit data under provisions of Division 01 and Section 260500.

B. Provide product data and shop drawing information including replacement parts list.

C. Provide installation, operation and maintenance information per manufacturer.

1.7 WARRANTY

A. Manufacturer shall warrant specified equipment to be free of defects for a period of one year from the date of installation.

1.8 SPARE PARTS

A. Keys: Furnish 2 each to Owner.

PART 2 PRODUCTS

2.1 MANUFACTURERS - AND LOAD CENTERS

A. Square D.

B. Cutler Hammer.

C. General Electric.

D. Siemens.

E. Substitutions: Under provisions of Division 01.

2.2 LOAD CENTERS

A. Load Centers: Circuit breaker load center.

B. Enclosure: Enclosure shall be NEMA 3R stainless steel.

C. Provide surface box, with door, with lock on door. Finish in manufacturer's standard gray enamel.

D. Provide load centers with copper bus, ratings as shown on Drawings.

E. Provide copper ground bus in all load centers.

F. Integrated Short Circuit Rating: Provide load centers with short circuit ratings as shown on the plans. Minimum ratings shall be 10,000 amperes RMS symmetrical for 250 volt.

G. Molded Case Circuit Breakers: NEMA AB 1; Provide load centers with plug-on type thermal magnetic trip circuit breakers.

1. Circuit breakers shall have an overcenter, trip free, toggle-type operating mechanism with quick-make, quick-break action and positive handle indication with common trip handle for all poles. Handles shall have ON, OFF, and "Tripped" positions.

2. Circuit breakers shall be UL Listed in accordance with UL standard 489 with current ratings as noted on the plans.

3. Provide circuit breakers UL listed as Type SWD for lighting circuits.

4. Provide circuit breakers UL listed as type HACR for use with heating, air conditioning and refrigeration equipment.

5. Provide UL Class A ground fault interrupter circuit breakers where scheduled on Drawings.

H. Do not use tandem circuit breakers.

2.3 LOAD CENTER IDENTIFICATION

A. Provide typed schedule denoting each circuit load by the load type and final name. Provide panel schedule in O&M manual.

B. Provide signage for arc hazard installed. The marking shall be located to be clearly visible to qualified personnel before examination, adjustment, servicing or maintenance of the equipment. At a minimum the signage shall state the following:

Warning

Arc Flash and Shock Hazard
Appropriate PPE Required

PART 3 EXECUTION

3.1 INSTALLATION

A. Install panelboards plumb at height in accordance with utility requirements, and in conformance with NEMA PB 1.1.

B. Provide filler plates for unused spaces in panelboards.

C. Panel Schedules: Revise schedules to reflect circuiting changes required to balance phase loads.

3.2 FIELD QUALITY CONTROL

A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 20 percent, rearrange circuits in the panelboard to balance the phase loads within 20 percent. Take care to maintain proper phasing for multi-wire branch circuits

B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers.

END OF SECTION 262416

SECTION 262726

WIRING DEVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Wall switches.

B. Receptacles.

C. Device plates and box covers.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 - General Requirements and Section 260500 – Basic Electrical Requirements.

B. Section 260526 – Grounding and Bonding for Electrical Systems

C. Section 260533 – Raceway and Boxes for Electrical Systems

D. Section 260553 – Identification for Electrical Systems

1.3 REFERENCE STANDARDS

A. FS W-C-596 – Federal Specification for Electrical Power Connector, Plug, Receptacle, and Cable Outlet.

B. FS W-S-896 – Federal Specification for Switches, Toggle (Toggle And Lock), Flush Mounted.

C. NEMA WD 1 - General Color Requirements for Wiring Devices

D. ANSI/NEMA WD 6 – Wiring Devices – Dimensional Requirement

E. UL 20 – General-Use Snap Switches

F. UL 498 - Attachment Plugs and Receptacles

G. UL 943 – Ground-Fault-Circuit-Interrupters

1.4 SUBMITTALS

A. Product Data: Submit product data for all components provided that are specified in this section showing configurations, finishes, and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - WALL SWITCHES.

A. Hubbell.

B. Leviton.

C. Pass & Seymour.

D. Arrow Hart.

E. Bryant.

F. Substitutions: Under provisions of Division 01.

2.2 WALL SWITCHES

A. Wall Switches for Lighting Circuits: UL 20; NEMA WD 1; and Federal Specification FS W-S-896 AC industrial grade snap switch with toggle handle, rated 20 amperes and 120-277 volts AC. Handle: nylon. Provide two-pole switches as indicated on Plans.

2.3 ACCEPTABLE MANUFACTURERS - RECEPTACLES

A. Hubbell.

B. Leviton.

C. Pass & Seymour.

D. Arrow Hart.

E. Bryant.

F. Substitutions: Under provisions of Division 01.

2.4 RECEPTACLES

A. Convenience and Straight-blade Receptacles: UL 498, NEMA WD 1 and Federal Specification FS W-C-596 industrial grade receptacle.

B. Convenience Receptacle Configuration: NEMA WD 1; Type 5-20R, nylon face.

C. GFCI Receptacles: 20A, duplex convenience receptacle with integral class ‘A’ ground fault current interrupter, LED indicator lamp, and integral lockout function.

D. Weather-Resistant Receptacles: Listed to the weather-resistant supplement of UL498 and complying with the requirements of NEC 406.8.

2.5 ACCEPTABLE MANUFACTURERS – DEVICE PLATES

A. Hubbell.

B. Leviton.

C. Pass & Seymour.

D. Mullberry.

E. Red Dot.

F. Raco.

G. Substitutions: Under provisions of Division 01.

2.6 DEVICE PLATES

A. Weatherproof Cover Plate: UL listed, cast aluminum, hinged outlet cover/enclosure, with gasket between the enclosure and the mounting surface, suitable for wet locations while in use.

PART 3 EXECUTION

3.1 INSTALLATION

A. Indicated on Contract Drawings. OFF position down.

B. Install specific-use receptacles at heights shown on Contract Drawings.

C. Unless otherwise noted, mounting heights are for finished grade to center line of outlet.

D. Install devices plates flush and level.

E. Ground receptacles to boxes with a grounding wire. Grounding through the yoke or screw contact is not an acceptable alternate to the ground wire.

END OF SECTION 262726

SECTION 265600

EXTERIOR LIGHTING

PART 1 GENERAL

1.1 WORK INCLUDED

A. Exterior luminaires and accessories.

B. Lamps.

C. Ballasts.

D. Poles.

1.2 RELATED WORK

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements, and Section 260500 – Basic Electrical Requirements.

B. Division 09 – Finishes: Painting.

C. Division 31 - Earthwork: Excavation and backfill for utilities on site.

1.3 REFERENCES

A. ASTM D635 - Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.

1.4 SUBMITTALS

A. Product Data: Submit the following:

1. Luminaires: Include manufacturer's product data sheets and/or shop drawings including outline drawings showing support points, weights, and accessory information for each luminaire type.

2. Lamps: Submit manufacturer's product data sheets for each lamp used on the project. Indicate which luminaires each lamps is used in.

3. Ballasts: Submit manufacturer's product data sheets for each different type of ballasts used on the project. Indicate which luminaires each ballast is used in.

B. **Exterior Fixture Substitutions:** Submit calculations to show that substitute parking lot lighting fixtures meet or exceed the lighting levels, uniformity ratios, fixture electrical load (less than or equal) and LEED SS8 compliance, as shown on the drawings.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Manuals:

1. Provide recommended luminaire cleaning and re-lamping schedule. If any luminaire lenses require special lubricants for cleaning, include this in the schedule.

2. Provide detailed bill of materials for all items purchased in this section including distributor's contact name, phone number and pertinent information.

3. Provide luminaire manufacturer's installation instructions.

4. Include any specific warranty information provided by the manufacturer for luminaires, lamps and ballasts.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site, store and protect under provisions of Division 01.

1.7 EXTRA STOCK

A. Provide spare parts under provisions of Division 01.

B. Lenses: Three percent of quantity furnished, minimum of one of each size and type.

C. Ballasts: One of each size and type installed.

PART 2 PRODUCTS

2.1 EXTERIOR LUMINAIRES AND ACCESSORIES

A. Luminaires: Provide UL listed luminaires as scheduled on the drawings or as approved equal.

B. Listing: Luminaires shall be listed for use in the environment in which they are installed. For example, luminaires installed in return air plenums, direct contact with insulation, or in hazardous, wet, damp, or corrosive locations shall be UL listed for such application.

C. Accessories: Provide all mounting kits, supports, interconnecting wiring, power supplies, trim kits, gaskets, etc. for a complete installation.

2.2 ACCEPTABLE MANUFACTURERS - POLES

A. PLP

B. Shakespeare Whatley Substitutions: Under provisions of Division 01.

2.3 LIGHTING POLES

A. Fiberglass Poles: Round tapered fiberglass reinforced composite lighting pole with anchor base. The pole shall be constructed by the filament winding process from thermosetting polyester resin and contain a minimum of 65% fiberglass by weight. The fiberglass filament shall be helically-wound under uniform tension. The resin shall be ultraviolet (UV) resistant and pigmented the same color as the final coating. The color shall be uniform throughout the entire wall thickness. A highly weather resistant, pigmented polyurethane coating with a minimum dry film thickness of 1.5 mils shall be applied to the pole. The surface of the pole shall have a smooth finish that is uniform along the entire length on the pole. The pole shall be flame resistant in accordance with ASTM D635. The pole top shall be reinforced and drilled to accommodate the number and type of fixtures provided. The pole shall be provided with a 4” x 6” oval handhold with a non-metallic cover secured with a vandal-resistant stainless steel socket head screw. Pole tops shall be capped. Caps shall match the finish of the pole.

B. Wind Load: 130 mph velocity with a gust factor of 1.3 per AASHTO standard specifications for structural supports for highway signs, luminaries and traffic signals with luminaries and brackets mounted.

C. Hand Hole: Drilled hand access hole at manufacturer's standard location. Provide matching gasketed cover plate.

D. Pole Top:Side mount luminaire to pole top and provide pole cap. Anchor Bolts: As recommended by pole manufacturer. Provide template, flat washers, lock washers, and hex nuts for each pole.

E. Pole Base Cover: Shall match pole finish and shall extend down to concrete cap over pole base to completely cover anchor bolts and flange between pole and driven pile.

PART 3 EXECUTION

3.1 INSTALLATION

A. Luminaire Pole Bases: Size and constructed as indicated on Drawings. Project anchor bolts 2 inches minimum above base. Install poles on bases plumb; provide double nuts for adjustment and pole base covers. After adjusting of pole to be vertical, pack grout under pole base to provide full contact with the foundation.

B. Use belt slings or non-chafing ropes to raise and set pre-finished luminaire poles.

C. LED Power Supplies: Install power supplies to be readily accessible. Where power supplies are installed outdoors, provide UL listed enclosures rated to -40F.

3.2 ADJUSTING AND CLEANING

A. Align luminaires and clean lenses and diffusers at completion of Work. Clean paint splatters, dirt, and debris from installed luminaires.

B. Touch up luminaire and pole finish at completion of work.

END OF SECTION 265600

SECTION 310000

EARTHWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This work consists of the earthwork shown on the Plans and Specifications including excavating and backfilling of material required for the construction of utilities, boat launch ramps, new fill sections, drain pipes, and other structures, as well as cutting, filling, shaping, and compacting existing surface in preparations for leveling course and furnishing and placing material on an approved surface.

1.2 RELATED SECTIONS

A. The Work of the following Sections is related to the Work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this Work. It is the Contractor's responsibility to perform the Work required by the Contract Documents.

B. Section 013300 – Submittal Procedures

C. Section 310519 – Geotextile

D. Section 352023 – Dredging

E. Section 015700 – Erosion Control and Pollution Prevention

1.3 REFERENCES

A. Plans and Specifications

B. American Society for Testing and Materials:

1. ASTM D75: Standard Practice for Sampling Aggregates.

2. ASTM D422: Standard Test Method for Particle-Size Analysis of Soils

3. ASTM D698: Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

4. ASTM D1557: Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft3 (2,700 kN-m/m3)).

5. ASTM D2216: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.

6. ASTM D2487: Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

7. ASTM D2922: Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

8. ASTM D3017: Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

C. Alaska Department of Transportation and Public Facility (ADOTPF) Standard Specifications for Highway Construction (SSHC).

1.4 QUALITY ASSURANCE

A. Contractor shall employ a testing laboratory acceptable to the Owner's Representative to perform material evaluation tests and to monitor fill placement.

B. Furnish each aggregate material from single source throughout the Work.

C. Materials and installed work may require testing and re-testing, as directed by the Owner's Representative, at any time during progress of work. Contractor shall provide access to materials stockpiles at all times. All testing, including re-testing of rejected materials and installed work, as directed by the Owner's Representative shall be at Contractor's expense.

D. Gradations of aggregates shall be within specified limits and verified by ASTM D422.

1.5 SUBMITTALS

A. Section 013300 – Submittal Procedures: Requirements for Submittals

B. Materials Source – Submit name of imported materials suppliers.

C. Samples – Submit one, ten-pound sample of each type of fill, import or usable excavation, to an approved testing laboratory, in airtight containers.

D. Test Reports – Contractor shall submit a gradation test in accordance with ASTM D422 and a standard proctor test in accordance with ASTM D698 for each type of material used in fills or backfills.

1.6 DEFINITIONS

A. Beach Sand: Fill material as specified under Paragraph 2.1 of this Section.

B. Compaction: The application of controlled forces to soils placed in lifts, using mobilized equipment, to achieve a prescribed soil density, in accordance with established standards.

C. Completed Course: A course or layer that is ready for the next layer or next phase of the Work.

D. Coverage: Coverage is defined as the requirement of successive trips of a piece of compaction equipment, which by means of sufficient overlap, shall ensure that all areas of the layer being compacted have been subjected to at least one pass of the compaction equipment.

E. Imported Material: Material obtained by the Contractor from sources off site.

F. Optimum Moisture Content: The moisture content for a given soil that will result in the maximum dry unit weight when subjected to the ASTM D698 compaction test.

G. Percent Compaction: The percent compaction in-place shall be calculated as the ratio (in percent) of the in-place dry density to the estimated maximum dry density, in accordance with ASTM D698/D1557, of the representative fill material at the location of the in-place density test.

H. Prepared Subgrade: The ground surface after clearing, grubbing, stripping, grading, excavation, smoothing, and/or compaction.

I. Proof Rolling: Observation of tested soils under moving loaded equipment to verify that no soft or pumping areas remain in any layer of foundation soil.

J. Site: The property shown on the Drawings, easements and rights-of-way for roads, drainage facilities, and pipelines, and the Contractor's working and storage areas adjacent to the work area.

K. Stockpiles: Soil temporarily placed in piles for future use.

L. Suitable Material: Material imported or excavated from the cut areas, which is suitable for use as fill material.

M. Well-Graded: A mixture of particle sizes that has no specific concentration, or lack thereof, of one or more sizes. A material type that, when compacted, produces a strong and relatively incompressible soil mass.

PART 2 PRODUCTS

2.1 Beach Sand

A. Beach Sand – Imported sand material shall be satisfactory soils meeting ASTM D2487 Soil Classification Group SW, free of rock or gravel greater than 3/8 on an inch in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter as approved by the Engineer.

Beach Sand	
US Standard Sieve Size	**Percent Passing by Weight**
3/8"	100
No. 4	80-100
No. 10	50-80
No. 40	20-50
No. 100	0-20
No. 200	0-8

2.2 LEVELING COURSE

A. Leveling course shall be soils as outlined in Alaska DOT section 703-2.03 classification D-1 as outlined and modified below. It shall be crushed stone or crushed gravel and consist of sound tough durable pebbles or rock fragments of uniform quality. It shall be free of deleterious materials including debris, waste, frozen materials, vegetation, and clay balls as approved by the Engineer. Leveling Course shall be compacted to 95% density after placement. It shall meet the following gradation:

Leveling Course	
US Standard Sieve Size	**Percent Passing by Weight**
1”	100
¾”	70 – 100
No. 4	35 - 65
No. 8	20 - 50
No. 50	8 – 30
No. 200	0 - 8

2.3 SOURCE QUALITY CONTROL

A. All imported materials specified in this Section are subject to the following requirements:

1. All tests necessary for the Contractor to locate an acceptable source of imported material shall be made by the Contractor. Certification that the material conforms to this Specification requirements along with copies of the test results from a qualified commercial testing laboratory shall be submitted to the Engineer for approval at least ten working days before the material is required for use.

2. All material samples shall be furnished by the Contractor at the Contractor's sole expense. Samples shall be representative and be clearly marked to show the source of the material and the intended use on the project. Sampling of the material source shall be done by the Contractor in accordance with ASTM D75. The Contractor shall notify the Engineer at least one working day prior to sampling. The Engineer may observe the sampling procedures. Tentative acceptance of the material source shall be based on an inspection of the source by the Engineer and/or the certified test results submitted by the Contractor to the Engineer.

3. Preconstruction material quality evaluations shall be performed by the Contractor. The Engineer will be provided the opportunity to review the Contractor’s entire preconstruction test results for acceptance and to classify the materials prior to incorporation in the respective cover system components fill.

4. No imported materials shall be delivered to the site until the proposed source and materials tests have been accepted in writing by the Engineer.

5. If variation in gradation is occurring, or if the material appears to depart from this Specification, the Contractor shall provide additional gradation tests as requested

by the Engineer at no additional cost to the Owner. Test results shall be forwarded to the Engineer within two working days after sampling.

6. If tests conducted by the Contractor or the Engineer indicate that the material does not meet Specification requirements, material placement shall be terminated until corrective measures are taken. Material not conforming to this Specification's requirements that is placed on site shall be removed and replaced at the Contractor's sole expense. Sampling and testing performed by the Contractor that is required in the Contract Documents or is otherwise required by the Engineer due to failure of the materials to meet specifications shall be done at the Contractor's sole expense.

PART 3 EXECUTION

3.1 GENERAL

A. Equipment

1. All equipment and tools used in the performance of this Work are subject to the approval of the Engineer before Work is started.

2. Provide compaction equipment appropriate for the material types to obtain the densities specified.

3. Operate and maintain compaction equipment in accordance with the manufacturer's instructions and recommendations. If inadequate densities are obtained, provide larger and/or different type equipment at no additional cost to the Owner.

4. Provide equipment for applying water of a type and quality adequate for the Work, free of leaks and equipped with a distributor bar or other approved device to ensure uniform application.

5. Provide equipment for mixing and drying out material, such as blades, discs, or other approved equipment.

B. Verification of Conditions

1. Verify all lines, limits and grades prior to beginning construction activities.

2. Verify that the survey control system is installed and properly protected from construction operations prior to earthwork.

3. Notify Engineer of any unexpected subsurface conditions encountered.

C. Request underground utilities to be located and marked within and surrounding construction areas no less than three working days before performing Work within the project area.

1. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Coordinate with the Owner's Representative and utility companies in keeping respective services and facilities in operations. Repair damaged utilities to satisfaction of utility owner.

2. Provide a minimum 48-hour notice to utility company and the contracting officer before interrupting any utility.

3. Maintain and protect existing utilities to remain.

3.2 PREPARATION

A. The Contractor will ensure environmental and site control measures are in place and working properly before the start of Work.

B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by the work.

C. Prevent surface water and groundwater from entering excavations, from ponding on prepared subgrades, and from flooding the project site and surrounding area.

D. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

E. All excavation shall occur within the work area as identified on the Plans.

F. Prior to backfilling, the Contractor shall obtain permission in writing from the Engineer.

G. Provide traffic warning signs, barricades, warning lights, or other devices as might be required to provide for the safety and protection of persons or property.

H. Establish temporary traffic control and detours when trenching in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.

3.3 EXCAVATING

A. All excavations, trenching, and shoring shall comply with the rules and regulations as established by OSHA Construction Safety and Health Regulations 29 CFR, Part 1926, Subpart P, Excavation, Trenching and Shoring. OSHA Pamphlet 2226, Excavation and Trenching Operations, can be used as an additional aid.

B. Perform excavation of every description, regardless of the type, nature, classification, or condition of the material encountered, as specified, shown, or required to accomplish the construction.

C. Limits of Excavation

1. Design and use sloping, sheeting, and bracing as necessary to protect existing structures from damage.

2. Excavate to lines, grades, and dimensions, as shown on the Drawings or as required to complete the Work.

3. Excavation beyond limits shown on the Drawings will be at no additional cost to the Owner. A horizontal tolerance beyond the excavation limits of 1-foot for areas where machine excavation work is performed in standing water, and 6-inches for machine excavation of dry areas, will be allowed. No excess material left above the grading limits will be allowed.

4. Unauthorized overexcavation shall be replaced with the same fill material as specified for the overlying fill or backfill, compacted as required for such overlying fill or backfill. Correct all unauthorized over-excavated areas at the Contractor's sole expense.

5. At the conclusion of each day's work, all excavations shall be either backfilled, barricaded or adequately fenced and protected at a minimum to OSHA standards to avoid injuries to pedestrians, motorists and wildlife.

D. Dewatering

1. Discharge of water from the work area shall be in accordance with the Construction Stormwater Pollution Prevention Plan and the Contractor's Temporary Erosion and Sedimentation Control Plan. Discharge of waters shall be undertaken such that no damage occurs to temporary or permanent drainage control features, and there is no unacceptable discharge of sediment off site.

E. Handling and Disposal of Unsuitable Soils

1. All unsuitable excavated material and debris shall be property disposed of at a location approved by the Owner's Representative.

3.4 OVEREXCAVATION

A. All overexcavation below depths shown on the Drawings shall only be completed with written approval of the Engineer.

B. When directed, overexcavation shall be completed in 1-foot vertical increments. Notwithstanding other factors, this overexcavation shall be completed in accordance with Paragraph 3.3 Excavating of this Specification.

C. At the approval of the Engineer, overexcavation shall be replaced using similar material. Replacement of overexcavated materials shall be completed in accordance with these Specification.

3.5 STOCKPILING

A. The Contractor shall stockpile excavated material as necessary to perform the work.

B. Stock pile materials in shaped, graded, drained and covered stockpiles. Stockpile soils away from the edge of the excavation.

3.6 PLACING AND SPREADING FILL MATERIALS

A. Do not place fill until preparation of the underlying surface has been completed in accordance with the Contract Documents and has been accepted by the Engineer.

B. Place fill materials to the lines and grades shown on the Drawings with specified suitable materials.

C. Stop fill placement temporarily during unsuitable weather conditions or as requested by the Engineer. Fill materials shall not be placed, spread or compacted at unsuitably high

moisture contents. When Work is interrupted by heavy rains, fill operations, other than those for moisture control, shall not be resumed until field tests indicate the moisture content is within the specified tolerances. Moisture content ranges indicated in this Specification represent the moisture content required at the time the material is undergoing compaction.

D. Place fill materials in continuous layers not exceeding the requirements for loose lifts described for each fill material or fill application of this Specification.

E. All soil materials shall be compacted and tested to the requirements of this Specification and ADOTPF-SSHC. If the Contractor cannot attain the specified densities with the maximum lift thicknesses specified, the lift thickness shall be reduced and/or heavier compaction equipment shall be provided. Adjustments to achieve compaction shall be at no additional cost to the Owner.

F. Distribute the moisture content of the fill material uniformly throughout each layer of the material prior to and during compaction.

G. Uniformly grade areas to provide a finished surface that is smooth, compacted and free of irregularities. Comply with compaction requirements and grade to cross sections, lines and elevations indicated.

H. Protect newly graded surfaces from erosion.

I. If, in the opinion of the Engineer, the underlying surface is not suitable for fill placement, the underlying surface shall be subject to additional Work. The cost of any additional Work required shall be incidental to and included in the pay items listed in the bid items list. Additional Work shall include, but not be limited to the following:

1. If the underlying surface of any layer of the fill is too dry and/or too smooth to bond properly with the layer of material to be placed thereon, moisten and/or scarify to provide a satisfactory bonding surface, before the next layer of fill material is placed.

2. If the underlying surface of any layer of the fill is too wet, either remove and/or scarify/disk in-place and allow to dry to reduce the moisture content to the required amount in accordance with the requirements in the Contract Documents. Recompact and verify that material is meeting the project compaction requirements before the next layer of fill is placed.

J. Mixing and placing of materials shall avoid segregation and degradation of materials.

3.7 COMPACTION

A. Proof roll subgrades before filling with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll over wet or saturated subgrades.

B. Place backfill materials in layers not more than 12-inch thick loose lifts for material compacted by heavy compaction equipment, and not more than 6-inch thick loose lifts for material compacted by hand operated tampers.

C. Provide adequate moisture or aerate material to achieve required compaction.

D. Borrow material shall be compacted to 90% of ASTM D698.

E. Imported fill and leveling course material shall be compacted to 95% of ASTM D698.

3.8 COMPACTION TESTING

A. Borrow, imported fill and leveling course materials: One compaction test for each lift layer placed and not less than one test per 2,000 sf of compacted work area. Failed test areas shall be recompacted and retested at no additional cost until compaction requirements are achieved.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement for excavation backfilling includes all equipment, materials and labor for preforming the work as shown on the Drawings and in accordance with this Specification

4.2 PAYMENT

A. No separate payment will be made for Earthwork associated with other items of the work. Measurement and Payment shall be included in the Work of the specified Section to which it applies.

B. Payment for Beach Sand shall be made under the following units:

Item	Pay Unit
Furnish and Install Beach Sand	Per Cubic Yard

END OF SECTION

SECTION 316200

STEEL PIPE and SHEET PILES

PART 1 GENERAL

The Work covered by this section consists of providing all plant, labor, equipment, supplies, materials, transportation, handling, storage, and performing all operations required to furnish and install steel pile for the new harbor float system in accordance with the specifications and drawings.

The Contractor shall be responsible for furnishing piles of sufficient length and suitable pile driving equipment to obtain the required penetration and capacity shown on the plans. The Contractor may (at no additional expense to the Owner) drive test piles, make borings or other such other investigations as deemed necessary to determine required driving equipment or site characteristics.

Limited soils exploration studies and resulting geotechnical reports are included in the Appendix.

The Contractor shall install the piles in accordance with this specification, and as shown on the plans.

1.1 REFERENCES

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. The version most current at the time of bid opening shall be used for this project.

ASTM INTERNATIONAL (ASTM)

ASTM A 36/A 36M	Carbon Structural Steel
ASTM A 572/A 572M	High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM A 123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 252	Welded and Seamless Steel Pipe Piles
ASTM A 588/A 588M	High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 in. (100 mm) Thick
ASTM A 780	Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM D 1143	Piles Under Static Axial Compressive Load

AMERICAN WELDING SOCIETY (AWS)

AWS C2.23	Application of the Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel.
AWS D1.1	Structural Welding Code – Steel

1.2 SUBMITTALS

Submit the following in accordance with the General Conditions, Special Conditions, and as amended by these technical provisions:

A. Steel Piles:

1. Certified mill test reports covering chemical and physical tests conducted on the steel shall be furnished to the Engineer for each heat number of metal included in the shipment.
2. Product Data, Shop Drawings, and Specifications. Manufacturer's product data and specifications for piles, cutting shoes, pile hammer, and driving helmet. Indicate driving energy and recommended rate of operation.
   a. Shop drawings and product data shall include location of proposed shop splices (if any).
   b. Proposed pile driving hammers, leads and methods for maintaining pile alignment.
   c. Coatings and Coating Repair Products and Procedures.
3. Weld inspection reports
4. Welder's certificates that include a statement that specifically certifies that welders employed on the work have been qualified as specified in AWS D1.1 for the particular process or processes that the welder will perform on this project. Submittal shall also specifically certify that welders qualifications remain in effect in accordance with AWS D1.1.
5. Pile-Driving Records: Submit to the Owner's Representative complete and accurate job pile records as specified in paragraph entitled "Records" of this section, within 15 calendar days after completion of driving.

B. Pile Driving Plan

1. The contractor shall submit a Pile Driving Plan at least two weeks prior to mobilizing to the site. The Plan shall contain the following items at a minimum:
   a. Detailed description pile driving hammer(s), cushions and other driving equipment.
   b. Detailed description of the template or means used to maintain alignment during pile installation.
   c. A schedule of driving activities indicating which pilling will be driven first, length of time for field splices, assessment of possible set-up during welding down time and other times.
   d. A detailed plan describing the planned installation of a typical pile step by step. Specifically how and when each piece of the driving equipment, including templates will be used.
   e. An Installation Plan including methods to be used to ensure accurate pile position, alignment, and embedment depth.
   f. Criteria to accept or reject piling based on the above monitoring and means to correct piling that do not meet acceptance criteria. Included in this shall be a description of how to deal with obstructions and damaged piling.

PART 2 PRODUCTS

2.1 GENERAL

A. All materials shall be new. Alternatives and substitutions shall be in accordance with *General Provisions*.

2.2 PILES

A. <u>Steel Pipe Piles</u>

1. Steel piles for use as anchor piles shall be furnished by the Contractor and shall be the diameter and wall thickness shown on the plans and shall be ASTM A53 Grade B, ASTM A500 Grade B or B/C, or ASTM A252 dual certified to meet ASTM A500 Grade B (or B/C).

2. Pipe piles shall be of steel, round, spiral or longitudinally welded, of sufficient strength to prevent harmful distortions during driving, after completion of driving and during driving of adjacent casings.
3. The sleeve pile shall have a conical driving shoe. The pile shall be fabricated prior to galvanizing.
4. The removable pipe shall have a conical tip to fit the conical driving shoe of the sleeve pile. The conical tip, and lifting eye shall be welded to the pipe prior to galvanizing.
5. Field splices will not be allowed. Piles bent or otherwise damaged will be rejected.
6. Coating: Except as otherwise noted, hot-dip galvanize all pipe piles after fabrication in accordance with ASTM A 123. Minimum coating thickness is 2.3 ounces per square foot.
7. Pile lengths: Piles shall be furnished by the Contractor in sufficient quantity to meet the requirements for the pile types shown on the drawings. The lengths shown on the drawings are based on lengths, which are assumed to remain in the completed structure. The Contractor shall, at his own expense, increase the lengths given to provide for fresh heading and for such additional length as may be necessary to suit the Contractor's method of operations.

B. Steel Sheet Pile

1. Steel sheetpile shall be of the type and length as indicated on the plans.
2. Meet the requirements specified herein, except as otherwise indicated below. Heavy gage hot-rolled sheet piling shall conform to ASTM A 572, Grade 50 or ASTM A 690. The interlock of sheet piling shall be free-sliding, allow a swing angle of at least 5 degrees when threaded and maintain continuous interlocking when installed. Sheet piling shall be full-length sections of the dimensions shown without splices. Provide sheet piling with standard pulling holes.
3. All sheets shall be of sufficient length to achieve specified penetration and top elevation, allowing for sheet cutoff due to driving damage, and other unforeseen deleterious conditions. Sheet piles shall be undamaged at the exposed end after final driving and cutoff, and shall meet the elevation requirements indicate in the construction documents

2.3 PROTECTIVE COATINGS

A. All new steel piles shall be hot-dip galvanized after fabrication in accordance with ASTM A-123.

B. Galvanize repair all field damaged areas using the flame-spray method in accordance with ASTM A780, AWS C2.23, and Section 099626.

2.4 Anchor Chain Connection

A. The Anchor Chain Connection tabs shall be welded to the pile top prior to hot dip galvanizing. All metal fabrication and welding shall be done in accordance with Section 055000, Metal Fabrications

B. The cost of the anchor chain connection tabs shall be included in the cost of fabricating the pile.

PART 3 EXECUTION

3.1 SHOP FABRICATION

A. Fabricate the piles in the longest lengths practicable. All pile splice welds shall develop the full strength capacity of the pipe.

B. All welding shall be in accordance with, and by welders currently certified in accordance with AWS D1.1 for the type of welding specified.

3.2 CORROSION PROTECTION

A. Piles will be delivered to the site with galvanized coating as specified herein.

3.3 INSTALLATION

A. Inspect piles when delivered and when in the leads immediately before driving. Piles shall be handled in a manner to protect the pile and coatings.

B. Driving Piles

1. Piles shall be driven to within the tolerances specified in paragraph, TOLERANCES of this Specification.

2. Pipe Pile driver leads, templates, or hammer carriages constructed in such a manner as to afford freedom of movement of the hammer shall be used. Leads shall also be held in such a manner to provide lateral support to the pile during driving. The use of a follower may be necessary as the pile tops are to be driven below the normal water level elevation. Templates shall be lined with a plastic or timber bearing surface designed to protect the coating. Templates shall be designed to accommodate the anchor chain connection tabs welded to the top of the pile, while still adequately guiding the pile

3. In lieu of using leads, air hammers with helmets and boots to fit the various diameters of pile may be used for driving float piles through tightly blocked pile collars or tight collars mounted solidly on the driving barge. Pile heads shall be driven to grade or cut squarely and a driving cap shall be provided to hold the axis of the piles in line with the axis of the hammer.

4. A sufficiently sized vibratory hammer may be used to drive the piles to the specified embedment depth, as driving conditions allow.

5. It is the contractor's responsibility to select hammers capable of driving the piles to the required embedment depth in the expected soil conditions. If the contractor elects to use a vibratory hammer, it is recommended that a sufficiently sized impact hammer be available in case hard driving conditions are encountered. The vibratory hammer may only be used if it can be demonstrated not to have an adverse effect on nearby slopes. The contractor is responsible to repair and restore slopes damaged by driving, and switch to a suitable hammer at no cost to the owner.

6. Prior to driving Sheetpile, provide a template or driving frame suitable for aligning, supporting, and maintaining sheet piling in the correct position during setting and driving. The template shall have two pair of walings; walings on both sides of the sheets. Use a system of structural framing sufficiently rigid to resist lateral and driving forces and to adequately support the sheet piling until design tip elevation is achieved. Provide at least two levels of support; one pair of guide walings shall be as low as possible, either at ground level or just above low water. The distance between the two sets of walings shall be as large as practical. Templates shall not move when supporting sheet piling. Fit templates with wood blocking to bear against the web of each alternate sheet pile and hold the sheet pile at the design location alignment. Provide outer template straps or other restraints as necessary to prevent the sheets from warping or wandering from the alignment. Mark template for the location of the leading edge of each alternate sheet pile. If in view, also mark the second level to assure that the piles are vertical and in position. If two guide marks cannot be seen, other means must be used to keep the sheet pile vertical along its leading edge.

7. Steel sheet piles shall be driven to specified sheet tip depth or to practical refusal, whichever should occur first.

8. Sheet piles shall be driven in panels of no less than six (6) pairs and no more than twelve (12) pairs using customary methods for driving panels.

9. If practical refusal occurs prior to achieving the specified sheet tip depth steel sheet pile driving operations shall be suspended immediately and the Owner's Representative shall be contacted at once. Driving shall not recommence until further direction is received from the Owner's Representative. No pile cut-offs will be allowed without authorization.

10. Maintain sheet piling vertical during driving. Drive piles in such a manner as to prevent damage to the piles and to provide a continuous closure. Drive steel sheet pile with the ball end leading. Incrementally sequence driving of individual piles such that the tip of any sheet pile shall not be more than 4 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 during driving.

11. Surveillance and inspection of the pile driving operation is required. No pile shall be driven in absence of the Owner's Representative. The Contractor shall notify the Owner's Representative of the driving schedule at least 48 hours prior to driving any piles.

12. Pile Driving Analysis: The Contractor shall select a hammer that will advance the pile tips to the specified elevations as indicated on the contract drawings without damaging the piles. Data shall be logged in accordance with paragraph RECORDS of this section, for all piles. The Contractor shall coordinate and mark the piles at the request of the Owner's Representative.

13. Each permanent pile shall be driven without interruption from the first blow of the hammer until the required tip elevation has been attained. Deviation from this requirement will be permitted only for unforeseen causes, with the approval of the Owner's Representative.

14. The Owner's Representative may require certain piles to be re-driven, depending on the Owner's Representative's or Engineer's judgment of driving conditions. Such piles will be re-driven 24 hours or more after being driven to the required elevation and position. All costs and delays associated with redriving up to ten percent of the total number of piles shown on the plans shall be incidental to the cost of the project.

C. Hard Driving and Obstructions to Driving:

1. Any obstruction to driving anchor piling shall be removed by use of industry standard means such as with a crane and sling or bucket, spudding, or other means. Obstructions within 5 feet of existing mudline shall be removed and shall be considered incidental to the bid item in question.

2. In the event that the desirable penetration and capacity shown on the plans cannot be obtained by the driving methods and equipment utilized by the Contractor and/or structural damage to the piles is, in the opinion of the Engineer, likely to result from continuation of these methods, the Engineer may give consideration to acceptance of the piles at a lesser penetration when, in the Engineer's judgment, the adequacy and safety of the resulting structure will not be jeopardized by such acceptance, or if in the case of float piles, it can be demonstrated that adequate lateral pile support, as determined by the Engineer, exists to restrain and secure the floats.

3. If in the judgment of the Owner's Representative or Engineer, the achieved penetration is inadequate, the Owner's Representative may order a replacement pile or piles driven for which the Contractor will be paid in accordance with the unit prices of the Contract. The uncompleted pile shall be pulled or cut off at the elevation directed by the Owner's Representative.

E. Cutting and Sheetpile

1. Piles driven to the specified sheet tip depth shall be cut off to the required top elevation.

2. Trim the tops of piles excessively damaged 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 or may be burned and reamed by approved methods which will not damage the surrounding metal. Holes other than bolt holes shall be reasonably smooth and the proper size for rods or other items to be inserted.

D. Damaged and Misdriven Piles:

1. The method used in driving piles shall not subject them to excessive and undue abuse resulting in deformation of the steel. Manipulation of the piles to force them into proper position will not be permitted.

2. Any pile damaged in driving by reason of internal defect, damaged by improper driving, or driven out of its proper location shall be removed and replaced by a new pile or shall be cut off and a second pile driven as directed by the Owner's Representative, at the expense of the Contractor.

3. Should the Contractor damage the pile top during driving so as to interfere, in the opinion of the Owner's Representative, with the satisfactory driving of the pile, the driving shall be discontinued, the pile shall be cut perpendicular to its axis, and the driving shall then be resumed. Any pile which is damaged in driving (other than at the top) shall be withdrawn and another pile shall be substituted; or, if permitted by the Contacting Officer, the damaged pile may be spliced at some point such that the completed pile will be satisfactory, all at no additional expense to the Owner.

3.1 TOLERANCES IN DRIVING

A. Piles shall be driven as accurately as practicable in the correct locations, true to line both laterally and longitudinally.

B. Anchor piles shall be driven in true alignment and location to within a 2 inch radius of the horizontal design location and so that the pile top is between EL 8'-0" and EL 8'- 2". Piles shall be located and driven so that the anchor chain connection tabs are aligned within 5 degrees of chain alignment.

C. Survey the installed position of the piling including the northing and easting location of the center of the pile, the elevation of the top of the pile and outline the deviation of the pile from design locations. Provide this survey within one week of competing the installation and prior to demobilizing the pile driving equipment from the site.

D. Manipulation of piles will not be permitted if the required deviation or force is considered to be excessive by the Engineer. A variation of not more than 0.125 inch per 4 feet of pile length from the vertical for plumb piles nor more than 0.125 inch per 4 feet of pile length from the required angle for batter piles will be permitted.

E. Inspect piles for heave. Redrive heaved piles to the required tip elevation.

F. Remove and replace with new piles those driven outside the above tolerances, damaged, mislocated, driven below the design elevation, or driven out of alignment, or provide additional piles, driven as directed.

3.2 RECORDS

A. Pile Driving Logs

Keep a complete and accurate record of each pile driven. Indicate the pile location, deviations from design location, cross section shape and dimensions, original length, ground elevation, bedrock elevation tip elevation, Top Elevation, hammer data including rate of operation, make, and size, and unusual pile behavior or circumstances experienced during driving such as re-driving, heaving, weaving, obstructions, jetting, and unanticipated interruptions.

B. Survey

Provide a record of the survey location of the installed piling including northing easting of the center of the pile and the top elevation.

3.3 LONG PILES

A. Handle and drive piles of a high slenderness ratio carefully to prevent overstress. Provide pile driving rig with rigid supports so that leads remain accurately aligned. Where a high degree of accuracy is required, erect templates or guide frames at or close to the ground or water surface.

3.4 SPLICES

A. Field splices will not be allowed.

3.5 WELDING

A. All welding shall be in accordance with AWS D1.1. Welding shall be performed by welders who possess welder's certificates that indicate they are currently certified in accordance with AWS D1.1 for the type of welding specified.

B. Inspection: All welds shall be visually inspected (100% visual inspection). All field and shop pile splice welds shall also be ultrasonically tested (100% ultrasonic testing). Inspection and testing shall be in accordance with the referenced standards by an AWS-certified welding inspector from an independent inspection service. Weld inspection reports prepared by the inspector shall be provided for each weld. The cost of this work shall be the responsibility of the Contractor.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. <u>Pipe Piles, Furnished</u>:

Payment for furnishing steel pipe piles will be at contract unit price per each, multiplied by the total number of acceptable piles actually installed.

Furnishing, as defined herein, includes new pile materials delivered to the site, including: galvanized coatings, splices, anchor chain connection tabs, pile top caps, pile crew time, including payroll and administrative additives and equipment rental for the driving crane, tug, barge, leads and hammer. All other costs associated with pile work shall be paid for under Piles, Driven. Partial payments for stockpiled materials shall be in accordance with the requirements of the General Conditions.

Base bids on the number of piles with pile length from tip to cutoff, as indicated, and on total length of piling from tip to cutoff, as specified. Include in bid a unit price per linear foot of piling based on the quantity. From the data obtained by geotechnical studies and specified herein, the

estimated pile tip elevations and/or embedment depth are shown on the contract drawings, which shall be used as the basis for ordering piles. If the Owner's Representative requires an increase or a decrease in the length of piles furnished and installed, the contract will be adjusted in accordance with *General Conditions, Article 10*. Adjustment in contract price will not be made for cutting off piles, for any portion of a pile remaining above the cutoff elevation, or for damaged or rejected piles.

B. Pipe Piles, Driven:

Payment for driving piles will be made at the contract unit price per each pile, multiplied by the total number of acceptable piles actually installed.

Driven, as defined herein, includes all items related to pile work which are not included in Piles, Furnished. This includes but is not limited to: equipment movements, cutoffs, pile caps, templates, crane or work platforms, pile cleanout, jetting or pre-boring to specified depths, and other fixed or variable items. This pay item is independent of pile length and does not change with variations from estimated pile tip elevations. No adjustment in the contract unit price for Piles, Driven, will be made as a result of revisions ordered to the pile tip elevations.

C. Anchor Chain Connection:

Furnishing and installing the anchor chain connection tabs shall be considered as part of the cost of furnishing the piles.

D. Sheet Piles:

Payment for sheet piles will be made at the contract unit price per lineal foot of wall installed.

Driven includes but is not limited to: equipment movements, cutoffs, pile caps, templates, crane or work platforms, pile cleanout, jetting or pre-boring to specified depths, and other fixed or variable items.

E. Earthwork

Measurement for earthwork payment for pipe and sheet pile bulkheads will considered included in the contract unit price.

F. Surveying

Surveying work in locating pile locations shall be considered separately as part of the bid item, Construction Surveying.

4.2 PAYMENT

The quantities, determined as provided above, shall be paid for at the contract price per unit of measurement, respectively, for each of the particular pay items listed below that is shown in the bid schedule.

Item	Pay Unit
Furnish Steel Anchor Piles	Each
Install Steel Anchor Piles	Each
Furnish and Install Sheetpile Bulkhead	Lineal Foot

END OF SECTION

SECTION 337173

ELECTRICAL UTILITY SERVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Arrangement with Utility Company for permanent electric service including payment of Utility Company charges for service.

B. Overhead service entrance.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements and Section 260500 – Basic Electrical Requirements.

B. Division 03 - Concrete Work.

C. Section 260526 – Grounding and Bonding for Electrical System.

D. Section 260533 – Raceway and Boxes for Electrical Systems.

E. Section 260553 – Identifications for Electrical Systems.

F. Section 312317 – Trenching.

1.3 REFERENCE STANDARDS

A. NEMA 250 – 2003 Enclosures for Electrical Equipment (1000 Volts Maximum).

B. UL 50 – 1995 Enclosures for Electrical Equipment.

C. UL 414 – 1999 Standard for Meter Sockets.

1.4 SYSTEM DESCRIPTION

A. System Voltage: 120/240 volts, single phase, three- wire, 60 Hertz.

B. Service Entrance: Overhead

1.5 SUBMITTALS

A. Product Data: Submit product data for all components provided, showing electrical characteristics, material, finishes, and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.

B. Shop Drawings: Submit shop drawings and manufacturer's literature for self-contained meter base with circuit breaker disconnecting means.

1.6 CLOSEOUT SUBMITTALS

A. Project Record Drawings: Indicate actual locations and mounting heights of service entrance equipment on the project record drawings.

1.7 QUALITY ASSURANCE

A. Utility Company: Kotzebue Electric Association Install service entrance in accordance with Utility Company's rules and regulations.

PART 2 PRODUCTS

2.1 METERING EQUIPMENT

A. Meter: Furnished and installed by the Utility Company.

B. Self-Contained Meter Base: NEMA 3R rated self-contained meter socket with circuit breaker disconnecting means with safety socket feature and factory installed test-block/bypass facilities. Automatic type, slide type, horn type, screw type and lever type meter socket bypass devices are specifically prohibited. The service entry section and the meter socket shall be sealable and isolated or barriered from other integral enclosure sections to effectively prevent the attachment to un-metered conductors or terminals. Network service installations shall have a factory installed 5th jaw or factory supplied 5th jaw kit. The 5th jaw shall be located in the 9 o'clock position.

C. All removable covers for compartments containing un-metered conductors shall be sealable or lockable with sealable latches, stud and wing-nuts, sealing screws, or slot and tab devices. All top cover panels, side cover panels and rear cover panels providing access to un-metered conductors shall be secured in place with devices that can not be loosened from the outside, screws or bolts requiring special tools for installation or removal are not acceptable alternates. No removable panel or cover requiring sealing or locking shall be located behind other panels, covers or doors except for rain-tight enclosures. Hinged cover panels shall be lockable on the side opposite the hinges. Hinged panel covers shall accept a padlock with a shackle diameter of not less than 5/16 inch. Stud and wing-nut sealing assemblies shall consist of a ¼ inch x 20 (minimum) stud and associated wing-nut, each drilled 0.0635 inch (minimum) for sealing purposes. The stud shall be securely attached so as to not loosen or back out when being fastened. Sealing screws shall be drilled 0.0635 inch (minimum) for sealing purposes. All securing screws for removable panel covers shall be captive.

PART 3 EXECUTION

3.1 INSTALLATION

A. Make arrangements with Utility Company to obtain permanent electric service to the Project.

B. Overhead: Install service rack and weatherhead at height as required by Utility Company. Utility Company will connect service drop to service entrance conductors.

C. Meter sockets shall be installed with the centerline of the socket opening no more than 72 inches and no less than 60 inches above finished grade. The meter socket shall be installed with a minimum 10 inches of side clearance to each side of the socket. On current transformer rated meter sockets, the conduit connecting the meter socket and the current transformer cabinet shall be rigid steel or IMC and have a minimum diameter of 1 inch, shall not be longer than 25 feet, shall have no access points (junction boxes, condulets, etc.), and shall connect to the meter socket at a factory supplied knockout located below the test switch mounting provisions.

D. Self-contained meter sockets equipped with a 5th jaw for network service but served from a single phase, 3-wire 120/240 Volt source shall have the 5th jaw and its associated wiring removed from the socket.

E. All service entrance equipment shall have signage for arc hazard installed. The marking shall be located to be clearly visible to qualified personnel before examination, adjustment, servicing or maintenance of the equipment. At a minimum the signage shall state the following:

Warning

Arc Flash and Shock Hazard

Appropriate PPE Required

END OF SECTION 337173

SECTION 355113

TIMBER MOORING FLOATS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Fabricating and installing new, high quality timber floats, including all associated items required for a complete and operable facility as shown on the Drawings and as specified herein.

1.2 RELATED SECTIONS

A. Section 055000 – Metal Fabrications

1.3 QUALITY ASSURANCE (QA)

A. The Float Manufacturer shall have manufactured at least five (5) facilities of comparable scope and complexity as the float system proposed herein. Quality facilities shall have been in satisfactory operation for a period of at least one (1) year. The timber float manufacturing workshop shall provide proper environment, adequate work space, equipment, level construction surfaces, physical conditions and protection from direct sunlight, wind, moisture, and freezing necessary for construction of high quality floats.

B. Float system fabricator shall have not less than three years experience in the fabrication of major timber structures including float systems comparable to this project. Competent carpenters shall be employed and all framing shall be true and exact.

C. Fabrication shall be in accordance with appropriate industry standards of good practice for heavy marine timber, galvanized steel, and other materials.

D. Float Tests and Inspections:

1. Quality control during the fabrication process shall be given utmost priority. A Quality Control Plan shall be prepared and submitted to the Owner for approval prior to construction of any floats. The Quality Control Plan shall include the following, at a minimum:

    a) Description of Fabrication Facilities

    b) Process for Monitoring and Correcting Deficiencies

    c) Name of Proposed Independent Testing Lab (s)

    d) Sampling and Testing Procedures

    e) Checklist of Contract Conformance Items

2. A Quality Control Supervisor shall be assigned to the project for the duration of the fabrication process. The Supervisor will be responsible for insuring that all products are constructed per the plans and specifications. A checklist of contract conformance items shall be prepared and submitted to the Owner for each float produced. No floats may be produced in the absence of the Quality Control Supervisor.
3. The Float Manufacturer shall provide testing and field or plant inspection service to the satisfaction of the Engineer. The Float Manufacturer shall hire an independent testing laboratory, as approved by the Owner, to provide on-site quality control services throughout the fabrication period. Sampling and testing shall be performed on-site or as otherwise approved by the Owner.
4. The plant facility shall be made available to the Owner's Representative for inspection of the products. The Owner's Representative may perform structural observation at any point during the manufacturing of the float modules. At a minimum, the Engineer will perform structural observation at the stages of construction listed below. The fabricator shall provide sufficient notice and access for the Engineer to perform these observations:
    a) During initial manufacture of the main float modules.
    b) Prior to shipment of the ` the approved shop drawings. Markings shall be located on one side and on one end for ease of field identification.

E. The Float Manufacturer's quality efforts shall include verification of material and treatment certificates against materials supplied before issuing them to the Engineer. This may involve inspection of materials prior to treatment to determine species. Float Manufacturer shall also provide documentation of verification of piece counts, section dimension and other random tolerance checks such as camber, sweep, crook, straightness, etc. The Engineer shall undertake quality assurance inspection, as he deems necessary.

F. Qualification of Workers: Provide at least one person who shall be present at all times during execution of all portions of the Work, who shall be thoroughly familiar with the type of materials being manufactured and installed, the best methods for installation, and who shall direct all Work performed under this section.

1.4 SUBMITTALS

A. Shop drawings, material certifications, and product data will be required for the following items in accordance with Section 01300—Submittals.
    1. Name and Qualifications of Timber Fabricator
    2. Timber Materials
    3. Timber Preservative Treatment
    4. Plastic Lumber Materials
    5. UHMW Materials
    6. Float Fabrication Shop Drawings
    7. Flotation Billets and Coating
    8. Hardware
    9. Metal Fabrication Shop Drawings, in accordance with Section 055000—Metal Fabrications.

B. Sample(s) shall be submitted for the following items, in accordance with this specification:
    1. Coated floatation billet

C. Warranties

D. Proof of Insurance

E. Proposed methods for lifting, stacking and storage procedures (if stored).

1.5 PRODUCT HANDLING

A. Delivery, Storage, and Handling: Prior to delivery to the site, provide the proper off-site storage, which prevents cracking, distortion, warping, staining, and other physical damage.

B. Protection: Use all means necessary to protect materials of this section before, during, and after installation, including installed work of other trades.

C. Replacements: In the event of damage during the term of this contract, or until Owner takes occupancy of the installed work, immediately make all repairs and replacements necessary at no additional cost to Owner.

1.6 WARRANTIES

A. Provide a two-year warranty for the complete timber float units, including all appurtenances and associated installations.

B. Provide a two (2)-year warranty on materials and workmanship of the float system.

PART 2 - PRODUCTS

2.1 TIMBER

Timber materials shall as noted on the plans and as outlined below:

A. All timber shall be new, graded in accordance with provisions of WCLIB No. 17. All timber shall be grade marked by a WCLIB licensed grader or shipped under mill certificate.

B. All timber components, including but not limited to wales, bullrails, decking, beams, and sills shall be Costal Region, Douglas Fir No.1 or better, appearance grade, surfaced dry, with minimum fiber bending strength (fb) of 2,000 psi. All timber shall comply with the pertinent provisions of West Coast Lumber Inspection Bureau (WCLIB), Rule Book 16 for Douglas Fir. All timber components shall not have splits, warps, or wanes.

C. Glue Laminated Timber: Douglas Fir, Grade 24F-V8, DF/DF in accordance with AITC 117 Specifications and conforming to the latest Standard Grading Rules for West Coast Lumber published by the WCLIB. Glue-laminated members shall be produced in conformance with the requirements of U.S. Commercial Standard PS 56-73. Laminating adhesives shall be waterproof. Appearance of glued-laminated members shall be Industrial Grade or better. Inspection shall be in accordance with American Institute of Timber Construction, AITC 200 Inspection Manual.

D. Sawn Timber: Doug Fir, Larch, grade No. 1 or better, no loose knots in accordance with WCLIB grading rules No. 17. Surfaced S4S or as otherwise noted on the plans. Commercial inspection with certification is required, mill certificates not acceptable. No express guarantee attached to certificate if subsequent inspection reveals unacceptable material.

E. Timber Decking: Doug Fir Larch, No. 1 or better per WCLIB grading rules. Surfacing shall be S1S2E, chamfered and milled as noted on the plans. Timber decking materials shall be of the highest quality and free from splits, warps, cracks, excessive knots and other defects. Commercial inspection with certification is required, mill certificates not acceptable. No express guarantee attached to certificate if subsequent inspection reveals unacceptable material.

F. Plywood: The plywood diaphragm plate shall be grade C-C exterior, group 1 species APA custom product V-611, using veneer graded for severe moisture service, laid with exterior-rated adhesives. Plates shall bear the grade mark of the American Plywood Association, certifying conformance to U.S. Product Standard PS 1-83 and marked “APA C-C EXT”.

G. Plastic Lumber: High-density polyethylene (HDPE) lumber will be used for rubboards. HDPE

shall be a purified high-density HDPE material made from 100% recycled plastic, in accordance with ASTM D-6662. The material shall be of uniform color, shall be color stabilized, and shall be resistant to ultra-violet deterioration, mechanical abrasion, chemical attack, detergents, and animals. The plastic lumber material shall be procured in 8-foot lengths, minimum. The material shall also be suitable for long-term exterior exposure. Color shall match the furnished wood float material or as approved by the Owner.

H. Timber Preservative Treatment: Timber members shall be pressure treated with preservative as outlined below. All timbers shall be cut to length, drilled and dapped prior to treatment. All pressure treatment processes shall be performed in accordance with Best Management Practices for the specified treatment type as published by the Western Wood Preservers Institute (WWPA), latest edition.

1. Bullrails: Pressure treat timber laminations with ACZA (ammoniacal copper zinc arsenate) to 0.6 pounds per cubic foot (pcf) net dry salt retention in accordance with AWPA Use Category 4B Commodity Specification F.
2. Glue Laminated Stringers: For glue laminated stringers below the decking treat with creosote in accordance with AWPA Use Category 5A Commodity Specification F, Provide minimum 12 pcf.
3. Plywood shall be preservative treated in accordance with AWPA U1-07 Commodity Specification Section F, Use Category 4B and AWPB Specification LP22 with CCA or ACZA to 0.6 pcf.
4. Sawn Timbers including Decking: shall be pressure treated with ACZA to not less than 0.6 pcf net dry salt retention in accordance with AWPA U1-2007 Use Category 4B (Salt Splash Zone).
5. Sawn Timbers below decking including skids: Pressure treat with creosote preservative, minimum net retention of 20 pcf in accordance with AWPA U1-2007 Use Category 5A for (marine use).

I. Sawn timber, plywood, and glue-laminated timber shall be cut to length, drilled, dapped, and chamfered prior to pressure treatment.

J. Treated timber shall be handled carefully without dropping, breaking of outer fibers, or bruising or penetrating the surface with tools.

K. Field/Repair Treatment: All nicks, cuts, abrasions and field drilled holes and saw cuts occurring after pressure treatment shall be carefully trimmed and thoroughly saturated in the field, in accordance with AWP-M4, with one of the following, as applicable:

1. Creosote: brush coated with two applications of a mixture of 60 percent creosote oil and 40 percent roofing pitch or shall be brush-coated with at least three applications of hot creosote oil (between 150 ° F and 200 ° F) and covered with hot roofing pitch.
2. If ACZA is the basic treatment, a copper naphthenate solution of not less than 2% copper metal shall be used in three applications in lieu of the creosote and pitch. Any unfilled holes bored after treatment, after being treated as outlined above, shall be plugged with creosote or copper naphthenate saturated plugs.

L. Lumber shall be fabricated to provide uniform gaps and butt joint connections. Lumber splices shall not exceed ½-inch between adjoining ends. All decking, spacers, plywood, or any other member which is subject to foot traffic, shall be flush with the timber walking surface.

M. Lumber decking shall be continuous across the float deck.

N. All exposed timber corners shall be chamfered by ½-inch.

O. Gap between adjacent deck boards shall be sufficient to allow for expansion in wet conditions,

but shall not be greater then ¼-inch.

P. The Float Manufacturer shall coordinate exact locations of the future on-float utilities (i.e., main utility runs, service runs, hose bib risers, power/light pedestals, safety equipment) and indicate these on a float system layout drawing, to be submitted to the Owner to facilitate float and utility installation by Others.

2.2 FLOTATION BILLETS

A. Flotation billets shall be of coated, expanded polystyrene materials and of the quantity and sizes called for on the plans and as indicated herein.

B. Float inner cores shall be closed-cell, expanded rigid cellular polystyrene in accordance with ASTM C-578. The density of the polystyrene shall be between 1.0 to 1.5 pounds per cubic foot and a maximum absorption of 4 percent by volume as tested by ASTM C-272.

C. Polystyrene shall be virgin new material throughout. Material that has exceeded the manufacturer's recommended shelf life will not be allowed nor will molded, stuffed or reground material be permitted. Voids shall not exceed 1% by area as measured on any internal cross-sectional cut surface. The knit or weld between the individual bead cells shall be such that a minimum of 60% of the beads fracture rather than separate when subjected to bending stresses.

D. All expanded polystyrene shall be aged six weeks prior to fabrication if molded in a conventional steam mold or seven days if molded in a new generation vacuum mold. The Owner's Representative may request certified test reports to substantiate foam density, compressive strength, absorption, and fusion aspects of this specification.

E. Prior to coating, float billets shall have a 1-inch radius on the edges (except ends) and shall be factory notched with a cross-wise notch at each sill connection to the depth indicated on the plans. Width of notch shall be the width of the supporting sill plus 2-inches. Provide additional notches and bevels where indicated to accommodate passage of electric cables. Notching shall be performed by hot-wire cutting methods.

F. All polystyrene flotation surfaces shall be encased with polyurethane coating:

1. Polystyrene floatation billets shall be coated to a minimum 50 mil thickness with approved 100% solids polyurethane or polyurea similar to HT 2090 manufactured by Hydroseal Polymers, Inc., or approved equal.

2. Coating shall be petroleum fuel resistant and be able to withstand the effects of ultraviolet exposure.

3. Coatings must adhere to the polystyrene materials without damaging it. All damaged coatings shall be repaired with a field-applicable, two component brush coating as manufactured by the coating supplier. Field repair method must be pre-approved by the Engineer.

4. Shop drawing submittals shall include a sample of the billet material to be used coated with the proposed protective coating (minimum sample size 6 inch x 6 inch x 4 inch).

2.3 STRUCTURAL AND MISCELLANEOULS STEEL AND HARDWARE

A. Fasteners for timber members: Timber connection bolts and other specified timber hardware such as drift pins shall be in accordance with ASTM A307 or A-36 as applicable, with ASTM A-563 hex nuts and flat washers.

1. Unless otherwise noted on the plans, timber connection bolts shall be economy head type.
2. Nuts facing timber shall be washered with galvanized malleable iron castings. For malleable castings the diameter of the head shall be equal to four times the diameter of the bolt and the thickness shall be equal to one-half the diameter of the bolt. Locking nuts shall be heavy hex head and self-locking type.
3. All bolts with heads facing decking shall be countersunk. Depth of countersink to be equal to the bolt head thickness + 1/16-inch, width of the countersink to be equal to the bolt head width plus 1/4-inch.
4. Wood screws shall conform to ASME B18.6.1.
5. Lag bolts shall conform to ASME B18.2.1.
6. Nails shall be common wire and box nails of the nominal size indicated on the plans. Use box nails for decking, where larger heads are desired.
7. All plates, bolts, lag bolts, wood screws, nuts, washers, nails, etc. shall be hot-dipped galvanized in accordance with ASTM A-153.
8. All structural bolts, including bullrail bolts, shall be through-bolted in the outer stringers, unless noted otherwise on the plans, and shall be capable of developing their full allowable strength without causing damage to the timber float. Provide plate washers on all nut-bearing surfaces. Bolts bearing on timber surfaces shall be economy head type unless malleable iron washers are used.

B. Hardware for hinge connections and other structural fabrications shall be as outlined in Section 055000—Metal Fabrications

C. Hinges and transition plates should be constructed as shown on the plans, and in accordance with section 055000.

2.4 OTHER MATERIALS

A. All other materials, not specifically described but required for a complete and proper installation of the Work of this section, shall be as selected by the Contractor subject to approval by the Owner's Representative.

B. UHMW Polyethylene Attachments: Fabricate float skids and gangway transition plate wear edges from virgin UHMW polyethylene, using no reprocessed material, and containing 0.6% carbon black to stabilize it against ultraviolet light (esp. collars) and in accordance with ASTM 4020. Color for transition plate wear edge shall be safety yellow. Collars shall be of the size and shape called for on the plans. UHMW should be hot rolled to form bends.

PART 3 - EXECUTION

3.1 GENERAL

NOTE: All floats are potentially unstable when placed in the water until fully assembled in their final intended configuration. Sub-assembled floats shall be handled with extreme caution and in no case stood or walked upon in the absence of final assembly or other temporary means of stabilization.

3.2 FLOAT FABRICATION

A. Float system components shall generally be fabricated and assembled in a shop facility. All lumber and timber members shall be accurately cut and framed to a close fit so that the joints will have even bearing over the entire contact surfaces without shimming.

B. Unless otherwise specified, nails and spikes shall be driven with sufficient force to set the heads flush with the surface of the wood. Use of nail guns to secure decking will not be allowed. Pilot holes shall be drilled prior to nailing at all locations such as near ends and edges of boards where splitting could occur.

C. Holes for round drift-bolts, if used, shall be bored with a bit 1/16 inch smaller in diameter than that of the bolt to be used. Holes for machine bolts shall be bored with a bit 1/16 inch larger than the diameter of the bolt. Holes for lag screws shall be bored with a bit with the same diameter and length as the un-threaded body and pilot bored using a drill not larger than 50% to 60% of the nominal diameter of the screw for the full depth of thread penetration.

D. Bolt heads shall be countersunk, including the rubboards and removable deckboards.

E. Washers of the size and type specified shall be used in contact with all non-economy bolt heads or nuts that would otherwise be in contact with wood. Steel components and connection hardware shall be shop fabricated and treated as applicable with specified protective coatings in accordance with Section 055000—Metal Fabrications.

F. No field cutting or trimming of the flotation billets will be permitted. Any flotation coating damaged after fabrication shall be repaired as previously described.

3.3 DELIVERY, STORAGE, AND HANDLING

A. Pre-fabricated timber floats shall be lifted, transported, shipped and stored with care and in a manner to prevent damage or undue stress. The manufacturer will submit for approval, proposed methods for lifting, stacking and storage procedures.

B. Float modules shall be lifted with only nylon or web type slings contacting the float. No wire rope slings or chains shall be allowed to touch the floats. A spreader bar shall be used for all lifts. Float modules may be lifted using by the following recommended methods. Method 1: Two slings suspended by a spreader bar are placed beneath the float, across the stringers Method 2: Float modules may be lifted by the bullrails using four slings. Slings should be suspended by a spreader bar and placed under each bullrail at approximately 8’ on each side of the center of the float or 16’ apart. Protection angles or blocking shall be applied at pickup points to protect corners and edges.

C. Floats shall be carefully loaded, shipped, stacked and stored. Floats shall be placed on uniform blocking or other protective barriers to prevent damage to the floats and associated coatings, timber, and appurtenances. Floats shall be stacked no more than 3 units high. Floats that are stacked shall have continuous blocking between the deck or ground and upper most module in such a fashion to transmit the loads from each float to the deck or ground. Sufficient attachment points shall be used to prevent movement during shipping. Protection angles or blocking shall be applied at tie down points to protect corners and edges. Use nylon or web type slings to secure the units for shipping. Chains and wire ropes used to secure floats for shipping shall not touch the floats.

D. Care shall be taken when lifting and transporting floats to avoid sudden movements, bouncing, bending or otherwise placing undue stress on the modules.

E. All materials and parts shall be clearly identified and marked. Small parts such as connection hardware shall be contained in bags or boxes.

F. Any damage to floats due to lifting, transporting, stacking, shipping or storage will be repaired at no cost to the owner.

3.4 FLOAT INSPECTION

A. Floats will be subject to inspection by the Engineer at the source of manufacture prior to shipping and at the project site after delivery and prior to installation. A minimum advance notice of two weeks shall be provided to the Engineer for inspection of completed float modules at the source of manufacture. Similarly, the Engineer shall be kept apprised of expected date of delivery and

the Contractor shall notify the Engineer at least one week prior to offloading and storing the floats. During offloading at the delivery site, each float will be made accessible to allow inspection of all sides of the float. Each float shall be individually lifted above the ground a sufficient distance to permit inspection of the underside of the float modules for conformance to the plans and specifications and for evidence of damage. Lifting and handling shall be as outlined above.

B. Any damage identified at the manufacture site shall be repaired prior to delivery.

C. Damage identified during offloading, following storage, and during or after installation will be repaired by the Contractor prior to final payment.

3.5 FLOAT INSTALLATION

A. Timber float modules shall be floated and positioned as shown on the plans and accurately located by land surveying methods. All land surveying shall be accomplished by a licensed land surveyor registered in the State of Alaska or other qualified personnel deemed acceptable to the Engineer. Suitable shore-control survey alignment stations shall be provided to insure positioning of floats. Survey work shall be included as part of the construction survey bid item.

B. Transporting and lifting of float modules shall be performed without damage or resulting in excessive stresses in accordance with the requirements as outlined in paragraph DELIVERY STORAGE AND HANDLING. After positioning, piles shall be driven through the pre-attached pile collars. Pile collars and floats shall be adequately blocked and restrained to prevent damage to float components during driving and installation.

C. Float modules shall be assembled, field joined and bolted as indicated on the Drawings. Float hardware will be pre-attached by the manufacturer as much as practical. This includes structural connection components, bull rails, cleats, rubboards, and corner bumpers..

D. The Contractor shall follow all manufacturers recommendations for ascertaining proper methods for connection of floats including fastener sequence, tolerances, and tightening.

E. Contractor shall level all floats to the acceptance of the Engineer.

3.6 REPAIR GALVANIZED COATING

A. Repair all areas of damaged galvanized coatings that occur during float installation or assembly.

3.7 PROTECTION

A. The Contractor will be responsible for protecting the stored and installed floats from damage until final inspection and final approval of the project is certified by the Engineer/Owner's Representative. Any missing or damaged items must be corrected by the Contractor prior to final payment.

B. The Contractor shall provide insurance as necessary to ensure protection of the floats until final acceptance.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. All costs associated with ensuring quality in materials and fabrication, including but not limited to testing, inspecting, verification of material certificates, Quality Control requirements, and insurance shall be considered incidental to the other items of work, and shall not be specifically measured for payment.

B. Any work on the plans or in these provisions that is not specifically described in the following bid item measurement and payment discussions shall be considered incidental to other items of work and shall not be specifically measured for payment.

C. Mooring and Boarding floats shall be measured per each module properly furnished and installed in accordance with the Drawings.

D. The contract unit prices will be full compensation for all labor, materials, equipment, and incidental expenses required to manufacture, deliver, and completely install the main float system, including but not limited to timber bullrails, rubboards, bumpers, pile restraint guides, hinge connection systems, connection plates, weldments, cleats, hardware, transition plates, removable decking and any utility chases/trays; equipment for proper storage of completed float units; all longshoreman/stevedoring services, off-loading, taxes, fees, and surcharges, and other incidental items.

E. All work associated with furnishing and installing the steel piling and anchor chain shall be covered in separate sections.

4.2 PAYMENT

A. The quantities, determined as provided above, shall be paid for at the contract price per unit of measurement, respectively, for each of the particular pay items listed below that is shown in the bid schedule.

B. This shall be considered full compensation for installing all new floats complete and in place, including all connection plates,transition plates, weldments, pile collars, cleats, miscellaneous hardware.

Payment will be made under the following bid items:

Item	Pay Unit
Furnish and Install Timber Mooring Float Module	Each

END OF SECTION

SECTION 355993

ANCHOR CHAINS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Furnishing and installing new, high quality galvanized steel anchor chain and hardware.

1.2 RELATED SECTIONS

A. Section 055000 – Metal Fabrications

B. Section 355113 – Timber Floats

C. Section 099626 – Thermal Spray Coatings

1.3 SUBMITTALS

A. Shop drawings, material certifications, and product data will be required for the following items in accordance with Section 013300—Submittals.

1. Anchor Chain: Include ABS certificates
2. Shackles: Include ABS certificates

1.4 PRODUCT HANDLING

A. Care should be taken during delivery, storage, handling, and installation of chain and shackles. Damage to the galvanized coating reduces the corrosion resistance of steel components. Galvanized coatings can be easily damaged during rough handling, or by contact with hard or abrasive surfaces. If damage to the coating does occur, the contractor shall repair the damage using spray metalizing methods.

PART 2 – PRODUCTS

2.1 GALVANIZED ANCHOR CHAIN

A. Anchor Chain shall be galvanized stud link chain, Grade 3, with ABS certificates. Chain shall have a proof load of 23,745lbs, and a breaking load of 33,220 lbs.

B. Chain size shown is a minimum. Larger chain sizes may be considered.

2.2 SHACKLES

C. Shackles shall be hot dip galvanized bolt-type anchor shackles with stainless steel cotter pin. The ultimate strength of shackle shall equal or exceed the chain-breaking load. ABS certificates are required. Project dimensions are based on a Crosby G-2130 5/8” shackle, min.

PART 3 – EXECUTION

3.1 CHAIN INSTALLATION

A. Install anchor chains as shown on the plans. Cut chain as needed using and abrasive disc cutoff saw. Chain should be held in a vise while cutting and care should be taken not to damage the galvanized coating on the adjacent links. Cutting torches should not be used to burn through the

chain.

B. Install bolt type shackles as shown on the plans. Use quality stainless steel cotter pins to retain the pin.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Anchor Chain Furnished: Payment for furnishing anchor chain will be at the contract price per lineal foot multiplied by the total length of chain installed, and the length of chain requested for spare. Furnishing, as defined herein, includes the galvanized anchor chain, shackles, and hardware and all costs to get it delivered to the site, and associated administrative, labor, equipment, and material costs. All other costs associated with the anchor chains shall be paid for under Anchor Chain Installed. Partial payments for stockpiled materials shall be in accordance with the requirements of general condition.

B. Anchor Chain Installed: Payment for installing the anchor chains will be made at the contract unit price multiplied by the lineal feet of chain installed. Installed, as defined herein, includes all items related to anchor chain work which are not included in Anchor Chain Furnished. Including but not limited to: cutting chain, positioning chain, connecting chain to anchors and floats, attaching shackles, adjusting chain to align floats.

4.2 PAYMENT

A. The quantities, determined as provided above, shall be paid for at the contract price per unit of measurement, respectively, for each of the particular pay items listed below that is shown in the bid schedule.

B. This shall be considered full compensation for installing the anchor chains on the floats and anchor piles, including all hardware and equipment necessary including shackles and cotter pins.

Payment will be made under the following bid items:

Item	Pay Unit
Furnish Anchor Chain	Lineal Foot
Install Anchor Chain	Lineal Foot

END OF SECTION

SECTION 356000
SPARE PARTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Spare Parts

1.2 RELATED SECTIONS

A. Section 355113 – Timber Floats

B. Section 355993 – Anchor Chains

PART 2 PRODUCTS

2.1 MATERIALS

A. Provide 30 each shackle of the same type used for the anchor system.

B. Provide 200 linear feet of galvanized stud link chain of the same type used in the anchor system.

C. Provide 60 each Rubber Hinge Bushings of the same type used in the float system.

D. Provide 60 each Hinge Pin assemblies of the same type used in the float system.

PART 3 EXECUTION

3.1 EXECUTION

A. Furnish the parts listed above neatly packaged in boxes. Each box shall be clearly marked with the contents and quantity of materials

B. Provide an itemized list of the materials.

C. Deliver and stack spare parts on site and stack them as directed in a local storage facility.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement for furnishing spare parts shall be by the lump sum.

4.2 PAYMENT

A. Payment shall be made under the following units:

Item	Pay Unit
Furnish Spare Parts	Per Lump Sum

END OF SECTION