CONTRACT DOCUMENTS

FOR

City of SeaTac
Angle Lake Park- Waterfront Improvements

IN
SEATAC, WASHINGTON

Owner: City of SeaTac
Contact: Clynn Wilkinson, Project Manager
(206) 973-4755
cwilkinson@seatacwa.gov
4800 S. 188th ST.
SeaTac, WA 98188

Consultant: Mott MacDonald Engineers
Contact: Evan Edgecomb
evan.edgecomb@mottmac.com
(425) 977-2592
1601 5th Ave #800
Seattle, WA 98101

ANGLE LAKE PARK- WATERFRONT IMPROVMENTS

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CITY OF SEATAC

NOTICE TO CONTRACTORS

Notice is hereby given that the City of SeaTac will receive sealed bids to SeaTac City Hall, third floor reception desk, 4800 South 188th Street, SeaTac, Washington, 98188 until **11:00 a.m. local time on October 29, 2026.** The bids received will be publicly opened and read after **11:15 a.m. local time** at City Hall, for construction of the project hereinafter referred to as:

ANGLE LAKE PARK WATERFRONT IMPROVEMENTS

At said time all bids will be opened and publicly read aloud. Each bid shall be accompanied by a bid deposit as described below. No bid will be considered unless accompanied by such bid deposit. All proposals must be made upon the regular forms provided in the Proposal Section of the contract documents. Incomplete proposals and proposals received after the time stated above will not be considered. Faxed or emailed proposals will not be considered.

The work to be performed under these specifications consists of furnishing all labor, tools, materials, and equipment necessary for construction of the Angle Lake Park Waterfront Improvements. Specific work includes, but is not limited to, demolition of existing dock structure, pilings and boat ramp; driving new piles, earthwork, constructing and installing new pier structure, ADA access ramp, boat ramp and other work described in construction documents.

The City will not sell bid packages.
Bid Documents are made available as follows:
Free-of-charge access to project bid documents (plans, specifications, addenda, and Bidders List) is provided to Prime Bidders, Subcontractors, and Vendors by going to www.bxwa.com and clicking on "Posted Projects", "Public Works", and "City of SeaTac". This online plan room provides Bidders with fully usable online documents with the ability to: download, view, print, order full/partial plan sets from numerous reprographic sources, and a free online digitizer/take-off tool. It is recommended that Bidders “Register” in order to receive automatic e-mail notification of future addenda and to place themselves on the “Self-Registered Bidders List". Bidders that do not register will not be automatically notified of addenda and will need to periodically check the on-line plan room for addenda issued on this project. Contact Builders Exchange of Washington at (425) 258-1303 should you require assistance with access or registration.

An optional Pre-Bid Conference will be held at the project site at on site 9:00am on September 30, 2026

Questions regarding this project shall be submitted in writing to Evan Edgecomb via email at Evan.Edgecomb@mottmac.com or Clynn Wilkinson at cwilkinson@seatacwa.gov no later than 5:00 PM on October 22, 2026. **Questions via phone will not be accepted.**

All bid proposals shall be accompanied by a bid deposit in cash, certified check, cashier’s check, or surety bond in an amount equal to five percent (5%) of the amount of the bid proposal. Bidder must use the bond form included in the contract provisions. Should the successful bidder fail to enter into such contract and furnish satisfactory performance bond within ten (10) calendar days of notification of intent to award contract, the bid proposal deposit shall be forfeited to the City of SeaTac.

The City reserves the right to reject any and all bids and to determine minor irregularities or informalities, and to waive any minor irregularities or informalities. No bidder may withdraw their bid for a period of forty-five (45) days after the date and time set for the opening thereof. Bid securities of the three lowest bidders may be held by the City until official award of the contract.

The successful bidder will be required to comply with all local, State, and Federal laws and regulations pertaining to equal employment opportunities.

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END OF SECTION

BIDDER'S CHECK LIST

The bidder's attention is especially called to the following forms which must be executed in full as required and submitted with the bid. Failure to complete these forms and to submit said forms with the bid, shall be due cause for rejection of bid.

1. **Proposal**
   The lump sum bid and alternate bid items must be shown in the spaces provided.

2. **Proposal Signature Sheet**
   To be filled in and signed by the Bidder

3. **Bid Bond**
   No bond form other than the form provided within these specifications shall be acceptable to the contracting agency. The form shall be executed by the Bidder and the surety company unless bid is accompanied by a certified check. The proposal bond shall not be altered, conditioned, or modified in any way. The amount of this bond shall be not less than five percent (5%) of the total amount bid and may be shown in dollars or on a percentage basis.

4. **Statement of Bidder's Qualifications**
   To be filled in and signed by the bidder.

5. **Subcontractor List**
   Identify any subcontractors doing more than 10% of the work.

6. **Statement of Non-Segregated Facilities**
   Complete the Statement and submit with the Bid Proposal.

7. **Non-Collusion Affidavit**
   To be signed and submitted with the bid.

8. **Have you acknowledged receipt of Addenda** (if applicable)?

9. **Bid proposal to be submitted in a <u>sealed envelope</u> marked *"Angle Lake Park Waterfront Improvements"***

END OF SECTION

INSTRUCTIONS TO BIDDERS

1. SCOPE OF WORK

A. The project is the Angle Lake Park Waterfront Improvements. The work to be performed shall include furnishing all labor, materials and equipment necessary for the construction of the above referenced project, related appurtenances, and performing all work as required by the contract in accordance with the Contract Drawings, Specifications and Standard Specifications, Instructions to Bidders, and all contents of the Project Manual, all of which are made a part hereof.

2. BID SCHEDULE

A. Each bidder shall submit a proposal for the base bid together with all Alternate Bids.

3. PREPARATION AND SUBMISSION OF BID

A. Each bid must be submitted on the enclosed form. Do not use or remove form bound within the specifications. All blank spaces for bid prices must be filled in, either in ink or typewritten. The Base Bid and Alternates must be stated in both words and figures. Each bid, accompanied by Bid Guarantee, Statement of Bidder's Qualifications, Non-Collusion Affidavit, Statement of Non-Segregated Facilities, and the Statement of Proposed Subcontractors, fully completed and executed, must be submitted in a sealed envelope bearing on the outside the name of the bidder, his address, and the name **"Angle Lake Park Waterfront Improvements".**

Bids shall be submitted to the City Clerk's Office, City Hall, 4800 S 188th St, SeaTac, WA 98188. Bids will be received until 11:00 a.m., Thursday, October 29, 2026

4. TELEGRAPH or FAX MODIFICATION

A. No telegraphic or fax modifications will be allowed.

5. QUALIFICATIONS OF BIDDER

A. Each bidder must furnish a statement of his construction experience and general ability to perform the work on the "Statement of Bidder's Qualification" form included in the Specifications. The Owner may take such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligation of the contract and to complete the work contemplated therein. In addition, the Contractor covenants that he is registered and licensed as required by the laws of the State of Washington.

6. QUALIFICATIONS OF SUBCONTRACTORS

A. The Owner reserves the right to approve or reject the subcontractors identified in the Bid Forms, after bid opening, providing the Contractor has the right to decide not to enter into the contract if the Owner so exercises the right to disqualify a subcontractor.

7. CONDITIONS OF THE WORK

A. Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligations to furnish all material and labor necessary to carry out the provisions of his contract.

B. Insofar as possible the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

8. ADDENDA AND INTERPRETATIONS

A. No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

B. Every request for such interpretation should be in writing addressed to Clynn Wilkinson at cwilkinson@seatacwa.ogv and Evan Edgecomb at Evan.Edgecomb@mottmac.com , and to be given consideration must be received no later than 11:00 a.m., Thursday, October 29, 2026. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed and faxed no later than three (3) days prior to the date fixed for the opening of bids. Failure of any bidder to receive such addenda or interpretation shall not relieve any such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

9. SECURITY FOR FAITHFUL PERFORMANCE

A. Simultaneously with his delivery of the executed contract, the Contractor shall furnish a surety bond or bonds AS DESCRIBED IN SECTION 004110, as required by RCW 39.08.010, as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be duly authorized by a surety company satisfactory to the Owner.

10. BID GUARANTEE

A. The Bid Guarantee shall be a certified check, a cashier's check, or a bid bond AS DESCRIBED IN SECTION 004110 made payable to the owner for an amount equal to at least 5% of the Base Bid. The Owner reserves the right to hold the bid guarantees of all bidders until the successful bidder has entered the contract and furnished the required guarantee bond, or for a period of 45 days, whichever is the shorter time.

B. The bidder winning the award of this project will be required to submit the following documents to the City, within 14 days of notice of award.

a. Three (3) executed copies of the contract.
b. Contract bond or equivalent performance bond
c. Public Liability and Property Damage Insurance
e. Affidavit of Intent to Pay Prevailing Wages.

B. Should a bidder fail to enter into contract and furnish the required documents within 14 days after his proposal has been accepted, his bid guarantee shall be retained by the Owner as liquidated damages, not as a penalty.

11. POWER OF ATTORNEY

A. The surety shall be bound by an Attorney-in-fact, resident in King County preferably, but certainly of the State of Washington. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney. The seal of the bonding company is required on all performance bonds.

12. LAWS AND REGULATIONS

A. The bidder's attention is directed to the fact that all applicable Federal, State and Municipal ordinances and regulations and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written in full.

13. NON-COLLUSION AFFIDAVIT

A. Each bidder shall complete and properly execute the Non-Collusion Certificate included in these specifications and shall submit same as a part of his bid proposal.

14. METHOD OF AWARD - LOWEST QUALIFIED BIDDER

A. It is the intent of the Owner to award the Contract to the Contractor submitting the lowest bid within the funds available for work included in the Base Bid and any alternates selected, in any order.

15. OBLIGATION OF BIDDER

A. At the time of the opening of bids each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the specifications and contract documents (including any addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect to his bid.

16. TIME OF COMPLETION

A. The Contractor shall complete the work in all respects within 184 calendar days from date of written notice to proceed. It is anticipated that the Park adjacent to the project site will be fully operational during the project. Contractor shall maintain access to the Park at all times.

17. LIQUIDATED DAMAGES

A. Completion time is an important aspect of the project. Liquidated Damages shall be assessed at the rate of $250.00 for each calendar day that the work is not completed within the specified time of completion.

18. PREVAILING WAGE RATES

A.The prevailing rate of wages to be paid all workmen, laborers or mechanics employed in the performance of any part of this contract shall be no lower than the schedule of prevailing wage rates for the locality or localities where this contract will be performed, as determined by the Industrial Statistician of the Department of Labor and Industries, which are, by reference, made a part of this contract as though fully set forth herein.

Inasmuch as the Contractor will be held responsible for paying the prevailing wages, it is imperative that all Contractors familiarize themselves with the current wage rates before submitting bids based on these specifications. In case any dispute arises as to what are the prevailing rates of wages for work of a similar nature and such dispute cannot be adjusted by the parties in interest, including labor and management representatives, the matter shall be referred for arbitration to the Director of the Department of Labor and Industries of the State of Washington and his decision therein shall be final and conclusive and binding on all parties involved in the dispute as provided for by RCW 39.12.060 as amended.

The Contractor, on or before the date of commencement of work, shall submit to the owner, and with the Director of Labor and Industries, a "Statement of Intent to Pay Prevailing Wages." Following the acceptance of the project, the Contractor and each Subcontractor shall submit an "Affidavit of Wages Paid" certifying that all prevailing wage requirements have been satisfied. Such statements and any supplemental statements which may be necessary shall be filed in accordance with the practices and procedures required by the Department of Labor and Industries.

Following the acceptance of the project, the Contractor and each subcontractor shall submit an "Affidavit of Wages Paid" certifying that all prevailing wage requirements have been satisfied.

A check, made payable to the Department of Labor and Industries, shall accompany each Statement of Affidavit sent to the State. All costs associated with these tasks should be considered as incidental and the Contractor should reflect these expenses into other bid items. The City will not separately reimburse the Contractor for these costs.

19. DUMP SITES

A. Prior approval of dump sites shall be obtained from the City before any waste material is deposited within the City limits. A fill permit will be required for all fills that are within the City limits and away from the project site.

20. LIMITATIONS REGARDING CONTRACTOR'S CLAIMS FOR DAMAGES

A. BIDDER IS HEREBY INFORMED that all claims to the City for all work and damages of any kind arising from this contract shall be limited to the maximum amount appropriated by the City for this project. Funds for this project are limited and are public funds derived through Federal, State, Utility and or City taxes or property assessments appropriated for this project through the budgeting process. The City's decision to award this project is based upon the supposition that all costs will be held within the appropriate amount. The total project appropriation shall be as stated in the City budget authorizing the work herein. In the event the project funding or appropriation equals the amount under contract and an irreconcilable dispute between the City and the Contractor which the Contractor views as a breach of contract by the City excusing the Contractor from further performance, the Contractor and the City may agree to increase the project appropriation and preserve the rights of both parties to future settlements or final resolution by a court of law.

B. BIDDER AGREES AS A CONDITION OF BIDDING FOR THE WORK HEREIN, to limit all claims for extra work or damages of any kind whatsoever relating to this contract to prices established by the units and lump sums bid herein and/or direct costs as provided under the force account provisions of APWA, Section 1-09.6. By acceptance of a contract for the work herein, Contractor waives all claims for payment of damages which include or are computed on total costs of job performance, extended overhead, or other similar methods which do not relate to the prices stated herein or are not specific as to the actual, direct costs of contract work as defined in the APWA force account provisions.

C. The above stated limitations on claims for damages shall apply only to disputed claims and shall not be construed to apply to payments for extra work pursuant to mutually agreed change orders or force account work in accordance with Sections 1-04.4 and 1-09.6 of the APWA Standard Specifications incorporated herein; and is specifically understood that the City shall be responsible to appropriate funds for all work performed in accordance with Section 1-04 of the APWA Standard Specifications.

21. CITY OF SEATAC

A. It should be noted that the City of SeaTac as project Owner is distinct in dealings and responsibilities from the City of SeaTac as building official and regulatory agency regarding compliance with existing ordinances, etc.

22. EQUAL OPPORTUNITY EMPLOYER

A. The City of SeaTac is an Equal Opportunity Employer.

END OF SECTION

BID PROPOSAL

Bidder.....

Date .....

To: City Council
City of SeaTac
4800 South 188th Street
SeaTac, Washington 98188

The undersigned bidder declares that it has carefully examined the Plans and Specifications, Notice to Contractors, Instructions to Bidders, Standard Specifications, General Provisions, Special Provisions, Appendix, Proposal, and contract for the construction of the above referenced project. The undersigned bidder also declares that it has investigated the project site to determine the conditions to be encountered, and that if this proposal is accepted it will enter into contract with the City of SeaTac, Washington, in the Form of Contract hereto affixed, will, to the extent required, provide the necessary equipment, tools, apparatus, and other means of construction, and will furnish all labor and materials as specified in these Contract Documents, or as called for in the plans, or necessary to complete the work in the manner herein specified and according to the requirements of the Engineer.

By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

The undersigned bidder certifies that this Proposal is in all respects fair and is made without collusion on the part of any person, firm or corporation mentioned below, and no officer or employee of the City of SeaTac is personally or financially interested, directly or indirectly, in the Proposal or in any purchase of or sale of any materials or supplies for the work to which it relates, or any portion of the profits thereof.

Accompanying this Proposal is a bid deposit or bid bond in the amount of five percent (5%) of the Proposal according to the conditions of the "Notice to Contractors" and "Instructions to Bidders" hereby attached. If this Proposal shall be accepted by the City of SeaTac, Washington, and the undersigned shall fail to execute a satisfactory contract and bond, as stated in the Instructions to Bidders hereto attached, within ten (10) days from the date of notification, then the City may, at its option, determine that the undersigned has abandoned the Contract and thereupon this Contract shall be null and void and the amount of the bid bond or certified check accompanying this Proposal shall be forfeited and become the property of the City of SeaTac, Washington.
The undersigned bidder understands that the quantities mentioned herein are approximate only and are subject to increase or decrease, and hereby proposes to perform all quantities of work as either increased or decreased in accordance with the provisions of the Drawings and Specifications and at the unit prices bid in the Bid Schedule, unless such schedule designates lump sum bids, or force account items.

Bidder has reviewed the third party liability insurance provisions of the Standard Specifications and hereby certifies that coverage will be provided as required. Yes _____ No _____

The undersigned bids and agrees to complete all construction of the Valley Ridge Sports Fields Improvements for the following:

BASE BID (As shown on the drawings and as defined in Section 01230)

	Quantity	Unit	Unit Price	Total Price
1. Base Bid Work	**1**	**LS**	**$**_____	**$**_____

Base Bid Total_____ **$**_____
Words *Figures*

NOTE: Do not include sales tax.

_____ $_____
Words *Figures*

None of the above prices include sales tax.

Bidder hereby acknowledges receipt of Addenda _____ through _____.

_____
CONTRACTOR (Firm Name)

_____ _____
Signature of Authorized Agent | Name and title of person signing

_____ _____
Dated at | Date

_____ _____
Washington State Contractor's Registration Number | Contractor's Industrial Insurance Account Number

_____
Uniform Business Identification (UBI) Number

Contractor Address:

_____ _____
Telephone Number

_____

_____ _____
Fax Number

The name and mailing address of the Surety Company which will furnish the required Performance Bond is:

_____

_____

_____

Bid proposal must be submitted in a **sealed envelope** marked
"Bid Enclosed for Angle Lake Park Waterfront Improvements."

END OF SECTION

CITY OF SEATAC, WASHINGTON
ANGLE LAKE PARK WATERFRONT IMPROVEMENTS
BID BOND

BOND NO._____
AMOUNT $_____

KNOW ALL PERSONS BY THESE PRESENTS

that_____as Principal,

hereinafter called the Contractor, and_____ a

corporation duly organized under the laws of the State of _____ having its

principal place of business at_____ in the State of _____
and authorized to do business in State of Washington, as SURETY, are held and firmly bound unto the City of

SeaTac as OBLIGEE, hereinafter called the Owner, in the penal sum of _____

Dollars ($_____) for the payment of which Contractor and Surety bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT: WHEREAS the Contractor is herewith submitting a Bid Proposal for the above referenced project. Project and said Bid Proposal, by reference thereto, being hereby made a part hereof.

NOW, THEREFORE, if the said Bid Proposal submitted by the Contractor is accepted and the Contract awarded to the Contractor and if the Contractor shall execute the proposed Contract and shall furnish the Public Works Performance Bond and labor and Material Payment Bond as required by the Bidding and Contract Documents within the time fixed by said Contract Documents, then this obligation shall be void; if the Contractor shall fail to execute the proposed Contract and furnish the required bond, the SURETY hereby agrees to pay to the Owner the penal sum as liquidated damages.

In the event suit is brought upon this bond by said OBLIGEE and judgment is recovered, said SURETY shall pay all costs incurred by said OBLIGEE in such suit, including a reasonable attorney's fee to be fixed by the court.

Signed and sealed this _____ day of_____, 2026.

_____ _____
CONTRACTOR SURETY

By _____ By_____
ATTORNEY-IN-FACT

The Attorney-in-Fact who executes this bond in behalf of the SURETY must attach a copy of his power of attorney as evidence of his authority.

CERTIFICATION OF NON-SEGREGATED FACILITIES

The Bidder certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this bid. As used in this certification the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The bidder agrees that (except where he has obtained identical certification from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001

Date_____, 2026.

(Name of Bidder)

_____
Official Address:

By:_____ _____
(Signature) (Print or Type Name)

_____
(Title)

*MUST ACCOMPANY EACH BID WITHOUT ALTERATION

END OF SECTION

NON-COLLUSION AFFIDAVIT

_____, being first duly sworn, on his oath
says that the bid submitted, is a genuine and not a sham of collusive bid, or made in the interest or on behalf of any person therein named; and he further says that the bidder has not directly or indirectly induced or solicited any bidder on the above work or supplies to put in a sham bid, or any person or corporation to refrain from bidding; and that said bidder has not in any manner sought by collusion to secure an advantage over any other bidder or bidders.

_____
CONTRACTOR

Subscribed and sworn to before me this _____ day of _____, 2026.

_____

NOTARY PUBLIC in and for the State of Washington

residing at_____.

My commission expires_____.

STATEMENT OF BIDDER'S QUALIFICATIONS

Name of Contractor.....

Address: .....

.....

Phone Number: ..... Fax : .....

Washington State Department of Labor and Industries Workmen's Compensation Account No.:

.....

Washington State Department of Licenses Contractor's Registration

No.....

Expiration Date: .....

Number of years the contractor has been engaged in the construction business under the present firm name indicated:.....

Gross dollar amount of work under contract: .....

Gross dollar amount of contracts not completed: .....

Type of work generally performed by contractor: .....

.....

List of five public projects of a similar nature which have been completed by the contractor within the last five years and the gross dollar amount of each project:

Bid Project Name	Agency	Contact & Phone No.	Year Completed	Amount

List of five public projects of a similar nature which have been completed by the float manufacturer within the last five years and the gross dollar amount of each project:

Bid Project Name	Agency	Contact & Phone No.	Year Completed	Amount

List of five public projects of a similar nature which have been completed by the structural aluminum framing manufacturer within the last five years and the gross dollar amount of each project:

Bid Project Name	Agency	Contact & Phone No.	Year Completed	Amount

List of major pieces of equipment which are owned by the Contractor and which will be available and required for use on this project:

.....

.....

.....

.....

.....

.....

Bank References:.....

.....

Have you changed bonding companies within the last three years.....

If so, why? (Optional): .....

.....

Have you ever sued or been sued by the client on any public works contract for a special district, municipality, county, or

state government? .....

Who? .....

For what reason: .....

.....

.....

Disposition of case, if settled: .....

.....

Name of Superintendent to be used on the project and how long with your company: .....

.....

Bidder: .....
(Printed Name of Bidder)

By: .....
(Signature of Authorized Official)

Title: .....

City of SeaTac Contract Number:_____

Debarment, Suspension, Ineligibility or Voluntary Exclusion Certification Form

NAME		Doing business as (DBA)	
ADDRESS	**Project Number (if any):**	WA Uniform Business Identifier (UBI)	Federal Employer Tax Identification #:
This certification is submitted as part of a request to contract.			

Instructions For Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions

READ CAREFULLY BEFORE SIGNING THE CERTIFICATION. Federal regulations require contractors and bidders to sign and abide by the terms of this certification, without modification, in order to participate in certain transactions directly or indirectly involving federal funds.

1. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the department, institution, or office to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or had become erroneous by reason of changed circumstances.
4. The terms covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded, as used in this clause, have the meaning set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is proposed for debarment under the applicable CFR, debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled ``Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction,'' without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not proposed for debarment under applicable CFR, debarred, suspended, ineligible, or voluntarily excluded from covered transactions, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant should, but is not required to, check the List of Parties Excluded from Federal Procurement and Non-procurement Programs.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business activity.
9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is proposed for debarment under applicable CFR, suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions

The prospective lower tier participant certifies, by submission of this proposal or contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this form.

Bidder or Contractor Signature:_____ Date: _____

Print Name and Title: _____

FEDERAL DEBARMENT, SUSPENSION INELIGIBILITY and VOLUNTARY EXCLUSION

(FREQUENTLY ASKED QUESTIONS)

What is "Debarment, Suspension, Ineligibility, and Voluntary Exclusion"?
These terms refer to the status of a person or company that cannot contract with or receive grants from a federal agency.

In order to be debarred, suspended, ineligible, or voluntarily excluded, you must have:

- Had a contract or grant with a federal agency, and
- Gone through some process where the federal agency notified or attempted to notify you that you could not contract with the federal agency.
- Generally, this process occurs where you, the contractor, are not qualified or are not adequately performing under a contract, or have violated a regulation or law pertaining to the contract.

Why am I required to sign this certification?
You are requesting a contract with the City of SeaTac, referred to as the "City". Federal law (Executive Order 12549) requires the City ensure that persons or companies that contract with the City are not prohibited from having federal contracts.

What is Executive Order 12549?
Executive Order 12549 refers to Federal Executive Order Number 12549. The executive order was signed by the President and directed federal agencies to ensure that federal agencies, and any state or other agency receiving federal funds were not contracting or awarding grants to persons, organizations, or companies who have been excluded from participating in federal contracts or grants. Federal agencies have codified this requirement in their individual agency Code of Federal Regulations (CFRs).

What is the purpose of this certification?
The purpose of the certification is for you to tell the City in writing that you have not been prohibited by federal agencies from entering into a federal contract.

What does the word "proposal" mean when referred to in this certification?
Proposal means a solicited or unsolicited bid, application, request, invitation to consider or similar communication from you to the City.

What or who is a "lower tier participant"?
Lower tier participants means a person or organization that submits a proposal, enters into contracts with, or receives a grant from the City, OR any subcontractor of a contract with the City. If you hire subcontractors, you shall require them to sign a certification and keep it with your subcontract.

What is a covered transaction when referred to in this certification?
Covered Transaction means a contract, oral or written agreement, grant, or any other arrangement where you contract with or receive money from the City. Covered Transaction does not include mandatory entitlements and individual benefits.

Sample Debarment, Suspension, Ineligibility, Voluntary Exclusion Contract Provision

Debarment Certification. The Contractor certifies that the Contractor is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in this Contract by any Federal department or agency. If requested by the City, the Contractor shall complete a Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion form. Any such form completed by the Contractor for this Contract shall be incorporated into this Contract by reference.

SUBCONTRACTOR LIST

Instructions:

1) This form must be submitted on all projects where the Owner's estimate of the project cost (Engineer's estimate) **exceed $1,000,000** including additive alternates.
2) Pursuant to RCW 39.30.060, list the names of the subcontractors with whom the bidder, if awarded the contract, will subcontract for performance of the work of: 5% or more of the total bid value or HVAC (heating, ventilation, and air conditioning); plumbing as described in chapter 18.106 RCW; and electrical as described in chapter 19.28 RCW, or to name itself for the work. The prime contract bidder shall not list more than one subcontractor for each category of work identified, unless subcontractors vary with bid alternates, in which case the prime contract bidder must indicate which subcontractor will be used for which alternate. Failure of the prime contract bidder to submit as part of the bid the names of such subcontractors or to name itself to perform such work or the naming of two or more subcontractors to perform the same work shall render the prime contract bidder's bid nonresponsive and, therefore, void.
3) This form must be submitted within one hour of the advertised bid due date/time, regardless of subcontractor usage.
4) This form must bear the bidder's signature to be considered complete.
5) Failure to properly complete and submit this form may result in a bid being declared non-responsive.

BASE BID

Name of Subcontractor	Designated Work	Estimated Subcontract Amount
HVAC		
PLUMBING		
ELECTRICAL		
OTHER		
OTHER		

_____ _____
Bidder's Signature Bidder's Name (Printed)

_____ _____
Company Date

PUBLIC WORKS AGREEMENT

between City of SeaTac and Contractor
for
Project Title & Location

THIS AGREEMENT is made by and between the City of SeaTac, a Washington municipal corporation (hereinafter the "City"), and CONTRACTOR NAME organized under the laws of the State of Washington, located and doing business at CONTRACTOR ADDRESS (hereinafter the "Contractor").

AGREEMENT

The parties agree as follows:

I. DESCRIPTION OF WORK.

Contractor shall perform the following services for the City in accordance with the following described plans and/or specifications:

INSERT PROJECT DESCRIPTION

Contractor further represents that the services furnished under this Agreement will be performed in accordance with generally accepted professional practices within the Puget Sound region in effect at the time such services are performed.

II. TIME OF COMPLETION. It is agreed that the work covered by this Agreement shall commence as soon as the Contractor has been officially issued a Notice to Proceed. The Contractor shall complete the work in all respects in # calendar days.

III. COMPENSATION. The City shall pay the Contractor a total amount not to exceed ($) plus any applicable Washington State Sales Tax, for the work and services contemplated in this Agreement. The Contractor shall invoice the City upon project completion. The City will pay for the portion of the work described in the invoice that has been completed by the Contractor and approved by the City. The City's payment shall not constitute a waiver of the City's right to final inspection and acceptance of the project.

A. Performance Bond. Pursuant to Chapter 39.08 RCW, the Contractor, shall provide the City a performance bond for the full contract amount to be in effect until sixty (60) days after the date of final acceptance, or until receipt of all necessary releases from the State Department of Revenue and the State Department of Labor and Industries and until settlement of any liens filed under Chapter 60.28 RCW, whichever is later.

B. Retainage. The City shall hold back a retainage in the amount of five percent (5%) of any and all payments made to contractor for a period of sixty (60) days after the date of final acceptance, or until receipt of all necessary releases from the State Department of Revenue and the State Department of Labor & Industries and until settlement of any liens filed under Chapter 60.28 RCW, whichever is later. The amount retained shall be placed in a fund by the City pursuant to RCW 60.28.011(4)(a), unless otherwise instructed by the Contractor within fourteen (14) calendar days of Contractor's signature on the Agreement.

C. Defective or Unauthorized Work. The City reserves its right to withhold payment from Contractor for any defective or unauthorized work. Defective or unauthorized work includes, without limitation: work and materials that do not conform to the requirements of this Agreement; and extra work and materials furnished without the City's written approval. If Contractor is unable, for any reason, to satisfactorily complete any portion of the work, the City may complete the work by contract or otherwise, and Contractor shall be liable to the City for any additional costs incurred by the City. "Additional costs" shall mean all reasonable costs, including legal costs and attorney fees, incurred by the City beyond the maximum Contract price specified above. The City further reserves its right to deduct the cost to complete

the Contract work, including any Additional Costs, from any and all amounts due or to become due the Contractor.

D. Final Payment: Waiver of Claims. THE CONTRACTOR'S ACCEPTANCE OF FINAL PAYMENT (EXCLUDING WITHHELD RETAINAGE) SHALL CONSTITUTE A WAIVER OF CONTRACTOR'S CLAIMS, EXCEPT THOSE PREVIOUSLY AND PROPERLY MADE AND IDENTIFIED BY CONTRACTOR AS UNSETTLED AT THE TIME FINAL PAYMENT IS MADE AND ACCEPTED.

IV. INDEPENDENT CONTRACTOR. The parties intend that an Independent Contractor-Employer Relationship will be created by this Agreement and that the Contractor has the ability to control and direct the performance and details of its work, the City being interested only in the results obtained under this Agreement.

V. TERMINATION. The City may terminate this Agreement for good cause. "Good cause" shall include, without limitation, any one or more of the following events:

A. The Contractor's refusal or failure to supply a sufficient number of properly skilled workers or proper materials for completion of the Contract work.

B. The Contractor's failure to complete the work within the time specified in this Agreement.

C. The Contractor's failure to make full and prompt payment to subcontractors or for material or labor.

D. The Contractor's persistent disregard of federal, state or local laws, rules or regulations.

E. The Contractor's filing for bankruptcy or becoming adjudged bankrupt.

F. The Contractor's breach of any portion of this Agreement.

If the City terminates this Agreement for good cause, the Contractor shall not receive any further money due under this Agreement until the Contract work is completed. After termination, the City may take possession of all records and data within the Contractor's possession pertaining to this project which may be used by the City without restriction.

VI. PREVAILING WAGES. Contractor shall file a "Statement of Intent to Pay Prevailing Wages," with the State of Washington Department of Labor & Industries prior to commencing the Contract work. Contractor shall pay prevailing wages in effect on the date the bid is accepted or executed by Contractor and comply with Chapter 39.12 of the Revised Code of Washington, as well as any other applicable prevailing wage rate provisions. A copy of the applicable wage rates is available for viewing in our office. A hard copy of the applicable wage rates will be mailed upon request.

VII. CHANGES. The City may issue a written change order for any change in the Contract work during the performance of this Agreement. If the Contractor determines, for any reason, that a change order is necessary, Contractor must submit a written change order request to the person listed in the notice provision section of this Agreement, section XV(D), within fourteen (14) calendar days of the date Contractor knew or should have known of the facts and events giving rise to the requested change. If the City determines that the change increases or decreases the Contractor's costs or time for performance, the City will make an equitable adjustment. The City will attempt, in good faith, to reach agreement with the Contractor on all equitable adjustments. However, if the parties are unable to agree, the City will determine the equitable adjustment as it deems appropriate. The Contractor shall proceed with the change order work upon receiving either a written change order from the City or an oral order from the City before actually receiving the written change order. If the Contractor fails to require a change order within the time specified in this paragraph, the Contractor waives its right to make any claim or submit subsequent change order requests for that portion of the contract work. If the Contractor disagrees with the equitable adjustment, the Contractor must complete the change order work; however, the Contractor may elect to protest the adjustment as provided in subsections A through E of Section VIII, Claims, below.

The Contractor accepts all requirements of a change order by: (1) endorsing it, (2) writing a separate acceptance, or (3) not protesting in the way this section provides. A change order that is accepted by Contractor as provided in this section shall constitute full payment and final settlement of all claims for contract time and for direct, indirect and consequential costs, including costs of delays related to any work, either covered or affected by the change.

VIII. CLAIMS. If the Contractor disagrees with anything required by a change order, another written order, or an oral order from the City, including any direction, instruction, interpretation, or determination by the City, the Contractor may file a claim as provided in this section. The Contractor shall give written notice to the City of all claims within fourteen (14) calendar days of the occurrence of the events giving rise to the claims, or within fourteen (14) calendar days of the date the Contractor knew or should have known of the facts or events giving rise to the claim, whichever occurs first. Any claim for damages, additional payment for any reason, or extension of time, whether under this Agreement or otherwise, shall be conclusively deemed to have been waived by the Contractor unless a timely written claim is made in strict accordance with the applicable provisions of this Agreement.

At a minimum, the Contractor's written claim shall include the information set forth in subsections A, items 1 through 5 below.

FAILURE TO PROVIDE A COMPLETE, WRITTEN NOTIFICATION OF CLAIM WITHIN THE TIME ALLOWED SHALL BE AN ABSOLUTE WAIVER OF ANY CLAIMS ARISING IN ANY WAY FROM THE FACTS OR EVENTS SURROUNDING THAT CLAIM OR CAUSED BY THAT DELAY.

A. Notice of Claim. Provide a signed written notice of claim that provides the following information:

1. The date of the Contractor's claim;
2. The nature and circumstances that caused the claim;
3. The provisions in this Agreement that support the claim;
4. The estimated dollar cost, if any, of the claimed work and how that estimate was determined; and
5. An analysis of the progress schedule showing the schedule change or disruption if the Contractor is asserting a schedule change or disruption.

B. Records. The Contractor shall keep complete records of extra costs and time incurred as a result of the asserted events giving rise to the claim. The City shall have access to any of the Contractor's records needed for evaluating the protest.

The City will evaluate all claims, provided the procedures in this section are followed. If the City determines that a claim is valid, the City will adjust payment for work or time by an equitable adjustment. No adjustment will be made for an invalid protest.

C. Contractor's Duty to Complete Protested Work. In spite of any claim, the Contractor shall proceed promptly to provide the goods, materials and services required by the City under this Agreement.

D. Failure to Protest Constitutes Waiver. By not protesting as this section provides, the Contractor also waives any additional entitlement and accepts from the City any written or oral order (including directions, instructions, interpretations, and determination).

E. Failure to Follow Procedures Constitutes Waiver. By failing to follow the procedures of this section, the Contractor completely waives any claims for protested work and accepts from the City any written or oral order (including directions, instructions, interpretations, and determination).

IX. LIMITATION OF ACTIONS. CONTRACTOR MUST, IN ANY EVENT, FILE ANY LAWSUIT ARISING FROM OR CONNECTED WITH THIS AGREEMENT WITHIN 120 CALENDAR DAYS

FROM THE DATE THE CONTRACT WORK IS COMPLETE OR CONTRACTOR'S ABILITY TO FILE THAT CLAIM OR SUIT SHALL BE FOREVER BARRED. THIS SECTION FURTHER LIMITS ANY APPLICABLE STATUTORY LIMITATIONS PERIOD.

X. This section intentionally left blank.

XI. DISCRIMINATION. In the hiring of employees for the performance of work under this Agreement or any sub-contract, the Contractor, its sub-contractors, or any person acting on behalf of the Contractor or sub-contractor shall not, by reason of race, religion, color, sex, age, sexual orientation, national origin, or the presence of any sensory, mental, or physical disability, discriminate against any person who is qualified and available to perform the work to which the employment relates.

XII. INDEMNIFICATION. Contractor shall defend, indemnify and hold the City, its officers, officials, employees, agents and volunteers harmless from any and all claims, injuries, damages, losses or suits, including all legal costs and attorney fees, arising out of or in connection with the Contractor's performance of this Agreement, except for that portion of the injuries and damages caused by the City's sole negligence.

The City's inspection or acceptance of any of Contractor's work when completed shall not be grounds to avoid any of these covenants of indemnification.

Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Contractor and the City, its officers, officials, employees, agents and volunteers, the Contractor's liability hereunder shall be only to the extent of the Contractor's negligence.

IT IS FURTHER SPECIFICALLY AND EXPRESSLY UNDERSTOOD THAT THE INDEMNIFICATION PROVIDED HEREIN CONSTITUTES THE CONTRACTOR'S WAIVER OF IMMUNITY UNDER INDUSTRIAL INSURANCE, TITLE 51 RCW, SOLELY FOR THE PURPOSES OF THIS INDEMNIFICATION. THE PARTIES FURTHER ACKNOWLEDGE THAT THEY HAVE MUTUALLY NEGOTIATED THIS WAIVER.

The provisions of this section shall survive the expiration or termination of this Agreement.

XIII. INSURANCE. The Contractor shall procure and maintain insurance as outlined below for the duration of this Agreement. Any Commercial General Liability and Automobile Liability insurance policies obtained shall be underwritten by insurance companies which have an A.M. Best's rating of A VII or better, licensed to do business in the State of Washington. Liability insurance policies shall specifically name the City, its elected or appointed officials, officers, employees and volunteers as *Primary-Non-Contributory Additional Insureds* of said policies.

The Contractor shall not begin work under the Agreement until all required insurance has been obtained and until such insurances have been received by the City. The Contractor shall file with the City a certificate of insurance evidencing that the policies are in force. The certificate shall be accompanied by policy endorsements as are necessary to comply with these requirements.

The types and limits insurance are as follows:

COMMERCIAL GENERAL LIABILITY-Comprehensive Form
$5,000,000 aggregate.
Coverage to include Premise and Operations Liability
Blanket Contractual
OCP for subcontractors' liability
Product and Completed Operations Liability
Stop Gap Liability-$1,000,000/$1,000,000/$1,000,000
Primary-Non-Contributory Additional Insured coverage for the City et.al.

AUTOMOBILE LIABILITY

$2,000,000 per accident bodily injury and property damage liability, including any owned, hired or non-owned automobile.

WORKER'S COMPENSATION
Employees of Contractor and Subcontractors are to be insured under Washington State Industrial Insurance.

The General Aggregate provision of the Contractor's insurance policies shall be amended to show that the General Aggregate Limit of the policies applies separately to this contract.

Failure of the Contractor to fully comply with the requirements regarding insurance will be considered a material breach of contract and shall be cause for immediate termination of the contract.

XIV. WORK PERFORMED AT CONTRACTOR'S RISK. Contractor shall take all necessary precautions and shall be responsible for the safety of its employees, agents, and subcontractors in the performance of the contract work and shall utilize all protection necessary for that purpose. All work shall be done at Contractor's own risk, and Contractor shall be responsible for any loss of or damage to materials, tools, or other articles used or held for use in connection with the work.

The Contractor shall also be solely and completely responsible for safety and safety conditions on the job site, including the safety of all persons and property during performance of the work. The services of City employees or the engineer's personnel in conducting construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's work methods, equipment, bracing, scaffolding or trenching, or safety measures in, on or near the construction site. The Contractor shall provide safe access for the City and its inspectors to adequately inspect the quality of work and the conformance with project specifications.

XV. MISCELLANEOUS PROVISIONS.

A. Recyclable Materials. The City recommends that its contractors and consultants use recycled and recyclable products whenever practicable.

B. Non-Waiver of Breach. The failure of the City to insist upon strict performance of any of the covenants and agreements contained in this Agreement, or to exercise any option conferred by this Agreement in one or more instances shall not be construed to be a waiver or relinquishment of those covenants, agreements or options, and the same shall be and remain in full force and effect.

C. Resolution of Disputes and Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Washington. If the parties are unable to settle any dispute, difference or claim arising from the parties' performance of this Agreement, the exclusive means of resolving that dispute, difference or claim, shall only be by filing suit exclusively under the venue, rules and jurisdiction of the King County Superior Court, King County, Washington, Maleng Regional Justice Center, unless the parties agree in writing to an alternative dispute resolution process. In any claim or lawsuit for damages arising from the parties' performance of this Agreement, the prevailing party shall recover its attorney's fees and costs incurred in bringing or defending such claim or lawsuit, including all appeals, in addition to any other recovery or award provided by law. Nothing in this paragraph shall be construed to limit the City's right to indemnification under Section XII of this Agreement.

D. Liquidated Damages. The parties agree that the City will suffer damage and be put to additional expense if the Contractor does not have the work completed in all respects and ready for use on or prior to the completion dates agreed upon. As it is difficult to accurately compute the amount of such costs and damages, the Contractor agrees to pay to the City as liquidated damages in the amount of Two Hundred and Fifty Dollars ($250.00) for each day the Contractor is required to achieve Substantial Completion of the work beyond the period above fixed. It is hereby agreed that the above amount shall be deducted from payment due the Contractor or from any sums retained for benefit of the Contractor's employees, subcontractors or suppliers.

E. Written Notice. All communications regarding this Agreement shall be sent to the parties at the addresses listed on the signature page of the Agreement, unless notified to the contrary. Any written

notice hereunder shall become effective three (3) business days after the date of mailing by registered or certified mail, and shall be deemed sufficiently given if sent to the addressee at the address stated in this Agreement or such other address as may be hereafter specified in writing.

F. Assignment. Any assignment of this Agreement by either party without the written consent of the non-assigning party shall be void. If the non-assigning party gives its consent to any assignment, the terms of this Agreement shall continue in full force and effect and no further assignment shall be made without additional written consent.

G. Modification. No waiver, alteration, or modification of any of the provisions of this Agreement shall be binding unless in writing and signed by a duly authorized representative of the City and Contractor.

H. Entire Agreement**.** The written provisions and terms of this Agreement, together with any Exhibits attached hereto, shall supersede all prior verbal statements of any officer or other representative of the City, and such statements shall not be effective or be construed as entering into or forming a part of or altering in any manner this Agreement. All of the above documents are hereby made a part of this Agreement. However, should any language in any of the Exhibits to this Agreement conflict with any language contained in this Agreement, the terms of this Agreement shall prevail.

I. Compliance with Laws. The Contractor agrees to comply with all federal, state, and municipal laws, rules, and regulations that are now effective or in the future become applicable to Contractor's business, equipment, and personnel engaged in operations covered by this Agreement or accruing out of the performance of those operations.

J. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall constitute an original, and all of which will together constitute this one Agreement.

IN WITNESS, the parties below execute this Agreement, which shall become effective on the last date entered below.

CONTRACTOR:	**CITY OF SEATAC:**
By:_____ *(signature)* Print Name:_____ Its_____ *(title)* DATE:_____	By:_____ *(signature)* Print Name: Jonathan Young Its: City Manager DATE:_____ Department Head Initials:_____
NOTICES TO BE SENT TO: **CONTRACTOR:** CONTRACTOR CONTACT CONTRACTOR BUSINESS NAME ADDRESS CITY/STATE/ZIP TELEPHONE EMAIL	**NOTICES TO BE SENT TO:** **CITY OF SEATAC:** CITY CONTACT NAME City of SeaTac 4800 South 188th Street SeaTac, WA 98188 (206) INSERT (telephone) EMAIL
	Approved as to Form: By:_____ *(signature)*

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that_____

of _____ as Principal, and

_____ as Surety, are

jointly and severally held and bound unto the City of SeaTac in the sum of

_____ Dollars ($_____.____), for payment of which we jointly and severally bind ourselves, our heirs, executors, administrators and assigns, and successors and assigns, firmly by these presents.

THE CONDITION of this bond such that, the Principal herein made and entered into a certain contract with the City of SeaTac, for the above referenced project for work items, which contract consists of the Proposal/Agreement, together with the Contract Documents, Standard Specifications, Special Provisions, Addenda and Plans, all as attached and made part hereof.

Now, therefore, if the Principal shall well, truly and faithfully perform all of the provisions and fulfill all of the undertakings, covenants, terms, conditions, and agreements of said Contract during the period of the original contract, and any extension thereof that may be granted by the City of SeaTac, with or without notice to the Surety, and during the life of any guarantee required under the Contract and shall also well and truly perform and fulfill all of the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived; and furthermore, shall pay all laborers, mechanics and subcontractors and material suppliers and all persons who shall supply such person or persons, and such Principal or subcontractors with the provisions and supplies for the carrying on of such work, shall indemnify and save harmless the City of SeaTac from all cost and damage by reason of the Principal's default or failure to do so and shall pay the State of Washington sales and use taxes and the amounts due said state pursuant to Titles 50 and 51 of the Revised Code of Washington, and shall further indemnify the workmanship or materials entering into any part of the work as defined in the agreement, to remain in full force and effect; provided, that the provisions of this bond shall not apply to any money loaned or advanced to the Principal or any subcontractor or other person in the performance of any such work.

Signed and dated this _____ day of _____, 2026.

PRINCIPAL:	SURETY:
By:_____	By_____:
Signature	Signature
_____	_____
Print or Type Name	Print or Type Name
Title: _____	Title: _____
Address: _____	Address: _____

Note: If attorney-in-fact signs for surety, a certified copy of the power of attorney must be attached.

CITY OF SEATAC, WASHINGTON
DECLARATION OF OPTION FOR MANAGEMENT OF
STATUTORY RETAINED PERCENTAGE

A. I hereby elect to have the retained percentage of this contract held in a fund by the City of SeaTac until thirty (30) days following final acceptance of the work.

Signed _____

Date _____

==========

B. I hereby elect to have the City of SeaTac invest the retained percentage of this contract from time to time as such retained percentage accrues and in accordance with RCW 60.28.0l0, .020, and .050.

I hereby designate _____ as the repository for the escrow of said funds.

Branch of repository:_____

Address:_____

Contact:_____ Phone No.:_____

Account No.:_____

I hereby further agree to be fully responsible for payment of all costs or fees incurred as a result of placing said retained percentage in escrow and investing it as authorized by statute.

The City of SeaTac shall not be liable in any way for any costs or fees in connection therewith.

Signed _____

Date _____

GENERAL CONDITIONS

1.01 REFERENCED STANDARD

A. AIA document A201, “General Conditions of the Contract for Construction”, 2017 edition are by reference made a part of this contract as though fully set forth herein. A copy of the document may be reviewed at the City Clerk's office of the City of SeaTac:

SeaTac City Hall
4800 S 188th St
SeaTac, WA 98188

or a copy may be purchased at AIA Seattle located at 1911 First Avenue, Seattle, WA 98101.

B. Where any condition of AIA Document A201 is contradicted or modified by any other provision of Division 0 or Division 1 of these contract documents the Division 0 or Division 1 provision will govern. Where any article, paragraph, or subparagraph or parts of an article paragraph or subparagraph of AIA document A201 is contradicted, modified or voided by provisions of Division 0 or Division 1, the portions of such provisions not so effected shall remain in effect.

END OF SECTION

SUPPLEMENTARY GENERAL CONDITIONS

1.01 GENERAL

A. The following additions, deletions and modifications to the General Conditions supersede applicable articles and paragraphs of the standard form AIA Document A201.

1.02 ARTICLE 1, GENERAL PROVISIONS

A. Subparagraph 1.1.7 add the following: “Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if mentioned or shown on both. In case of difference between small and large-scale drawings, the large-scale drawing shall govern. Schedules on any drawing shall take precedence over conflicting information on that or any other contract drawing. On any of the drawings where a portion of the work is detailed or drawn out and the remainder is shown in outline, the parts detailed or drawn out shall apply also to all other like portions of the work.”

1.03 ARTICLE 3, CONTRACTOR

A. SUBPARAGRAPH 3.6.1: Add the following sentence: “The Washington State and Local Sales Taxes, if applicable, will be reimbursed to the Contractor by Owner.”

B. PARAGRAPH 3.10.4: Add the following paragraph: “The Contractor’s Construction Schedule shall not be construed to alter the terms of the Contract as it pertains to Contract Completion Time, Delays and Time Extensions.”

C. PARAGRAPH 3.11.1: Change to read: “The Contractor shall keep the building record set of Contract Documents at the job during construction in good condition. They shall be kept up to date daily and shall include approved shop drawings, and other modifications. Just prior to final acceptance, the Contractor shall deliver to the Architect the approved set of plans showing all modifications 'as-built'.”

1.04 ARTICLE 4, ARCHITECT

A. PARAGRAPH 4.2.3: Change the second sentence to read: “. . . not be responsible for the Contractor’s or his Surety’s failure to carry out. . .”

B. PARAGRAPH 4.2.11: Delete first sentence and in lieu, insert the following:
“The Architect will provide opinions to the Owner regarding interpretations of the requirements of the Contract Documents and the performance there under by the Contractor. The architect will not be liable for result of his opinion rendered in good faith.”

C. PARAGRAPH 4.2.11: Delete second sentence and in lieu, insert the following:

“The Owner will within a reasonable time, render decisions regarding interpretations through the architect as he may deem necessary for the proper execution or progress of the work. The decisions will be in writing or in the form of drawings and within any time limits agreed upon.”

D. PARAGRAPH 4.2.12 Delete.

1.05 ARTICLE 7, CHANGES IN THE WORK

A. PARAGRAPH 7.3.6: Add the following:

7.3.6 Overhead and profit shall be calculated as described in Section 01015, Special Provisions.

1.06 ARTICLE 8, TIME

A. Add the following under 8.1 Definitions:

8.1.5 The Contractor has been delayed only when the Contractor's completion of the work has been caused to be extended beyond the Contract Completion Time by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate Contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor'' control, or by delay authorized by the Owner pending arbitration, or by other causes which the Architect and Owner determine may justify work delay.

1.07 ARTICLE 9, PAYMENTS AND COMPLETION

A. SUBPARAGRAPH 9.4.1: Change to read: ". . . within ten days after. . ."

B. SUBPARAGRAPH 9.5.1: Delete and in lieu, add the following:

".3 failure of the Contractor to present affidavit performing to proper and timely payments to subcontractors or for labor materials or equipment. . ."

C. Add the following subparagraph:

9.6.7 As duly certified by Architect, the Owner will make partial payment to the Contractor, but the Owner shall retain a sum equal to (5%) of each payment as retainage. Retainage will be held until project closeout as described in Section 01700.

D. PARAGRAPH 9.7.1: Change first sentence to read:

". . .within ten days after receipt of. . .to pay Contractor with ten days after. . ."

1.08 ARTICLE 11, INSURANCE AND BONDS

A. Add the following: "Contractor shall secure Public Liability and Property Damage Insurance Coverage in the minimum amount of $1,000,000 combined single limit from an insurance company authorized to do business in the State of Washington. Said insurance coverage may be superseded by addenda or other provisions of this Contract. CITY shall be an additional named insured on said insurance in a form acceptable to the City Attorney.

1.09 ARTICLE 13, MISCELLANEOUS PROVISIONS

A. PARAGRAPH 13.4.1: Change to read: ". . .not a limitation of any duties, obligations, defenses, rights and remedies. . ."

1.10 ARTICLE 14, TERMINIATION OF THE CONTRACT

A. PARAGRAPH 14.2.2: Change to read: ". . .Contractor and his Surety, if any, ten days written notice. . ." and add the following after the last sentence: "In the event of any such termination, the Owner shall serve notice thereof upon the Surety and the Contractor, and the Surety shall have the right to take over and perform the Contract; provided, however, that if the Surety does not commence performance thereof within ten days from the date of the mailing to such Surety of notice of termination, the Owner may take over the Work and prosecute the same to completion by contract or by force for the account and at the expense of the Contractor, and the Contractor and his Surety shall be liable to the Owner for any excess cost occasioned by the Owner thereby, and in such event the Owner may take possession of and utilize in completing the Work, such materials, appliances, and plant as may be on the site of the Work and necessary therefore."

END OF SECTION

STATE REQUIREMENTS

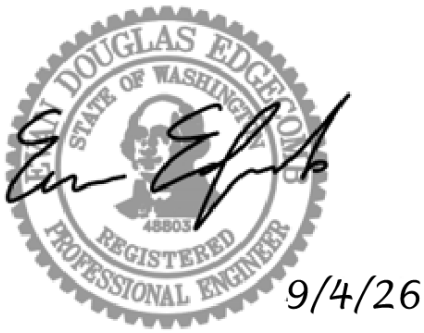
The Contractor must submit a Statement of Intent to Pay Prevailing Wages on City contracts, as per the current State of Washington Department of Labor and Industries, Form SF 9882.

When a difference exists between wage rates for a particular craft, the higher of the two required wage rates shall apply.

A list of the hourly prevailing wage rates is incorporated in and made part of the Contract Documents.

END OF SECTION

The following sections of the Technical Specifications contained, herein, have been prepared by or under the supervision of the licensee described under "Prepared by" in the following table:

Section No.	Section Name	Prepared by
01 00 00	GENERAL REQUIREMENTS	 9/4/26 Evan Edgecomb, Mott MacDonald
01 11 00	SUMMARY OF WORK	
01 20 00	MEASUREMENT AND PAYMENT	
01 33 00	SUBMITTAL PROCEDURES	
01 50 00	TEMPORARY FACILITIES AND CONTROLS	
01 57 19	TEMPORARY ENVIRONMENTAL CONTROLS	
01 71 23	CONSTRUCTION SURVEYING	
02 41 00	DEMOLITION	
03 30 00	CAST-IN-PLACE CONCRETE	
03 40 00	PRECAST CONCRETE	
05 05 00	GALVANIZING	
05 14 00	STRUCTURAL ALUMINUM FRAMING	
05 50 00	MISCELLANEOUS METALS	
31 23 00	EXCAVATION AND FILL	
31 62 16	STEEL PILE	
32 10 00	PAVING	
35 51 00	FLOATING STRUCTURES	

TECHNICAL SPECIFICATIONS STAMP PAGE

PART 1 - GENERAL

1.01 LIQUIDATED DAMAGES

A. If Contractor fails to complete Contract within stipulated time, an assessment of $250.00 per day will be made against Contractor for each additional day required to complete contract, unless an extension of time was granted through Change Order. This assessment is to cover the City of SeaTac's liquidated damages and is not to be construed as a penalty.

B. Contract authorizes the City of SeaTac to deduct liquidated damages from money due at completion of contract.

1.02 PRE-CONSTRUCTION CONFERENCE

A. Following notification of award to Contractor, the date for an on-site pre-construction conference will be set. Do not commence Work prior to conference or until written clearance has been obtained from Owner's Representative.

B. Furnish Owner's Representative with following:

1. Complete list of sub-contractors, including business address, telephone numbers, items of Work, and registration numbers. List is to be updated during contract life.
2. Name of Contractor's superintendent who will be on job at all times.
3. A progress schedule in accordance with General Conditions.
4. A detailed cost breakdown for lump sum bid items. Furnish a fair evaluation of actual cost of each item of Work listed. This will be used in processing Contractor's requests for partial payment. Submittal of breakdown does not affect the Contract terms.

1.03 PROGRESS CLEANING

A. Remove rubbish and debris from the property daily unless otherwise directed do not allow accumulation. Store materials that cannot be removed daily only in areas specified by the Owner's Representative.

B. Maintain worksites in a neat and orderly condition.

C. Cleanup operations are incidental to the Contract and no extra compensation will be made.

1.04 AS-BUILT DRAWINGS

A. Keep a clean set of full-sized drawings at job site to use to identify changes.

1.05 PROJECT CONDITIONS

A. The Contractor is alerted to the General Conditions requirements regarding safety. The Contractor shall be solely responsible for job-site safety. Contractor shall adhere to requirements for safety established in WAC 296-155.

B. Federal, state, and local laws, rules, and regulations related to construction, safety and health standards are essential and must be followed by the Contractor. The Contractor will conduct their work in a safe and prudent manner at all times. The Contractor is prohibited from allowing or requiring workers to work in conditions that are unsanitary, hazardous, or dangerous to their health or safety.

C. Provide reasonable restroom facilities for personnel and adequate work time to use those facilities, including provision of portable facilities for moving operations.

D. Hazardous Materials: Creosote treated timber is present on site, see Technical Specification 024100 - Demolition

E. It is unknown whether other hazardous materials will be encountered in the Work.

1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner's Representative and Owner. Owner will remove hazardous materials under a separate contract.

1.06 PROJECT SIGN

A. Provide the following temporary signage. Sign location is shown on drawings or determined by Owner's Representative. Upon Project completion, remove signage and restore area to original condition.

1.07 PROJECT SIGN LETTERING

TITLE OF PROJECT:	
NAME OF FACILITY:	
NAME OF CONTRACTOR:	(Place Contractor's Name here)
ADDRESS OF CONTRACTOR:	(Place Contractor's Address here)
PHONE NUMEBR OF CONTRACTOR:	(Place Contractor's Phone Number here)
FUNDING TITLE NUMBER 1:	
FUNDING TITLE NUMBER 2:	(LEAVE BLANK FOR THIS PROJECT)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

PART 1 — GENERAL

1.1 SUMMARY

A. Section includes:
1. Project information
2. Contact award and time of completion
3. Work covered by contract documents
4. Work under separate contracts
5. Future work
6. Owner-furnished contractor installed products
7. Access to site
8. Work restrictions
9. Specification and drawing conventions
10. Use of site by Owner
11. Applicable standards
12. Existing soils

B. Related Section:
1. Division 1, Section 015000 – Temporary Facilities for limitations and procedures governing temporary use of Owner's facilities.

C. This Section applies to all Specification Sections and supplements to the General and Supplemental Conditions.

1.2 PROJECT INFORMATION

A. Project Identification: Angle Lake Park Waterfront Improvements
1. Project Location: 19408 International Blvd., SeaTac, WA 98188. Refer to plan sheets for project site vicinity map.

B. Owner: City of SeaTac. 4800 South 188th Street, SeaTac, WA 98188.
1. Owner's Representative: Clynn Wilkinson; Phone (206) 973-4755; Email: cwilkinson@seatacwa.gov

C. Engineer: Mott MacDonald, 1601 5th Ave Ste 800, Seattle, WA 98101; Phone (206) 838-2886;

1.3 CONTRACT AWARD AND TIME OF COMPLETION

A. Single Contract Award: it is the Owner's intent to award a single prime contract for the improvements.

B. Time of Completion: 184 Calendar days.
1. Notice of Award: Nov 12, 2026.
2. Construction Start: January 4, 2027
3. Substantial Completion: No later than May 15, 2027
4. Final Acceptance: May 23, 2027

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of the Project is defined by the Contract Documents and generally consists of the following:
1. Demolition of existing in water structures, pile driving, pier building, boat ramp construction, float construction and install, precast and cast-in-place concrete stairs, ramps and paths, and asphalt paving.

B. Type of Contract:
   1. Project will be constructed under a single prime contract.

1.5 WORK UNDER SEPARATE CONTRACTS

A. Not applicable.

1.6 FUTURE WORK

A. The Contract Documents include requirements that will allow the Owner to carry out future work following completion of this project.

1.7 OWNER-FURNISHED AND INSTALLED PRODUCTS

A. Products and equipment will be furnished and installed by the Owner.

B. Items include, but are not limited to, the following:
   1. Buoy line
   2. Facility rules signage

1.8 ACCESS TO SITE

A. General: Access to the site must be kept open at all times for emergency vehicle use.
   1. Site access and construction access shall be agreed upon award.

B. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1.9 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.
   1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
   2. Noise Restrictions: Conform to City of SeaTac residential neighborhood noise ordinances.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7 a.m. to 6 p.m., Monday through Friday, except as otherwise indicated.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
   1. Notify Owner not less than five (5) days in advance of proposed utility interruptions.
   2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Nonsmoking Site: Smoking is not permitted within any Park property.

E. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.

F. Employee Identification: Provide identification tags for Contractor personnel working on the Project site. Require personnel to utilize identification tags at all times.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall", "shall be", or "shall comply with", depending on the context, are implied where a colon (:) is used within a sentence or phrase.
   2. Specification requirements are to be performed by contractor unless specifically stated otherwise.

B. Division 1 General Requirements: Requirements of Sections in Division 1 of these specifications apply to the Work of all Sections in these Specifications.

C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the specifications. One or more of the following are used on the Drawings to identify materials and products:
   1. Terminology: materials and products are identified by the typical generic terms used in the individual Specifications Sections.
   2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.

1.11 USE OF SITE BY OWNER

A. The balance of Angle Lake Park will be in operation during the project.

B. Do not affect safe and convenient access to any upland facilities at any time.

1.12 APPLICABLE STANDARDS

A. Prior to commencing construction, Contractor shall contact all reviewing agencies, utility companies, and governmental agencies having jurisdiction over the Project site, and obtain all standards and requirements for work that will satisfy those requirements, including purchasing necessary construction permits and being placed on any and all "approved contractors" lists.

1.13 EXISTING SITE

A. The Contractor shall visit the site prior to bidding to familiarize oneself with the site access conditions.

B. See Appendix for test pit locations and logs.

PART 2 — PRODUCTS

Not used.

PART 3 — EXECUTION

Not used.

END OF SECTION 011100

PART 1 - GENERAL

1.01 SUMMARY

A. This Specification Section includes descriptions for all Bid Items for the Project. The Contract specific Bid Items are listed in this Specification in addition to the Bid Form.

1.02 GENERAL PROVISIONS

A. The total Contract Amount covers the Work required by the Contract Documents. All costs in connection with the successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction, equipment, and tools; and performing all necessary labor and supervision to fully install and complete the Work, shall be included in the unit and lump sum prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

B. If used, all estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) for the purpose of comparing the bids submitted for the Work, and (b) as a basis for determining an initial Contract Amount. The actual amounts of Work completed, and materials furnished under unit price items, may differ from the estimated quantities. The Owner does not expressly or by implication represent that the actual quantities involved will correspond exactly to the quantities stated in the Bid Form; nor shall the Contractor plead misunderstanding or deception because of such estimate or quantities or of the character, location or other conditions pertaining to the Work. Payment to the Contractor will be made only for the actual quantities of work performed or material furnished in accordance with the Drawings, Specifications, and other Contract Documents, and it is understood that the quantities may be increased or decreased as provided in the General Conditions.

C. If used, the unit prices listed in the Bid Form shall include all services, obligations, responsibilities, labor, materials, devices, equipment, royalties and license fees, supervision, temporary facilities, construction equipment, bonds, insurance, taxes, clean up, traffic control, control surveys, field offices, close out, overhead and profit and all connections, appurtenances and any other incidental items of any kind or nature, as are necessary to complete the Work in accordance with the Contract Documents, unless otherwise noted.

D. The Contractor agrees that it will make no claim for damages, anticipated profits, or otherwise because of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts therefore.

E. Where payment by scale weight is specified under certain items, the Contractor shall provide suitable weighing equipment which shall be kept in accurate adjustment at all times and certified. The weighing of all material shall be performed by the Contractor in the presence and under the supervision of the Owner.

1.03 MEASUREMENT AND PAYMENT

A. Measurement. The complete amount of the unit of measure installed and accepted as complete within the limits specified and shown in the Specifications and Drawings. Slope angles and elevations shall be measured using surveying equipment. Contractor shall provide supporting documentation (i.e. drawings, delivery tickets, invoices, surveying calculations, etc.) to verify actual installed quantities. Common units of measurement used for bidding comprise of the following:

1. Linear Feet (LF)
2. Square Feet (SF)
3. Square Yard (SY)
4. Cubic Yard (CY)

5. Each (EA)
6. Lump Sum (LS)

B. Payment. Compensation for work performed will be made based on the Contractor's estimated completion progress in terms of each bid item's quantity and approved by the Owner.

1. Lump sum bid items will be compensated based on percent completion.

1.04 BID ITEMS

A. Measurement for payment will be at the unit price as stipulated in the bid form for the items listed below. Payment shall be considered full compensation for furnishing all materials, supplies, equipment, and labor necessary to complete the work as specified.

B. Bids for the Project will be based on the following Bid Items:

1. Bid Item 1 - Mobilization/Demobilization

a. Measurement. Lump Sum (LS).

b. Description: The lump sum bid price for "Mobilization" shall include the cost for furnishing, scheduling, installing and testing, complete and in place, all Work and materials necessary to:
   1) Move and organize equipment and personnel onto the job site
   2) Secure job site
   3) Provide and maintain necessary support facilities
   4) Obtain all necessary permits and licenses (except those provided by the Owner)
   5) Prepare site for construction operations, including fencing
   6) Prepare staging and laydown area
   7) Maintain site and surrounding areas during construction
   8) Cleaning of job site during construction
   9) Site removal of all personnel and equipment after Contract Completion
   10) Site clean-up prior to final acceptance
   11) Accomplish all other items of Work not specifically listed in other sections, including snow removal and fire prevention and mitigation

c. Payment: As follows:
   1) 25% Payment: When mobilized on-site and temporary facilities are in place.
   2) 50% Payment: When 50% of the Work is completed.
   3) 75% Payment: When 75% of the Work is completed.
   4) 100% Payment: When Final Completion is achieved.

2. Bid Item 2 –Environmental Protection and Site Restoration

a. Measurement: Lump Sum.

b. Payment: The lump sum bid price shall include all materials, supplies, equipment, and labor required for fabricating, constructing, installing, and maintaining and repairing environmental protection measures as needed for temporary erosion and sediment control (TESC), water quality protection, compliance with permit conditions, and spill prevention as described in these Technical Specifications and as shown in the Contract Drawings. Work elements for this item include, if required, but are not limited to:
   1) Water Quality Monitoring Plan.
   2) Water Quality Control.
   3) Water Quality Monitoring.
   4) Spill Prevention, Control and Countermeasures Plan (SPCC Plan).
   5) TESC Plan and Compliance.

6) Certified Erosion & Sediment Control Lead (CESCL).
7) Best management practices (BMPs) such as silt fencing, construction fencing, debris boom, etc. as needed for compliance with permits.
8) Compliance with the regulatory permits and monitoring requirements during construction.
9) Site Restoration of any disturbed areas

c. Payment: "Environmental Protection and Site Restoration", per Lump Sum.

3. Bid Item 3 – Construction Survey

a. Measurement: Lump Sum.

b. Payment: The lump sum bid price for "Surveying" shall include all materials, supplies, equipment, and labor required for the proper surveying of the existing and new construction components, as described in these Technical Specifications and as shown in the Contract Drawings. Work elements for this item include, but are not limited to:
1) Establishing Control.
2) Preconstruction surveys.
3) Progress surveys.
4) Final surveys.
5) As-built survey.

c. Payment: "Construction Survey", per Lump Sum.

4. Bid Items 4 – Demolition and Disposal

a. Measurement: Lump Sum

b. Description: Work under this item shall include all materials, disposal fees, trucking, handling, dewatering, containment, supplies, equipment, and labor required for excavation and disposal of any existing material or structures removed as part of the Work, including the following elements:
1) Existing Timber and Steel Piles
2) Existing Concrete Pier Structures, including Timber Pile Caps and Decks
3) Existing Concrete Floats
4) Existing Concrete Abutments
5) Existing Boat Ramp and Paving
6) Existing Gangways
7) Existing Railing
8) Existing Concrete ADA Concrete Path and Railing
9) Existing Blackberry Patch
10) Miscellaneous Metals (e.g. connection hardware, metal debris, and other metal found within the limits of construction)
11) Miscellaneous Debris (e.g. concrete rubble and garbage)
12) Excavation (Excavated material as required to construct the site improvements to the lines and grades indicated on the Contract Drawings in accordance with the Contract Documents and as specified in Technical Specification Section 02 41 00 – Demolition)

c. Disposal: All material shall be assumed to be disposed of at an approved offsite upland facility.

d. Payment for the work includes all work incidental to excavating, storing, dewater, hauling, trucking, shipping and disposal as described in these Technical Specifications and as shown in the Contract Drawings.

e. Work also includes development and refinement of a work plan to complete the work. All work conducted inside the lines and grades shown in the Contract Drawings is the contractor's responsibility to remove.

f. No additional payments shall be made for over excavation allowance.

g. Payment: “Demolition and Disposal”, per Lump Sum.

5. Bid Item 5 – Access Pier and Fishing Pier

a. Measurement: Lump Sum

b. Description: Work under this item shall include all materials, supplies, equipment, and labor necessary for the manufacture and installation of the Access Pier and Fishing Pier including the following:
   1) Aluminum Truss: Access Pier and Fishing Pier (and all attachments and railings)
   2) Galvanized Steel Pile Caps and Frames
   3) (22) 12.75x0.5” Galvanized Steel Piles
   4) Shoremount, Hinges and Transition Plates

c. Work includes all material preparation, work plans, engineered designs, shop drawings, mock-ups, handling, and transportation to the construction area, to ensure everything is installed as described in these Technical Specifications and as shown in the Contract Drawings.

d. Payment: “Access Pier and Fishing Pier”, per Lump Sum.

6. Bid Item 6 – Boat Ramp

a. Measurement: Lump Sum

b. Description: Work under this item shall include all materials, supplies, equipment, and labor necessary for the manufacture and installation of the boat ramp including the following:
   1) Excavation and Disposal
   2) Geotextile Fabric
   3) Foundation Gravel
   4) Galvanized Steel Support Frame
   5) Precast Concrete Panels
   6) Quarry Spalls and Riprap Toe
   7) ACBMs (under floats)
   8) (2) 12.75x0.5” Galvanized Steel Piles (for new boarding floats including cap)
   9) New Aluminum Floats
   10) Cast-in-place Concrete Ramp
   11) Cast-in place Abutment (including stairs and railing)
   12) Shoremount, Hinges and Transition Plates
   13) Asphalt Paving
   14) Concrete Curbs

c. Work includes all material preparation, work plans, engineered designs, shop drawings, mix design, panel mock-up, concrete sampling and laboratory testing, handling, and transportation to the construction area, to ensure everything is installed as described in these Technical Specifications and as shown in the Contract Drawings.

d. Payment: “Boat Ramp”, per Lump Sum.

7. Bid Item 7 – Concrete Path and Railing

a. Measurement: Lump Sum

b. Description: Work under this item shall include all materials, supplies, equipment, and labor necessary for the manufacture and installation of the concrete path and railing including the following:
   1) Excavation and Disposal
   2) Geotextile Fabric
   3) Foundation Gravel
   4) Cast-in-place Concrete Path and Access Ramp
   5) Backfill
   6) New Railing and Connections
   7) Planting area and new planted shrubs
   8) All planted Trees as indicated in the contract drawings.
   9) Cut and Cap Sprinklers.
   10) Landscaping

c. Work includes all material preparation, work plans, engineered designs, shop drawings, mix design, mock-ups, concrete sampling and laboratory testing, handling, and transportation to the construction area, to ensure everything is installed as described in these Technical Specifications and as shown in the Contract Drawings.

d. Payment: "Concrete Path and Railing", per Lump Sum.

8. Bid Item 8 – ADA Swim Access Ramp

a. Measurement: Lump Sum

b. Description: Work under this item shall include all materials, supplies, equipment, and labor necessary for the manufacture and installation of the ADA Swim Access Ramp including the following:
   1) Excavation and Disposal
   2) Geotextile Fabric
   3) Foundation Gravel
   4) Cast-in-place Concrete Ramp
   5) Concrete Anchors
   6) Precast Concrete Panels
   7) Galvanized Steel Support Frame
   8) Stainless Steel Railing, Brackets and Hardware
   9) Mobi Mat and Anchors

c. Work includes all material preparation, work plans, engineered designs, shop drawings, mix design, mock-ups, concrete sampling and laboratory testing, handling, and transportation to the construction area, to ensure everything is installed as described in these Technical Specifications and as shown in the Contract Drawings.

d. Payment: "ADA Swim Access Ramp", per Lump Sum.

9. Bid Item 9 – Lifeguard Float

a. Measurement: Lump Sum

b. Description: Work under this item shall include all materials, supplies, equipment, and labor necessary for the manufacture and installation of the Lifeguard Float including the following:
   1) (2) 12.75x0.5" Galvanized Steel Piles (including caps)
   2) New Aluminum Lifeguard Float
   3) New Aluminum Gangway with Gates and Connections and Roller Guide

c. Work includes all material preparation, work plans, engineered designs, shop drawings, handling, and transportation to the construction area, to ensure

everything is installed as described in these Technical Specifications and as shown in the Contract Drawings.

d. Payment: “ADA Swim Access Ramp”, per Lump Sum.

10. Bid Item 10 – Beach Fill

a. Measurement: Lump Sum

b. Description: Work under this item shall include all materials, supplies, equipment, and labor required for the furnishing and installing of the beach fill including, foundation gravel, pea gravel and course sand as described in these Technical Specifications and as shown in the Contract Drawings. The Contractor shall assume the following quantities when calculating this lump sum cost:
   1) Coarse Sand: 750 CY
   2) Pea Gravel: 75 Tons
   3) 2”-4” Quarry Spall: 140 Tons

c. Work includes all material preparation, work plans, handling, and transportation to the construction area, to ensure everything is installed as described in these Technical Specifications and as shown in the Contract Drawings.

d. Payment: “Beach Fill”, per Lump Sum.

11. Bid Item 11 – Kayak Access Float

a. Measurement: Lump Sum.

b. Description: Work under this item shall include all materials, supplies, equipment, and labor required for the required for the manufacturing, furnishing, and installing of the Kayak Access Float, attachment and transition span, as described in these Technical Specifications and as shown in the Contract Drawings.

c. Work includes all material preparation, work plans, engineered designs, shop drawings, handling, and transportation to the construction area, to ensure everything is installed as described in these Technical Specifications and as shown in the Contract Drawings.

d. Payment: “Kayak Access Float”, per Lump Sum.

12. Bid Item 12 – Swim Access Stair Extensions

a. Measurement: Lump Sum.

b. Description: Work under this item shall include all materials, supplies, equipment, and labor required for the required for the manufacturing, furnishing, and installing of the precast concrete stairs, railing, foundation materials, scour protection, CDF and any excavation and disposal, as described in these Technical Specifications and as shown in the Contract Drawings.

c. Work includes all material preparation, work plans, engineered designs, shop drawings, mix design, mock-ups, concrete sampling and laboratory testing, handling, and transportation to the construction area, to ensure everything is installed as described in these Technical Specifications and as shown in the Contract Drawings.

d. Payment: “Swim Access Stair Extensions”, per Lump Sum.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for submittals, including shop drawings, product data, samples, and other submittals.

B. Related Requirements:

1. Required submittals are identified in each of the individual Sections.

1.02 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Owner's receipt of submittal. No extension of the Contract time will be authorized because of failure to transmit submittals enough in advance of the work to permit processing, including resubmittals.

B. Initial Review: Allow ten (10) working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. The Owner will advise Contractor when a submittal being processed must be delayed for coordination.

C. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

D. Resubmittal Review: Allow five (5) working days for review of each resubmittal.

E. Submittals: Place a permanent label or title block on each submittal item for identification.

F. Indicate name of firm or entity that prepared each submittal on label or title block.

G. Include the following information for processing and recording action taken:

1. Project name.
2. Date.
3. Name of construction manager.
4. Name of Contractor.
5. Name of Subcontractor.
6. Name of supplier.
7. Name of manufacturer.
8. Submittal number or other unique identifier, including revision identifier.
9. Number and title of appropriate Technical Specification section.
10. Contract Drawing number and detail references, as appropriate.
11. Location(s) where product is to be installed, as appropriate.
12. Other necessary identification.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Owner.

I. Distribution: Furnish copies of final submittals to manufacturers, Subcontractors, suppliers, fabricators, installers, and others as necessary for performance of construction activities. Show distribution on transmittal forms. Contractor is responsible for furnishing copies to agencies from which Contractor has secured permits.

J. Use for Construction: Retain complete copies of submittals on project site. Use only final submittals that are marked with approval notation from Owner.

K. All text shall be legible with a font size 8 points or larger when printed on 8.5x11-inch paper.

PART 2 – PRODUCTS

2.01 SUBMITTAL PROCEDURES

A. General submittal procedure requirements: Prepare and submit submittals required by individual Technical Specifications. Types of submittals are indicated in individual Technical Specification sections and may include, but not limited to the following:

B. Product data: Collect information into a single submittal for each element of construction and type of product or equipment.

C. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as shop drawings, not as product data.

D. Mark each copy of each submittal to show which products and options are applicable.

E. Include the following information, as applicable:

1. Manufacturer's catalog cuts.
2. Manufacturer's product specifications.
3. Standard color charts.
4. Statement of compliance with specified referenced standards.
5. Testing by recognized testing agency.
6. Application of testing agency labels and seals.
7. Notation of coordination requirements.
8. Availability and delivery time information.
9. Submit product data before or concurrent with samples.

F. Shop Drawings: Prepare project-specific information, drawn accurately to scale. Do not base shop drawings on reproductions of the Contract Drawings or standard printed data.

G. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

1. Identification of products.
2. Schedules.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.
6. Relationship and attachment to adjoining construction clearly indicated.
7. Seal and signature of professional engineer if required.

H. Sheet Size (when hard copies required): Except for templates, patterns, and similar full-size drawings, submit shop drawings on sheets at least 8-1/2 by 11 inches, but no larger than 22 by 34 inches.

I. Samples: Submit samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

J. Transmit samples that contain multiple, related components such as accessories together in one submittal package.

K. Identification: Attach label on unexposed side of samples that includes the following:

1. Generic description of sample.
2. Product name and name of manufacturer.
3. Sample source.

4. Number and title of applicable Technical Specification section.
5. Technical Specification paragraph number and generic name of each item.

L. Disposition: Maintain sets of approved samples at project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

M. Samples that may be incorporated into the work are indicated in individual Technical Specification sections. Such samples must be in an undamaged condition at time of use.

N. Samples not incorporated into the work, or otherwise designated as Owner's property, are the property of Contractor.

O. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available. Submit material sample for items such as aggregates, soil, and mulch.

P. Contractor's Construction Schedule: The Contractor shall submit a construction schedule Comply with requirements specified in the Specific Requirements and Technical Specifications.

Q. Test and inspection reports and schedule of tests and inspections submittals.

R. Pre-work Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

S. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

T. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Include a detailed description of the differing conditions, together with recommendations for correcting the differing conditions. All Change Order requests must be submitted in accordance with the Contract Documents.

U. Closeout Submittals: Project Record Drawings, and maintenance material submittals.

V. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

W. Manufacturer, product, and material certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer, its products, and/or its materials comply with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

X. Material test reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

Y. Product test reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

2.02 COMPLIANCE

A. In the absence of an approved submittal that meets the requirements of this section, the Contractor shall furnish the exact materials specified or materials selected by the Owner's Representative based on the Contract Drawings.

2.03 WORKING DRAWINGS

A. The Owner will not accept Working Drawings that prohibit the Owner from making sepias or copies for its own use.

B. Quality: Working Drawings shall be prepared accurately to scale sufficiently large to indicate all pertinent features of the products and the method of fabrication, connection, erection, or assembly with respect to the work.

C. All Drawings submitted to the Owner's Representative for this approval shall be drawn on sheets in 11-inch by 17-inch format or sheets that are multiples of 8-1/2 inches by 11 inches. Upon the Owner's Representative's specific request, the Contractor shall furnish copies of any drawing on sheets having the dimensions 22 inches wide by 34 inches long in overall dimensions. All text shall be legible with a font size 8 points or larger when printed on 11x17-inch paper.

D. Type of Prints Required:

1. Whenever possible, the Contractor shall transit all submittals in Adobe portable document format (PDF).
2. If PDF format is not feasible, the Contractor shall submit six prints or copies of all Shop Drawings or supplemental Working Drawings in accordance with the General Conditions.

E. Distribution: The Owner will review any Drawings provided by the Contractor, mark with appropriate notations, prepare the required number of prints for its use, and return marked copies to the Contractor. The Contractor may then order, at the Contractor's expense, as many additional copies as required for Contractor's work.

2.04 PRODUCT DATA

A. The Contractor shall submit product data in PDF format.

B. Catalog cuts or brochures shall show the type, size, ratings, style, color, manufacturer, and catalog number of each item and be complete enough to provide for positive and rapid identification in the field. General catalogs or partial lists will not be accepted.

2.05 SAMPLES

A. The sample submitted shall be the exact or precise article proposed to be furnished.

B. Samples, color chips, finish styles, etc., shall be submitted in sufficient number as to provide the Engineer with alternate choices.

2.06 SUBSTITUTIONS

A. The Contract is based on the materials, equipment, and methods described in the Contract Documents.

B. The Engineer will consider proposals for substitutions of materials, equipment, and methods only when such proposals are accompanied by full and complete technical data and all other information required by the Engineer to evaluate the proposed substitution.

C. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved in writing for this work by the Owner's Representative or Engineer.

D. Requests for substitutions may be made after award. Such requests shall be accompanied by all technical data and costs, and delivery information. When, in the opinion of the Engineer, the product is equal, or better, in all respects to the product specified, it will be approved subject to Contract requirements and the Contractor's assumption of all responsibility therefore.

E. After written approval, this submission shall become a part of the Contract, and may not be deviated from except upon written approval of the Owner.

F. Catalog and product data for equipment approved by the Engineer does not in any case supersede the Contract Documents. The approval by the Engineer shall not relieve the Contractor from responsibility for deviations from the Plans, unless Contractor has in writing called the Engineer's attention to such deviations at the time of the submission, nor shall it relieve Contractor from responsibility for errors of any sort in the items submitted. The Contractor shall check the work described by the product data with the Contract Documents for deviations and errors.

G. It shall be the responsibility of the Contractor to ensure that items to be furnished fit the space available. Contractor shall make necessary field measurements to ascertain space requirements, including those for connections and shall order such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the Drawings and Specifications.

H. Where equipment requiring different arrangement of connections from those shown as approved is used, it shall be the responsibility of the Contractor to install the equipment to operate properly, and in harmony with the intent on the Plans, and to make all changes in the work required by the different arrangement of connections together with any cost of redesign necessitated thereby, all at Contractor's expense.

I. Where the phrase "or approved alternate" or "or equal" occurs in the Contract Documents, do not assume that material, equipment, or methods will be approved by the Engineer unless the item has specifically been approved for this Work by the Engineer.

PART 3 – EXECUTION

3.01 CONTRACTOR'S REVIEW

A. Submittals: Review each submittal and check for coordination with other work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with submittal stamp before submitting to Owner.

B. Submittal Stamp: Contractor shall stamp the cover page of each submittal with a uniform, approval stamp. Include project name and location, submittal number, Technical Specification section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

C. All working drawings, brochures, and product data shall be submitted in Adobe Portable Document Format (PDF) generated by a PDF writer or scanned to PDF format.

D. Samples shall be submitted using electronic means following a system selected by the Owner and discussed at the pre-construction conference.

3.02 OWNER'S ACTION

A. The Owner's Representative will review each submittal, make marks to indicate corrections or revisions required, and return it. The Owner's Representative will forward each submittal to the Contractor.

B. Partial submittals prepared for a portion of the work will be reviewed when use of partial submittals has received prior approval from Owner.

C. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

D. Submittals not required by the Contract Documents may be returned by the Owner without action.

E. Submittal Response: The Owner will note the submittal status when responding to a submittal as follows:

1. Under Review.
1. Reviewed (RVD): If the review indicates that the submittal appears to be in conformance with the Contract Documents, the submittal will be marked "REVIEWED" or “RVD”. The Contractor may begin implementing the work method or incorporating the material or equipment covered by the submittal.
2. Reviewed as Noted (RAN): If the review indicates that the submittal is insufficient or that limited corrections are required, the submittal will be marked "REVIEWED AS NOTED" or “RAN”. The Contractor may begin implementing the work method or incorporating the material or equipment covered by the submittal, in accordance with the noted corrections. Where submittal information will be incorporated in operation and maintenance plan, a corrected copy shall be provided within 30 days, otherwise no further action will be required.
3. Revise and Resubmit (RAR): If the review finds the submittal is substantially insufficient or contains incorrect data to an extent that requires revision and re-review by the Owner’s Representative prior to proceeding with the associated work, the submittal will be marked "REVISE AND RESUBMIT" or “RAR” and returned to the Contractor. This indicates that the Contractor should not proceed with the relevant portion of work, at-risk or otherwise, until a revised submittal has been submitted, reviewed, and accepted by the Owner’s Representative as either “REVIEWED”, or “REVIEWED AS NOTED.”
4. Rejected (RJD). If the review reveals a proposed product which does not meet the specifications, the submittal will be marked “REJECTED” or “RJD” and returned to the Contractor. This indicates that the Contractor should not proceed with the relevant portion of work.
5. Not Applicable (N/A): If the review reveals that the submittal is not required by the Contract Documents, at the Owner’s Representative’s discretion it may be returned by the Owner’s Representative without action marked “NOT APPLICABLE or “N/A” This does not constitute review of the submittal and is only communicating that Owner’s Representative’s review of this submittal is not required by the Contract Documents. It is the Contractor’s responsibility to follow up with the Owner’s Representative if the Contractor needs approval of information in a submittal that was marked “NOT APPLICABLE” or “N/A”.

END OF SECTION

DIVISION 01 – GENERAL REQUIREMENTS
Section 01 50 00 – Temporary Facilities and Controls

PART 1 - GENERAL

1.01 SUMMARY

A. This work includes the requirements for temporary construction facilities, use of Project Site, access to work area, and construction aids.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Any damages, fines, levies, or judgments incurred as a result of Contractor, Subcontractor(s), or supplier negligence in complying with the requirements of this Technical Specification will be charged to the Contractor.
B. The Contractor shall be solely responsible for any schedule impacts from damages, fines, levies, judgments, or stop work orders incurred as a result of Contractor, subcontractor, or Supplier negligence in complying with the requirements of this Technical Specification. The project schedule will not be changed to accommodate the time lost.

1.03 PROTECTION OF PROPERTY AND EXISTING FACILITIES

A. Provide protections necessary to prevent any damage to Owner property and facilities.
B. Only rubber-tired equipment are permitted to operate on paved Owner roads.
C. Protect existing trees and other vegetation indicated to remain in place against cutting, breaking or skinning of roots, skinning and bruising of bark, or smothering of trees by stockpiling materials within dripline. Provide necessary temporary guards to protect trees and vegetation to remain in place.
D. Make every effort to minimize damage and cutting major tree roots during work operations. Provide protection for larger tree roots exposed or cut during excavation operations.
E. Protect existing asphalt, pavement, and concrete surfaces against damage from heavy equipment and construction materials by laying steel plates (or similar measure) during construction activity. The Contractor is responsible for restoring any damaged surfaces to the pre-construction condition, as documented by photos.
F. All Traffic and Pedestrian Controls shall comply with local, state and federal requirements.

1.04 PROTECTION OF WORK

A. Protect Work, materials, and equipment against damage, weather conditions, or other hazards. Equipment, work or materials found damaged or in other than new condition will be rejected by Owner’s Representative.

1.05 CONTRACTOR PLANT AND EQUIPMENT

A. Unless otherwise specifically cited elsewhere in these specifications, the Contractor shall provide cranes, rigging, lifts, operators, and other necessary means to unload, load, and move equipment or materials as required to perform the work.
B. Complete Plant and Equipment List to be used onsite shall be provided to the Owner. The Contractor shall update and submit this list monthly with each progress payment request. The list shall include rented equipment as well as lease-purchase or sale-leaseback equipment. The list shall indicate dates equipment is assigned to or removed from the project, dates scheduled for repairs and returned for use, and adequate identification or description of each item of equipment including manufacturer's name (abbreviated), model number, manufacturer's serial number, year of manufacture, and Contractor's assigned serial or record number.
C. The Contractor’s equipment shall be conspicuously marked for identification. Contractor vehicles shall be marked on the outside with the company name.

D. Any barge used as a base for any equipment or materials shall not be allowed to ground. Any positioning shall be accomplished using anchors or spuds.

1.06 REMOVAL AND REPLACEMENT OF OWNERS OWNED ITEMS

A. Should any Owners owned items, such as signs, bumper blocks, or related items, interfere with the proper construction process, remove and reinstall such items to the satisfaction of Owner's Representative.

1.07 USE OF OWNER SPACE

A. Only in areas of Owner that Contract covers and only during active inclusive dates of Contract.
B. Contractor vehicle and equipment parking shall be coordinated with the Owner.

1.08 UTILITIES

A. Existing subsurface utilities on Project are represented on Contract Drawings to the best of the Owner's knowledge. It is Contractor's responsibility to verify existence of utilities and determine exact location and depth. Maintain use of utilities during construction through temporary connections or other measures suitable to Owner. No extra compensation will be made for removal, temporary connections, relocations, or replacement of utilities.

1.09 SERVICE OUTAGES

A. Coordinate and schedule outages for, power, water, and sewer service connections/repairs with Owner Manager, so as not to inconvenience Owner staff or public.

1.10 SANITARY FACILITIES

A. Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of Authorities Having Jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

PART 2 - PRODUCTS

2.01 TEMPORARY FACILITIES

A. Field Offices are defined as Prefabricated or mobile units with serviceable finishes, temperature controls (heating and cooling), and foundations adequate for normal loading (unless noted as increased in specific section).
B. Common-Use Field Office: A field office is not required for this project. If the contractor chooses to establish a field office, its location, access, and utilities shall be coordinated with the Owner.
    1. Contractor to provide floor plan and construction materials specification for Owner review and approval prior to installation.
    2. Contractor to provide regular and emergency maintenance for all building components, finishes, systems, and utilities as needed to maintain the unit in good working order during the term of the Project.
    3. Contractor to disconnect (including proper termination) all utilities, remove trailer, and restore grounds at the completion of the project or as directed by the Owner.

2.02 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. Locate facilities where they will serve project adequately and result in minimum interference with performance of the work. Relocate and modify facilities as required by progress of the work.
B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
C. Locate staging and stockpiling areas in locations to minimize soil compaction in vegetated areas. Staging and stockpiling shall not occur on permeable surfaces once they have been scarified or final surfacing has been placed. The Contractor shall propose and confirm the extent and location of a staging area with the Owner.
D. Temporary buildings: Locate temporary buildings in accordance with county building regulations and at locations acceptable to the Owner and/or their Representative.

3.02 USE OF PROJECT SITE

A. Use of sites: Limit use of project sites to the Limits of Construction indicated on the Contract Drawings. Do not disturb portions of the site beyond areas in which the work is indicated. Keep access roads clear and available to the Owner and emergency vehicles at all times. Do not use access roads for parking or storage of materials. Do not stockpile construction materials waterward of the OHW. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
B. Laydown and storage areas: The contractor shall be allowed limited space near the top of the boat ramp for laydown and storage. The contractor shall coordinate with Owner prior for final laydown location and approval.
C. Owner Operations. Owner and adjacent Park operations will continue during construction. Contractor is responsible for conducting activities within the Limits of Construction shown on the Contract Drawings and to not interfere with Owner or adjacent Park Operations.
D. General
    1. No work shall impact adjacent properties unless directed by the Owner. Coordinate with the Owner when work will impact access to adjacent properties.
    2. Do not clear outside of the project limits.
    3. Do not close or obstruct roads or other facilities used by occupants of adjacent properties without written permission from authorities having jurisdiction.
E. Contractor will not have exclusive or unrestricted use of the project site for storage during their operations. Contractor shall recognize and take into account during their planning and execution of the work that the Owner or the Owner's Representative may require access to and use of certain areas or spaces during certain periods.
F. The Contractor shall perform all work within the project area limits defined in the Contract Documents. If other areas are required for construction, the Contractor shall secure any necessary agreement or construction easement documentation with the private landowners at no additional expense to the Owner. The actual selected location shall be coordinated with and approved by the Owner.
G. The Owner assumes no responsibility for the condition or maintenance of any road or structure thereon that may be used by the Contractor in performing the work under the Contract Documents or in traveling to and from the site of the work. The Contractor is responsible for constructing, maintaining, and removing any additional access that they deem necessary to the site of the work. No payment will be made to the Contractor by the Owner for any work done in improving, repairing, or maintaining any road or structure thereon for use in the performance of the work under the Contract Documents.
H. The Contractor shall be responsible for restoring the Contractor use areas, access site, project area, and other impacted areas to their original condition.

3.03 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. The Contractor shall comply with applicable laws, ordinances, rules, regulations and orders pertaining to personnel, construction machinery and equipment, hoists, cranes, staging, materials

handling facilities, tools, appliances and other construction aids. The Contractor shall provide first aid facilities where required.

B. Protection of existing facilities: Protect existing vegetation and other improvements at project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

C. Environmental protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

3.04 Temporary fencing and gates: Contractor shall install temporary construction fencing (construction and chain link) and gates around all landside work areas and laydown areas, prior to beginning construction, to provide pedestrian control. Fencing shall prevent people and animals from entering the construction zone. Construction fencing material shall be U.S. Netting Safety Fence Sentry Secura or approved equal (1.800.331.2973). Locations shall include along public rights-of-way, easements, and adjacent property boundaries. Contractor shall provide construction safety signage on the fencing and/or gates.

3.05 CONTRACTOR OBTAINED PERMITS

A. The Contractor shall be responsible for obtaining all permits necessary for haul and transport of construction materials, equipment and waste material to and from the project site, and any other permits necessary to accomplish the work that have not already been secured by the Owner. The cost of any necessary permits not already acquired by the Owner shall be incidental to the Contract.

3.06 ACCESS TO PROJECT SITE AND WORK

A. The Contractor is responsible for coordinating and obtaining all necessary agreements and easements for access to the project site, lay down areas, and vessel moorage at no additional expense to the Owner. Access for construction equipment into the project work areas are the responsibility of the Contractor.

B. The Contractor shall coordinate with the Owner any upland work areas needing to be closed to public use during construction. In-water areas outside the limits of construction will remain open and available for public use throughout the duration of construction.

3.07 PROTECTION OF PUBLIC

A. Throughout construction, the contractor shall take measures to protect the public during from any risks and hazards associated with construction. At minimum, these will include the following:

1. Establish appropriate site boundaries, using temporary fencing as described in this specification to exclude unauthorized personnel from site, per this Technical Specification.
2. Pedestrian areas and walkways shall be clear of any slip, trip, or falling hazards.
3. During construction, the contractor shall monitor any overhead work with equipment so that objects cannot fall out of the established site boundary.
4. Proper procedures shall be followed to project the public from delivery and other site vehicles entering/exiting the site. Materials shall be stored/stacked within the site boundary.
5. Best management practices shall be employed to prevent any debris or contamination from entering the public areas. This includes both upland and in-water work.

END OF SECTION

DIVISION 01 – GENERAL REQUIREMENTS
Section 01 57 19 – Temporary Environmental Controls

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work includes the requirements to maintain environmental controls by the Contractor in accordance with the specifications and the Owner provided permits until the acceptance of the Contract. The work also includes compliance with all controls or ordinances with respect to safety, noise, dust, fire and police action, civil disobedience, security, or traffic.

1. Notification must be provided to WDFW three (3) days prior to construction and seven (7) days after completing the work.

B. Lubricants composed of biodegradable base oils such as vegetable oils, synthetic esters, and polyalkylene glycols are recommended for use in equipment operated in or near water.

C. This work item shall include the planning, installing, inspecting, maintaining, and removing Best Management Practices (BMPs) to prevent pollution of air, land, and water, and control, respond to, and dispose of existing structures during the contract.

D. The Contractor shall perform the following:

1. Install, maintain, and remove all BMPs during the life of the contract.
2. Perform other work shown on the Contract Drawings or as directed by Owner's Representative.
3. Educate all Contractor and all Subcontractor staff in environmental compliance issues at weekly meetings.

E. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other Federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

F. The Contractor is wholly responsible for meeting water quality standards during the duration of the work.

1.02 GENERAL

A. The all project environmental permits, and local, state, and federal rules, requirements, and regulations shall apply to the work.

B. All activities shall conform to the Stormwater Management Manual for Western Washington, Volume II, Construction Stormwater Pollution Prevention by the Washington State Ecology, latest edition.

C. Soil erosion stabilization and sedimentation control consist of the following elements:

1. Maintenance of existing permanent or temporary storm drainage piping and channel systems, as necessary.

2. Construction of new permanent and temporary storm drainage piping and channel systems, as necessary.

3. Install, maintain, and remove all erosion prevention, containment, and countermeasures BMPs during the life of the contract.

A.

1.03 SITE MAINTENANCE

A. The Contractor shall keep the work site and Contractor's facilities clean and free from rubbish and debris. Materials and equipment shall be removed from the site when they are no longer necessary. Upon completion of the work and before final acceptance, the work site shall be

cleared of equipment, unused materials, and rubbish to present a clean and neat appearance in conformance with the present condition of the site.

1.04 CLEAN-UP

1. Refer to specific site and permitting requirements in Permit Documents.

1.05 AIR POLLUTION CONTROL

A. The Contractor shall not discharge smoke, dust, and other contaminants into the atmosphere that violate the regulations of any legally constituted authority. Internal combustion engines shall not be allowed to idle for prolonged periods of time. The Contractor shall maintain construction vehicles and equipment in good repair. Exhaust emissions that are determined to be excessive by the Owner's Representative shall be repaired or replaced.
B. The Contractor shall minimize dust nuisance by cleaning, sweeping, vacuum sweeping, sprinkling with water, or other means. The use of water, in amounts which result in mud on public streets, is not acceptable as a substitute for sweeping or other methods. Equipment for this operation shall be on the job site or available at all times.
C. Visible dust generated from any Contractor activity shall not be allowed.
D. The Contractor shall sprinkle water as necessary to prevent visible dust at all times during earthwork operations.

1.06 NOISE CONTROL

A. Refer to Specific Requirements in Permit Documents.
B. Construction involving noisy operations, including starting and warming up of equipment shall be in compliance with local noise ordinances. Noisy operations shall be scheduled to minimize their duration. Construction involving noisy operations shall be limited to work hours stated.
C. The Contractor shall comply with all local controls and noise level rules, regulations and ordinances which apply to any work performed pursuant to the Contract.
D. Each internal combustion engine, used for any purpose on the job or related to the job, shall be enclosed and be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler and enclosure.
E. Noise levels shall be in accordance with RCW. Equipment that cannot meet these levels shall be quieted by use of improved exhaust mufflers, portable acoustical screens, or other means. Equipment not modified to meet these requirements shall be removed from the project.
F. There shall be no noise between 6pm and 6am unless approved by the Owner.

1.07 WATER CONTROL

A. The Contractor shall conform to the regulations and requirements of legally authorized surface water management agencies.
B. The Contractor shall be responsible for keeping upland (above OHW) excavations for the structures, trenches, and other areas free from water as required to permit continuous progress of, or to prevent damage to, its own work or the work of others. The Contractor's operations shall be conducted in such a manner as to prevent sediment or other contaminants from reaching the existing sewers, storm drains, creeks, or streams. Temporary erosion control and settling ponds shall be provided in the work area as required to trap runoff until the turbidity has settled and the water can be diverted into the storm drains or drainage courses.
C. The Contractor shall cover exposed excavated areas and spoil piles when runoff from rain is or would be likely to cause turbid waters to enter local waterways. The Contractor shall suspend work in the rain if such work cannot be performed without causing turbid runoff. If turbid water is discovered entering storm drainage structures, the Owner's Representative may suspend the

work immediately. All costs associated with suspension of the work shall be the responsibility of the Contractor. Work shall remain suspended until turbid runoff has been eliminated.

D. To avoid solids or turbid runoff from entering local waterways and storm drain systems, the Contractor shall cover, secure, and/or berm excavated areas and spoil piles and employ other methods as necessary such as hay bales around storm drains or around construction sites, use of cut and cover construction method, or use of sedimentation basins.

1.08 WATER QUALITY MEASURES

A. Erosion control measures including silt fences, filter fabric, sedimentation ponds, placement of hay bales along the peripheries of construction sites, temporary detention ponds, and terraced slopes shall be employed as appropriate and shall be in place prior to any clearing or grading activity.

B. All site runoff shall be diverted into temporary erosion control facilities until solids settle before routing to a creek or off site.

C. The Contractor shall utilize industry standard erosion and sedimentation control Best Management Practices (BMPs) such as catch basin protective inserts, check dams, silt fences, sediment ponds, holding tanks, and drainage swales to prevent turbid runoff during the duration of the work.

D. No "track-out" of soils or other materials shall be allowed. The Contractor shall employ the use of built up construction entrances, wheel washes, and other means to prevent contamination of roads, streets, and other traveled surfaces in the vicinity of the project site. Should "track-out" occur, it shall be removed immediately.

E. A turbidity curtain may be installed during dredging and shoreline construction activities.

1.09 WATER QUALITY CONTROL REQUIREMENTS

A. All work shall be performed in a manner that does not adversely impact water quality or cause damage to critical habitat located outside the Project Site areas. The Contractor shall have absorbent boom on site and ready for placement to contain sheens in the event a spill occurs. The Owner must be immediately notified if a material spill occurs or oil sheen is observed during any part of construction.

1.10 WATER QUALITY MONITORING AND CONTROL PLAN

A. The Contractor shall prepare and submit a Water Quality Monitoring and Control Plan prior to the start of construction for all work located below ordinary high water (OHW). The Water Quality Control Plan shall include methods and procedures of demolition, excavation and fill placement, and pile driving that will be protective of water quality, and a description of contingency measures that will be implemented in the event water quality compliance criteria is exceeded during the performance of such activities.

1.11 WATER QUALITY MONITORING AND REPORTING CONDITIONS

A. During and immediately after project construction, the Contractor shall visually monitor for turbidity discharges at the point of compliance established in WAC 173-201A-210(1)(e)(i) and in accordance with project Section 401 Water Quality Certification Order in Permit Documents. The Contractor shall meet water quality criteria as defined in the Project Section 401 Water Quality Certification and applicable local, state, and federal standards. The Contractor shall have in place BMPs to prevent water quality exceedances and contingency measures to implement should water quality violations occur.

B. Turbidity monitoring work shall be conducted by a technician that is either an employee of Contractor or an independent company experienced in conducting water quality compliance monitoring work. The proposed technician shall have a minimum 5 years of documented

experience with water quality and turbidity monitoring work and holding a CESCL certification. Technician shall have demonstrated proficiency in using the water quality monitoring equipment.

C. Turbidity monitoring reports shall be sent weekly to the 401/CZM Federal permit coordinator. The 401/CZM Federal permit coordinator shall be contacted within 24 hours if an exceedance occurs.

D. The reports shall include the following information:

1. Send the reports to the following:

   a. ECY(Ecology) Headquarter Office Attn: Federal Permit Coordinator, P.O. Box 47600 Olympia, WA 98504-7600
   b. Email: ECYREFEDPERMITS@ecy.wa.gov

2. A description of the nature and cause of the exceedance.
3. The period of non-compliance including exact dates, duration and times and/or the anticipated time when the Applicant will return to compliance.
4. The steps taken, or to be taken, to reduce eliminate, and prevent the recurrence of the non-compliance.
5. In addition, within 5 days after notification of an exceedance, the Applicant shall submit a written report to Washington Department of Ecology (ECY) that describes the nature of the exceedance, turbidity results and location, photographs, and any other pertinent information.

E. If water quality exceedances are observed outside of the point of compliance, work shall cease immediately and the Contractor shall assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further water quality turbidity exceedances.

F. If the results of the monitoring show that the water quality standards or project performance standards are not being met, additional monitoring and mitigation may be required.

G. Any changes to the monitoring requirements must be approved in writing by Ecology.

1.12 OIL SPILL PREVENTION AND CONTROL

A. The Contractor shall prepare a project specific spill prevention, control and countermeasures (SPCC) plan to be used for the duration of the project. The plan shall be submitted to the Owner's Representative prior to the commencement of any on site construction activities. The Contractor shall maintain a copy of the plan at the Work site, including any necessary updates as the Work progresses. If hazardous materials are encountered during construction, the Contractor shall do everything possible to control and contain the material until appropriate measures can be taken. Hazardous material, as referred to within this Specification, is defined in RCW 70.105.010 under "Hazardous Substances". Specific information required in the SPCC Plan are in the Submittals section of this Technical Specification.

B. The Contractor shall be responsible for prevention, containment, and cleanup of spilling of oil, fuel and other petroleum products used in the Contractor's operations. All such prevention, containment and cleanup costs shall be borne by the Contractor and shall be conducted in accordance with WSDOT Standard Specification Section 1-07.15(1) - Spill Prevention, Control and Countermeasures Plan (SPCC Plan).

C. The Contractor is advised that discharge of oil from equipment or facilities into state waters or onto adjacent land is not permitted under state water quality regulations.

D. The Contractor shall, at a minimum, take the following measures regarding oil spill prevention, containment, and cleanup:

1. Fuel hoses, lubrication equipment, hydraulically operated equipment, oil drums, and other equipment and facilities shall be inspected regularly for drips, leaks, or signs of damage, and shall be maintained and stored properly to prevent spills. Proper security shall be maintained to discourage vandalism.

2. All land-based oil and products storage tanks shall be diked or located so as to prevent spills from escaping to the water. Diking and subsoils shall be lined with impervious material to prevent oil from seeping through the ground and dikes.
3. The Contractor shall not store oil or fuel on the shoreline, or equipment that is not required for the daily construction activities. The Contractor shall specify where oil and fuels will be stored in the SPCC Plan. A metal pan or other impervious material with sides a minimum of four (4) inches high shall be placed under the equipment on the beach or adjacent area during refueling. The pan shall have a capacity equal to the capacity of the fuel cans used and catch any spills or leaks during the refueling activity. Fuel caught in the pan shall be contained and either transported off-site or used in the equipment. Under no condition shall the material be discharged on the Project Site. If the Contractor's fuel cells exceed the thresholds set forth in 40 CFR 112, the Contractor shall provide a spill plan and containment equipment accordingly.
4. Special measures shall be taken to prevent bilge pumpage or effluent, chemicals, fuels, oils, greases, bituminous materials, waste washing, herbicides and insecticides, and concrete drainage from entering the water.
5. All visible floating oils shall be immediately contained with booms, dikes, or other appropriate means and removed from the water prior to discharge into state waters. All visible oils on land shall be immediately contained using dikes, straw bales, or other appropriate means and removed using sand, ground clay, sawdust, or other absorbent material, which shall be properly disposed of by the Contractor. Waste materials shall be temporarily stored in drums or other leakproof containers after cleanup and during transport to disposal. Waste materials shall be disposed off property at an approved site.
6. In the event of any oil or product discharges into public waters, or onto land with a potential for entry into public waters, the Contractor shall immediately notify the Owner's Representative and the following agencies at their listed 24-hour response numbers:

    a. 1-800-258-5990 (Washington Emergency Management Division)
    b. 1-800-424-8802 (National Response Center)

E. Maintain on the job at each site the following materials (as a minimum):

1. Oil-Absorbent Booms: 8 each, 20 feet long.
2. Oil-absorbent pads or bulk material, adequate for coverage of 200 square feet of surface area.
3. Hay bales: 10
4. Plastic sheeting
5. Oil drywall, gloves and plastic bags.

1.13 CONTAMINATED/HAZARDOUS SOILS AND GROUNDWATER

A. Contractor's Responsibility

1. The Contractor shall monitor soils, groundwater and waste materials by instructing workers in observing and reporting questionable materials and odors, such as refuse, oily sheen or color on soils or water, and oily or chemical odors. If hazardous or contaminated materials are encountered, the Contractor shall stop all work in that area and notify the Owner immediately.
2. The Contractor shall be responsible for all matters related to work safety and for detection of contaminated soils and groundwater encountered during the construction as they relate to worker safety. The Contractor shall ensure the protection of the safety and health of construction workers and other authorized persons at the work site from exposure to potential toxic materials.

B. Notification and Suspension

1. In the event the Contractor detects the presence of suspicious materials, the Contractor shall immediately notify the Owner. Following such notification by the Contractor, Owner

shall in turn notify the various governmental and regulatory agencies concerned with the presence of potentially dangerous materials. Depending upon the type of problem identified, Owner may suspend the work in the vicinity of the material discovery.

2. Following completion of any further testing necessary to determine the nature of the materials involved, the Owner will determine how the material shall be handled and disposed of.

1.14 ADMINISTRATIVE REQUIREMENTS

A. Failure to install, maintain, and/or remove BMPs shown on the Contract Drawings and specified herein, or by order of Owner's Representative; or failure to comply, implement and maintain any provisions and requirements of this Technical Specification; or failure to conduct project operations in accordance with these Technical Specifications and Contract Drawings will result in the suspension of the Contractor's operations by Owner's Representative in accordance with General Conditions.

B. Any damages, fines, levies, or judgments incurred as a result of Contractor, Subcontractor, or supplier negligence in complying with the requirements of this Technical Specification will be charged to the Contractor.

C. The Contractor shall be solely responsible for any schedule impacts from damages, fines, levies, judgments, or stop work orders incurred as a result of Contractor, subcontractor, or supplier negligence in complying with the requirements of this Technical Specification. The project schedule will not be changed to accommodate the time lost.

1.15 REGULATIONS

A. Comply with applicable federal, state and local laws and regulations concerning environmental pollution control and abatement, and specific requirements elsewhere in specifications and drawings to prevent and provide for control of environmental pollution.

B. The Contractor is responsible for taking the appropriate preventative water quality protection systems to ensure compliance with the Permit Documents and in accordance with WSDOT Standard Specification Section 8-01 - Erosion Control and Water Pollution Control. Water pollution control measures shall be utilized throughout the duration of the work in accordance with BMPs described in Washington State ECY Stormwater Management Manual for Western Washington, Volume II Construction Stormwater Pollution Prevention.

1.16 APPLICABLE PUBLICATIONS

A. The following permits, rules, requirements, and regulations specified may apply to this work:

1. All Other Technical Specification Sections
2. All permits included in Permit Documents

1.17 SUBMITTALS

A. The Contractor shall prepare and submit a Work Plan to the Owner for review and approval. For submission specifics including time frame requirements, see Section 01 33 00 – Submittal Procedures. The following items shall be submitted:

1. Temporary Erosion and Sediment Control plan and Stormwater Pollution Prevention Plan
2. Water Quality Control Plan: The Contractor shall submit to the Owner a detailed Water Quality Control Plan for approval that is consistent with the project specification requirements presented herein of this Specification. At a minimum the plan shall include the following information:

    a. Project Schedule: A schedule reflecting the expected timing and duration of the major activities associated with in-water marine construction. These shall include

but are not limited to mobilization, commencement of demolition operations, anticipated schedule for performing in-water work, surveys, method and anticipated rate of filling, demobilization, and sequencing with other work including demotion and piling work.

b. Best Management Practices: The Contractor shall also include in the Water Quality Control Plan a description of Best Management Practices (BMPs) that will be implemented during in-water marine and shoreline construction activities to satisfy permit requirements and meet the Owner's project goals.

1) BMP is to include a site-specific Spill Prevention and Countermeasure or Pollution Control Plan that provides a site plan and narrative describing demolition debris and spill containment plan; and measures to reduce/recycle hazardous and non-hazardous wastes.
2) The spill containment control plan, per Section 1.11 of this Specification.
3) Water quality monitoring for turbidity during pile driving work if required.
4) Hazardous materials storage plan with narrative describing methods of storage, security, and containment methods.
5) BMPs that will be used to protect water quality must be approved by Ecology (ECY) prior to commencement of the work.

3. Spill Prevention, Control and Countermeasures Plan: Develop a written description of their SPCC plan per section 1.11 of this Specification. The SPCC plan shall additionally include the following information:

a. Site Information: Identify general site information useful in construction planning, recognizing potential sources of spills, and identifying personnel responsible for managing and implementing the plan.

b. Project Site Description: Identify staging, storage, maintenance, and refueling areas and their relationship to drainage pathways, waterways, and other sensitive areas, specifically address:

1) The Contractor's equipment maintenance, refueling, and cleaning activities.
2) The Contractor's on-site storage areas for hazardous materials.

c. Spill Prevention and Containment: For each of the locations identified in B, above, specifically address:

1) Spill prevention and containment measures to be used at each location.
2) The method of collecting and treating or disposing of runoff from each location.
3) The method of diverting project runoff from each location.

d. Spill Response: Outline spill response procedures including assessment of the hazard, securing spill response and personal protective equipment, containing and eliminating the spill source, and mitigation, removal and disposal of the material.

e. Standby, On-Site, Material and Equipment: The plan shall identify the equipment and materials the Contractor will maintain on site to carry out the preventive and responsive measures for the items listed.

f. Reporting: The plan shall list all federal, state and local agency telephone numbers the Contractor must notify in the event of a spill.

g. Program Management: Identify site security measures, inspection procedures and personnel training procedures as they relate to spill prevention, containment, response, management and cleanup.

h. Preexisting Contamination: If preexisting contamination in the project area is described elsewhere in the Plans or Specifications, the SPCC plan shall indicate measures the Contractor will take to conduct Work without allowing release or further spreading of the materials.

i. Work Below the Ordinary High Water Line: Identify equipment that will be used below the ordinary high water line. Outline daily inspection and cleanup

procedures that ensure equipment is free of all external petroleum-based products. Identify refueling procedures for equipment that cannot be moved from below the ordinary high water line.

j. Attachments: Site plan showing the locations identified in (1. B. and 1. C.) noted previously.

k. Spill and Incident Report Forms, if any, that the Contractor will be using.

1.18 ENVIRONMENTAL PROTECTIONS

A. Pile Driving Sound Attenuation Measures

1. Use of an impact hammer for piles located below OHW will require the use of sound attenuation in accordance with Permit Documents.
2. The design of the sound attenuation systems is the sole responsibility of the Contractor. It is the Contractor's responsibility to interpret permit performance or system requirements and ensure that a compliant sound attenuation system appropriate for all potential site conditions is provided.
3. Impact driving of steel piles below the water line shall at a minimum require the use of a bubble curtain installed around the pile during pile driving operations in accordance with Environmental Permit requirements.
4. Other sound attenuation methods may be used if required/allowed by the applicable Permit Documents and local, state, federal law and with prior approval by the Owner.
5. Regardless of the sound attenuation method used, the selected system shall provide sound attenuation in accordance with Environmental Permit requirements. The Contractor is responsible for monitoring the effectiveness of their sound attenuation system, and if the noise level is exceeded per the permit requirements, the attenuation measures or pile installation methods and equipment shall be modified to bring the pile driving operation into compliance at the Contractor's expense.
6. The sound attenuation system shall be designed so as not to damage the pile.

B. Protection of Land Resources

1. Give special attention to the effect of Contractor's operations upon surroundings. Take special care to maintain natural surroundings undamaged and conduct Work in compliance with following requirements:

a. When work is completed, remove storage and all other Contractor buildings and facilities, and sites restored to a neat and presentable condition appropriate to surrounding landscape, unless otherwise specified. Remove debris resulting from Contractor's operation.

b. Store petroleum products, industrial chemicals and similar toxic or volatile materials in durable containers, approved by the authority having jurisdiction, located in areas where accidental spillage will not enter water. Store substantial quantities of materials in an area surrounded by containment dikes of sufficient capacity to contain an aggregate capacity of tanks.

C. Protection and Restoration of Property

1. Preserve public property, prevention of damage to natural environment, etc., insofar as they may be endangered by Work.
2. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in execution of Work, or in consequence of non-execution of Contractor, restore, or have restored at Contractor's expense, such property to a condition similar and equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring same, or make good damage or injury in some other manner acceptable to the Owner's Representative.

D. Protection of Water Resources

1. Perform Work not to create conditions injurious to fish or to their habitat, or which would make water unsuitable for private, municipal, or industrial use.
2. Take special measures to prevent chemicals, fuels, oils, grease, bituminous materials, waste washings, herbicides, insecticides, lime, wet concrete, cement, silt or organic or other deleterious material from entering waterways.
3. To prevent leaching, construct forms to contain any wet concrete. Place impervious material over any exposed wet concrete that will come in contact with waters of the state. Forms and impervious materials must remain in place until the concrete is cured.
4. Dispose at an offsite location, wastes, effluents, trash, garbage, oil, grease, chemicals, cement, bitumen, etc., petroleum, and chemical products or wastes containing such products, in a lawful manner conforming to applicable local, state and federal laws. Furnish the Owner with documentation showing compliance with this requirement.
5. Conform to applicable local, state and federal laws for disposal of effluents. Dispose of waters used to wash down equipment in a manner to prevent their entry into a waterway. If waste material is dumped in unauthorized areas, remove material and restore area to condition of adjacent, undisturbed area. If necessary, excavate contaminated ground and disposed of as directed by Owner's Representative and replace with suitable compacted fill material with surface restored to original condition.

E. Emergency Spill Response Notification

1. Under state law, ECY must be notified when any amount of regulated waste or hazardous material that poses an imminent threat to life, health, or the environment is released to the air, land, or water, or whenever oil is spilled on land or to waters of the state. The spiller is always responsible for reporting a spill. Failure to report a spill in a timely manner may result in enforcement actions. the Contractor should consult with ECY's response team before attempting any type of response or cleanup and also notify the Owner's Representative.
2. If oil or hazardous materials are spilled to state waters, the spiller must notify both federal and state spill response agencies. The federal agencies contact is the NRC at 1-800-424-8802. For state notification, call the Washington Emergency Management Division (EMD) at 1-800-258-5990 or 1-800-OILS-911 AND the appropriate ECY regional office for your county (see numbers below). An ECY spill responder will normally call the reporting party back to gather more information. The agency will then determine its response actions. Also notify Owner's Representative.
3. ECY Regional Spill Reporting Numbers:

    a. 1-800-258-5990 (Washington Emergency Management Division)
    b. 1-800-424-8802 (National Response Center)

PART 2 - MATERIALS

2.01 GENERAL

A. Contractor shall not clear, grub, grade, or perform any earth disturbing activities, dredged material, or dispose dredged material after Contract Award until all BMP's outlined in the Owner approved TESC and SWPP Plan are installed to the satisfaction of the Owner.

B. Contractor shall have materials on hand, in quantities sufficient to cover all bare soil exposed to rainfall and surface water runoff in accordance with Ecology Stormwater Manual for Western Washington, divert all flows, contain all sediments, and prevent turbid discharges from the site during all stages of construction. These materials include, but are not limited to, the following:

1. Reinforced plastic sheeting (minimum 6 mil thickness) so that all areas that are exposed at any given time to rainfall and site water runoff can be covered.

2. Straw.

3. Drain pipe
4. Sand bags. Sufficient quantity shall be provided to hold all installed reinforced plastic in place and to prevent wind blowing under the plastic sheeting or water draining under the plastic sheeting
5. Filter fabric
6. Hay bales
7. Floating debris boom
8. Silt/turbidity curtain
9. Silt fence

PART 3 - EXECUTION

3.01 WATER QUALITY CONTROL

A. The Contractor is responsible for allowing Water Quality monitoring on their construction site and for achieving Water Quality criteria throughout all in-water or near water construction activities as defined in the Section 401 Water Quality Permit, and applicable local, state and federal standards. The Contractor shall have in place a Water Quality Control Plan (see Part 1 of this specification) listing Best Management Practices (BMPs) that will be utilized during in-water marine and shoreline construction to prevent adverse effects to water quality. The Water Quality Control Plan will include contingency measures that may be implemented should they become necessary.

B. Violations of any water quality requirement listed in Permit Documents may result in work stoppage by regulators. There shall be no additional compensation or time for shutdown, standby time, or delay associated with non-compliance.

C. The Contractor is responsible for taking the appropriate preventative erosion control measures and water quality protection systems to ensure compliance with the project regulatory permits and approvals and in accordance with WSDOT Standard Specifications.

D. All work shall be conducted in accordance with the Owner provided permit conditions in Permit Documents. The Contractor is responsible for complying with all permit conditions when performing the work.

E. Materials for containment and cleanup shall be available onsite during all phases of the project.

F. Temporary Erosion and Stormwater Control (TESC) measures shall be utilized throughout the duration of the work in accordance with BMPs described in Washington State ECY Stormwater Management Manual for Western Washington, Volume II Construction Stormwater Pollution Prevention (latest version).

G. A floating debris boom shall be deployed around the wetted perimeter of the limits of construction during any in-water construction earth work activities (including but not limited to demolition). All floating debris shall be removed and disposed of at an upland facility. Floating debris shall not be allowed to leave the project work area.

H. All construction debris shall be properly disposed of on land so that it cannot enter a waterway or cause water quality degradation to state waters.

I. Wash water containing oils, grease, or other hazardous materials resulting from wash down of equipment or working areas shall be contained for proper disposal, and shall not be discharged into state waters.

J. No wood, metal, or concrete preservatives, paints, sealers, glues, epoxies, chemicals, or other substances harmful or toxic to fish shall be applied to the new construction once it has been placed within or over the OHW of the Puget Sound.

K. Clean Fill Criteria: The Contractor shall ensure that fill placed for the proposed project does not contain toxic materials in amounts exceeding the applicable environmental requirements.

L. If at any time, as a result of project activities, fish are observed in distress, a fish kill occurs, or water quality problems develop (including equipment leaks or spills), immediate notification shall be made to the Washington Department of Ecology (ECY).

3.02 EQUIPMENT

A. Vehicle staging, cleaning, maintenance, refueling, and fuel storage shall be located in accordance with Washington ECY requirements.

B. When heavy equipment is used, the equipment selected shall have the least adverse effects on the ground, e.g., minimally sized, low ground pressure.

C. Equipment used shall be free of external petroleum-based products while working around the water. Accumulation of soils or debris shall be removed from the drive mechanisms (wheels, tires, tracks, etc.) and the undercarriage of equipment prior to its working below the ordinary high water line. Equipment shall be checked daily for leaks and any necessary repairs shall be completed prior to commencing work activities near the water.

D. Equipment used for this project operating with hydraulic fluid shall use only those fluids certified as non-toxic to aquatic organisms.

E. Except for hand tools, barge or boat mounted equipment, or a floating pile driver, equipment used for this project shall not enter or operate below the ordinary high water line. Any exception to this requirement can only be made with specific written consent of the Owner.

F. All stationary power equipment such as generators, cranes, or stationary drilling equipment, operated within 150 feet of any waterbody shall be diapered to prevent leaks unless suitable containment is provided to prevent potential spills for entering the water.

3.03 PILE REMOVAL

A. Vibratory extraction is the preferred method of pile removal.

B. Place the piling on a construction barge or other dry storage site after the piling is removed. The piling must not be shaken, hosed off, left hanging to dry or any other action intended to clean or remove adhering material from the piling near waters of the state.

C. If a treated wood piling breaks during extraction, remove the stump from the water column by fully extracting. If the stump cannot be fully extracted, remove the remainder of the stump with a clamshell bucket, chain, or similar means, or cut it off three feet below the mudline. Cap all buried cut stumps and fill all holes left by piling extraction with approximately 2 cubic feet of clean sand or gravel that matches the native material.

D. When removing creosote piling, containment booms and absorbent booms (or other oil absorbent fabric) must be placed around the perimeter of the work area to capture wood debris, oil, and other materials released into marine waters as a result of construction activities to remove creosote pilings. All debris on the bed and accumulated in containment structures must be collected and disposed upland at an approved disposal site.

3.04 AGGREGATE AND CONSTRUCTION DEBRIS STOCKPILES

A. No demolition or excavation materials shall be stored or stockpiled onsite on Owner property. Stockpiling of new construction materials offsite shall be coordinated with the Owner.

B. Demolition material shall become the property of the Contractor. It will be deposited offsite, at a Contractor provided location pre-approved by the Owner. Demolition materials are not to be allowed to enter the water below the OHW line.

3.05 BMP – TURBIDITY CURTAIN

A. During dredging and shoreline construction activities the Contractor may need to deploy a floating turbidity curtain to isolate suspended sediments and turbidity to the work area in order to meet the water quality protection permit requirements. The intent of the turbidity curtain is to reduce suspended sediments from dispersing out from the work area beyond the mixing zone boundary.

B. Contractor shall monitor the turbidity curtain during installation, operation, maintenance and removal to avoid injury or mortality to local fish life in accordance with Permit Documents.

3.06 BMP – DEBRIS BOOM

A. The Contractor shall install and maintain a floating impervious debris boom around the perimeter of the work area prior to any in-water work or demolition activities. All floating debris shall be removed and disposed of by the Contractor.

B. The Contractor shall maintain the debris boom throughout the duration of all construction activities.

C. The impervious debris boom shall at all times fully enclose the entire wet perimeter of the Contractor work area for the work being performed and shall be anchored to the shoreline.

D. All Contractor work vessels shall be moored inside the debris boom.

E. Any treated wood or materials that fall into the water during disassembly or construction shall be contained within the debris boom and immediately removed to a containment basin or confined stockpile area. All accumulated debris shall be disposed of property at an approved disposal site in accordance with Technical Specification Section 02 41 00 – Demolition.

F. Absorbent sausage booms (or other oil-absorbent fabric) shall be placed around the work area and used in conjunction with the debris boom, as needed.

3.07 BMP REMOVAL

A. All temporary BMPs and debris boom shall be removed upon completion of the work, or as directed by the Owner's Representative.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section covers construction surveying work required to construct the in-water components of the project in accordance with the Contract Drawings and Specifications subject to the terms and conditions of the Contract including furnishing all materials, labor, and equipment necessary to perform pre-construction surveying, existing utility line locate surveying, progress/intermediate surveying for quality control (confirm work is being performed to specified requirements), establishing on-site water level gages, surveying for development of progress payments, construction staking and layout, establishing temporary benchmarks from primary control, and post-construction surveying. Work covered by this Section includes but is not limited to the following elements:

1. Ramps
2. Walkways
3. Gangways
4. Piers
5. Concrete
6. Floats
7. Piles
8. Boat Ramp
9. Abutments
10. Excavation and Fill
11. Replacement of the existing benchmark/monument

B. The Contractor is fully responsible for the methods to be used to achieve the requirements in this section.

C. The Contractor is fully responsible for coordination of the replacement benchmark.

D. All survey work performed by the Contractor shall conform to all applicable sections of the Revised Code of Washington (RCW) and the Washington Administrative Code (WAC).

E. Partial surveys of the work may be submitted for partial payment upon prior approval from the Owner's Representative.

F. The surveys performed during construction including pre-construction, progress surveys and post construction surveys shall be done at no additional expense to the Owner.

G. Existing Site Surveys: The Owner will provide a survey of existing site conditions and provide survey drawings and data to the Contractor. The purpose of the existing site survey is to provide sufficient information to the Contractor so that he can perform staking of proposed construction work under existing conditions, check elevations and alignment for discrepancies, and adapt the Work prior to commencing the ordering of materials and excavation.

1. Existing site survey information may not accurately represent existing conditions. Contractor shall perform a pre-construction survey to assess any changes from existing site survey provided.

1.02 REFERENCES

U.S. Army Corps of Engineers Manuals:

EM 1110-1-1005 (Aug 1994) Topographic Surveying Manual

1.03 SUBMITTALS

A. Qualifications: The Contractor shall submit a description of construction survey personnel qualifications to the Owner's Representative for review at least 21 days prior to start of survey work. Survey qualifications are as follows:

B. Licensed surveying: Licensed surveying shall be performed under the direct supervision of an independent licensed State of Washington Professional Land Surveyor that is not an employee of the Contractor. All post-construction and primary control establishment survey work shall be conducted as licensed survey. Licensed survey may require multiple survey methods and there may be performed by different licensed surveyors, provided that they meet the following requirements:

1. General: The surveyor shall have a minimum 10 years of documented experience with construction field surveying for similar types of shoreline and nearshore upland improvement projects.
2. Equipment Information: Contractor shall submit information regarding survey equipment to be utilized on the project, including manufacture and model numbers.
3. Survey Plans: Contractor shall submit to the Owner's Representative for review in accordance with Section 01 33 00 – Submittal Procedures. All survey plans must be reviewed and approved by the Owner prior to the start of surveys and construction activity by the Contractor.

    a. The survey plans shall include a description of the methods and procedures to be used for surveying the alignment and location of the following structures shown on the Contract Drawings:

        1) Ramps

        2) Walkways

        3) Gangways

        4) Piers

        5) Concrete

        6) Floats

        7) Piles

        8) Boat Ramp

        9) Abutments

    b. The survey plans shall list the following for each structure:

        1) Survey data file shall list the project name, surveyor's name, area surveyed, date of survey, and the horizontal and vertical datum.

    c. Data shall be submitted to the Owner in electronic ASCII, AutoCAD 2019 (or newer format) and PDF formats showing one (1) foot contours.

C. Survey Responsibility and Sequence of Survey Work: The Contractor shall perform all survey work for controlling the work, including setting temporary benchmarks, staking and layout, intermediate/progress surveys, and pre-construction survey. The Contractor shall hire an independent survey company to conduct post-construction surveys that will be used to verify the post-construction conditions. Construction survey assignments and activities follows:

1. Establish control, including setting temporary benchmarks, construction staking, layout, and delineation (Contractor)
2. Pre-construction survey (Contractor)
3. Intermediate and progress surveys for quality control (Contractor)
4. Post-construction survey (Contractor hired independent licensed surveyor)

1.04 CONSTRUCTION SURVEYING REQUIREMENTS

A. Reference Points and Verification: The Contractor shall locate existing permanent benchmarks, control points, and similar reference points before beginning the work. The Contractor shall preserve and protect permanent benchmarks and control points during construction operations. If discrepancies are discovered or monuments not identified in the Contract Drawings are discovered, promptly notify the Owner's Representative. The Contractor shall:

1. Not change or relocate existing benchmarks or control points without prior written approval of the Owner's Representative. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to the Owner's Representative before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
3. An accurate method of horizontal control shall be established by the Contractor before construction begins. The Owner will review and approve the proposed method and maintenance of the horizontal control system.
4. The Contractor shall perform all survey work, using electronic surveying equipment, required to layout and set any construction stakes and marks which are needed to establish the install and construct the project. In addition, the Contractor shall perform surveys during construction to ensure that the new products are being placed within the tolerance specified. The Owner's Representative shall be allowed to review the surveys prior to the start of materials placement.

B. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

C. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the work.

D. Inform installers of lines and levels to which they must comply.

E. Check the location, level and plumb, of every major element as the work progresses.

F. Notify Owner's Representative when deviations from required lines and levels exceed allowable tolerances.

G. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

1. The Owner may spot-check the Contractor's surveying. These spot-checks will not change the requirements for normal checking by the Contractor.

H. Datums: All surveys performed for this work shall be referenced to the following survey datums:

1. Horizontal Datum: Washington State Plane South Zone.
2. Vertical Datum: Mean low low water (MLLW) and North American Vertical Datum 1988, (NAVD88).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SURVEY EQUIPMENT

A. Survey Equipment. Surveying equipment and methods used for pre-construction, progress, and post-construction surveys shall be conducted in accordance with the paragraph "Construction Surveying Requirements" above.

3.02 STAKING

A. The Contractor shall furnish at its own expense all stakes, templates, platforms, equipment, range markers, transponder stations and labor as may be required to lay out the work from the work points shown on the Drawings.
B. The location of all new structures shall be field staked or marked and reviewed by the Owner prior to the start of construction.
C. When staking structure or other alignment and stationing, the Contractor shall perform independent checks to ensure that the points staked are within the specified survey accuracy tolerances.
D. Contract work to be performed using contractor-provided stakes shall not begin until the stakes are approved by the Owner's Representative. Such approval shall not relieve the Contractor of responsibility for the accuracy of the stakes.

3.03 PRE- AND POST- CONSTRUCTION SURVEY

A. The work areas shall be surveyed both before and after construction. The pre- and post-construction surveys will be used to verify the pre- and post-construction conditions.
B. Schedule/completion time requirements: The Contractor shall furnish the pre-construction and post-construction survey results and data to the Owner within seven (7) calendar days of completion of field survey work. The post-construction survey and the final review and acceptance by the Owner shall be completed prior to Contractor's request for final acceptance.
C. Reporting requirements: The Contractor shall provide pre- and post-construction survey data drawings in format described in Section 1.4 of this Technical Specification. Each drawn cross-section shall show the station or easting, northing, and azimuth that it is referenced to.

3.04 INTERMEDIATE AND PROGRESS CONSTRUCTION SURVEY

A. There should be intermediate and progress surveys at various stages of construction to ensure that the grades, slopes, locations and elevations are being constructed per plan.
B. All progress surveys shall be submitted to the Owner for review.

3.05 PRE-CONSTRUCTION SURVEYS

A. Notification of pre-construction survey: Contractor shall notify the Owner of intent to conduct the pre-construction survey at least 5 calendar days prior to conducting survey. A Owner's Representative shall be present during the execution of the pre-construction survey data collection effort. The pre-construction survey shall take place at least 14 calendar days prior to the start of onsite construction activities.
B. Structure condition survey: The Contractor shall conduct a pre-construction condition survey of all existing structures within the designated work areas. Any damaged facilities shall be identified in writing and provided to the Owner prior to the start of excavation work.
C. The pre-construction survey area shall include all work areas outlined in Part 1.5 – Submittals.
D. Preconstruction survey shall consist of survey transects taken perpendicular to specified structure alignment and dredging area baseline or along shoreline reference line and at no greater than 25 feet on center. Survey along the top and toe of bank slope at shoreline should occur more frequently and shall delineate any major changes in shoreline position. Survey points along each transect shall be taken at all major breaks in grades, slope, and alignment to accurately depict topographic conditions. Surveying along transects shall extend at least 25 feet beyond the edge of dredge excavation and fill limits (both landward and waterward directions).

3.06 POST-CONSTRUCTION SURVEYS

A. The Contractor shall hire a survey company to conduct post-construction surveys that will be used to verify the post-construction conditions. Post-construction surveys shall be conducted using similar methods as the pre-construction survey and include all the locations surveyed during the pre-construction survey.

B. Notification of Post-Construction Survey: Upon substantial completion, the Contractor shall notify the Owner of intent to conduct the post-construction surveys at least 5 calendar days prior to conducting the survey. An Owner's Representative shall be present during the execution of the post-construction survey data collection effort. The post-construction survey shall be conducted within five (5) calendar days of substantial completion.

C. Post-Construction surveys shall be conducted following the procedures and locations outlined in Part 1.4 – Submittals.

3.07 PROJECT RECORD DRAWINGS

A. Contractor shall utilize final progress and post-construction survey data to assemble project record drawings for submission to the Owner at the conclusion of the project.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. The extent and location of the demolition work is indicated on the Contract Drawings. The work is inclusive of the demolition and removal, wholly or in part, processing, and disposal at an approved location for all existing structures shown on the Contract Drawings and in accordance with the specifications herein.

B. Existing structures shown on the Contract Drawings and miscellaneous debris to be demolished and/or disposed of by the Contractor include the following:

1. Existing Timber and Steel Piles
2. Existing Concrete Pier Structures
3. Existing Concrete Floats
4. Existing Concrete Abutments
5. Existing Boat Ramp and Paving
6. Existing Gangways
7. Existing Steel Fencing
8. Existing Concrete ADA Concrete Path
9. Existing Blackberry Bush
10. Miscellaneous Metals (e.g. railing, connection hardware, metal debris, and other metal found within the limits of construction)
11. Miscellaneous Debris (e.g. concrete rubble, timber, and garbage)

C. The demolition work included on the Contract Drawings is for guidance only to indicate typical general construction features of the various types of structures and/or debris and is not to be construed as definitive or adequate to supplant an actual on-site inspection by the Contractor.

D. No demolition of any structures shall be performed outside of the limits of construction without prior approval from the Owner.

E. Contractor is responsible to familiarize themselves and comply with specific permit requirements and to implement BMPs as necessary to complete the works.

F. The work includes removal of resulting rubbish and debris following demolition of the existing structures indicated on the Contract Drawings and described herein. Rubbish and debris shall be removed from the project site limits daily, unless otherwise directed, to avoid debris accumulation within the limits of construction. Debris as a result of the work described in this Section becomes the property and responsibility of the contractor upon removal.

G. Contract Drawings: Indication of existing conditions is cursory, and for Contractor's general reference only. Contractor shall carefully examine existing conditions and accept existing construction and site improvements on an "as is" basis.

1.02 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.

American National Standards Institute (ANSI)

ANSI A10.6 – “Safety Requirements for Demolition Operations”

Washington Administrative Code

WAC Chapter 296-155 – "Safety Standards for Construction Work"

Environmental Protection Agency (EPA)

EPA Region 10 Best Management Practices for Piling Removal and Placement in Washington State

Washington Department of Natural Resources (DNR)

Washington Department of Natural Resources Derelict Creosote Piling Removal Best Management Practices for Pile Removal & Disposal

United States army Corps of Engineers (USACE)

EM 385-1-1 – "Safety and Health Requirements Manual"

1.03 CONTRACTOR'S RESPONSIBILITY

A. Furnish all labor, equipment, supplies, and materials necessary to perform the demolition and disposal activities associated with the work shown on the Contract Drawings and described herein.

1. Piles: Existing timber and steel piles demolished as shown on the Contract Drawings and transported offsite to an approved facility.
2. Concrete Floats, Piers, Abutments, Slabs, etc: Existing concrete to be demolished as shown in the Contract Drawings and transported offsite to an approved facility.
3. Miscellaneous Metals and Debris: Existing miscellaneous metals and debris within the limits of construction to be sorted and disposed of at an approved upland facility.

1.04 SITE CONDITIONS

A. The Contractor is responsible for visiting the site to become familiar with the quantity and character of all existing structures to be demolished and disposed of. The Contractor agrees that the premises were made available prior to the deadline for submission of bids for whatever inspection and tests the Contractor deemed appropriate. The Contractor assumes full responsibility for the proper disposal of all demolition materials identified within the Contract Documents and in accordance with all applicable regulatory permit requirements included within Permit Documents and applicable federal, state, and local regulations.

B. Demolition notations on Contract Drawings are schematic and general in nature and do not attempt to show the exact scope or detail of all required demolition.

C. If any demolition material is suspected to contain hazardous substances, the Contractor shall submit information to the Owner for resolution prior to proceeding.

1.05 CONTRACTOR ACCESS

A. The Contractor shall include all anticipated access by truck and/or barge for equipment and materials delivery and for disposal of demolition debris and materials off site at an approved location.

1.06 COORDINATION

A. The Contractor shall coordinate and sequence all demolition work with other work to be performed as indicated within the Contract Drawings. Any discrepancies regarding the structures to be demolished shall be coordinated with the Owner prior to proceeding with the demolition works.

B. The contractor shall sequence the work to minimize on-site construction time and reduce the time the park is closed to the public.

1.07 ENVIRONMENTAL CONTROLS

A. Contractor shall comply with requirements of Section 01 57 19 – Temporary Environmental Controls during all demolition work.

1.08 PROTECTION

A. Protection of Personnel. During the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or other structural elements will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

B. Protection of Existing Property. The Contractor shall take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Owner; any damaged items shall be repaired or replaced to the satisfaction of the Owner's Representative.

1. The Contractor shall coordinate the work of this Section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural support or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.
2. Avoid any encroachment on adjacent properties unless prior written permission is obtained from the underlying landowner. Repair and make good any damage to adjoining properties or improvements caused by operations under this Contract.

1.09 REGULATORY REQUIREMENTS

A. Contractor shall comply with all regulatory requirements. Regulatory requirements with respect to demolition includes, but are not limited to, the following:

1. Work below the Ordinary High Water must occur as allowed by the permits.
2. Vibratory or direct pull extraction is the preferred method of pile removal.
3. If treated wood piling break during extraction, remove the stump from water by fully extracting. If the stump cannot be fully extracted, remove the remainder of the stump and cut off three feet below the mudline. Cap all buried cut stumps with clean native sediment.
4. Containment and absorbent booms must be placed around the perimeter of the work area when removing timber pile stubs. All visible subsurface debris and debris accumulated in the containment booms must be collected and disposed upland at an approved disposal site.

B. Contractor shall implement water quality measures and monitoring per Section 01 57 19 – Temporary Environmental Controls and Regulatory Permits.

C. See Regulatory Permits for a summary of all regulatory requirements for the Work

1.10 SUBMITTALS

A. The following items shall be submitted to the Owner's Representative for review and approval in accordance with Section 01 33 00 – Submittals.

B. Demolition Work Plan

1. A demolition work plan shall be submitted to the Owner for review at least 15 days prior to Notice to Proceed.
2. Construction Sequencing Plan: The Contractor shall submit a Construction Sequence Plan showing how the Contractor will minimize on-site construction time and reduce the time the park is closed to the public.
3. The Contractor shall submit the procedures proposed for the accomplishment of the demolition work. The procedures shall provide for safe conduct of the work, including procedures and methods to provide necessary supports, lateral bracing and shoring when required, careful removal and disposal of materials, protection of property which is to remain undisturbed, coordination with other work in progress, and timely disconnection of utility services (if applicable). The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations in accordance with U.S. Army Corps of Engineers Engineering Manual EM 385-1-1. The Contractor shall list and describe best management practices (BMPs) to conduct the demolition work in a manner to contain any floatable materials, spills, blowing debris, pollution and any other affect resulting from the Contractor's demolition activities.

C. Pile Extraction Logs: The Contractor shall maintain and submit pile extraction logs. Pile extraction logs shall include the following information:

1. The dates (including start and stop times) for all pile extractions.
2. The type, size, and number of piles extracted per day.
3. The duration of vibratory pile extraction, per pile.
4. A description of the containment boom and BMPs installed around pile extraction locations (full-depth silt curtain if possible).
5. The extent (in feet) and duration of visible turbidity plumes around pile extraction locations, and during tugboat operations (if applicable).

PART 2 - PRODUCTS

2.01 GENERAL

A. Products that are required to accomplish the demolition and disposal works described herein and shown on the Contract Drawings shall be selected and provided by the Contractor.

PART 3 - EXECUTION

3.01 GENERAL DEMOLITION

A. The Contractor shall keep the Owner's Representative aware of the timing and duration of project activities. Any changes or delays from the information provided to the Owner's Representative shall be communicated as soon as it is known.

B. The Contractor shall take care and provide protection and barriers to prevent demolition debris from being tracked or otherwise impacting areas outside of the limits of construction.

C. All metals salvaged from the site shall be placed in roll-off containers and recycled or disposed of by the Contractor at permitted facilities.

D. Any damage to existing surfaces or site components to remain, resulting from demolition work, shall be filled, patched, or refinished as required for proper completion and appearance of the finished work. Damage to existing structures to be protected (existing boat ramp, parking lots, signage, park infrastructure, and/or parking structures) shall be repaired or replaced at no additional cost to the owner.

3.02 PILE REMOVAL

A. The Contractor shall completely remove all timber piling, including stubs, identified on the Contract Drawings and/or found within the limits of construction.

B. Vibratory extraction is the preferred method of pile removal. Simple pull techniques are also allowed. Neither water jetting nor clamshell excavation is allowed per regulatory requirements. Refer to Permit Documents.

C. Removed piling shall be placed on a construction barge or isolated upland storage location. The piling must not be shaken, hosed off, left hanging to dry or any other action intended to clean or remove adhering material from the piling near waters of the state.

D. All identified piles in the Contract Drawings must be removed. If a pile breaks during extraction, remove and cut the stump 3 feet below the mudline and backfill the void with clean native material.

E. When removing creosote timber piling, containment booms and absorbent booms (or other oil absorbent fabric), must be placed around the perimeter of the work area to capture wood debris, oil, and other materials that may release into marine waters. All subsurface debris must be collected and disposed of upland at an approved disposal site. See Paragraph 3.03 herein.

F. To the extent possible, existing piles shall be pulled at low water levels in dry conditions.

G. Completely remove and dispose of designated structures and other obstructions as shown on the Contract Drawings, unless specified to be salvaged. Adjacent materials designated to remain that are damaged by the Contractor as a result of the demolition works shall be replaced at no additional cost to the Owner.

3.03 DISPOSAL

A. All material generated from the demolition operations shall be disposed of properly offsite and an Owner approved facility.

B. Treated Timber Materials: treated timber should be handled and disposed of as follows:

1. Any materials containing substances classified as hazardous or potentially hazardous by regulating local, state or federal controlling agencies, shall upon their demolition or removal become the property of the Contractor. All such material, including those containing hazardous or potentially hazardous substances shall be removed and promptly disposed of in a legal manner, away from the site and on property not owned by the Owner.
2. All chemically treated or creosoted timber material including pile stubs and associated sediments shall be disposed of by the Contractor in a landfill which meets the liner and leachate standards required for disposal of these materials. The Contractor shall provide receipts from the disposal facility to the Owner's Representative. In addition, the Contractor shall submit to the Owner's Representative a written certification to confirm that all creosoted materials were disposed of at an authorized disposal site.
3. All pressure treated and creosote treated timber piling shall be disposed of in a landfill permitted to receive those types of waste materials.

C. No material shall be disposed of within any adjoining waterbodies or waterways.

D. The Contractor shall deploy a debris boom around the active timber demolition work to capture wood debris and other materials released into the water as a result of demolition activities. All debris on the bed and accumulated in containment structures must be collected and disposed upland at an approved disposal site, in accordance with Paragraph A above.

E. Debris from demolition works and any floating debris removed from within debris booms shall be collected and properly disposed of at an offsite facility.

F. Absorbent booms and other products used to contain oils shall be properly disposed of at an offsite facility complying with federal and state regulations.

G. Dispose of any ammoniacal copper zinc arsenate (ACZA), chromated copper arsenate (CCA), and creosote treated timber materials as required by state and federal regulations.

H. Do not burn demolished materials.

I. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them at an approved upland facility.

3.04 CLEANUP

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to the condition existing before demolition operations began.

END OF SECTION

DIVISION 03 – CONCRETE
Section 03 30 00 – Cast-in-Place Concrete

PART 1 - GENERAL

1.01 SUMMARY

A. This Section covers supply, placement, and testing for all cast-in-place concrete, including formwork and reinforcement for construction of concrete boat ramps, aprons, abutments, and any other miscellaneous concrete work. The work includes the requirements for providing and installing Cast-In-Place Concrete and associated work in conformance with the Specifications and to the extents shown in the Contract Drawings. Work included under this Section is to include all equipment, labor, and materials, including reinforcement, formwork, placement, curing, testing, saw-cutting, and any other associated work required for the installation of cast-in-place concrete.

B. Work associated with this item includes the supply and installation of the following:

1. Concrete abutment providing access to the boarding floats.
2. Cast-in-place boat ramp section connecting the precast portion of the boat ramp to the upland parking area.
3. ADA swim access ramp
4. Concrete path

1.02 APPLICABLE PUBLICATIONS

A. Codes and Standards: Comply with the provisions of the latest codes, specifications, and standards, except as otherwise shown or specified:

American Concrete Institute (ACI)

117	Tolerances for Concrete Construction and Materials
211.1	Selecting Proportions for Normal, Heavyweight and Mass Concrete
301	Structural Concrete
304	Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete
305	Recommended Practice for Hot Weather Concrete
306	Recommended Practice for Cold Weather Concrete
308	Guide to Concrete Curing
315	Manual of Standard Practice for Detailing Reinforced Concrete Structures
318	Building Code Requirements for Reinforced Concrete
347	Recommended Practice for Concrete Formwork

ASTM International (ASTM)

C94	Ready-Mixed Concrete
C143	Test Method for Slump of Hydraulic-Cement Concrete
C172	Sampling Freshly Mixed Concrete
C31	Making and Curing Concrete Test Specimens in the Field
C39	Test Method for Compressive Strength of Cylindrical Concrete Specimens
C42	Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
C1064	Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
C131	Test Method for Abrasion Resistance (aka LA Abrasion)
C618	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
C989	Slag Cement for Use in Concrete and Mortars
C1240	Silica Fume Used in Cementitious Mixtures
C150	Portland Cement
C1602	Mixing Water Used in the Production of Hydraulic Cement Concrete
C33	Concrete Aggregates
D4791	Test Method for Flat Particles, Elongated Particles… in Coarse Aggregate
C260	Air-Entraining Admixtures

C494	Chemical Admixtures for Concrete
A615	Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
A775	Epoxy Coated Steel Reinforcing Bars
A82	Steel Wire, Plain, for Concrete Reinforcement
D1752	Joint Fillers for Concrete Paving and Structural Construction
C309	Liquid Membrane-Forming Compounds for Curing Concrete
C1059	Latex Agents for Bonding Fresh to Hardened Concrete
C219	Terminology Relating to Hydraulic Cement
C109	Test Method for Compressive Strength of Hydraulic Cement Mortars

Washington State Department of Transportation (WSDOT)

Standard Specifications for Road, Bridge, and Municipal Construction

1.03 QUALITY ASSURANCE

A. General

1. All concrete work shall meet the local building code requirements. All concrete shall be reinforced unless otherwise stated.
2. Workmanship: The workmanship must be equal to the best practice in modern construction. The Contractor shall exercise the greatest possible care to make a uniform dense concrete of required strength, true to the elevations and lines shown on the Contract Drawings.
3. All concrete work which does not conform to the specified requirements, including those for strength, tolerances, and finishes shall be corrected or removed and recast as directed by the Owner at the Contractor's expense with no modification of project schedule requirements. The Contractor shall also be responsible for the cost of corrections to any other work affected by, or resulting from, corrections to the concrete work.

B. Qualifications of Personnel

1. Provide at least one person who shall be present at all times during execution of this work and who shall be thoroughly trained and experienced in placing the types of concrete specified and who shall direct all work performed under this Section.
2. Thoroughly trained and experienced journeyman concrete finishers shall be responsible for finishing of exposed surfaces.

1.04 DEFINITIONS

A. Site mixed sack concrete: Pre-measured and packaged combination of all necessary dry constituents for concrete. Final mixing of dry and wet constituents performed at site.

1.05 SUBMITTALS

A. Submit the following items to the Owner for review in accordance with Section 01 33 00 – Submittal Procedures:

B. Concrete work plan: Contractor shall submit a work plan which will incorporate work plan elements within the submittals described in Section 03 40 00 – Precast Concrete as well as to include details of interface between pre-cast and cast-in-place concrete materials (including abutment).

1. Thermal control: If hot or cold weather concrete placement is anticipated as defined by ACI 301, the Contractor shall adhere to the requirements of this Section and submit a thermal control plan.

2. Curing compounds: Contractor shall submit the manufacturer's literature for curing compounds to be used in the work if applicable in accordance with Section 01 33 00 – Submittal Procedures.
3. Concrete pour sequence and joint plan.
4. The Contractor shall submit a description of the form or tool to be used to develop the grooves on to the concrete surface and the procedure by which the proposed form or tool is to create the required grooves for review and approval by the Owner at least one week prior to casting of the cast-in-place v-groove panel mockup.
5. Prior to commencement of any concrete work, the Contractor is to submit a repair plan for both structural and non-structural repairs addressing materials and methods.

C. Concrete mix design: Submit concrete mixture proportions and supporting data for review by the Owner to prequalify their mix design. The mix design shall be approved prior to any concrete placement. The proportions of each ingredient used in all mixes, the compressive strengths at 7 and 28 days, and slump, air content, chloride-ion content, Los Angeles (LA) Abrasion test results, and other characteristics of all mixes shall be submitted for approval. Note that all testing for this project is at the point of placement not the point of discharge, and it is the Contractor's responsibility to ensure the mix design will provide the required properties at the point of placement. This submittal shall be accompanied by the test data showing the properties of each ingredient used in the mixes including cement and aggregates. The materials used in the work shall be the same as those in the submittal.

D. Reinforcing steel shop drawings: Contractor shall submit shop drawings for all reinforcing steel conforming to ACI and CRSI standards.

E. Mill certificates: Contractor shall submit certified mill test reports for reinforcing steel.

F. Batch tickets: Contractor shall submit one original copy in accordance with ASTM C94, Section 14, except items:

1. Ready-mixed concrete: 14.1.5
2. Job-mixed concrete: 14.1.4, 14.1.5

G. Test results: Concrete cylinders taken during concrete construction shall be tested in accordance with these Specifications and the results submitted to the Owner for review.

H. Mockups and Samples

1. Cast-in-place V-groove surface finish mockup (boat ramp): Prepare and pour a single 6 foot by 6-foot concrete panel with a V-groove surface finish using the same tool as will be used in the field as a mockup for review. The mockup panel shall be constructed and finished in accordance with the Contract Documents. The mockup panel shall be reviewed by the Owner prior to the commencement of any cast-in-place concrete work. If the mockup panel is rejected by the Owner, the Contractor shall fabricate additional mockup panels until the finish surface meets the requirements of the Owner, the Specifications, and Contract Drawings at the Contractor's expense. The approved mockup panel will serve as the reference panel for the remainder of the V-groove cast-in-place elements for the boat ramp.
2. Prepare and submit a 6 inch by 6-inch broom/tined surface sample and submit it to the Owner for approval as specified herein. To create a representative sample, the original specimen shall at a minimum be twice as wide as the widest finishing tool in use, and the submitted sample shall be cut from this specimen.

PART 2 - PRODUCTS

2.01 GENERAL

A. Unless otherwise specified, use materials, measure, batch, and mix concrete materials and concrete and deliver concrete in approved equipment, all in conformance with ASTM C94.

B. All cast-in-place concrete shall be normal-weight concrete made with normal-weight aggregate. Lightweight aggregates shall not be used.

2.02 MIX COMPONENTS

A. Concrete mix: Concrete mixtures shall be proportioned by the Contractor in accordance with ACI 211.1. Concrete mixtures shall conform to ACI 318, Chapter 4, and shall meet both the strength and durability criteria specified herein.

B. Consistency of mix shall be obtained with the minimum amount of water required to produce a concrete that will work properly into the corners, angles, and reinforcement without excessive puddling, or the need for spading or excessive vibrating and without permitting the materials to segregate or free water to collect on the surface.

C. Mix proportions: The mixture proportions for concrete shall be developed by the Contractor to produce the design strength and to provide durability, workability, and mixture consistency to facilitate placement, compaction into the forms and around reinforcement without segregation or bleeding. The Contractor shall submit this mix design to the Owner for approval. The following durability requirement considerations shall be incorporated in the mixture proportions for concrete subject to marine environment, subjected to water immersion and splash:

1. Maximum water/cement ratio: 0.40 by weight
2. Min. quantity cementitious materials: 675 lb/cy.

D. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement (fly ash or other pozzolans, slag, or silica) in concrete as follows. The Contractor is to select quantities of pozzolan, fly ash, slag, and/or silica fume not less than the amount that has been determined by service records to improve sulfate resistance and provide decreased permeability.

1. Combined fly ash and pozzolan conforming to ASTM C618: 25%
2. Ground granulated blast-furnace slag conforming to ASTM C989 Grade 100 or 120: 50%
3. Combined fly ash or pozzolans and ground granulated blast-furnace slag: 50%
4. Silica fume conforming to ASTM C1240: 10%
5. Combined fly ash, pozzolans, and silica fume: 35%
6. Combined fly ash or pozzolans, ground granulated blast-furnace slag, and silica fume: 50%

E. Portland cement: Portland cement shall conform to ASTM C150, Type II for all cast-in-place elements. Only cement of low alkali (less than 0.60 percent as Na2O) content shall be used with aggregates identified as potentially reactive. All cement used shall be from the same mill and manufacturer and shall have uniform color and shade.

F. Water used in the mixing of concrete shall be potable in accordance with ASTM C1602 and shall be clean and free from oil, acid and injurious amounts of organic material, or alkalies and other salts.

G. Aggregates:

1. Coarse aggregate shall be hard, durable, clean, uncoated particles conforming to the requirements for deleterious substances contained in ASTM C33, Class Designation 4S.

Course aggregate shall conform to ASTM C33 No. 67 gradation requirements unless otherwise approved by the Owner. The aggregate shall contain no more than 8 percent by weight of flat or elongated pieces (ratio between maximum and minimum dimensions of a circumscribing rectangular prism exceeding 5:1) when tested in accordance with ASTM D4791.

2. Maximum size of aggregate shall be 1-1/2 inch to 2-inch minus for 6-inch thick slabs, 1 inch to 1-3/8 inch minus for 4-inch thick slabs, pea gravel for drilled concrete piers and 1-1/2 inch for all other structural concrete, unless noted otherwise. Aggregate shall not be larger than 1/3 of the depth of slabs or 3/4 of the minimum clear distance between reinforcing bars and forms. The Contractor shall propose an alternate aggregate gradation if required.
3. Fine aggregate shall be clean, hard, durable, uncoated grains of natural medium sand, free from silt, loam and clay, as available from established, approved local sources conforming to ASTM C33, including grading requirements.

H. Admixtures:

1. No admixtures containing calcium chloride shall be used.
2. All admixtures shall be provided by the same supplier and shall be stated by the manufacturer as being compatible.
3. Air-Entraining Admixture: Air-entraining admixture shall be in strict accordance with agent manufacturer's printed instructions and shall conform to ASTM C 260.
4. Set-Retarding Admixture: Set-retarding admixture shall conform to ASTM C494, Type A or D. All concrete shall contain Master Builders Pozzolith 100-XR, or approved equal, set retarding admixture, which shall be used at the rate, recommended by the manufacturer if the concrete cannot be placed within 1 hour of batching.
5. Water Reducing Agent(s) (Plasticizers): Sika 'Plastiment' or Master Builders' 'Pozzolith' or approved equal.
6. Concrete Accelerator Admixtures may be used, if approved by the Owner. Calcium chloride shall not be used.
7. Other Admixtures: Anti-freeze liquids, salts, or other similar materials shall not be used in concrete unless specifically authorized in writing by the Owner prior to construction.
8. Superplasticizer can be added to a concrete mix on-site to increase slump prior to placement, provided that the finished mix meets all specified requirements and the manufacturer’s mix design parameters. Superplasticizer cannot be added to a partially-emptied concrete truck. Superplasticizer additions can only be made to a load of concrete of known volume. Superplasticizer can only be added by the concrete manufacturer’s representative.

I. Water soluble, chloride-ion content in hardened concrete is not to exceed 0.15% by weight of cement. The Contractor shall include test results showing compliance with this requirement with the submittal of their proposed mix design.

2.03 REINFORCING STEEL AND MISCELLANEOUS

A. Reinforcing steel (deformed bars & undeformed rod) shall be in accordance with ASTM A 615, Grade 60 unless reinforcement is to be welded, in which case it shall be in accordance with ASTM A 706. Reinforcing steel shall be uncoated unless otherwise noted.

B. Epoxy coating of smooth bar reinforcing shall conform to ASTM A775. Epoxy coated reinforcement shall only be located at construction joints where shown on the Contract Drawings.

C. Tie wire shall conform to ASTM A82, 16-gauge minimum.

D. Metal accessories: Metal accessories including spacers, chairs, ties and other devices necessary for proper placement, spacing, supporting and fastening reinforcement in place shall conform to the CRSI Manual of Standard Practice.

2.04 JOINT FILLER MATERIAL

A. 'Ceramar' by W.R. Meadows, or other approved equal, 3/4-inch thickness by full depth, or as otherwise sized, detailed, or noted in the Contract Drawings. Joint filler strips shall meet ASTM D 1752 Type I requirements and shall be punched to admit dowels where called for on the Contract Drawings.

2.05 STEEL WELDED WIRE REINFORCEMENT

A. Welded wire reinforcement (WWR) shall conform to the latest edition of ASTM A185 or A497. Galvanizing shall conform to ASTM A641/A641M, for cold-worked wire, or ASTM A123, for hot-dipped galvanizing of welded wire sheets/mats.

2.06 FORMING AND CURING

A. Formwork: Materials for concrete formwork shall be suitable to achieve the finish requirements for formed surfaces specified and meet ACI 347 “Recommended Practice for Concrete Formwork.” Unless specified or detailed otherwise, construct all formwork with new plywood or clean steel forms, to provide continuous straight, smooth, exposed surfaces. Vertical surfaces not over 12 inches high may be formed with new dimension lumber or stock steel forms. Provide form material with sufficient strength and rigidity to withstand pressure of newly placed concrete without bow or deflection.

B. Form coatings, sealers and release agents: Form coating, sealers and release agents shall not bond with, stain, not adversely affect concrete surfaces, and shall not impair subsequent treatments (painting, etc.) of concrete surfaces.

C. Curing compounds: Curing compounds can be used at the Contractor’s option. These shall be used only where approved by the Owner.

D. Bonding agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.07 CONCRETE REPAIR MATERIALS

A. Repair underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent surface elevations.

1. Cement binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer for site conditions and repair thickness.
4. Compressive strength: Not less than 5500 psi at 28 days when tested according to ASTM C109.

B. Repair Topping: Traffic-bearing, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch.

1. Cement binder: ASTM C150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.

2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer for site conditions and repair thickness.
4. Compressive strength: Not less than 5,500 psi at 28 days when tested according to ASTM C109.

C. All repair materials and methods shall be submitted to the Owner for review and approval. The Contractor shall allow for any and all submittals sufficient time for review and approval taking into consideration that repair materials and/or methods may be rejected and may need to be resubmitted.

D. Materials defined for repair in this Specification are not all inclusive and may not be applicable to the type of repair that is to be performed in the field. It is the Owner's discretion to define the applicability of specific repair materials and whether or not the damaged item is repairable or not. If an item is deemed non-repairable the Contractor shall replace such item(s) at no additional cost to the Owner.

PART 3 - EXECUTION

3.01 GENERAL

A. Trucks used for transportation of concrete shall have a water-gage for monitoring the water added to the concrete batch. The water-tank shall always arrive on-site full, and no other uses of this water shall be permitted until any on-site water additions have been made. On-site water additions shall be recorded on the batch receipt that becomes part of the project records.

B. Measuring, mixing, transporting and placing concrete shall adhere to the requirements and recommendations of ACI 304. Aggregate shall be handled in such a way as to avoid segregation prior to incorporation.

C. Place concrete on damp (not wet) firm earth, or base course fill where so indicated on the Contract Drawings. Finished surface is to be true to plane within 3/8 inch in 10 feet of design elevation in any direction.

D. Weather Considerations

1. Wet Weather: Do not place concrete while rain, sleet, or snow is falling unless protection is provided. Do not allow rain to increase mixing water or damage unformed surfaces.
2. Hot Weather: Conform to ACI 305R
3. Cold Weather: Conform to ACI 306.1

E. The work shall be protected from the elements, rain, flowing water, and defacement of any nature during construction.

F. In the case of concrete inadvertently placed such that it will be below the water level within 7 days of placement, the Contractor shall prevent the cast-in-place concrete from being submerged by waters during the curing by providing adequate protection systems designed for project-specific field conditions. Concrete and formwork damage caused by contact with pool waters shall be repaired or replaced by the Contractor to the Owner's satisfaction at no additional cost to the Owner. Temporary, low-impact protection systems such as sandbags may be used – cofferdams shall not be allowed.

G. Ends of reinforcement ties shall be bent inwards, away from the outside edges of the concrete pour.

3.02 INSPECTIONS

A. The Owner shall be notified upon completion of installation of concrete reinforcement and formwork. The Owner will review the work for conformance with the Contract Documents prior to placement of concrete.

B. All concrete inspections and testing are the responsibility of an independent testing firm hired by the Contractor.

C. Inspection and testing performed by the Owner shall not affect the Contractor's inspection and testing requirements.

D. Concrete testing – general

1. All concrete test samples are to be procured at the point of placement prior to consolidation to ensure the in-place product provides the required level of performance.
2. Materials and installed work will require testing by the Contractor's inspection laboratory and services in accordance with ASTM C172.
3. Contractor shall employ a qualified independent commercial testing laboratory to perform concrete quality control sampling and testing at no additional expense to the Owner.
4. The Owner may independently sample concrete and perform slump, temperature and air tests in accordance with ASTM C 143. Concrete exceeding the maximum slump may be rejected by the Owner. Concrete rejected for excessive slump shall be immediately removed from the Project Site.

E. Concrete Strength Testing

1. Unless otherwise shown on the Contract Drawings or otherwise approved the 28-day concrete compressive strength shall be 4,000 psi.
2. Concrete test specimens shall be collected in accordance with ASTM C 172 at the point of placement, created in accordance with ASTM C 31, and be tested in accordance with ASTM C 39. Sample acquisition and testing shall proceed promptly so as not to impede progress of the work. Strengths of concrete shall be considered satisfactory if the average of any three consecutive strength tests of the laboratory cured specimens representing each specified strength of concrete is 15 percent greater than the specified strength, and if not more than 10 percent of the strength tests have values not more than 10 percent less than the specified strength.

    a. A minimum of four 6-by-12-inch test specimens shall be taken by the testing laboratory for each sample set as follows:
    b. Cast-In-Place Launch Slab/Ramp/Abutment: A minimum of 1 set each day of placement.
    c. One test specimen of each set shall be tested at seven (7) days or prior to stripping of the form sand three test specimens shall be tested at 28 days. The 28-day compressive strength shall be evaluated in accordance with ASTM C 39.
    d. Specimens will be collected by a testing laboratory/special inspector. Contractor shall provide labor, and material as required, to assist testing laboratory in preparing specimens for testing, and job storage facilities for making and storage of specimens. The Contractor is responsible for protecting the specimens from damage while they are on the project site. Assist in packing specimens for shipping. Delivery and responsibility of the test specimens will be that of the testing laboratory/special inspector.
    e. The Contractor is to keep an identification record of cylinders taken and concrete poured. Mark all cylinders from each set with the same number on one end and

enter this number in the concrete testing records and include the date, time and location.

f. If compressive strength test samples fail to meet the minimum strength requirements, the concrete represented by the failed tests shall be considered questionable and shall be subjected to further testing. In this case, the Owner may require test cores of cured concrete to be taken by the testing laboratory in accordance with ASTM C 42 and ASTM C 39. If core specimen compressive strength test results do not meet the minimum strength requirements, the Contractor is to remove and replace the concrete in question at the Contractor's expense.

g. Compressive strength test results shall be submitted in writing to the Owner, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in work, design compressive strength, concrete mix proportions and materials, compressive breaking strength, and type of break for all tests and shall be correlated to the corresponding on-site test results.

F. Concrete Slump Testing

1. Slump tests shall be in accordance with ASTM C 143 and WSDOT Standard Specification Section 6-02.3(4) C – Consistency at the point of placement. Concrete failing the slump test cannot be placed as-is. Perform one test for each batch of each strength of concrete and at least one test per truck.

G. Concrete Air Entrainment Testing

1. Perform air entrainment tests in accordance with ASTM C 173 for each truck-load of concrete at the point of placement. Add air-entraining admixture in accordance with the proven, approved mix design as required to achieve required percent air content at the point of placement in accordance with the table below, unless otherwise noted. The air content shall be within the range shown below – additional tolerances shall not be applied.

Maximum Aggregate Size [in.]	3/8	1/2	3/4	1	1 1/2
Corresponding Air Entrainment [%]	6.0% - 9.0%	5.5% - 8.5%	4.5% - 7.5%	4.5% - 7.5%	4.0% - 7.0%

H. Concrete Temperature Testing

1. Concrete temperature: ASTM C 1064; test hourly when the ambient air temperature is 40 degrees F (4.4 degrees C) or below and when the ambient air temperature is 80 degrees F (27 degrees C) or above, and whenever cylinders are taken. Concrete temperatures shall be in conformance with ACI 301.

I. Testing of concrete mix components

1. Limit water soluble, chloride-ion content in cured concrete to 0.15% by weight of cement. The Contractor shall submit test records indicating that their proposed mix design meets this requirement. The Contractor shall ensure that the test records represent samples made with materials from the same material suppliers as will be used for the work.

2. Aggregate shall have an L.A. abrasion loss of no more than 40%, tested in accordance with ASTM C 131.
3. Aggregate from sources determined on the basis of petrographic analysis or tests to be susceptible to the alkali-carbonate form of alkali-aggregate reaction shall not be used.

3.03 SITE MIXED SACK CONCRETE

A. Contractor shall obtain Owner's Representative approval prior to utilizing site mixed sack concrete.

B. Placement, finishing and curing of site mixed sack concrete shall conform to the requirements in this Section.

C. Contractor shall utilize proportions and mixing methods as recommended by manufacturer.

D. Contractor shall only utilize site mixed sack concrete on placements for gate posts.

E. Contractor shall only utilize site mixed sack concrete on placements that can be completed in one work day and that do not require construction joints.

F. Site mixed sack concrete, if utilized shall have an advertised average strength of 4000 psi.

3.04 CONCRETE FORMWORK

A. Design, erect, support, brace and maintain formwork according to ACI 301 to support vertical and lateral loads that might be applied until such loads can be supported by the concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position, within tolerance limits of ACI 117.

B. Formwork shall be designed to be readily removable without impact, shock or damage to concrete surfaces and adjacent materials and surfaces.

C. Forms shall be in compliance with ACI 347. Construct to sizes, shapes, lines and dimensions as necessary to produce the finished shapes shown in the Contract Drawings. Obtain accurate alignment, location, grades, level and plumb work in the finished structures. Solidly butt joints of forms and provide back-up at joints to prevent leakage of water and/or cement paste. Leakage of concrete from improperly sealed formwork is prohibited from entering the water. The Contractor shall immediately notify the Owner if any wet concrete enters the water. Voids, honeycombing, sand pockets, fins, etc., may be cause for rejection.

D. Forms shall be of wood or steel, straight, of sufficient strength to resist springing during depositing and consolidation concrete. Wood forms shall be of adequate thickness, straight and free from warp, twist, loose knots, splits or other defects. Steel forms shall be channel formed sections with a flat top surface and with welded braces at each end and not less than two intermediate points. Ends of steel forms shall be interlocking and self-aligning.

E. Fabricate forms for easy removal without hammering or prying against the concrete surfaces.

F. Form coatings, sealers and release agents shall be applied immediately before erecting forms where necessary to achieve the specified curing and finishes. Forms shall be protected from dust and dirt.

G. Cleaning and tightening: Before inspection of forms and reinforcing steel, thoroughly clean forms and adjacent surfaces to receive concrete. Remove wood chips, sawdust or other debris just before concrete is placed. Retighten forms after placement of concrete, and as required, eliminating any concrete or water leakage.

3.05 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete so that strength and appearance of concrete are not impaired. Joints shall be in compliance with the approved concrete pour sequence and joint plan submittal. All necessary joint locations, spacing and offsets from adjacent structures shall be considered. A layout in plan view of all required joint locations (construction, control, expansion) shall be included for approval, and shall be laid out in accordance with the Contract Drawings, and as indicated for interfacing with upland concrete components.

B. Construction Joints: Install construction joints as indicated on the Contract Drawings with full depth pre-molded joint filler and sealant. Joint filler and sealant shall be installed as shown in the Contract Drawings and in accordance with manufacturer's written recommendations.

C. Contraction Joints

1. Sawcut Contraction Joints: Install joints so that strength and appearance of concrete is not compromised, at locations indicated in the Contract Drawings or alternate locations approved by the Owner.

a. Continue reinforcement across construction joints, unless otherwise indicated.

2. Grooved Tool Joint: Form contraction joints after initial floating by grooving and finishing at each joint to the dimensions with a finishing tool capable of producing a single groove in accordance with industry standard practice at the locations and extents as indicated on the Contract Drawings. Eliminate groove tool marks from concrete surfaces. Groove depth shall be at least equal to a quarter of the slab thickness.

D. Expansion joints: Install expansion joint as indicated on the Contract Drawings with pre-molded joint filler and sealant with smooth bar dowels.

E. Joint filler shall be installed as shown in the Contract Drawings and in accordance with manufacturer's written recommendations.

F. Joint sealant shall be installed as shown in the Contract Drawings and in accordance with manufacturer's written recommendations for both construction and contraction joints.

3.06 PRIOR TO PLACEMENT

A. Notify the Owner and Special Inspector not less than twenty-four (24) hours before placing concrete.

B. Clean formwork thoroughly, removing all loose dirt, scrap lumber and other debris from forms prior to concrete placement.

C. Do not place concrete until the forms and reinforcement have been completed and all preparations for the pour have been made and have been inspected and approved by the Owner.

D. Refer to Technical Specification 31 50 00 – Shoreline Excavation, Grading, and Fill for additional requirements for preparation prior to placement of the cast-in-place concrete.

3.07 PLACEMENT

A. Discharge and place concrete not later than one hour after the original addition of water to the mix. Mix concrete for a minimum of 10 minutes prior to placing, at least 3 minutes of which must be immediately prior to discharge at the site.

B. No additional water to be added on-site, unless on-site water additions are pre-authorized by the Owner. On-site water additions shall be recorded on the batch receipt that becomes part of the project records.

C. In no case shall concrete be placed on standing water, muddy, soft or spongy areas. Sub-grade conditions shall conform in all respects to the requirements of Section 31 23 00 – Excavation and Fill.

D. Pours of concrete, once started, shall be carried on as a continuous operation until the section of approved size and shape is completed. The Contractor shall determine pour sizes based on ability to provide finishes as specified in this Technical Specification. Any defects in finishing work shall be repaired, using a method approved by the Owner, at no additional cost to the Owner.

E. Depositing of concrete shall be continuous, or in layers, or bands, of such thickness that no concrete will be deposited on, or against, concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section.

F. Concrete shall be consolidated by use of approved immersion-type mechanical vibrators immediately upon placement. Concrete shall be vibrated sufficiently to remove entrapped air such that the concrete closes snugly against all surfaces to the maximum practicable density but not so much as to cause the coarse aggregate to settle or excessive accumulation of mortar at the surface. Vibrators shall not be held against embedded materials.

G. Concrete shall be deposited in or near its final position; segregation due to rehandling or flowing shall be avoided.

H. Depositing a large quantity at any point, or running or working the concrete along the forms will not be permitted.

I. Concrete shall be conveyed from mixer to place of final deposit by methods which will not cause separation or loss of material.

J. Concrete shall be placed in a manner that prevents it from dropping from a height greater than 4 feet.

K. Concrete which has developed initial set shall not be used. Concrete which has developed initial set shall not be re-tempered or remixed.

L. Concrete shall be deposited in layers, not to exceed 18 inches, in a continuous operation until each section or panel is complete. Each layer shall be thoroughly vibrated before placing the succeeding layer. Concrete shall be thoroughly worked around reinforcement and embedded items, and into corners of forms by effective vibration. Vibrators shall penetrate each layer and into the top of the underlying layer. Top surfaces shall be generally level during placement.

M. Placing of concrete shall be regulated so that the pressure caused by the wet concrete shall not exceed that used in the design of the forms.

N. Concrete shall not be cast underwater or used to displace water in the forms without written approval of the Owner.

3.08 FINISHES - GENERAL

A. All walking surfaces shall be ADA compliant, with a maximum ¼ inch change in level. Surfaces failing these criteria shall be carefully corrected using a masonry rubbing stone without compromising the non-skid finish.

B. Prepare slabs for finishing by tamping concrete with special tools to force the coarse aggregate away from the surface and then screed to the required level.

C. All finishes are to be clearly designated on the Contractor's shop drawings.

D. All finishes shall be in accordance with ACI 301 unless otherwise noted.

E. Formed surfaces:

1. Formed surfaces above grade and permanently exposed to view shall have a smooth form finish unless otherwise noted.
2. Formed surfaces which will be below grade and exposed to earth shall be allowed to have a rough form finish instead of a smooth form finish at the Contractor's option.

F. Non-formed surfaces (flatwork):

1. At exterior slabs and walks, not otherwise noted, lightly brush wet troweled surface with soft hair broom, all strokes perpendicular to walks or flow lines, or in direction indicated on the Contract Drawings, to create moderately abrasive, uniform, non-skid surface.
2. Mark off slabs as indicated or directed; round edges to ½ inch radius with 1-1/2 inch wide smooth edging tool. Unless otherwise indicated or detailed, edge all sections of brushed slabs with 1-1/2 inch wide smooth edging along all edges and both sides of all joints.

G. Upland concrete finishes.

1. Provide a 3/4" fillet along all exposed vertical concrete edges unless otherwise shown or directed by Owner.

H. Exterior Slabs

1. Form exterior slabs to the finish elevations as indicated on the Contract Drawings and as otherwise identified to provide required drainage slopes.
2. Where not otherwise indicated, typical drainage slope shall be 1%.

3.09 FINISHES – BOAT RAMP

A. V-groove surface finish: Areas designated as having a V-Groove surface finish shall have a finish in compliance with the V-groove surface requirements in the Contract Drawings. This finish shall be created in the cast-in-place ramp surface utilizing a specialty V-groove surface finishing tool system constructed of aluminum as manufactured by Roseburrough Tool Co. Inc, (714) 602-0476, or approved equal. It is the Contractor's responsibility to obtain all the appropriate tools and equipment required to provide the specified V-groove surface finish at all locations shown in the Contract Drawings including along the edges of the ramp. In addition to the specified tool system, the Contractor shall have on-site a metal hand-tool capable of producing a single v-groove for use in touching up the finish manufactured by Roseburrough Tool Co. Inc, or approved equal.

B. Broomed: Areas designated as having a broomed finish shall be furnished as described herein with the finish orientation shown in the Contract Drawings. The broomed finish shall consist of a medium-to-coarse textured broomed surface preparation followed by final texturing with a wire comb tine device.

1. The surface preparation for the wire comb tine device shall be obtained by striating the float-finished concrete surface 1/16-inch to 1/8-inch-deep with a stiff-bristled broom in with the finish orientation shown in the Contract Drawings to create a moderately abrasive, uniform, non-skid surface.
2. The wire comb of the final texturing device shall be rectangular in cross section, 3/32 inch to 1/8-inch-wide, spaced on ½ inch centers (±1/8 inch), and of sufficient length, thickness,

and resilience to form grooves approximately 1/8 inch deep in the fresh concrete surface such as manufactured by Joyce Brush Company, Inc. (1-417-276-4116) or approved equal. Final texture shall be uniform in appearance with the majority of the grooves having a depth between 1/16 inch and 3/16 inch. Finishing shall take place with the elements of the wire comb as nearly perpendicular to the concrete surface as is practical, to eliminate dragging the mortar.

3.10 CURING AND PROTECTION

A. Curing: Concrete is to be wet-cured not less than seven days after placement for Type I and II cement concrete, and three days for Type III cement concrete in accordance with ACI 308. During wet-curing the concrete is to remain wet by covering with burlap or cotton mats or rugs which are to be kept moist with a soaker hose or sprinkler. Plastic sheets or other moisture barrier shall not be an acceptable substitute for a soaker hose or sprinkler unless approved by the Owner. To simplify the wet curing process, concrete curing compounds can be used in accordance with the manufacturer's recommendations and in conformance with ASTM C 309.

B. Concrete shall be protected from damage during removal of formwork and from injury resulting from the storage or movement of materials during construction. Careful attention shall be given to the proper curing and protection of all concrete.

C. Curing shall start as soon as concrete has hardened sufficiently to prevent surface damage.

D. Changes in temperature. Curing temperature of all concrete shall be as uniform as possible. Changes shall not exceed 5 degrees F. in any one hour or 50 degrees F. in any 24-hour period. The Contractor is to monitor the concrete temperature intermittently as required to ensure the change in temperature requirements are met.

E. Formwork shall not be disturbed until the concrete has hardened adequately. All forms shall be loosened and removed as soon as practicable, but in no case shall they be removed earlier than seven days after placement for Type I and II cement concrete and three days for Type III cement concrete unless approved by the Owner. Concrete exposed by form removal prior to seven days after placement shall be moist-cured in accordance with this Technical Specification. Cure for longer periods if directed by the Owner. Forms shall be removed carefully so as to prevent damage to the concrete. Any repairs needed or finish treatment required on surfaces shall be performed at once and shall be followed immediately by the specified curing.

F. If forms are removed prior to end of prescribed curing time, continue curing for the prescribed time as specified herein.

G. If voids and/or rock pockets are present when forms are removed, the Contractor shall modify his placement procedure on future pours. Do not proceed until placement procedure has been corrected.

3.11 CONCRETE REPAIRS

A. The Contractor shall not be granted schedule extensions due to time spent performing concrete repairs. All concrete repairs are to be performed at the Contractor's expense.

B. Curing shall be interrupted for the shortest time and in the smallest area practicable to perform repair.

C. All tie holes shall be patched.

D. Every defect shall be reported to the Owner by a means adequate to convey the size and extent of the defects. The Owner shall reply to the Contractor and direct them to consider the repair as

either structural or non-structural. The Contractor can then proceed to make the repair in accordance with their approved repair plan. The Contractor is not permitted to repair a defect that the Owner has not been made aware of.

E. Repair materials and installation not specified herein may be used, subject to Owner's approval.

F. Defective concrete: Repair and patch defective areas when repair designation (structural or non-structural) has been made the Owner. Remove and replace concrete that cannot be repaired and patched as directed by the Owner.

G. Non-structural patching mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

H. Repairing formed surfaces (non-structural): Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Take all measures required to prevent reinforcement from being cut. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by the Owner.

I. Repairing unformed surfaces (non-structural): Test unformed surfaces, such as slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct low areas with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent surface elevations. Prepare, mix, and apply repair topping and primer according to manufacturer’s written instructions to produce a smooth, uniform, plane, and level surface.
4. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

5. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

J. Structural repairs: Perform structural repairs of concrete, subject to the Owner's approval, using epoxy adhesive and patching mortar in accordance with the manufacturer's recommendations and the Owner comments on the Contractor's submitted structural repair procedure.

3.12 CONCRETE ANCHOR INSTALLATION

A. Install in accordance with manufacturer's recommendations. Special inspection in accordance with IBC, Section 17, must be provided. Concrete anchors shall not be used to resist tension or fatigue loading without Owner approval.

B. Use stainless steel threaded rod or reinforcing bar as shown on the Contract Drawings, and meeting Manufacturer's recommendations. Provide minimum embedment as shown. Holes shall be drilled with carbide-tipped drill bit. Holes shall be cleaned of dust and debris. Adhesive shall be inserted with a mixing nozzle.

3.13 CLEAN-UP

A. Areas to be kept clean during progress of work and until completion. Dispose of all surplus, waste materials, and rubbish according to laws, regulations, and ordinances.

B. Provide certification from disposal site operator stating that disposal site complies with governmental regulations.

C. Under no circumstances shall waste concrete or process water be disposed of below OHW/HTL or come in contact with the open water.

3.14 ENVIRONMENTAL REQUIREMENTS

A. Cold weather: Unless otherwise approved in writing by the Owner, concrete shall not be placed when the ambient temperature is below 40°F, or when the concrete is likely to be subject to freezing temperatures before expiration of the curing period. Where cold weather placement is approved, special procedures shall be adopted to heat the material and to protect the concrete from damage by freezing during mixing, placing and curing. All such special procedures shall be subject to prior approval of the Owner. Cold weather concreting procedures contained in ACI 306 Cold Weather Concreting shall be utilized.

B. Hot weather: Unless otherwise approved in writing by the Owner, the maximum allowable temperature of the concrete as it is placed, shall be 90°F. When the ambient air temperature approaches or exceeds this maximum, special procedures shall be adopted to control the temperature of the materials and to protect the concrete from damage due to hot weather during mixing, placing and curing. All such special procedures shall be subject to the prior approval of the Owner. Hot weather concreting procedures contained in ACI 305 Hot Weather Concreting shall be utilized.

C. Concrete shall not be placed during rain, sleet or snow unless Owner approved protection is provided.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes requirements for furnishing, fabricating, and handling all precast concrete ramp panels and other precast structural concrete work in conformance with these Section and to the extents shown on the Contract Drawings. Work included under this Section is to include all equipment, labor, and materials, including reinforcement, formwork, placement, curing, testing, and any other associated work required for the installation of precast concrete elements. The extent of the work is shown on the Contract Drawings.

B. Work associated with this item includes the supply and installation of the following:

1. Boat ramp precast concrete panels which are to be installed over steel railings
2. ADA swim ramp precast concrete panels which are to be installed over steel railings
3. Underwater and/or partially submerged installation work of precast panels and associated work items
4. Precast stair extension
5. Articulated Concrete Block Mats (ACBMs)
   a. Foundation preparation - excavation and placement of Base Course
   b. Earth anchors

1.02 APPLICABLE PUBLICATIONS

A. Codes and Standards: Comply with the provisions of the latest codes, specifications, and standards, except as otherwise shown or specified:

Precast Concrete Institute (PCI)

MNL - 116 Manual for Quality Control for Plants and Production of Precast Concrete Products

American Concrete Institute (ACI)

301 Structural Concrete
318 Building Code Requirements for Reinforced Concrete
350R Environmental Engineering Concrete Structures

ASTM International (ASTM)

C478 Standard Specification for Precast Concrete Manhole Sections
C443 Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets

1.03 QUALITY ASSURANCE

A. The Contractor responsible for precast concrete panel fabrication and installation work shall have at least five years of relevant (and similar type) boat ramp construction experience.

B. The precast panels shall be provided by a PCI qualified precast fabrication plant and will not be allowed to be poured and fabricated on site.

C. Provide at least one person who shall be present at all times during execution of this work and who shall be thoroughly trained and experienced in placing the types of concrete specified and who shall direct all work performed under this Section.

1.04 REINFORCED PRECAST CONCRETE

A. Procure services from a precast concrete manufacturing company with a minimum five years of industry experience specializing in providing precast and prestressed concrete products of similar design as described in the Contract Documents.

B. The precast concrete manufacturing facility shall be certified by the PCI Plant Certification Program unless otherwise approved by the Owner in writing.

C. Other qualifications in accordance with Section 03 30 00 – Cast-In-Place Concrete.

D. The fabrication plant engineer shall conducted prestressing calculations to refine the prestressing force and submit for approval

E. Precast concrete shall comply with applicable provisions of the PCI MNL-116, Manual for Quality Control for Plants and Production of Precast Concrete Products. All testing shall be performed in accordance with the applicable provisions of ACI 318 (latest edition).

F. In addition to complying with all pertinent codes and regulations, comply with all pertinent recommendations of “Specifications for structural Concrete for Buildings: publication ACI 301 and “Environmental Engineering Concrete Structures”, publication ACI 350R.

1.05 TESTING

A. Precast concrete testing shall be in accordance with Section 03 30 00 – Cast-In-Place Concrete.

B. Concrete mix testing, form work, rebar, concrete placement and curing inspection shall be by a Contractor-provided independent testing and inspection company.

C. Steel materials used for the steel frame system shall be tested in accordance with Section 05 50 00 – Miscellaneous Metals.

D. Provide testing and field or plant inspection service to the satisfaction of the Owner.

E. The casting plant facility shall be made available to the Owner or the Owner’s Representative for inspection purposes.

1.06 SUBMITTALS

A. General: Precast concrete panel (or fabrication) and/or assembly work shall not begin until all required submittals have been reviewed and approved by the Owner.

B. Experience: Submit qualifying Contractor experience documentation.

C. Work sequence plan: Submit a work plan detailing methods for preparation and execution of boat ramp and swim ramp foundation in accordance with Section 31 23 00 – Excavation and Fill, installation of gravel and concrete panels. The work plan will be developed to address requirements for installation based on utilization of land based equipment and separately for floating equipment. The plan shall describe the Contractor’s understanding of variability of the pool water levels and such effect on the work at the various depths for which work is to be performed. The plan shall also describe the Contractor’s proposed work area isolation method.

D. Diver certification: Submit diver(s) certification documentation (type of diving and equipment certification, etc.), along with methods the Contractor proposes to use for positioning of the ramp panels and ACBMs.

E. Daily reports: The Contractor shall provide a daily record of construction activities and shall include the following:

1. Report shall document the percent of project completion, limitations of quarry, and adverse weather conditions or other issues that cause problems for each day they are onsite work activities. The report shall be submitted to the Owner at the end of each week.

F. Daily shipment log sheets: The Contractor shall submit a copy of the log of all shipments from the manufacturer. The log sheets shall include information regarding placement or stockpiling of the shipment. The daily log sheet and its format shall be approved by the Owner prior to the shipment of any stone materials.

G. Plant QA/QC: Submit precast concrete plant quality control plan and proof of PCI certification.

H. Concrete mix design: Submit concrete mix, mill certifications, admixtures, and test specimens in accordance with Section 03 30 00 – Cast-In-Place Concrete. Note these requirements were specifically created to address conventional concrete mixes, and self-consolidating-concrete may be used with Owner's approval of the mix design. Self-consolidating concrete mixes may, at the Owner's discretion, vary from the herein specified requirements of conventional concrete mixes.

I. Concrete shop drawings: Submit shop drawings demonstrating the location and type of the precast concrete unit lift points capable of construction loads due to handling, stacking, transportation, and placement. Any embedded or welded lifting points required shall be designed by the precast concrete unit manufacturer/fabricator and the capacities of such lifting point shall be identified on the shop drawings. Design calculations for the lift points shall be submitted to the Owner for review and approval. Design submittals shall bear the stamp and signature of a State of Washington Registered Professional Engineer experienced in the design of such lifting and rigging devices for precast concrete.

J. Prestressing design calculations.

K. V-groove panel finish method (boat ramp): The Contractor shall submit, a description of the form to be used to develop the grooves on to the concrete surface and the procedure by which the proposed form is to create the required grooves, for review and approval by the Owner at least one week prior to the precast panel mockup casting. V grooves shall be cast into the panels by formwork and not by using a tool on the uncured concrete. The dimensions of the V-groove shall match those shown on the contract drawings.

L. Medium broom panel finish method (swim ramp): The Contractor shall submit, a description of the method of developing a medium broom panel finish that is slip resistant and bare foot friendly.

M. Schedule. Submit the schedule for casting, transporting and placing the precast units for approval by the Owner. Schedule shall include adequate timelines as for the receipt, review, and approval of submittals as required prior to initiation of precast concrete related work as described herein.

N. Transporting/lifting/placement plan. Submit descriptions, shop drawings, and fabricator developed supporting calculations for the Contractor proposed method of transportation and lifting and placement methods including sequencing for the concrete stairs, boat ramp and swim ramp panels and ACBMs.

O. Precast panel mockup (boat ramp and swim ramp). The Contractor shall prepare and pour two full size concrete panels as a mockup for review by the Owner 15 days prior to start of production casting. The mockup panels shall be constructed and finished in accordance with this Section. Mockup panels shall be reviewed by the Owner prior to fabrication of any additional panels for construction for conformance with the design intent including appearance, tongue-and-groove joint fit-up, construction tolerances, and v-groove continuity between panels. If the mockup panels are rejected by the Owner, the Contractor shall fabricate additional mockup panels until the panels meet the requirements of the Owner and the specification. The approved mockup panels will serve as the reference panels for the remainder of the project concrete work, and can serve as a replacement panels in the event of damage during transport or installation.

P. Concrete testing: Refer to Section 03 30 00 – Boat Ramp and swim ramp Cast-in-Place Concrete for specific testing requirements. Submit results of all concrete placement testing (slump, air entrainment, temperature) to the Owner within a week of the respective concrete pour, and all strength test results within a week of the last required strength test. All results shall be reviewed and approved prior by the Owner prior to shipment. Any failing tests shall be brought to the immediate attention of the Owner, and any product manufactured with concrete that fails any required testing shall be repaired or replaced at the Owner's discretion and the Contractor's expense.

Q. ACBM: ACBM product specifications.

R. Diver Work Documentation. Provide photos or videos of underwater work, showing the final installation of underwater elements such as the precast stairs to the aluminum ADA ramp for each underwater element installed.

1.07 INFORMATIONAL SUBMITTALS

A. Concrete delivery slips:

1. Keep a record at the casting site showing time and place of each pour of concrete, together with mix delivery slip certifying the contents of the mix.
2. Make the record available to the Owner upon request.

1.08 SITE CONDITIONS

A. Water level conditions: Part of the precast panel system installation might need to occur underwater. The Contractor shall plan to utilize methods appropriate for underwater installation of the base course, geotextile, ACBM and earth anchors. Use of divers will likely be required.

PART 2 - PRODUCTS

2.01 REINFORCED CONCRETE MATERIALS FOR PRECAST WORK

A. Concrete formwork, reinforcement, and materials shall be in accordance with Cast-In-Place Concrete specification and the Contract Drawings.

B. Concrete for the precast concrete panels shall develop a compressive strength of 5,000 psi (at 28 days).

C. Precast concrete ramp panels shall be manufactured to meet PCI MNL-116 standards.

D. Prestressing Steel shall be uncoated low-relaxation seven-wire strand conforming to ASTM A416, Grade 270.

2.02 PRECAST CONCRETE STAIRS

A. Contractor and designer shall ensure the precast stairs are designed and fabricated to resist any installation loads without cracking the concrete. Precast lifting sockets shall be stainless or galvanized steel and shall be epoxy filled after installation with marine grade epoxy.

B. All walking surfaces and steps shall have a medium brush finish.

C. The reinforcing bars shall include standard hook or 90 degree bars around all corners and edges.

D. The contractor and designer shall include precast inserts for railing post installation so the precast is not drilled in after casting.

2.03 ARTICULATED CONCRETE BLOCK MAT (ACBM)

A. Product Requirements:

1. All ACBM shall be prefabricated as an assembly of concrete blocks, with specific hydraulic capacities, laced with revetment cables. Mats shall be assembled with ¼ inch (or as determined from ASTM 6884) stainless steel or polyester cables.
2. Individual units shall be staggered and interlocked for enhanced stability. The mats shall be constructed of open cell units as shown on the Contract Drawings. The open cell units have two (2) vertical openings of rectangular cross section with sufficient wall thickness to resist damage during shipping and installation. Parallel strands of revetment cable shall extend through two (2) cable ducts in each block allowing for longitudinal binding of the units within a mat. Each row of units shall be laterally offset by one-half of a block width from the adjacent row so that any given block is cabled to four other blocks (two in the row above and two in the row below).
3. Each block shall incorporate interlocking surfaces that minimize lateral displacement of the blocks within the mats when they are lifted by the longitudinal revetment cables. The interlocking surfaces must not protrude beyond the perimeter of the blocks to such an extent that they reduce the flexibility or articulation capability of the ACBM.
4. The cables inserted into the mats shall form lifting loops at one end of the mat with the corresponding cable ends spliced together to form a lifting loop at the other end of the mat.
5. The ACBM shall be placed on a geotextile filter fabric as specified in Division 31 Section “Earth Moving”. Under no circumstances shall the fabric be affixed (i.e., chemically bonded to the blocks) to the ACBM in a manner in which would jeopardize the functionality of the filter fabric. Specifically, the filter fabric shall be independent of the block system.
6. The concrete units shall be produced by a dry cast method.

B. Physical Requirements:

1. At the time of delivery to the work site, the units shall conform to the physical requirements prescribed in the table listed below.

Compressive Strength Net Area Min. psi (mPa)		Water Absorption Max. lb/ft (kg/m)	
Avg. of 3 units	Individual Unit	Avg. of 3 units	Individual Unit
4,000 (27.6)	3,500 (24.1)	9.1 (160)	11.7(192)

Required Nominal Characteristics				
	Type	Block Weight	Block Size	Open

Class				Length	Width	Height	Area
		Lbs.	Lbs./Sq ft.				
				inches	inches	inches	%
70T	Open	120-138	68-78	17.5	15.5	8.5	20

C. Manufacturer: ACBM shall be ARMORFLEX or approved equal, as manufactured and sold by:

Contech Engineering Solutions LLC
188th Street NE
Arlington, WA 98223
Phone: 360.435.2181

D. Assembly and Installation: The Contractor is responsible for assembly of mats using ¼ inch stainless steel cables. Mats shall have geotextile fastened to their base as recommended by manufacturer. The Contractor shall lift mats using extension bar by method recommended by manufacturer and approved by the Owner. All mats shall be anchored in place with earth anchors.

2.04 MISCELLANEOUS CONCRETE STRUCTURES

A. All concrete structures identified on the Contract Drawings as being pre-cast, prefabricated, or not specifically detailed with reinforcing steel shall be pre-cast concrete. The Contractor shall provide reinforcement plans for pre-cast items, as well as structural calculations unless the item is built in accordance with a standard plan stamped by a professional engineer licensed in the state of Washington.

2.05 EARTH ANCHORS AND ANCHOR WIRE

A. Earth anchors shall be as manufactured by Foresight Products, LLC of Commerce City, CO. or approved equal. Earth Anchor shall be MantaRay MR4 or approved equal. Earth anchor heads shall be Hot Dip Galvanized Ductile Iron in accordance with ASTM A-123.

B. Attachment Hardware consisting of Washers, Beveled Washers, Cable Clamps, Steel Plates, Turnbuckles, and Nuts or Eyenuts shall be compatible with the anchor wire in terms of fit, function and strength. Hardware should be provided to meet or exceed the specified breaking strength of the wire rope. All hardware shall be Type 316 Stainless steel.

C. Wire rope used for anchors shall be 1/4 inch diameter stainless steel seven (7) strand wire rope with wire core. The wire rope shall have a breaking strength equal to or greater than 6,100 pounds and shall comply with ASTM A-153. Wire rope length shall be provided with sufficient length to satisfy the specified minimum finished embedment length as shown on the Contract Drawings.

D. Earth anchors shall be evenly spaced at 8ft centers along the mat's perimeter unless the manufacturer indicates that anchors should be placed closer together than this.

2.06 STEEL RAILING AND STEEL FRAME

A. Steel railing and frame shall conform to Section 05 50 00 – Miscellaneous Metals.

PART 3 - EXECUTION

3.01 CONCRETE PLACEMENT

A. Concrete placement and curing shall conform to the requirements of this Section and Section 03 30 00 – Cast-in-Place Concrete.

3.02 V-GROOVE FINISH (BOAT RAMP)

A. V-groove surface finish shall be created utilizing a prefabricated form liner in the bottom of the panel form. The v-groove surface shall not be created by a finishing tool method such as stamping.

3.03 DELIVERY AND HANDLING

A. Precast concrete boat ramp and swim ramp panel units shall be lifted and supported during manufacturing, stockpiling, transportation and construction operations by approved lifting devices only at the lifting and/or supporting points as indicated on the shop drawing and in accordance with the manufacturer/fabricator written instructions.

B. Care shall be exercised during handling operations so as to not damage the concrete units any damage incurred due to Contractor mishandling or accident shall be repaired by the Contractor at no additional cost to the Owner, and any concrete unit damage deemed by the Owner as beyond repair shall be removed from the site and replaced by the Contractor at no additional cost to the Owner.

C. Do not lift or move precast units until the concrete has attained 80% of its design strength. Handle units only by lifting points as designated in the shop drawings.

D. Contractor shall provide adequate equipment for proper rigging and lifting of the concrete units.

3.04 STORAGE

A. Store all units off-ground, and in such a manner so that the concrete unit identification markings are visible.

1. Stack units so that lifting points are accessible.
2. Support all units to prevent overstress.

3.05 PRECAST BOAT RAMP AND SWIM RAMP PANELS

A. The Contractor shall produce two (2) mockup size Boat Ramp and Swim Ramp Panels, for review by the Owner’s Representative. These panels shall be used to verify the fit and finish of the tongue and groove connection between Panels and the continuity of V-groove finish between panels. If these panels are satisfactorily delivered to the Project Site without damage, they may be used as part of the finished construction in the event of damage to other Boat Ramp Panels.

3.06 PRECAST CONCRETE STAIRS

A. Furnish all labor, materials, equipment, and incidentals required to perform all operations in connection with the installation of concrete stairs in accordance with the Contract Documents. Stairs are to be installed level and flush with adjacent structures. Foundation shall be adjusted as needed to create a level stair placement.

3.07 PRECAST PANELS INSTALLATION (BOAT RAMP AND SWIM RAMP)

A. Inspection: Prior to precast panel installation the Contractor shall examine the site and verify that conditions are satisfactory for proper installation work to be performed. Any unsatisfactory conditions shall be noted in writing and reported to the Owner. Installation shall not proceed until any unsatisfactory conditions have been corrected in a manner acceptable to the Owner.

B. The precast concrete ramp panels shall be installed on the structural steel support frame. The panels shall be set as shown on the Contract Drawings with all the tongue and groove joints positively interlocked. Final panel installation shall include pushing the panels into their final position to ensure the tongue and groove joint is fully interlocked.

C. The Contractor shall verify the precast boat ramp panel shop drawings and placement plan in coordination with the floats to verify that there are no conflicts; and any such conflicts shall be communicated in writing to the Owner for review.

D. Precast concrete panels shall not be installed until the concrete has attained the minimum specified design strength and only after a minimum of 14 days after casting.

E. The Contractor shall field verify the alignment and slope of the precast panels prior to end panel fastening and commencement of cast-in-place concrete work.

F. If required, divers shall be used to verify proper placement of panels.

G. Provide necessary temporary shoring and bracing, where required to keep members plumb and stable. Align and level members as required for a lock in system.

H. Precast units shall be handled by means of suitable lifting/rigging devices at lifting points provided by the manufacturer.

I. The method and sequence of erection shall be the responsibility of the Contractor. The Contractor shall lift, handle, and place precast concrete units in accordance with the manufacturer or fabricator written instructions and the approved placement drawings.

J. All exposed holes and inserts, in the precast panels, including those at the lifting points shall be adequately patched after installation.

3.08 ARTICULATED CONCRETE BLOCK MAT (ACBM) HANDLING AND INSTALLATION

A. Furnish all labor, materials, equipment, and incidentals required to perform all operations in connection with the installation of ACBM in accordance with the Contract Documents.

B. Once on site, the Contractor shall follow the manufacturer’s rigging and handling procedures during offloading and staging activities.

C. Excavate ramp area to the lines and grades required by the Contract Drawings.

1. Unsatisfactory soils containing clods, roots, or other deleterious materials shall be removed and replaced with approved material.
2. Above-water approved replacement material shall be compacted to a minimum 90% of Standard Proctor density (ASTM Test Method D698).
3. Below-water approved replacement material shall be compacted to the extent necessary as confirmed by qualified and experienced divers and an Owner’s Representative.

D. Prepare subgrade with 6 inches of base course to a smooth surface.

E. Install geotextile filter fabric directly on the prepared subgrade and free of folds, wrinkles and excess tension. Longitudinal and transverse joints shall be overlapped by at least 3 feet for submerged installation and at least 2 feet for dry installation. Filter fabric shall extend at least 1 foot beyond all ACBM edges.

F. Install mats and earth anchors in the position shown on Contract Drawings as per manufacturer's recommendations.

G. Fill voids in ACBM blocks with chinking gravel.

H. Underwater ACBM installation shall be performed with the assistance of qualified and experienced divers (and equipment/tools that can be operated underwater) as necessary to ensure the accuracy of the installation work. Divers shall be used to verify that base course and geotextile fabric are adequately prepared prior to installation of the ACBM.

3.09 EARTH ANCHOR INSTALLATION

A. Anchor system shall be installed in accordance with the manufacturer's written instructions. Choice of driving equipment is the responsibility of the Contractor.

B. Anchors shall be driven into the undisturbed ground and have a minimum of five (5) feet embedment below undisturbed ground. Anchors shall be installed and anchor-locked in place with a minimal cable slack.

C. Ensure the anchor is tipped to its "load locked" position. The Contractor shall keep a record of final embedment lengths and location of each anchor.

D. Underwater earth anchor installation shall be performed with the assistance of qualified and experienced divers (and equipment/tools that can be operated underwater) as necessary to ensure the accuracy of the installation work. Divers shall be used to verify that the anchors are in their correct position and that they are installed conforming to manufacturer's recommendations.

3.10 INSPECTION

A. Mockup boat ramp and swim ramp panel shall be inspected and approved by Owner prior to production casting of concrete panels.

B. Precast concrete ramp panels shall be inspected and approved by the Owner to verify conformance with the Contract Documents for fabrication/manufacture prior to delivery to the project site, and upon installation.

C. QA/QC testing of concrete to be performed by Contractor in accordance with Section 03 30 00 – Cast-in-Place Concrete.

D. Progress Surveys on the steel frame and installed panels shall be provided, at a minimum, on a weekly basis to show that the ramp is being installed in accordance with the contract drawings. Data shall be submitted to the Owner in electronic ASCII (X, Y, Z files), AutoCAD 2014 (or newer format) and PDF formats showing the baseline stationing.

3.11 REPAIRS

A. Precast concrete repairs shall be in accordance with Section 03 30 00 – Cast-In-Place Concrete.

B. If damaged by the Contractor during delivery, handling or installation, the steel frame repairs shall be in accordance with Section 05 50 00 – Miscellaneous Metals.

C. Any damage or defects requiring repairs to the precast concrete units shall be notified in writing to the Owner and any repair materials and methodology shall be reviewed and approved by the Owner prior to the initiation of any such work.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. The Work in this Specification Section includes the requirements to provide a galvanized coating to miscellaneous metals as specified with all handling, pre-finishing, cleaning, pickling, rinsing, dipping, cooling, draining, vibrating, centrifuging, inspection, and other processes or materials required. Hot dip galvanized all steel, except piles. This Section is applicable to the following items:

1. All steel fabricated metal items
2. Steel pipe piles
3. Miscellaneous steel hardware

1.02 REFERENCES

A. The publications listed below form a part of this Section to the extent referenced. Latest editions apply.

ASTM International (ASTM)

ASTM A123/A123M	Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
ASTM A143	Practice for Safeguarding Against Embrittlement of Hot Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
ASTM A153/A153M	Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.
ASTM A384	Practice for Safeguarding Against Warpage and Distortion During Hot Dip Galvanizing of Steel Assemblies.
ASTM A385	Practice for Providing High Quality Zinc Coatings (Hot Dip).
ASTM A653	Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process.
ASTM A780	Practice for Repair of Damaged and Uncoated Areas of Hot Dip Galvanized Coatings.
ASTM B6	Standard Specification for Zinc.

American Galvanizers Association (AGA)

Inspection of Products Hot Dip Galvanized After Fabrication
Quality Assurance Manual

1.03 QUALIFICATIONS

A. Galvanizer. Company specialized in hot dipped galvanizing after fabrication and following procedures of the Quality Assurance Manual of the AGA.

1.04 INSPECTION AND TESTING

A. Inspect and test hot dip galvanized fabricated items in accordance with ASTM A123/A153M and A153/A153M.

B. Visually inspect coating and test for thickness and adhesion of zinc coating for a minimum of three test samples from each lot in accordance with ASTM A123/A123M and A153/A153M.

C. Reject and retest nonconforming articles in accordance with ASTM A123/A123M and A153/A153M.

1.05 PRODUCT HANDLING

A. Handle and store hot-dip galvanized material in a manner that minimizes potential for warping and distortion of the material.

B. Repair or replace damaged work, if any, to the satisfaction of the Owner.

1.06 SUBMITTALS

A. Provide the following submittals. See Section 01 33 00 – Submittal Procedures for more details regarding processes and procedures. Submit the following items related to this Section:

Submittal	Description	Due Date
1. Certificate of Compliance	Signed certification provided by the galvanizer, with description of material to be galvanized and ASTM standard used for coating.	7 days before installation
2. Inspection/Testing Reports		7 days after galvanizing

PART 2 - PRODUCTS

2.01 ZINC

A. Hot Dip Galvanizing. Use zinc for galvanizing that conforms to manufacturers' specifications, directions, and recommendations for best results in the use of each of their products for each condition.

B. Repairs. Use zinc-based alloy hot stick solder rods.

PART 3 - EXECUTION

3.01 PREPARATION

A. Grind smooth and plane all flame-cut surfaces to bright metal prior to galvanizing.

B. Ground all edges and corners a 2mm radius prior to galvanizing.

C. Any drain or vent holes not indicated on the Contract Drawings which are required to produce a high quality galvanized coating with minimal warping and distortion shall be identified by the coating manufacturer, clearly shown on the Shop Drawings, and shall be subject to acceptance by the Port. The fabricator shall detail the assembly in accordance with ASTM A384 recommendations.

D. Report any discrepancies between the Shop Drawings and the recommendations of cited ASTM standards and of any potential warpage problems during hot-dip galvanizing.

E. Consult with the Owner and hot-dip galvanizer regarding potential concerns, including handling issues, during the galvanizing process that may require design modification before fabrication proceeds.

F. Remove welding slag, splatter, burrs, grease, oil, paint, lacquer, and other deleterious material prior to delivery for galvanizing.

G. Remove by blast cleaning or other methods surface contaminants and coatings not removable by normal chemical cleaning process in the galvanizing operation.

3.02 GALVANIZING

A. Hot dip galvanize steel members, fabrications, and assemblies after fabrication in accordance with ASTM A123/A123M.

B. Hot dip galvanize bolts, nuts, washers, and hardware components in accordance with ASTM A153 and ASTM A385. Provide oversize holes to allow for zinc alloy thickness. Test-fit nuts and bolts after galvanizing prior to shipment. Nut/bolt pairs are to be shipped in an assembled state. Coating thickness shall be in accordance with the relevant ASTM requirements.

C. Hot dip galvanize components of bolted assemblies separately before assembly.

D. Clean tapped holes with a wire brush immediately after galvanizing and test-threaded full-depth prior to shipment from the galvanizer. Threads may be cleaned with a tap if fastener cannot be fully finger-inserted for the full depth of the threaded hole.

E. If results are at variance with these Specifications, immediately report the discrepancy to the Owner and proceed with the related work only after receiving direction from the Owner in writing.

3.03 REPAIR OF GALVANIZED COATING

A. Repair all galvanized surfaces removed or damaged during welding, shipping, or erection in accordance with ASTM A780.

B. Repair material shall be zinc-based alloy solder (zinc rod) in accordance with ASTM A780 and rod manufacturer's recommendations. Apply the original galvanizing thickness required for the component in accordance with ASTM galvanizing requirements, or 4 mils, whichever is greater.

C. After cooling, apply two coats of zinc rich paint. Any galvanizing repair conducted by the Contractor, Subcontractor, or supplier which occurs on-site will be subject to approval by the Owner.

D. Notify the Owner when any repair is being performed and provide access to adequately review the repair area before and after the repair.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. General. The Work in this Section consists of all labor, materials, tools, and equipment necessary for the Contractor to finalize the design, fabricate, assemble, and install the following:

1. Fishing pier and walkways
2. Access gate and railing to boarding floats
3. Guardrails and Handrails
4. Boarding floats at boat ramp
5. Lifeguard float and gates
6. Gangway and gate
7. Kayak transition plate and support frame
8. All related appurtenances such as transition plates, associated guardrails, guides and guide rails, connection hardware

B. Size, shape and layout of all structures are indicated in the Contract Drawings.

C. Contractor is responsible for developing final engineering design, layouts and details based on site conditions, design criteria, and Contract Drawings and Specifications.

D. The design, manufacture, and installation of the aluminum structures systems shall be performed by experienced personnel meeting the minimum qualifications as defined in this Section.

1.02 REFERENCES

The publications below form a part of this Section to the extent referenced. Latest editions apply.

Aluminum Association (AA)
AA – Aluminum Design Manual

American Welding Society (AWS)
AWS D1.1 – Structural Welding Code, Steel
AWS D1.2 – Structural Welding Code, Aluminum

ASTM International (ASTM)
ASTM B308 – Aluminum Alloy 6061-T6 Standard Structural Profiles
ASTM B221 – Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles and Tubes

American Society of Civil Engineers (ASCE)
ASCE 7 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures

American Institute of Steel Construction (AISC)
Code of Standard Practice for Steel Buildings and Bridges
Specification for Structural Steel Buildings

International Building Council (IBC)
IBC 2015 – International Building Code

1.03 CONTRACTOR RESPONSIBILITIES

A. Final Engineering Design. Provide final design drawings and calculations for the aluminum structures and associated connections. The Contract Drawings and this Specification indicate the minimum requirements for the proposed aluminum structures. The Contract Drawings are intended to indicate basic configuration and appearance criteria. Design of the aluminum structures is the sole responsibility of the Contractor.

1. Signs and Signposts. Coordinate requirements, quantity, and location of signage with the Owner.

B. Procurement. The Contractor shall furnish all necessary materials, equipment, labor, testing, and incidentals for the successful completion of all work identified on the Contract Drawings and in these Specifications.

C. Fabrication. The means, methods, techniques, sequences, and procedures used for fabrication of the aluminum structures is the sole responsibility of the Contractor. The Contractor is responsible for overseeing that the finished work complies accurately with the Contract Drawings, Specifications, existing site conditions, and approved Shop Drawings.

D. A lifting plan shall be provided stamped and signed by a professional engineer registered within the State of Washington and approved by the Owner prior to any gangway lifting operations.

E. Where new structures are being provided in place of existing structures, the contractor shall ensure that the new structure can be connected to existing connection points and function as intended.

F. Special inspections and testing requirements herein are Contractor-provided.

1.04 SUBMITTALS

A. Provide the following submittals. See Section 01 33 00 – Submittals for more details regarding processes and procedures. Submit the following items related to this Section:

Submittal	Description	Due Date
1. Qualifications and QA/QC Plan	Qualifications and Certifications of the fabricator's facility, personnel, and material testing competency as required by this Specification and applicable industry and building codes. Quality Assurance / Quality Control (QA/QC) Plan	Minimum fourteen (14) days before fabrication begins
2. Shop Drawings and Final Engineering Calculations	Shop Drawings to include layout plans, elevations, cross-sections, details, and notes for all aluminum and steel items described in this Specification. Also include sizes, dimensions, quantities, materials, hardware finishing details, lift points, and colors. Shop Drawings should be adequate for transportation, handling, field assembly, and installation. Final engineering calculations to provide engineering support of the provided Shop Drawings in accordance with referenced design manuals, codes, and design criteria. Calculations and drawings shall be affixed with the appropriate stamps and signatures of a registered professional engineer in the state of Washington and who is experienced in the design of aluminum structures.	Within thirty (30) days of Contract Award
3. Product Data Sheets & Mill Certificates	Manufacturer's literature and data for products used that demonstrates compliance with the applicable materials specifications. Provides instructions for application and installation. Include the following items, but not limited to: • Aluminum • Steel • Fasteners • Deck Grating	Minimum fourteen (14) days before fabrication begins
4. Inspection & Testing Reports	Submit testing reports for the items noted in 3.05.	Prior to completion of aluminum structures

1.05 QUALIFICATIONS

A. Engineer Qualifications. The Engineer of Record for the aluminum structures system structural design shall be a registered professional engineer in the State of Washington and who is experienced in the design of gangway and bridge structures. The Engineer shall have at least five years of documented work experience in the design of aluminum structures with at least 15 projects of similar scope.

B. Welder Qualifications. Currently certified in accordance with AWS D1.1 for structural steel and AWS D1.2 for aluminum welding, submit qualification test reports, and bearing witness certification of independent laboratory and inspection service approved by the Owner. If the welder has not been engaged in the welding process for three or more months, requalify before permitting them to do structural welding work.

C. Manufacturer Qualifications. Manufacturer must be regularly engaged in the design and fabrication of aluminum bridge and walkway structures and shall show proof of having five years of consecutive experience and have successfully completed a minimum of ten similar projects within the last three years.

D. Qualification of Workers. Provide sufficient supervisors and skilled workers who shall be thoroughly familiar with the type of fabrication involved and the techniques required for the proper execution of the work.

E. Aquatic/Swimmer Safety Expert. The aquatic/swim safety expert shall hold a degree in recreation, engineering, architecture or related field and shall have a minimum of 5 years' experience in the assessment of safety of aquatic/swimming facilities.

PART 2 - PRODUCTS

2.01 ALUMINUM

A. Structural Members

1. Material: Marine grade 6061-T6 alloy
2. Weld Material: 5356 alloy wire or approved alternative
3. Applications: Fishing pier walkways, boarding floats, gates, guardrails and handrails

2.02 STEEL

A. Fasteners

1. Bolt & Nut Material: Type 316 stainless steel
2. Shackle Material: Type IVA, Grade A, Class 3 (per Federal Spec. RR-C- 271D)
3. Applications: Fishing pier walkways, boarding floats, gates, guardrails and handrails

2.03 COMPOSITE AND PLASTIC

A. Decking

1. Material: Fiber Reinforced Polymer (FRP)
2. Product: Fibergrate Ecograte 62 or approved equal
3. Net Open Area: 60% (minimum)
4. Color: Gray
5. Applications: Fishing pier walkways, transition plates
6. Other Properties: ADA compliant, integrally applied grit traction surface, suitable for marine environments, deck bearing members to run transverse to walkway length

B. Angled Top Rail

Angled Top Rail shall be installed on top of the aluminum truss at a 30 degree angle. The top rail shall be fabricated of fiberglass reinforced plastic lumber Fiberforce by Tangent Materials or approved equal. Plastic lumber shall be gray in color unless otherwise approved by the Owner. All plastic lumber shall be UV stabilized. Top Rail shall be 2 inches thick and 6 inches wide or shall be wide enough to cover the entire top rail. Top rail shall be milled to meet project specific dimensions and each piece be secured with a minimum of (8) #10 tamper proof stainless steel screws. Top and bottom exposed edges of the top rail shall be chamfered or rounded.

C. Skids, Rollers, Bushings, Edge Strips, Dielectric Isolators, And Other Non-Metallic Parts

1. Material: Ultra-High Molecular Weight Polyethylene (UHMW PE)
2. Color: Black
3. Other Properties: Ultraviolet stabilized
4. Applications: Fishing pier walkways, transition plates

2.04 COATINGS

A. Transition Plates

1. Shall have arc-sprayed “Thermion” Ceramic Core TH604 anti-skid aluminum garnet traction coating or approved equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Examine the site conditions and Contract Drawings and discuss any other requirements with the supplier prior to preparing shop drawings to avoid conflicts. Verify dimensions, all physical conditions, and surroundings. Notify the Owner in writing of any unsuitable conditions. Commencement of work without such notification will be construed as acceptance of all conditions.

B. Fabrication of the aluminum structures shall conform to the latest revisions of the aluminum construction manual and all applicable standards and data as described by the Aluminum Association. Fabricate aluminum structures in accordance with approved shop drawings. Edges shall be cut true, smooth, and free from burrs. Corner edges shall be ground smooth. Drill or punch all holes required for the attachment of other trades and for bolted connections. Weld splatters, burrs and weld flash shall be removed from all exposed surfaces.

C. The aluminum structures system including all hardware and accessories shall be designed, fabricated, and securely fastened to resist all conditions normally encountered within marinas for similar sized aluminum structures. All work shall conform to the approved shop drawings and Contract Documents. Fabrication details, finishing details and colors shall be consistent throughout. Work shall be accurately set to established lines and elevations, and securely fastened in place. Cutting, drilling and punching shall produce clean true lines and surfaces. Exposed surfaces of work shall have a smooth finish.

D. The Contractor shall ensure that any new structure provided as part of the Work can be connected to its associated element(s) of the Project and function as intended and as shown in the reference drawings (e.g. new transfer spans and gangway to new floats).

E. Job files for each aluminum structure shall be kept by the Contractor. This includes all information such as shop drawings, submittals, material purchase orders, as-built shop drawings, material certifications for all components, shipping information and any correspondence. Also included shall be the QC report.

F. Where new structures are being provided in place of existing structures, the Contractor will ensure that the new structures can be connected to existing connection points and function as intended.

3.02 FINAL ENGINEERING DESIGN

A. Pre-Design Requirement. The Contractor shall examine the reference drawings and discuss any other requirements with the Owner’s Representative prior to preparing shop drawings to avoid conflicts and verify dimensions, all physical conditions, and surroundings. The Contractor shall notify the Owner in writing of any unsuitable conditions. Commencement of work without such notification shall be construed as acceptance of all conditions.

B. Code Requirements. The following criteria shall be considered as minimum requirements. Overall design shall conform to IBC code requirements. Mere conformance to the minimum sizes, strengths and design parameters provided in this section will not automatically insure approval of the final design. The proposed aluminum structures shall be subject to thorough engineering analysis using all relevant criteria in applicable IBC, ASCE, AA, and local codes.

C. Design Life. The aluminum structures shall be designed to withstand the loading and motions without damage to allow for a minimum design life of 25 years.

D. Vertical Loads. To be applied on all deck surfaces or at any point on the deck surface unless noted otherwise.

1. Dead Load: As defined by the IBC
2. Live Load: 100 psf and 400 lb point load
3. Snow Load: 30 psf

E. Lateral Loads

1. Wind Load: Uniform wind load of 98 mph, exposure “D” category winds.
2. Handrails: 50 lb/lf or 200 lb (applied to handrail in any direction)

F. Load Combinations. All load cases defined by the IBC and designed based off of controlling load combination.

G. Serviceability

1. Deflection: L/360 (Live Load only)

3.03 GENERAL DESIGN CRITERA

A. Risk Category: II (per ASCE 7)

B. Dimensions. The nominal aluminum structures dimensions are shown in the Contract Drawings. The clear width dimension shall be as shown on the Contract Drawings. The truss structures shall be open top with no top cross members (3-sided).

C. Guardrail. The aluminum structures shall meet IBC guardrail requirements for openings. All openings shall not permit passage of a 4-inch diameter sphere on each side of the walking surface. The top chord of the truss may serve as the guardrail, provided it is not less than 42 inches above the walking surface of the gangway. Aluminum handrails and kick plates shall be provided.

1. Sections of the aluminum fishing pier guardrail shall be lower in height to provide ADA accessible fishing locations as shown on the design drawings. In addition to the guardrail requirements listed above, the ADA guardrail sections shall meet the following requirements:
   a. 34 inches maximum height above the deck surface.
   b. Deck surface shall extend 12 inches minimum beyond the inside face of the railing.
   c. Toe clearance shall be provided and shall be 30 inches wide minimum and 9 inches minimum above the deck surface beyond the railing.
2. On top of all guardrails shall include an angled full width fiberglass reinforced plastic lumber with no cellulosic as shown in the Drawings. The color shall be grey. The angle shall be at a minimum 25 degree angle.

D. Handrails. The aluminum structures shall be fitted with continuous handrails on each side of the walking surface having the same length as the walking surface with each handrail extending a minimum of one (1) foot beyond the ends of the structures, with required return at the ends.

1. Handrail height shall not be less than 34 inches nor more than 38 inches above the walking surface.
2. Fabricate the handrail with a 1-1/2 inch outside diameter aluminum pipe or tubing with a smooth gripping surface. Provide a minimum of 1-1/2 inches clearance between the gangway truss and the backside of the handgrip portion.
3. Design the handrail to not allow for the collection of material including water and bird droppings between the aluminum structures frame and the handrail surface.
4. Handrails shall not have any sharp edges on handrail support. Aluminum handrail configuration and dimensions shall comply with IBC and OSHA requirements.

E. Kick plate. Provide at base of each guardrail, 4 inches tall.

F. Transition Plates: The transition plates shall make a smooth, gap-free transition between the aluminum structures deck and the offshore and onshore landings.

1. Minimum plate thickness: 0.25-inch
2. Plate shall be attached to the aluminum structures by a continuous pipe (piano) hinge, and cover the full width of the aluminum structures.
3. Slope of plate shall not exceed the maximum slope of the aluminum structure it is attached to. The maximum slope for the transition plate shall not exceed 1V:12H and 1V:4H for the toe plate.
4. The sliding edge shall be fitted with a continuous UHMW PE wear block a minimum of 0.5-inch thick with beveling that conforms to code requirements for accessibility and safety.

G. Welds. Use a filler metal alloy for welds to produce a weld compatible with base structural metal for corrosion resistance in accordance with AWS D1.2. All connections to be welded shall be of new material, clean and free of any contaminants. All joints shall fit properly and be prepared for the appropriate weld as described in the Shop Drawings.

H. Dissimilar Metals. Where dissimilar metals are in contact, such as in steel to aluminum connections the surfaces shall be protected to prevent galvanic action. All bolted connections shall be isolated by using UHMW insulating washers, spacers, and nylon sleeves (ferrules) in the bolt holes to stop the bolts touching the aluminum. A nonconductive uncompressible spacer such as fiberglass shall be sandwiched between the two materials and sealed around the perimeter with a flexible sealant such as silicone.

I. The Contractor shall coordinate the design of the gangways with the design of the floating dock system to ensure proper interaction between installed systems. This includes but is not limited to providing computed dead and live load values (imposed on the landing float) to the float manufacturer and engineer for their use in the design of the landing float flotation checks. The gangway roller design shall consider the full range of motion based on water level criteria.

J. The deck and structural components shall be designed with a minimum safety factor on working stress as specified in AA “Specifications for Aluminum Structures” for bridge type structures. For non-aluminum structural components, similar safety factors shall apply.

K. Design shall consider construction and transportation stresses on aluminum structures resulting from handling and installation.

L. The aluminum structures shall also be designed to withstand horizontal drift due to wind loads without structure interferences or overstress, including fatigue of aluminum members and supports.

M. Contractor shall design any connections needed for temporary and permanent installation of the walkway and gangway spans. There shall not be a gap between the concrete slab surface, transition plate, and walkway. The connections shall be designed to be site specific, and its design is to be included in the engineer’s supporting calculations.

N. Walkway and Gangway Lugs: The lugs and their connection shall be designed by the Contractor. The lugs shall be designed to prevent binding or impact between the adjacent supporting structures. Dissimilar metals shall be isolated with UHMW bushings and washers.

O. Contractor shall provide drainage holes at lower end of the bottom chords for all walkways, gangways, and transfer spans.

P. Any splices shall be designed and detailed by the Contractor and submitted to the Owner for review.

3.04 SPECIFIC DESIGN CRITERIA

A. Fishing Pier Walkways

1. Pile Cap Connections: Should be connected via tabs welded to the bottom chords of the walkways to transfer loads to the pile cap per Section 3.02. Connections shall address dissimilar metals. Slots shall be designed into the tabs to account for tolerances along the length of the walkway based on in field conditions and thermal expansion/contraction. Connection hardware to be provided by the Contractor. Bolts size to be minimum 5/8” in diameter, A325 hot dipped galvanized steel.

3.05 FABRICATION AND WORKMANSHIP

A. Design, fabrication, delivery, handling, and installation of the aluminum structures shall conform to the latest revisions of the aluminum construction manual and all applicable standards and data as described by the Aluminum Association. Fabricate aluminum structures in accordance with approved shop drawings. Edges shall be cut true, smooth, and free from burrs. Corner edges shall be ground smooth. Drill or punch all holes required for the attachment of other trades and for bolted connections. Weld splatters, burs and weld flash shall be removed from all exposed surfaces.

B. Welding shall be done in accordance with AWS D1.2, including procedures for repair of defective welds. All welds shall be visually inspected by an independent testing company hired by the Contractor.

C. Items shall be shop fabricated to the extent practicable for transportation and handling. Splices shall be designed and detailed by the Contractor and submitted to the Owner for review.

D. Parts shall be match-marked to ensure accurate installation.

E. Aluminum items shall be fabricated in accordance with AA’s Design Manual specifications for aluminum structures and AWS 01.2-03, Structural Welding Code Aluminum.

F. Materials delivered and stored at the manufacturing facility shall be properly marked and inventoried on vertical racks located in a lockable heated warehouse.

G. Completed gangways, walkways, transfer ramp, transition plates, etc. shall be stored on dunnage or by other appropriate means to prevent direct contact with the ground and unnecessary damage. Completed aluminum structures shall bear an identification decal showing the date of manufacture, live load capacity, and identifying serial number. Every ramp shall be directly traceable to the manufacturer.

H. The Contractor shall establish lifting and handling methods to avoid damage to aluminum structures during storage, assembly, and transport as directed by the manufacturer.

I. Job files for each aluminum structures shall be kept, including all information including shop drawings, submittals, material purchase orders, as-built shop drawings, material certifications for all components, shipping information and any correspondence. Also included shall be the QC report.

J. All inspection and testing required on the aluminum structures, the cost of welding procedures and welder certifications will be considered as included in the payment for this item, and no additional compensation will be allowed.

3.06 TRANSPORT, DELIVERY, & HANDLING

A. Handle aluminum structures by lifting points and methods as identified by the manufacturer. Use of alternate lifting points shall not be allowed.

B. Use all means necessary to protect the aluminum structures before, during, and after installation and to protect the installed work and materials of all other trades.

C. The Contractor shall assume full responsibility for any damages or losses resulting from the handling or transporting of the aluminum structures during loading, shipping, transport, and delivery to the Project Site, as well as the subsequent handling required on site for installation.

D. Damage that occurs during transport and delivery and/or during other handling operations prior to final inspection shall be repaired or replaced by the Contractor at the discretion of the Owner, and at no additional cost to the Owner.

E. Stamped Lifting Plan shall be provided by a professional engineer registered within the State of Washington and approved by the Owner prior to any aluminum structures lifting operations.

F. All aluminum structures lifting operations shall be performed in accordance with the stamped lifting plan.

3.07 ASSEMBLY AND INSTALLATION

A. Construction methods and products not specifically mentioned in the Contract Documents shall be utilized using reasonable care and the highest quality construction practices. Final inspection and acceptance of all work and products not specifically mentioned in the Contract Documents shall be made by the Owner. Approval shall be based upon conformance to the Contract Documents, quality of workmanship, applicable industry standards, and pertinent manufacturer's recommendations.

B. The complete aluminum structures assembly shall be installed at the locations shown on the Contract Drawings. Alignment shall be straight and true.

C. The gangway shall be installed on the floating dock and the toe end adjusted as to allow the dock system free movement to travel the full range of water levels without binding or stressing the gangway or dock system. The gangway roller guide tracks shall be adjusted to suit the full range of lateral movement of the rollers and shall be adequately secured to the dock surface in accordance with the gangway manufacturer recommendations.

D. The walkways shall be installed on top of the pile caps spanning between the transfer ramp and the gangway.

E. The transfer ramp shall be installed between the concrete landing and the walkway.

F. The aluminum structures shall be installed to meet all ADA walking surface requirements including a maximum slope, 0.5-inch grating gap and 0.25-inch grating lip.

3.08 COORDINATION WITH OTHERS

A. The Contractor shall coordinate the design of the gangways with the design of the floating dock system to ensure proper interaction between installed systems. This includes but is not limited to providing computed dead and live load values (imposed on the landing float) to the float manufacturer for their use in the design of the landing float flotation.

B. The gangway roller design shall consider the full range of motion based on water level criteria.

3.09 PROJECT CLOSEOUT

A. Warranty. The manufacturer shall provide a two-year written warranty that the aluminum structures and associated appurtenances furnished shall be free from defects in materials and workmanship and performance for a period of two (2) years following completion and acceptance by the Owner. The two-year warranty period shall commence upon project completion and acceptance by the Owner.

B. Spare Parts. Provide spare parts required to accomplish supplier recommended maintenances for a full three-year period. The Contractor shall assume normal wear and tear on the aluminum structures. Spare parts to be provided as a minimum include the following:

1. Four (4) grating panels and associated connection hardware.
2. Four (4) UHMW roller guides and associated connection hardware.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. The Work in this Specification Section covers the detailing, supply, fabrication and installation of aluminum and steel metal components including all miscellaneous metal fabrication and connection components required to complete the work as required by the Contract Drawings and Specifications. Work included in this Section are the following:

1. Structural steel frame (boat ramp) and miscellaneous structural steel, including underwater and/or partially submerged installation work of steel frame and associated work items including base aggregate material placement and grading
2. Pile caps
3. Bolts, nuts, threaded rod, and studs
4. Miscellaneous fabricated metal items
5. Railing and handrail

1.02 RELATED SECTIONS

A. Section 01 20 00 – Measurement and Payment
B. Section 01 33 00 – Submittals
C. Section 05 05 00 – Galvanizing
D. Section 05 14 00 – Structural Aluminum Framing
E. Section 31 00 00 – Earthwork
F. Section 31 62 16 – Steel Pile
G. Section 35 51 00 – Float Systems

1.03 REFERENCES

The publications below form part of this Section to the extent referenced. Latest editions apply.

Aluminum Association (AA)
AA Aluminum Design Manual

American Welding Society (AWS)
D1.1 Structural Welding Code – Steel
D1.2 Structural Welding Code - Aluminum

American Institute of Steel Construction (AISC)
AISC 303 Code of Standard Practice for Steel Buildings and Bridges
AISC 360 Specification for Structural Steel Buildings

ASTM International (ASTM)
A36 Carbon Structural Steel
A47 Ferritic Malleable Iron Castings
A53 Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
A123 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
A240 Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
A276 Stainless Steel Bars and Shapes
A312 Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
A316 Stainless Steel
A307 Carbon Steel Bolts, Studs, and Threaded Rod
A384 Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing

A500 Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
A563 Carbon and Alloy Steel Nuts
A572 High-Strength Low-Alloy Columbium-Vanadium Structural Steel
A780 Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
A992 Structural Wide-Flange Beams
B308 Aluminum Alloy 6061-T6 Standard Structural Profiles
B209 Aluminum and Aluminum-Alloy Sheet and Plate
B695 Coatings of Zinc Mechanically Deposited on Iron and Steel
F436 Hardened Steel Washers Inch and Metric Dimensions
F593 Stainless Steel Bolts, Hex Cap Screws, and Studs
F594 Stainless Steel Nuts
F959 Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners
F1554 Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
F3125 Grade A325 Type 1 Structural Bolts, Steel, Heat Treated

Steel Structures Painting Council (SSPC)
Good Painting Practices Vol. 1 & 2

1.04 GENERAL

A. Miscellaneous metals material specification requirements shall apply to all metal items unless otherwise identified or noted on the Contract Drawings.

B. Temporary Construction. The Contractor is responsible for temporary bracing and support of all structures during construction and shall protect all exposed partially complete work against damage. The Contractor shall take precautions to assure that the structure is adequately braced to avoid damage from wave or wake action during construction. Any structural component damaged during construction shall be replaced by the Contractor at no cost to the Owner. The Contractor's proposed methods for providing temporary protection shall be included in the work plan submitted to the Owner for approval.

C. Alternative Design. The Contractor may submit an alternative design. The alternative design shall bear the stamp and signature of a State of Washington Registered Professional Engineer. The alternative design shall clearly identify deviations from the original design intent and any associated cost savings. Substitutions and Change Orders resulting from alternative design will be addressed in accordance with the Specific Requirements and General Conditions, respectively.

1.05 QUALIFICATIONS

A. Fabricator. Experienced in metal fabrication work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance. The fabricator shall be an ICBO 'Approved Fabricator" as defined in the International Building Code for an AISC Certified Fabricator.

B. Welders. Steel welding shall be performed by welders certified as being qualified in accordance with AWS D1.1, Section 5, Parts C and D or WABO for steel welding. Welders shall be qualified to perform full penetration groove welding in all positions of the relevant type (plate, tube, etc.), using the procedures, materials, and equipment of the type required for the work.

C. Installer. At least five years of relevant and similar type construction experience.

1.06 MATERIAL TESTING

A. Miscellaneous Metals. Test and certify that all metals used for the miscellaneous metal items meet the specified chemical, mechanical, and section property requirements prior to delivery to the site. Test miscellaneous metals for mechanical properties after the completion of all rolling and forming operations. Testing of miscellaneous metals shall meet the requirement of ASTM A6.

B. Welding. Performed in accordance with AWS D1.1. All welds shall be visually inspected by a Contractor-provided independent testing company.

1.07 SUBMITTALS

A. Provide the following submittals. See Section 01 33 00 – Submittals for more details regarding processes and procedures. All steel and aluminum construction and/or assembly work shall not begin until all required submittals have been reviewed and approved by the Owner. Submit the following items related to this Section:

Submittal	Description	Due Date
1. Qualifications and QA/QC Plan	Qualifications and Certifications of the fabricator's facility, personnel, and material testing competency as required by this Specification and applicable industry and building codes. Quality Assurance / Quality Control (QA/QC) Plan	Minimum fourteen (14) days before fabrication begins
2. Fabrication Work Plan	Written description of plan for fabrication and installation including proposed schedule and procedures shall be submitted to the Owner.	Minimum fourteen (14) days before fabrication begins
2. Shop Drawings and Calculations	Shop Drawings to include layout plans, elevations, cross-sections, details, and notes for all aluminum and steel items described in this Specification. Also include sizes, dimensions, quantities, materials, hardware finishing details, lift points, and colors. Shop Drawings should be adequate for transportation, handling, field assembly, and installation. Calculations to provide engineering support of the provided Shop Drawings in accordance with referenced design manuals, codes, and design criteria. Calculations and drawings shall be affixed with the appropriate stamps and signatures of a registered professional engineer in the state of Washington and who is experienced in the design of aluminum structures.	Within thirty (30) days of Contract Award
3. Product Data Sheets & Mill Certificates	Manufacturer's literature and data for products used that demonstrates compliance with the applicable materials specifications. Provides instructions for application and installation. Include Safety Data Sheets (SDSs). Include the following items, but not limited to: • Steel • Fasteners	Minimum fourteen (14) days before fabrication begins
Welding procedures	Contractor to submit welding procedures for approval of the Owner. Welding variables on submitted welding procedures shall conform to weld filler metal manufacturer's recommendations unless a procedure is qualified by testing, in which case procedure qualification records should be submitted with the corresponding procedure. Preheat and interpass temperature shall be in accordance with AWS D1.1 Annex I.	Minimum fourteen (14) days before fabrication begins
4. Inspection & Testing Reports	Details inspector's information, tests/inspections performed, and notes on conformance to the applicable specifications.	Within two (2) days of inspection
5. Welder Certificates	Provide for proposed welders showing that they have been qualified to AWS D1.1 for all welds shown in the Shop Drawings.	Minimum fourteen (14) days before fabrication begins
6. Diver Work Documentation	Provide photos or videos of underwater work, showing the final installation of underwater elements such as the connection between the piles and pile caps of the aluminum ADA ramp for each underwater element installed.	Within seven (7) days of installation

PART 2 - PRODUCTS

2.01 GENERAL

A. Supply miscellaneous metal connectors, and other metal items required to fabricate the project components. Miscellaneous structural metals materials shall be new, free from defects and imperfections, and shall unless otherwise indicated.

B. Material with laminar discontinuities may be rejected by the Owner if the discontinuities are perceived to decrease the connection quality or strength, at discretion of the Owner. Material with laminar discontinuities shall at a minimum be repaired with a Owner-approved repair procedure. The Contractor shall notify the Owner immediately if laminar discontinuities are discovered.

C. Materials for proprietary system or contractor-supplied components shall meet manufacturer's recommendations/specifications, unless otherwise approved by the Owner.

D. Steel plate, bar and shapes shall be true to line and free from warp or twist.

E. Substitution of the metal grades specified shall not be performed without written approval from the Owner.

2.02 STEEL

A. Steel W Shapes: ASTM A992 Gr. 50.

B. Steel HP Shapes: ASTM A572 Gr. 50.

C. Steel rectangular, round, and square HSS: ASTM A500 Gr. B (46ksi).

D. Steel plate, flat bar, channels, angles: ASTM A36.

E. Steel pipe: ASTM A53 Grade B, Type S.

2.03 STAINLESS STEEL

A. Stainless steel railing or handrail. Guardrails and handrails shall be fabricated from Stainless Steel 316 pipe. Handrail members shall be 1-1/2-inch nominal Schedule 40 pipe minimum. Posts shall be 2-inch nominal Schedule 40 pipe minimum. Fabrication and welding shall conform to AWS D1.6. All hardware shall be Type 316 stainless steel. Stainless Steel railing systems shall be designed to comply with applicable IBC and OSHA loading and geometry requirements.

2.04 ALUMINUM

A. Aluminum Shapes: Marine Grade 6061-T6 Aluminum extruded shapes.

B. Aluminum railing or handrail. Guardrails and handrails shall be fabricated from Alloy 6061-T6 aluminum pipe. Handrail members shall be 1-1/2-inch nominal Schedule 80 aluminum pipe minimum. Posts shall be 2-inch nominal Schedule 80 aluminum pipe minimum. Fabrication and welding shall conform to AWS D1.2. All hardware shall be Type 316 stainless steel. Aluminum railing systems shall be designed to comply with applicable IBC and OSHA loading and geometry requirements.

2.05 REQUIREMENTS FOR FASTENERS, HARDWARE, AND WELDMENTS

A. Bolt, anchor bolt, washer, threaded rod, and nut requirements vary depending on the materials being fastened.

B. Steel to steel:

1. Standard Connection: Regular hot-dip galvanized hexagon head type bolts shall be used in accordance with F3125 Grade A325 Type 1, with threads excluded from the shear plane unless otherwise noted. Hardened washers conforming to ASTM F436 shall be

used under all nuts and bolt heads unless otherwise noted. Nuts shall be heavy hex nuts conforming to ASTM A563 and shall be lubricated. Lock nuts conforming to ASTM A563 shall be used if shown on the Contract Drawings.

2. Slip Critical Connections: Regular hot-dip galvanized hexagon head type bolts shall be used in accordance with ASTM A325, with threads excluded from the shear plane unless otherwise noted. Hardened washers conforming to ASTM F436 shall be used under all nuts and bolt heads unless otherwise noted. Nuts shall be heavy hex nuts conforming to ASTM A563 and shall be lubricated. Standard direct tension indicating washers (DTIs) conforming to ASTM F959 shall be used in accordance with manufacturer's recommendations to facilitate proper bolt tensioning. Direct tension indicating washers shall be mechanically galvanized in accordance with ASTM B695.

C. Aluminum to steel (stainless hardware):

1. Hardware shall be type 316 stainless steel, with chemistry suitable for marine exposure; and nuts shall be type 304 stainless steel, with chemistry suitable for marine exposure. Regular hexagon head type bolts shall be used in accordance with ASTM F593. Washers shall be used under all nuts and bolts heads unless otherwise noted. Heavy hex nuts and lock nuts conforming to ASTM A563 shall be used on all bolts and shall be lubricated.

D. Aluminum to aluminum or steel (galvanized hardware):

1. Regular hot-dip galvanized hexagon head type bolts shall be used in accordance with F3125 Grade A325 Type 1, with threads excluded from the shear plane unless otherwise noted. Hardened washers conforming to ASTM F436 shall be used under all nuts and bolt heads unless otherwise noted. Nuts shall be heavy hex nuts conforming to ASTM A563 and shall be lubricated. Lock nuts shall be used if shown on the Contract Drawings.
2. Galvanized hardware shall be isolated from the aluminum base material as specified in Part 3.3 of this Section.

E. Tie-Rods. Hot-dip galvanized threaded rod shall be supplied in conformance with ASTM F1554, Grade 55 unless otherwise noted. Hardened washers conforming to ASTM F436 shall be used under all nuts bearing on steel and malleable iron washers conforming to ASTM A47 and lock nuts shall be used under all nuts bearing on timber. Lock nuts shall be provided on each end of threaded rod passing through timber. Nuts shall be heavy hex nuts and shall conform to ASTM A563 and shall be lubricated.

F. Screws shall be type 316 stainless steel unless otherwise noted. All screws shall be tamper proof

G. Beveled washer thickness is measured in the center of the washer.

H. Plate washers shall be 1/4 inch thick plate, with a diameter matching the equivalent malleable iron washer unless otherwise noted.

I. Epoxy anchoring: Epoxy anchoring shall be accomplished with HILTI Hit-RE 500-SD epoxy or approved equal, used in accordance with the manufacturer's recommendations.

J. Make exposed fastenings of compatible materials, generally matching in color and finish, to which fastenings are applied.

2.06 COATINGS

A. All steel shall be hot dipped galvanized after fabrication in accordance with Section 05 05 00 – Galvanizing, unless otherwise noted.

B. Fabricated steel specified to be galvanized steel shall be galvanized in accordance with ASTM A123. Hot dip galvanization process shall be completed after fabrication unless otherwise specifically noted in the approved shop drawings. All intersecting components shall be seal welded at a minimum prior to galvanizing unless otherwise noted.

C. Repair of zinc-coated surfaces. Repair all galvanized surfaces removed or damaged during welding, or shipping in accordance with the Section 050500 – Galvanizing.

D. Repair of painted surfaces. Repair all damaged painted surfaces in accordance with the paint manufacturer's recommendations.

2.07 FABRICATION MARKING

A. Marking the weight. Mark the weight on sub-assemblies and individual members weighing over 200 pounds.

B. Marking piece marks and directional arrows. Provide piece marks and directional arrows on all members and sub-assemblies requiring on-site assembly. Shop drawings shall show all piece marks.

C. Marking bare or painted materials. Make all shop markings plainly visible with a non-corrosive waterproof paint stick that will not compromise marking after coating, if applicable.

D. Marking materials to be galvanized. Stamp piece marks or match marks in material to be galvanized with metal dies so that the marks are clearly legible after galvanizing.

PART 3 - EXECUTION

3.01 MATERIALS DELIVERY AND STORAGE

A. Materials delivered to the site shall be new and undamaged and shall be accompanied by certified test reports. The manufacturer's mill identification mark shall be provided on components for traceability as required by the referenced specifications. Components shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion or damage. Any such permanent deflection, distortion, or damage shall be repaired by the Contractor at the Contractor's expense to the satisfaction of the Owner. Storage of metal materials and/or fabrications should also facilitate required inspection activities.

3.02 FABRICATION

A. Existing Conditions. Obtain all field measurements required for proper and adequate fabrication and installation of the work. Exact field measurements are the Contractor's responsibility.

B. Aluminum Fabrication. Performed in accordance with AA's specifications for aluminum structures and AWS D1.2, Structural Welding Code Aluminum.

C. Steel Fabrication. Performed in accordance with AISC 303, AISC 360, and AWS D1.1. Fabrication is to occur in accordance with the fabricator's quality program. Upon request, the fabricator may be asked to submit this quality program to the Owner for review.

D. Fabrication Location. Shop fabricate the items described in this Section to the full extent practicable for transportation and handling. Show splice details and locations in the Shop Drawings.

E. Match-Marking. Applied to all parts to ensure accurate installation.

F. Tolerances. Items shall be fabricated to the tolerances indicated herein or on the Contract Drawings, or if not specified, to accepted industry standards.

G. Provide concentric work points on structural members unless otherwise noted.

H. Metal preparation: All structural steel and miscellaneous metal fabrications shall be fabricated in strict accordance with the approved shop drawings and the referenced standards. Materials must be straight before being laid out or worked. If straightening is necessary, it shall be done by methods that will not damage the metal. Sharp kinks or bends shall be cause for rejection of the material. Material with welds will not be accepted except where welding is specifically specified, indicated or otherwise approved. Bends shall be made by industry standard method such as dies, press brakes or bending rolls. Where heating is required, precautions shall be taken to avoid overheating the metal and it shall be allowed to cool in a manner that will not damage the metal.

Proposed flame cutting of material other than structural steel shall be subject to approval and shall be indicated in the shop drawings. Shearing shall be accurate, and all portions of the work shall be neatly finished.

I. Bolt holes shall be provided where required or specified and at the proper location or position. Holes in metals members shall be shop punched and reamed or drilled. Flame cutting or drilling of holes shall not be allowed. Unless otherwise indicated or specified, all bolt holes through metal members shall be standard size; 1/16 inch larger in diameter than the diameter of the fastener being installed. For steel assemblies to be galvanized after assembly, all holes shall be oversize; 1/8 inch larger in diameter than the diameter of the fastener being installed.

J. Metal may be cut by mechanically guided or hand-guided torches, provided an accurate profile with a surface that is smooth and free from cracks and notches is obtained. Surfaces and edges to be welded shall be prepared in accordance with AWS requirements. Where structural steel is not to be welded, chipping or grinding will not be required except as necessary to remove slag and sharp edges of mechanically guided or hand-guided cuts not exposed to view. Hand-guided cuts that are to be exposed or visible shall be chipped, ground or machined to sound metal.

K. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut or abrade the surfaces of exterior components which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

L. Shop assembly: Structural unit furnished shall be assembled in the shop to determine the correctness of the fabrication and matching of the component parts unless otherwise specified. Tolerances shall not exceed those shown. Each unit assembled shall be closely checked to ensure that all necessary clearances have been provided. Errors or defects disclosed shall be immediately remedied by the Contractor without cost to the Owner. Before disassembly for shipment each piece of a structural unit shall be matchmarked to facilitate erection in the field. The location of match-marks shall be indicated by circling with a ring of white paint after the shop coat of paint has been applied or as otherwise directed.-marked to facilitate erection in the field. The location of match-marks shall be indicated by circling with a ring of white paint after the shop coat of paint has been applied or as otherwise directed.

M. Metal fabrications shall be placed accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels.

N. Dissimilar metals. Where dissimilar metals are in contact, such as in steel to aluminum connections the surfaces shall be protected to prevent galvanic action. All bolted connections shall be isolated by using UHMW PE or fiberglass insulating washers a minimum of 1/16 inch thick, spacers and nylon sleeves (ferrules) in the bolt holes to prevent steel bolts from coming in contact with aluminum. Isolating material shall cover the entire contact surface and shall be applied in conformance with the manufacturer's recommendations. Isolating material shall be shown on the shop drawings.

O. For assemblies to be galvanized after welding, the fabricator shall detail the assembly in accordance with ASTM A384 recommendations – see Section 050500 – Galvanizing.

3.03 GENERAL WELDING REQUIREMENTS

A. Welding shall be done in accordance with AWS procedures, including procedures for repair of defective welds.

B. All welds shall be visually inspected by a Contractor provided independent testing company. The components shall be inspected as statically loaded, non-tubular and tubular connections in accordance with AWS requirements.

C. All welds and edges that may be encountered by the public after construction shall be ground to remove all burrs and weld splatter to the satisfaction of the Owner.

D. The Owner, at their discretion, may non-destructively test welds in accordance with AWS criteria. Acceptance criteria shall be for non-cyclic loading. Welds failing shall be repaired at the

Contractor's expense, which will also include all costs for retesting to achieve a passing inspection test.

3.04 STEEL WELDING

A. Weld filler metal. Weld filler metal shall meet Charpy requirements of 20 foot-pounds at -20 degrees Fahrenheit and shall have chemistry similar to the base metal. Filler metals shall only be used in welding positions recommended by the filler metal manufacturer, and any welds not conforming to manufacturer's recommendations shall be removed and replaced by the Contractor at the Contractor's expense. Welding consumables shall be stored in accordance with the manufacturer's recommendations and in accordance with AWS requirements and recommendations. Overmatching weld filler metals shall be avoided.

B. Preheat. Preheat shall be based on material grade and thickness in accordance with AWS requirements.

C. Inspection timeline. Prior to galvanizing, all required weld inspections and required repairs shall be performed.

D. Welding galvanized/metalized components. All welding shall be done prior to galvanizing if possible, unless otherwise required for field-assembly. Galvanizing/metalizing within one inch of the finished weld location shall be removed prior to welding.

E. Fillet weld soundness Test. Fillet weld procedures shall be qualified by a fillet soundness test in accordance with AWS requirements.

3.05 ALUMINUM WELDING

A. Aluminum items shall be fabricated in accordance with AA's specifications for aluminum structures and AWS D1.2, Structural Welding Code Aluminum.

B. Qualifications. Aluminum welding shall be performed by welders certified as being qualified in accordance with AWS D1.2 for full penetration groove welding in all positions, using the procedures, materials, and equipment of the type required for the work. All welding shall conform to AWS D1.2.

C. Weld filler metal. Weld filler metal shall be used in full conformance with the manufacturer's recommendations unless otherwise proven in a procedure qualification test.

D. All welding shall be done in conformance with a qualified welding procedure. All welding procedures shall be qualified in accordance with AWS D1.2 requirements.

E. The Contractor shall not use oxyfuel gas cutting, carbon arc cutting or gouging processes, or oxyfuel flames to preheat.

F. Mechanically remove the plasma arc and laser cut edges from 6xxx series alloys by removing a minimum of 1/8 inch of metal from the cut edge.

G. Prepare and clean the joint prior to assembly and degrease the surfaces with a solvent. Maintain surface cleanliness throughout the assembly and welding process.

H. Shop rags shall not be used to clean joints; instead use clean cloth or paper towels.

I. Joints shall not be cleaned by using compressed air.

J. Wire brushes can only be used for cleaning after a joint is solvent cleaned.

K. Tools and the work area shall be kept clean throughout the duration of the work.

3.06 PAINTING

A. Painting operations shall occur indoors in a controlled shop environment.

B. Paint products shall be used in full conformance with the manufacturer's recommendations.

C. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85% at temperatures less than 5° F above the dew point; or to damp or wet surfaces.

D. Steps for surface preparation prior to painting shall be as follows unless otherwise recommended by paint manufacturer:

1. SSPC SP-1 Solvent Cleaning
2. SSPC SP-6 Commercial Blast Cleaning with a minimum angular profile of 1.5 mils.

E. Prior to painting verify that surfaces to be coated are dry, clean and free of dust, dirt, oil, wax, grease or other contaminants.

F. Apply primer immediately after blast cleaning, adhering to manufacturer's recommendations for maximum lag time between blasting and painting.

3.07 INSTALLATION

A. General. All parts to be installed shall be thoroughly cleaned. Packing compounds, rust, dirt, grit and other foreign matter shall be removed. Holes and grooves for lubrication shall be cleaned. Enclosed chambers or passages shall be examined to make sure that they are free from damaging materials. Where units or items are shipped as assemblies they will be inspected prior to installation. Disassembly, cleaning and lubrication will not be required except where necessary to place the assembly in a clean and properly lubricated condition. Pipe wrenches, cold chisels or other tools likely to cause damage to the surfaces of rods, nuts or other parts shall not be used for assembling and tightening parts.

B. Alignment and settings. Each structural unit shall be accurately aligned by the use of steel shims or other approved methods so that no binding in any moving parts of distortion of any member occurs before it is fastened in place. The alignment of all parts with respect to each other shall be true within the respective tolerances required.

C. All galvanized steel hardware surfaces to be in contact with new treated lumber shall be covered with a layer of dielectric grease prior to installation. The Contractor shall take all required measures to ensure that dielectric grease is applied in a careful manner, and excess grease removed prior to hardware installation. Any grease that has been inadvertently applied to other components shall be immediately removed.

D. All bolts shall be installed at the proper location and set straight and square with connecting members. Bolt installation shall conform to the requirements of AISC specification for structural joints using ASTM A325 Bolts for steel and A276 for stainless steel.

E. Bolts, nuts, and screws shall be tight in accordance with industry standards. Carbon steel bolts shall be tightened with the turn-of-the-nut method unless otherwise noted. Bolts, nuts, and screws shall be tightened firmly and uniformly but care shall be taken not to overstress the threads. Care shall be exercised when tightening bolts passing through tubular members so as not to distort the member.

F. When a lock nut is used for a metal-to-metal connection, the lock nut shall be installed first at approximately half-tightness, followed by the full nut installed to full tightness. The lock nut shall be held in place while the full nut is tightened.

G. Driving or drifting bolts will not be permitted.

H. Holes for concrete anchors shall be made using a steel plate template by either core drilling or hammer drilling with a tool adequate for the task. Diamond-tipped tools shall not be used. Holes shall be thoroughly cleaned with a wire brush and oil-free compressed air.

I. Concrete anchors shall be installed in accordance with the Manufacturers recommendations. Special inspection is required for all adhesive anchors.

J. Holes for anchors shall be inspected after final cleaning for conformance with the project requirements and manufacturer's installation instruction by an independent testing agency.

Reports are to be submitted to the Owner for approval and shall be approved prior to making the anchors inaccessible.

3.08 HANDLING AND LIFTING

A. Means and methods are the full responsibility of the Contractor. Handling and lifting shall be done in a way so as to prevent damage. Care shall be taken to avoid damaging coatings during handling. The Contractor shall develop and use lifting and handling plans if required for safety reasons (such as overhead lifting), or to ensure that components of the work are protected from damage.

B. Care shall be exercised during handling operations so as to not damage the steel components, any damage incurred due to Contractor mishandling or accident shall be repaired by the Contractor at no additional cost to the Owner, and any steel damage deemed by the Owner as beyond repair shall be removed from the site and replaced by the Contractor at no additional cost to the Owner.

C. All lifting equipment shall comply with industry standards and be appropriately labeled if required.

3.09 INSPECTION

A. Steel and aluminum sections and hardware shall be inspected and approved by the Owner to verify conformance with the Contract Drawings and this Technical Specification for fabrication/manufacture prior to delivery to the project site, and upon installation.

B. Any damage or defects requiring repairs to the Steel and aluminum sections and hardware shall be notified in writing to the Owner and any repair materials and methodology shall be reviewed and approved by the Owner prior to the initiation of any such work.

C. All miscellaneous metals inspection and testing shall be Contractor-provided.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work described in this Section includes import of new materials and placement within the construction area associated with the boat ramp, concrete path, concrete ramp, precast stairs and beach fill.
B. Work Area Boundary: Boundary area of excavation and fill shall be as shown on the Contract Drawings.

1.02 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only.

American Society for Testing and Materials (ASTM)
C88 Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
C127 Specific Gravity and Absorption of Coarse Aggregates.
C131 Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
C535 Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
D2938 Unconfined Compressive Strength of Intact Rock Core Specimens.
D4992 Evaluation of Rock to be used for Erosion Control.

U.S. Army Corps of Engineers (USACE)

CRD-C 148-69 Method of Testing Stone for Expansive Breakdown on Soaking in Ethylene Glycol.
CRD-C 144-92 Resistance of Rock to Freezing and Thawing.

Washington State Department of Transportation (WSDOT)

All references to WSDOT shall refer to the current Standard Specifications for Road, Bridge, and Municipal Construction of the Washington State Department of Transportation.

1.03 CONTRACTOR'S RESPONSIBILITY

A. Furnish all labor, equipment, supplies, and materials necessary to perform the excavation, fill, and geotextile associated with the work shown on the Contract Drawings and described herein.
B. All required special inspections and testing herein are to be Contractor-provided.

1.04 SITE CONDITIONS

A. Review of Site Conditions

1. It is the Contractor's responsibility to visit the site and perform any inspection and testing the Contractor deems appropriate, and to examine the Contract Drawings and Specifications to become familiar with the quantity and character of all materials to be excavated and filled within the Limits of Construction.

1.05 DEFINITIONS

A. Riprap: Layer of stone used as exterior armor layer for the Toe Scour Protection.
B. Quarry Spalls: Layer of stone used in the Shoulder Scour Protection and as bedding stone in the Toe Scour protection and as foundation under the precast stairs and cast-in-place concrete ramp as shown on the Contract Drawings.

C. 2”-4” Quarry Spall: Layer of stone to be used as scour protection under the coarse sand beach fill as shown on the Contract Drawings.
D. Foundation Gravel: Gravel material to be placed beneath new concrete abutments, ramps, precast and boat ramp as shown on the Contract Drawings and as described within the Specifications.
E. Shoulder Scour Protection: Layer of quarry spalls stone along the sides of the boat ramp and abutment as shown on the Contract Drawings.
F. Crushed Surfacing: Layer of stone used at parking lot side of abutment and boat ramp.
G. Toe Scour Protection: Layer of riprap and quarry spalls stone along the sides of the boat ramp and abutment as shown on the Contract Drawings.
H. Scour Protection: General term used that applies to both the Shoulder Scour Protection and Toe Scour Protection as shown on the Contract Drawings.
I. Excavation: Earthwork required to install scour protection and concrete elements. Does not include demolition of existing structures, see Section 024100 – Demolition for demolition requirements.
J. Stoneworks: Installation of any stone material structures including, riprap, quarry spalls, crushed surfacing, and foundation gravel in accordance with the Contract Drawings and requirements specified herein.
K. Beach Fill: Installation of imported fill materials in front of the existing concrete stairs shown as on the Contract Drawings including 2”-4” Quarry Spall, pea gravel and coarse sand.
L. Coarse Sand: Coarse clean sand material free from any organics or clay.
M. Pea Gravel: Washed material consists of smooth-textured river rock pebbles from 1/4 to 3/8 in a blend of blue, gray, green, brown, and red hues.

1.06 SUBMITTALS

A. The following items shall be submitted to the Owner’s Representative for review and approval in accordance with Section 013300 – Submittals:

1. Product specifications for geotextile and other materials specified herein.
2. All pertinent source and test records as herein specified.
3. Work Plan, consisting of the following subsections:

a. Description of transportation, name of source for each type of material, delivery and re-handling work plan. Include description of any temporary stockpile and re-handling facilities.
b. Description of earthwork construction sequencing method.
c. Description of proposed work area isolation method.
d. Intermediate/Progress Survey sequencing and review plan for the Scour Protection and Foundation Gravel in accordance with Technical Specification Section 01 71 23 – Construction Surveying.
e. Service Records: Provide at least 2 example projects that the stone source(s) has been used for erosion protection with similar or larger size stone gradation(s). Service record will be used to help determine acceptability of stone source for use on the project.

4. Survey Data: The Contractor shall submit all survey data in accordance with Technical Specification Section 01 71 23 – Construction Surveying.
5. Material gradations as presented in Part 2 of this Section for all aggregates. Sampling of the fill materials for testing shall be in accordance with Part 2 of this Section.
6. Daily Shipment Log Sheets: On the workday following stone shipment, the Contractor shall submit a copy of the log of all shipments from the stone source(s). The log sheets shall include information regarding placement or stockpiling of the shipments, quantity of stone imported separated by stone type, and what shipments were sampled. The Daily

Log sheet and its format shall be approved by the Owner's Representative prior to the shipment of any stone materials.

7. Mobi Mat Data: Submit manufacturer's product literature, technical specifications, color, installation instructions, anchorage details, and evidence demonstrating that the proposed Mobi-Mat® system meets the requirements shown on the Drawings and provides an accessible route in accordance with applicable ADA standards.

PART 2 - PRODUCTS

2.01 MATERIAL SOURCES

A. Imported Materials: Unless otherwise specified, material shall be imported from offsite and the Contractor is responsible for obtaining a source for all fill materials in accordance with these Sections. Contractor shall select materials from an existing commercial source for which all operating permits have been obtained prior to bid opening. The Contractor shall assure himself of availability of an adequate and acceptable material source based on quantity, quality, and gradation standpoints prior to submitting his bid. If the primary source is determined to be unqualified, subsequent sources shall also be evaluated at the Contractor's expense.

B. General: All imported materials shall contain no floatable material and shall conform to quality and testing requirements outlined herein.

C. If a blended material is proposed, the source components shall be mixed at the source location. All fill materials proposed for use on the project shall be sampled at the source location, tested and the results provided in the pre-construction submittals to the Owner for approval.

2.02 TESTING

A. Material quality test results will be evaluated with testing results in accordance with WSDOT Standard Specification Section 9-03.20 - Test Methods for Aggregates. The Contractor is responsible for performing pre-construction testing work.

2.03 INSPECTION

A. Material Source: The borrow source shall be inspected by the Contractor in order to assure that the materials to be delivered to the site will meet the appropriate specifications. The Owner reserves the right to periodically inspect the materials at the borrow source.

2.04 GEOTEXTILE FABRIC

A. Physical Properties: The geotextile shall be pervious, non-woven geotextile composed of long chain polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position to each other during handling, placement, and design service life. At least 95 percent by weight of the material shall be polyolefins or polyesters and shall meet or exceed the requirements of AASHTO M28892. The material shall be free from defects or tears. Geotextile material shall be inert to chemicals commonly found in natural water, the soils conditions encountered at the site, and UV stabilized. The edges of the geotextile shall be finished to prevent the outer fiber from pulling away from the geotextile. The geotextile fiber shall contain stabilizers or inhibitors added to the base material if necessary to make filaments resistant to deterioration due to ultraviolet and heat exposure. The geotextile shall also be free of any treatment or coating which might adversely alter its hydraulic or physical properties after installation. Geotextile shall be sampled and tested in accordance with ASTM D4354. The geotextile fabric shall meet the following physical property requirements:-92. The material shall be free from defects or tears. Geotextile material shall be inert to chemicals commonly found in natural water, the soils conditions encountered at the site, and UV stabilized. The edges of the geotextile shall be finished to prevent the outer fiber from pulling away from the geotextile. The

geotextile fiber shall contain stabilizers or inhibitors added to the base material if necessary to make filaments resistant to deterioration due to ultraviolet and heat exposure. The geotextile shall also be free of any treatment or coating which might adversely alter its hydraulic or physical properties after installation. Geotextile shall be sampled and tested in accordance with ASTM D4354. The geotextile fabric shall meet the following physical property requirements:

PHYSICAL REQUIREMENTS FOR GEOTEXTILE

Fabric Property	Property Value
Trapezoidal Tear Strength (ASTM D-4533)	140 lbs/in, in machine direction ≥ 140 lbs/in, in cross machine direction
Weight (ASTM D5261)	14.5 oz/yd
Thickness (ASTM D5199)	161 mils
Puncture Strength (ASTM D-4833)	≥ 430 lbs
Apparent Opening size AOS (ASTM D-4751)	< 0.150 mm (#100 sieve)
Permittivity (ASTM D-4491)	0.70 sec -1
Grab Tensile Strength (ASTM D-4632)	380 lbs, in machine direction ≥ 380 lbs, in cross machine direction

2.05 STONE SOURCES

A. The Contractor is responsible for obtaining a source for the stone in accordance with these Specifications. The name and location of the material source the Contractor proposes for supply of the products shall be submitted with the Contractor's Stoneworks Work Plan. The Owner's Representative will evaluate these sources as potential suppliers and determine if they are qualified for consideration under these Specifications. Evaluation will be conducted based on a review of test results, prior service record on similar projects, and review of source material at the proposed source location. If the primary source is determined to be unqualified, subsequent sources shall also be evaluated at the Contractor's expense. The Contractor shall select stone materials from an existing commercial source for which all operating permits have been obtained prior to bid opening. Contractor shall assure themselves of availability of an adequate and acceptable material source based on quantity, quality, production rate, and gradation standpoints prior to submitting the bid.

2.06 SAMPLING

A. Should the Contractor's documentation not include previous satisfactory laboratory test results for tests completed within the last 12 months or should the Contractor's documentation fail to satisfy the Owner's Representative, samples of all types of stone and gravel proposed for use in construction shall be selected in the presence of the Owner's Representative and delivered to the testing lab for testing at the Contractor's expense. These samples shall be delivered to the testing lab within five (5) business days after receipt of notification of insufficient or unsatisfactory lab tests. Samples of Riprap shall consist of 5 to 10 pieces with a total weight of not less than 200 pounds with an average weight of 25 pounds per piece. No single piece shall weigh more than 100 pounds. For all other stone types consist of stone with a total weight of not less than 50 pounds. The presence of the Owner's Representative during selection of samples of stones and gravel will not relieve the Contractor of the responsibility to secure representative samples from the quarry for testing.

2.07 STONE QUALITY

A. All stone shall meet the following requirements:

1. Stone materials shall be clean, dense, hard, sound, rough, angular, close grained durable, naturally occurring stone, free from overburden material, and shall not slake or deteriorate on exposure to the action of water or atmosphere. The faces of individual stone shall be roughly angular, not rounded in shape.
2. Stone shall be free of cracks, joints, honeycomb, faults, flaws, seams or mineral in-fillings, or other defects that would tend to increase its deterioration from the weathering process or result in breakage during re-handling at offsite stockpile locations, normal handling, placing, or service on the breakwater.
3. Each stone shall not have a longest dimension greater than three times its shortest dimension.
4. Each stone shall have sufficiently uniform physical properties throughout so that all portions of the stone will meet the specified test requirements. All quarried Products shall be cured in the quarry and stockpiled for a minimum of 48 hours after blasting during which time the atmospheric temperature does not drop below 40º F prior to shipment to the site of the breakwater construction.
5. Stone materials shall be produced only from quarries in areas free of marine basalt flows, reefs, shale, or chert.
6. Any stone containing an inferior stone material portion that does not meet the specified test requirements will be rejected as unsatisfactory and shall be removed from the Limits of Construction at the Contractor's expense.
7. Weak or inferior appearing portions of any non-uniform type stone such as igneous flow breccias, volcanic breccias, scoria, cataclastic metamorphics, or irregularly cemented sedimentaries shall be subjected to all testing to determine that the stone will not be susceptible to splitting or differential weathering.
8. Riprap shall be sourced from a quarry with demonstrated experience supplying erosion protection stone of similar or larger size. Jointing of stone source(s) shall be large enough (greater than the size of the stone) to produce durable and long-lasting stone of the specified size range.

2.08 STONE QUALITY TESTING

A. Separate tests shall be made for each different stone type. All costs of tests shall be borne by the Contractor and shall be incidental to placing materials. All tests shall be conducted by an independent laboratory acceptable to the Owner's Representative. In the event any stone type in the sample fails to pass the required tests, subsequent tests for that stone type shall also be conducted at the Contractor's expense. The Owner's Representative will be notified of the results of laboratory tests. Satisfactory Contractor documentation of laboratory test results on stone sample will not constitute approval of all stone in the quarry and will not in any way change the Contractor's responsibility for obtaining, developing, and maintaining a satisfactory source of stones. Throughout the duration of this contract, the Owner's Representative may sample and test stones delivered to the construction site and proposed for use in the construction. No contract extension will be granted for specified submittal and testing time or because materials fail to meet the specification requirements.

B. The test results reported by the laboratory will be considered as exact results for unit weight, absorption, abrasion, accelerated expansion, or other necessary supplemental tests, regardless of any permissible variance that may be established by test procedures in determining the acceptability of stone furnished under this contract. Test procedures to be utilized and required values are as follows:

Stone Testing Requirements

Test	Required Value	Test Method
Specific Gravity	>2.65	ASTM C127
Water Absorption	<2.7%	ASTM C127
Sodium Sulfate Soundness	<10% loss (after 5 cycles)	ASTM C88
L.A. Abrasion	<20% (after 500 revolutions)	ASTM C535
Unconfined Compressive Strength	**>10,000**psi	ASTM D2938
Expansive Breakdown in Ethylene Glycol	<5% loss in 15 days	CRD C148*

*The proposed stone should be free of the presence of clay minerals in the stone fabric. If during the Owner's Representative's field review of the proposed stone source, clay is observed in the stone and laboratory tests (from past 12 months) are not available to validate conformance with the specification, the Contractor will be required to conduct a new test and ensure compliance with the specified value.

C. In the event any stone in the sample fails to pass the required tests, subsequent tests for that stone type shall also be conducted at the Contractor's expense. Samples shall be delivered to the testing lab within five (5) business days after receipt of notification of insufficient or unsatisfactory lab tests. No contract extension will be granted for specified submittal and testing time or because materials fail to meet the specification requirements.

D. Failure of Stones: Stones failing to meet the specified requirements or as determined by the Owner's Representative to be in non-conformance shall be removed from the project site. No materials or stones shall be placed until those materials or stones have been approved for use by the Owner's Representative. Individual stones failing to meet specified requirements, or loads containing more than 10 percent by weight of stones failing to meet specified requirements, will be rejected prior to placement, or shall be removed from the site if placed on the prepared site.

E. The Contractor shall perform a drop test on Riprap products for each load delivered or as determined necessary by the Owner's Representative. The drop test shall be performed by dropping a stone specimen, selected by the Owner's Representative, from a height of half the average diameter of the stone onto a rigid surface or second stone. Stone fracturing as a result of the drop test constitutes test failure. Individual fractured stones will be rejected for use as Riprap. If a stone fractures as a result of the drop test, the Owner's Representative may elect to test other stones from the same load. If multiple stones from a single load fail the drop test, the Owner's Representative may elect to reject the entire load for use as Riprap.

2.09 GRADATION

A. Riprap. Riprap material forms the toe of the ramp, over the Quarry spalls, as shown in the Contract Drawings. Riprap shall be angular and conform to WSDOT Standard Specification Section 9-13.4(2) – Class A Rock classification and meet the following modified gradation:

Stone Size (in)[1]	Percent Passing
28	100
24	80-95
20	50-80
14	15-50
8	15 maximum

B. Quarry Spalls. The Quarry Spalls shall be used as shown in the Contract Drawings. The Quarry Spalls shall be clean, washed, and angular meeting WSDOT Standard Specification Sections 9-13.1(5) and meet the following gradation.

Stone Size (in) [1]	Percent Passing
8	100
3	40 max.
¾	10 max.

C. 2” to 4” Quarry Spalls. The 2” to 4” Quarry Spalls shall be used as shown in the Contract Drawings. The Quarry Spalls shall be clean, washed, and angular meeting WSDOT Standard Specification Sections 9-13.1(5) and meet the following gradation.

Stone Size (in) [1]	Percent Passing
4	100
2	40 max.
¾	10 max.

D. Foundation Gravel. The Foundation Gravel layer is to be installed as shown on the Contract Drawings. The gravel shall be clean, washed, fractured, angular 1” inch gravel meeting WSDOT Standard Specifications. Gravel materials shall meet the source and quality requirements outlined in WSDOT Standard Specification Sections 9-03.12. The Contractor shall submit material gradations to the Owner for review and approval. Foundation Gravel shall meet the following gradation.

Sieve Number	Percent Passing
2 inch	100
1.5 inch	90 – 100
3/4 inch	15 – 50
1/2 inch	0 – 10
No 4	0 – 5

E. Coarse Sand. The Coarse Sand layer is to be installed as shown on the Contract Drawings. The Coarse Sand shall be coarse, non-crushed, clean, graded washed material and shall meet the source and quality requirements outlined in WSDOT Standard Specification Sections 9-03. The Contractor shall submit material gradations to the Owner for review and approval. Coarse Sand shall meet the following gradation.

Sieve Number	Percent Passing
1/4 inch	100
No 4	95-100
No 8	70-100
No 16	45-70
No 50	10-30
No 100	0-5

F. Pea Gravel. The Pea Gravel layer is to be installed as shown on the Contract Drawings. The pea gravel shall be clean, non-crushed, washed, meeting WSDOT Standard Specifications. Pea gravel materials shall meet the source and quality requirements outlined in WSDOT Standard Specification Sections 9-03.12. The Contractor shall submit material gradations to the Owner for review and approval. Pea Gravel shall meet the following gradation.

Sieve Number	Percent Passing
½ inch	100
3/8 inch	55-100
¼ inch	10-50
No 4	0 – 5
No 8	0

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[1] Approximate size of riprap and quarry spalls can be determined by taking the average dimension of the three axes of the rock (length, width, and thickness, by use of the following calculation methodologies:

1. (Length + Width+ Thickness)/3 = Approximate Riprap Size
2. Bedding Stone or Shoreline Cobble gradation testing may be provided as a sieve analysis produced by the Quarry.

G. Riprap Gradation testing must include a minimum of thirty (30) stones per gradation test. Approximate Riprap size shall be plotted against the specified gradation requirements included herein.

H. Gradation tests of the stone shall be accomplished at the quarry prior to any Stone is delivered to the project site. Tests shall be made by the Contractor in the presence of the Owner's Representative by the Contractor. The Contractor shall notify the Owner's Representative not less than three (3) working days in advance of each test.

I. A minimum of one gradation test shall be performed for every material.

J. Specified gradation is for the installed (in-place) condition. The Contractor shall consider breakage during material handling, delivery and installation in order to provide the specified in-place stone gradations.

PART 3 - EXECUTION

3.01 WORK SEQUENCING

A. It is the Contractor's responsibility to develop a work method to ensure all excavations are protected from waves, currents, and sedimentation during the installation of the various materials.

The Contractor shall take permit requirements into consideration in developing their work approach and sequencing plan. See Contract Drawings for details and requirements on construction sequencing.

B. Excavation. All deteriorated structures and debris that lie within the template of the work or interfere with construction shall be removed and disposed of or salvaged in accordance with specification Technical Specification Section 024100 – Demolition. Immediately prior to placing stone, the area to receive the stone will be inspected by the Owner's Representative, and no material shall be placed thereon until that area has been approved

3.02 CLEARING AND GRUBBING

A. The limits of the shoreline excavation and fill work areas shall be first cleared and grubbed in accordance with WSDOT Standard Specification Section 2-01 Clearing, Grubbing, and Roadside Cleanup prior to the start of any excavation, grading or filling work. All materials shall be lawfully disposed of offsite by the Contractor offsite. Burning is not allowed on the project site.

3.03 WORK LAYOUT

A. Contractor is responsible for conducting all pre-construction surveying and staking required for laying out the work for the excavation and filling activities. All construction staking work shall be reviewed by the Owner prior to the start of any excavation and fill work activities. Construction survey work shall be conducted in accordance with the applicable requirements of Section 01 71 23 – Construction Surveying.

B. An accurate method of horizontal and vertical control shall be established by the Contractor prior to the start of fill placement work is initiated. The Contractor shall layout the work using the work points provided on the Contract Drawings

3.04 EXCAVATION

A. General Excavation

1. The Contractor shall locate, identify, and protect existing utilities from damage during construction activities. The Contractor shall pre-mark all areas where excavation and grading operations are to occur and shall call the Utility Notification Center (1-800-424-5555 or 811) and the Owner at least 72 hours prior to the start of construction activities.
2. Areas to be excavated shall have all deleterious material removed prior to the start of excavation activities. The deleterious material shall be disposed of off-site in a legal manner by the Contractor, at no additional expense to the Owner.
3. The Contractor shall be aware that the existing conditions at the project site are dynamic and subject to change.
4. All material which does not meet the specified material reuse and stockpiling requirements are the property of the Contractor and shall be disposed of offsite in a legal manner.
5. Unauthorized excavation consists of removal of materials beyond indicated sub-grade elevations or dimensions without specific direction of the Owner Representative. Unauthorized excavation, as well as remedial work directed by the Owner Representative, shall be at the Contractor's expense.
6. Excavation work shall be conducted when not inundated with surface water except for the slope stabilization and the boat ramp structure.
7. Excavation work shall not occur until the appropriate approved BMPs and Water Quality protection measures have been installed.
8. Excavation and grading work shall be completed to the lines and grades shown on the Contract Drawings.

9. Under footings of gravel base, except those noted to be located on "structural fill or structural gravel mat", fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering required top elevation.
10. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by the Owner Representative.

3.05 STABILITY OF EXCAVATIONS

A. Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
B. Provide materials for shoring and bracing, such as sheet piling, uprights, stringers and cross-braces, in good serviceable condition.
C. Maintain sides and slopes of excavations in a safe condition until completion of backfilling or riprap placement. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.
D. The Contractor is responsible for the design and adequacy of all temporary excavation slopes. The Contractor shall comply with all applicable regulations governing temporary excavation slopes, including Occupational Safety and Health Administration (OSHA and WISHA).
E. All excavation which will in any manner affect the bearing capacity of the soil foundation presently supporting retaining walls, pavements, pipe beds, etc. shall be performed so as not to disturb existing soils to remain. Do not undermine or weaken bearing of existing structures foundations, or pavements to remain, except where temporary removal of such bearing is an indicated part of the work, and then only with adequate provision of temporary support and permanent restoration of bearing capacity.
F. Cold Weather Protection. Protect excavations against freezing when atmospheric temperature is less than 35 degrees F. Remove or recompact frozen and/or thawed portions as required before backfilling or installation of materials.
G. Excavation for Trenches. Dig trenches to the uniform width required for the particular item to be installed, sufficiently wide to provide ample working room, and minimum 12 inches on each side of items to be buried.
H. Excavation

1. Excavation work outlined in this Section shall be conducted in accordance with the requirements outlined in “General Excavation” paragraph.
2. All demolition work shall be completed before performing final excavation and grading work.
3. Excavation work to be performed below water shall be completed prior to the initiation of any fill placement work.
4. Temporary work platforms may be required to access the work area for performing the work. The Contractor is responsible for providing the necessary documentation as part of the work plan submittal for any regulatory agency approval that may be required for the proposed work method.

3.06 ADDITIONAL EXCAVATION

A. When excavation has reached required sub-grade elevations, notify the Owner and Special Inspector who will make inspections of conditions.
B. If localized areas of unsuitable bearing materials other than those identified on the Contract Drawings, or other unsuitable conditions not reasonably anticipated from the soils reports and other information contained in the Contract Documents are encountered at the specified sub-

grade elevations, the Owner will authorize the Contractor to carry excavations deeper and replace the excavated material as directed.tified on the tions, the

C. Removal of such additional unsuitable material, and its replacement as directed, will be paid for on the basis of Contract Conditions pertaining to changes in the work.

3.07 GEOTEXTILE INSTALLATION

A. The geotextile shall be installed as described below and within the limits shown on the Contract Drawings. Geotextile fabric shall be placed prior to quarry spall or gravel placement.

B. Geotextile shall be kept dry and wrapped such that it is protected from the elements during shipping and storage. At no time shall the geotextile be exposed to ultraviolet (sun) light for a period exceeding seven days. The geotextile shall be labeled in accordance with ASTM D-4873.

C. The area to receive the geotextile shall be cleared of any debris or obstructions which may damage the geotextile. The geotextile must be placed to cover the footprint shown on the Contract Drawings prior to placement of granular backfill material.

D. The installed geotextile shall have no tears or punctures.

E. Should the geotextile be torn or punctured, the damaged area shall be repaired by the Contractor. The repair shall consist of a patch of the same type of geotextile which replaced the ruptured area. All geotextile within 2 feet of the ruptured area shall be removed from the geotextile by cutting the geotextile using a method which produces a smooth geotextile edge and does not cause geotextile ripping or tearing. The patch shall be sewn onto the geotextile using a double sewn “Flat” seam, one inch from the edge, Type Ssn-2 (COE 1995), may be used for the repair. The stitch density shall be six stitches per inch. High strength polypropylene, polyester, or Kevlar thread shall be used. The seams shall be sewn in such a manner that the Owner Representative can inspect the seam readily.

F. All non-sewn geotextile fabric panel seams shall be overlapped at a minimum distance of 3 feet.

G. The geotextile fabric shall be unrolled and laid smooth without excessive wrinkles. The Contractor may elect to sew fabric seams. A double sewn “J” seam, Type Ssn-2, with parallel stitching spaced approximately 0.5 inches apart, shall be used for both factory and field sewn seams. The seams shall be sewn in such a manner that the Owner Representative can inspect the seam readily.

H. The geotextile shall be placed with the machine direction parallel to stone structure slope. The geotextile shall not be rolled out along the length of the stone structure.

I. The geotextile shall be placed in the manner and at the locations shown on the Contract Drawings. The Contractor shall prepare the surface to receive the geotextile to ensure that the surface is relatively smooth and free of obstructions, depressions, debris, or stone that could damage the geotextile during placement. Geotextile placement areas shall be protected from inundation of currents and waves until the geotextile, bedding stone and riprap are installed to a level above the native ground elevation.

J. The geotextile shall be temporarily anchored into its final position, using sandbags and other methods that will not rupture the geotextile, prior to the placement of stone on the geotextile.

K. At the time of installation, the geotextile shall be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. The geotextile shall be protected at all times during construction to ensure that the original chemical and physical properties of the geotextile are not changed.

L. The work shall be scheduled so that all of the geotextile that is placed is covered with a layer of the specified material by the end of each workday. Failure to comply shall require replacement of geotextile.

M. All wrinkles and sags shall be stretched out immediately before stone is placed on the geotextile. The geotextile shall be protected from damage during placement of stone. This shall be accomplished by limiting the height of drop to less than 1-foot. In the event that this damages the geotextile, the stone shall be placed directly on the geotextile with zero height of drop. Ensure

placement technique will not damage the geotextile. Any geotextile that is rejected or damaged shall be replaced by the Contractor at no additional cost to the Owner.

3.08 STONEWORKS CONSTRUCTION

A. Stone shall be delivered to the project site for installation as shown on the Contract Drawings by methods that will minimize multiple re-handling of the materials to minimize breakage. Acceptance of stone gradations will be provided by the Owner's Representative based on in-place materials. If excessive breakage occurs so that in-place required gradations are not being provided, the installed stone may be rejected by the Owner's Representative which require the Contractor to remove and replace the installed materials at no additional cost to the Owner.

B. The Stoneworks shall be constructed as specified herein and at the locations and geometrical configuration as shown on the Contract Drawings.

C. Riprap shall be mechanically placed on secured geotextile fabric layer in such manner that will produce a well-keyed mass of stone (with maximum level of stone interlocking) to the lines, grades and thickness shown on the Contract Drawings. Stone shall be placed to its full course thickness in one operation and in such a manner as to avoid displacing the underlying material. Placing stone through chutes, dropping more than 2 feet (above or below water surface), and other methods which may segregate the various sizes or damage the riprap or underlying material will not be permitted. The larger stones shall be well distributed in the mass of stones.

D. Riprap shall be installed using the "Selected Placement" method. This method requires the careful selection and mechanical placement of individual riprap to achieve a high degree of interlocking and stability between adjacent stones. Individual stones shall be selected for placement on the structure and repositioned as necessary to produce a tight fitting and interlocked structure

E. Rearranging of individual riprap will be required to the extent necessary to achieve the results specified herein. Any stonework which contains objectionable segregation of stone sizes shall be excavated, removed from the site of the work, and replaced with material conforming with these Specifications at no additional cost to the Owner.

F. Placement of stone shall be suspended when adverse wave, weather, and flow conditions do not allow for proper placement.

G. Stone shall be placed within the limits shown on the Contract Drawings. The Contractor's method for placing the stone shall release the stone in such a manner that the stone will be properly interlocked with the underlying or adjacent stones to resist displacement by wave action and provide a uniform and compact section. Stones shall be firmly set, repositioned as necessary, and well supported by underlying or adjacent stones to resist displacement by wave action and provide a uniform and compact section. The stone shall be placed to produce a tight fitting and interlocked structure.

H. The Contractor shall place the stone using methods, techniques, and equipment that will produce a tight-fitting mass of stone.

I. Stone shall be constructed, within the specified tolerance, to the lines and grades shown on the Contract Drawings. The Contractor will not be paid for stone placed outside the allowable tolerance. The Contractor shall relocate the unsatisfactorily placed stone within the specified limits for payment or the weight of the stone so misplaced will be estimated by the Owner's Representative and the payment deductions shall be determined from this estimate and the bid price of the stone.

J. The largest stones shall be well distributed and the entire mass of stone in their final position shall be graded to conform to the gradation specified in Part 2 above. The finished riprap slopes shall be free from objectionable pockets of small stones and clusters of larger stones.

K. The Riprap layers shall be constructed to minimum thickness equal to 2 diameters of the median size of the respective stone type. Riprap shall be placed in such a manner as to provide the 2-stone thickness at a minimum or as indicated on the Contract Drawings.

L. Smaller Riprap shall be utilized to "chink" the voids of the structure.

M. Special care shall be taken during installation to ensure that maximum contact between adjacent Riprap stones is maintained along the edge of the breakwater toe.

N. Segregation of various sizes within the Stoneworks will not be permitted.

O. The Contractor shall maintain the stone until accepted and any material displaced prior to acceptance and due to the Contractor's negligence shall be replaced at the Contractor's own expense and to the lines and grades shown on the Contract Drawings.

P. Riprap Stones shall be placed such that at least three sides of the placed stone are in contact with the adjacent in-place stones. Loose and unstable stones shall be reset by picking the stone up off the slope and twisting and rolling it back into its required position or be replaced with a different stone to ensure sufficient stability.

3.09 FILL

A. Ground Surface Preparation

1. Remove vegetation, brush, debris, unsatisfactory soil materials, obstructions and deleterious materials from ground surface prior to placement of fills.
2. When existing ground surface to receive fill has a density less than that specified under "Compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to specified percentage of maximum density to a minimum depth of 6 inches.
3. Do not bury construction debris. Remove and lawfully dispose such offsite.

B. The Contractor shall not use installed products as access or haul roads. Any consolidation of material due to Contractor's equipment shall be filled with in kind material to return surface to lines and grades shown on the Contract Drawings at no additional cost to the Owner.

C. Placement and Compaction

1. Place backfill and fill materials in layers not more than 6 inches loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.ment, and not more than 4
2. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content. Compact each layer to required percentage of maximum density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen or contain frost or ice.
3. Place backfill and fill materials evenly adjacent to structures, to required elevations. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around structure to approximately the same elevation in each lift.

D. Fill Under Structures: Type/Compaction of fills designated for "under structures" shall extend laterally to an assumed bearing pressure line sloping downwards from a point at least 0.5 feet outside the outermost edge of bearing surface at an angle no steeper than 40 degrees.

E. Compaction: Control compaction during construction so that material is compacted as applicable to the scheduled soil types:

1. Upland Area On-Site Natural Soils 92% of maximum density. –, unless otherwise directed by Owner. The Natural soils contain silts and are moisture sensitive with regards to the compactive effort required to reach the minimum density.

    a. Under Vehicular Pavements: Compact top 12 inches of sub-grade and each layer of backfill or fill material to maximum density.

2. Imported Material –

a. Under Concrete Slabs, Walkways, and Abutments: Compact in 6-inch lifts of sub-grade and each layer of backfill or fill material.
b. Under Vehicular Pavements, and Boat Ramp/Apron: Compact in 6-inch lifts of sub-grade and each layer of backfill or fill material to 95% maximum density.
c. Only imported granular fill material shall be used under structures and slabs unless specifically approved otherwise. Use natural on-site soils for fills at surfaced areas.
d. Cobbles and boulders larger than 8 inches in diameter and broken inorganic rubble shall not be placed in compacted fills.
e. Owner shall establish equivalent compaction requirements for non-conforming standard proctor test method criteria.

3.10 INSPECTION

A. Slope lines, grades, and placement of fill will be inspected by the Owner and placed material may be tested for gradation by the Owner. The Owner will perform inspection of the material prior to material placement, however, this inspection does not relieve the Contractor from performing the in-place inspection. The Owner will also review the results of the quality control surveys. The Owner may conduct independent surveys for which the Contractor shall provide access and time to complete prior to placement of subsequent material types.
B. Immediately prior to placement of fill, the Owner will inspect the prepared base, and no material shall be placed thereon until that area has been approved.

3.11 MISPLACED MATERIAL

A. Should the Contractor, during the execution of the work, lose, dump, throw overboard, sink or misplace any material, machinery, or appliance, the Contractor shall be solely responsible for its recovery. The Contractor shall give immediate verbal notice, followed by written confirmation, of the description and location of such obstructions to the Owner and shall mark and buoy such obstructions until they are removed.
B. In the event that fill material is placed outside the limits shown on the Contract Drawings, the Contractor shall be responsible for retrieval of the material or procurement of additional material (of equal volume). The Contractor shall be responsible for costs associated with damage caused by material placement outside of the limits shown on the Contract Drawings, as well as costs associated with the procurement of additional material as necessary.
C. Should the Contractor refuse, neglect, or delay compliance with this requirement, such obstructions may be removed by the Owner, and the expense charged to the Contractor, or recovered from the bond. The liability of the Contractor for the removal of a vessel wrecked or sunk without his fault or negligence shall be limited to that provided in Sections 15, 19, and 20 of the River and Harbor Act of 3 March 1899 (33 U.S.C. 410 et seq.).

3.12 WORK AREA ISOLATION

A. So that construction operations progress successfully, the excavation areas shall be isolated and protected from adverse environmental conditions as to prevent sloughing of excavation slopes and deposition of suspended sediments. The Contractor shall use an isolation system capable of withstanding the hydrodynamic conditions at the project site during the construction of the Work to protect the excavation and installed materials. A description of the proposed work isolation method shall be submitted to the Owner’s Representative.

3.13 STOCKPILE

A. No designated areas onsite are provided for stockpile. All Contractor proposed stockpile locations shall be coordinated with the Owner and Owner shall give approval. All stockpiles need BMPs and all areas need to be restored to the original conditional.

3.14 OFFSITE DISPOSAL OF EXCAVATED MATERIALS

A. All excavated materials shall be hauled and lawfully disposed of onsite at Carpenter Island at an Owner approved location.

3.15 PROTECTION AND MODIFICATION OF EXISTING IRRIGATION SYSTEMS

A. Where excavation, grading, or fill operations conflict with existing irrigation or sprinkler systems, the Contractor shall locate, protect, and maintain the systems in operation to the greatest extent practicable. Sprinkler heads, lateral lines, valves, and associated appurtenances designated on the Drawings for abandonment shall be cut and capped at the locations shown on the Drawings. Sprinkler heads, lateral lines, valves, and associated appurtenances affected by the Work shall otherwise be removed, relocated, or adjusted as required to accommodate final grades and construction limits. Irrigation lines abandoned due to the Work shall be capped with fittings matching the existing pipe material and pressure rating to provide a watertight closure. Any damage to existing irrigation facilities resulting from construction activities shall be repaired or replaced at no additional cost to the Owner. Upon completion of grading operations, the Contractor shall restore affected irrigation systems to full operational condition and verify proper coverage and performance.

3.16 MOBI-MAT INSTALLATION ON BEACH

A. Provide all labor, materials, equipment, and incidentals necessary to furnish and install Mobi-Mat® beach access matting at the locations shown on the Drawings. The Contractor shall procure the matting, connectors, anchors, edge transitions, and all accessories required for a complete and functional installation. Install the matting in accordance with the manufacturer's recommendations and the Drawings, ensuring a smooth, stable, and continuous accessible route across beach sand and other unconsolidated surfaces. Secure the matting using manufacturer-recommended anchorage appropriate for site conditions to prevent displacement, uplift, or movement due to pedestrian traffic, wind, wave action, or lake level fluctuations. The Contractor shall remove wrinkles, gaps, or uneven areas that may create tripping hazards and shall restore any disturbed beach surfaces resulting from installation activities. Upon completion, the installed matting system shall provide a safe, durable, and ADA-compliant accessible pathway to the beach and water access area. Color of Mobi-Mat shall be approved by the Owner.

3.17 FINAL INSPECTION

A. Upon completion of the work, the Contractor shall perform a post-construction survey of the areas designated for fill according to surveying requirements to determine acceptance of the work. The Contractor shall not demobilize any construction equipment from the site until approval has been given by the Owner.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. The work of this Section consists of furnishing all plant, equipment, labor and materials and performing all operations in connection with fabricating, coating, transporting, handling, storing, and installing steel pipe piles in accordance with the Sections and Contract Drawings using vibratory and impact driving methods. It also includes the splicing and cut-off requirements in accordance with these Sections, the referenced standards, and the applicable provisions of pertinent codes.

B. Work associated with this item includes the supply and installation of the following:

1. Steel pipe piles

1.02 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only.

ASTM

A36	Structural Steel
A252	Welded and Seamless Steel Pipe Piles
A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
A780	Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

AWS

"Structural Welding Code – Steel," AWS D1.1

OSHA

1926.603	Pile driving equipment
1926.605	Marine Operations and Equipment

WISHA

RCW Chapter 49.17

1.03 PROJECT SITE CONDITIONS

A. Subsurface Conditions. The contractor shall anticipate very dense glacial till subsurface conditions, see geotechnical report in the Appendix.

B. Pile Driving: Use of an impact hammer may be necessary to achieve the pile tip elevations as defined in the Contract Drawings. The Contractor shall mobilize all required equipment for pile driving work including a vibratory hammer, impact hammer, and bubble curtain. Pre-driving with a temporary steel HP pile may be required to achieve design pile embedments. The Contractor shall mobilize with a steel HP pile as hard driving is anticipated.

C. Sequencing: Scheduling of pile installation, float fabrication, and float installation shall be conducted with consideration for hard driving conditions. The Contractor is to sequence the work such that the as-built locations of the driven piling can be used to locate the pile hoops on the float.

1.04 QUALITY ASSURANCE

A. The Contractor shall facilitate and assist the Owner in keeping an independent complete record of each pile driven, noting the rate, type, time, location and driving record with blow counts (impact driving) or inches per minute for every foot or fraction of a foot driven (vibratory driving), and energy rating and fuel setting of the hammer. Facilitation and assistance shall include, but not be limited to providing access to the pile driving site, providing visual access to the driving site, and access to Contractor driving records. Data shall be recorded on a "Pile Driving Record Sheet."

B. Records: The Contractor shall keep a complete and accurate record of each pile driven in accordance with Part 3 of this Section

C. Provide skilled workpeople at all times who shall be experienced and familiar with construction of pile supported marine structures. Supervisory personnel shall have a minimum of five (5) years of experience with the work performed in this contract.

D. Welding

1. Weld procedure and quality: Welding shall be done in accordance with AWS D1.1, including procedures for repair of defective welds. Welding requirements are described in Section 05 50 00 – Miscellaneous Metals.
2. Weld inspections: All shop and field welds shall be visually inspected by an AWS Certified Welding Inspector through a Contractor provided independent testing company in compliance with Section 05 50 00 – Miscellaneous Metals. Weld inspection reports shall be submitted to the Owner. Non-conforming discontinuities shall be repaired in accordance with AWS D1.1 and retested. The results of both the failed and passing tests shall be submitted to the Owner for all repairs made. The test report will clearly indicate the component with the failing test, and the location of the repair.
3. Qualification of Welders and Welding Operators. Welders and welding operators shall be qualified for shop and field welding in accordance with Section 05 50 00 – Miscellaneous Metals.

1.05 PRODUCT HANDLING

A. Protection:

1. Product handling procedures shall be anticipated and accounted for in the Contractor-submitted work plan.
2. Use all means necessary to protect the materials of this Section before, during and after installation, and to protect the installed work and materials of all other trades.
3. Piles in storage or temporary stockpile shall be supported in such a manner that will not impair the alignment of the piles.
4. Piles shall be handled and transported only with acceptable equipment and by qualified personnel.

B. Replacements: In the event of damage, immediately notify the Owner and make all repairs and replacements necessary to comply with the Sections at no additional cost to the Owner.

C. Dents, gouges, or arc strikes in the piling greater than 0.125-inch shall be removed or repaired as required under AWS. Pile deficiencies greater than 0.125-inch will be rejected, and the pile shall be removed from the site and replaced by the vendor at no additional cost to the Owner.

1.06 SUBMITTALS

A. Mill Test Reports: Certified copies of mill test reports for structural steel. Piling and appurtenant materials shall be tested and certified by the Manufacturer to meet the specified chemical, mechanical, and section property requirements to delivery to the site

B. Material Certificates: Submit for each shipment of steel pile certificates identified with specific lots prior to installing piling. Identification data should include piling type, dimensions, chemical composition, mechanical properties, section properties, heat number, and mill identification mark.
C. Weld inspection report(s).
D. Piling Cap Data: manufacturer or fabricator of piling; name and contact information.
E. Certificates of treatment or quality of materials from pile manufacturer in accordance with the Sections.
F. Shop Drawings: Shop drawings for steel piles, pile assemblies, and any associated weldments/hardware.
G. Product data for pile/bird caps and associated adhesive sealant.
H. Weld Certificates: Certify welders employed in the work with AWS qualifications in accordance with the requirements in Section 05 50 00 – Miscellaneous Metals.
I. Pile driving work plan including falsework and bracing.

1. List of equipment intended to be utilized in the driving, noting hammer sizes, lead lengths and crane capacities.
2. Vibratory Hammer: The following vibratory hammer information shall be provided:

    a. Manufacturer
    b. Model
    c. Type
    d. Serial no.
    e. Rated energy
    f. Modifications

3. Impact Hammer: The following hammer information shall be submitted:

    a. Manufacturer
    b. Model
    c. Type
    d. Serial no.
    e. Rated energy/length of stroke
    f. Modifications

4. Capblock (hammer cushion): The following capblock information shall be provided:

    a. Material
    b. Thickness
    c. Area
    d. Modulus of elasticity
    e. Coefficient of restitution

5. Pile Cap: The weight of the helmet, bonnet, anvil block, and drive head shall be provided.
6. Pile Cushion: The following pile cushion information shall be provided:

    a. Material
    b. Thickness
    c. Area
    d. Modulus of elasticity
    e. Coefficient of restitution

7. Pile: The following pile information shall be provided:

    a. Type
    b. Length (in feet)
    c. Weight/foot

d. Wall thickness
e. Cross-sectional area
f. Tip treatment

8. Power Plant and Leads: A description of the power plant and leads shall be provided.
9. Air Compressor: A description of the air compressor to be use for the bubble curtain.
10. Bubble Curtain: A description of the bubble curtain system.
11. Wave equation analysis results and driving recommendations: Required for all impact pile driving. Submit in accordance with the requirements of Part 3 of this Section.
12. Pile Placement Plan: Submit pile placement plan for review. The pile placement plan shall include a narrative and illustrations for the proposed installation sequence, driving procedures, methods for controlling the location and alignment of piles, and driving template design and configuration.

    a. Pile driving records in accordance with this Section.

13. Inspection records: Records verifying fabrication/erection, welding inspection, and nondestructive test (NDT) conformance.

PART 2 - PRODUCTS

2.01 GENERAL

A. All pipe piling shall be new, round pipe and have a minimum outside diameter and wall thickness as indicated on the Contract Drawings. Steel pipe piles shall conform to the requirements of ASTM A252, Grade 3 (Fy = 50 ksi min.), or stronger with chemistry suitable for welding.
B. Steel pipe piles shall be galvanized in accordance with ASTM A123, and described in the Contract Drawings.
C. Welding consumables shall conform to the requirements of the applicable provisions of AWS D1.1, Structural Welding Code and to the appropriate Building Code.
D. Minimum Cutoff Supply: The length of the pile shall be calculated based on the top and tip elevation, and the cut-off length. The Contractor is to determine the required supply cut-off length, which shall be a minimum of three feet.

2.02 FIBERGLASS PILING CAPS (BIRD CAPS)

A. Piling caps that do not include a steel pile cap shall be a heavy duty black conical cap with a cylindrical sleeve to fit over the top of all installed pile.
B. The pile cap shall be made of fiberglass. The final outer surface shall be smooth and without apparent waves, wrinkles, or other surface defects.
C. The cone taper shall be between 40 and 60 degrees. The wall thickness of all surfaces of the cap shall be 1/8 inch minimum.
D. The inside diameter of the cylindrical sleeve shall be sized to fit the outer diameter with enough clearance to allow adhesive bonding to the pile.
E. Adhesive: The piling caps shall be bonded to the pile (as applicable) with an approved marine grade adhesive/sealant compatible with the pile and the fiberglass piling cap that is suitable for use in wet environments such as 3M Marine 5200. All adhesive products shall be approved by the Owner.
F. Stainless Steel Screws: All piling caps are to be secured to the pile with a minimum of four self-tapping stainless screws per cap. Self-tapping screws shall have an unslotted drive hex head and shall be 0.25-inch in diameter.

2.03 PILE SHOES

A. Piles are designed to be driven with an open end inside flanged driving shoe. Pile driving shoes and their associated weld shall be shown on the shop drawings and the manufacturer's cut sheet for the pile driving shoe provided.

PART 3 - EXECUTION

3.01 GENERAL

A. All pile quantities, locations and geometry shall be in accordance with the details and pile schedule in the Contract Drawings. Final pile locations and geometry shall be coordinated with the float manufacturer to ensure the piles are installed in the correct location as required for adequate float motion allowance, in accordance with the requirements of this document.

B. All pile fabrication installation operations shall be in conformance with OSHA regulations including 1926.603 Pile Driving Equipment and 1926.605 Marine Operations and Equipment.

C. Preparation: Visually inspect piles when delivered and when in the leads immediately before driving for defects or damage. Repair damages or defects in pile or pile coatings as specified.

D. Handling. Handle piles so as to protect the piles, pile coatings, and pile markings. Lift steel piling by the use of appropriate rigging as required to prohibit permanent deformations.

E. Temporary Construction: The Contractor is responsible for temporary bracing and support of the handling floats during construction, and shall protect all exposed partially complete work against damage. The Contractor shall take precautions to assure that the handling floats are adequately braced to avoid damage from wave action during construction. Any structural component damaged during construction shall be replaced by the Contractor at no cost to the Owner.

F. Protection of Existing Structures: When the Contract Drawings require steel pile driving/construction operations in close proximity to existing structures or newly constructed structures, take all reasonable precautions to prevent damage to such structures. The requirements described herein apply to all types of structures that may be adversely affected by construction operations due to vibrations, ground loss, or ground heave. Do not commence work at points where the construction operations are adjacent to utility facilities or other property, until making arrangements with the utility facilities to protect against damage that might result in expense, loss, disruption of service, or other undue inconvenience to the public or to the Owner. The Contractor is solely and directly responsible to the Owner and operators of such properties for all damages, injuries, expenses, losses, inconveniences, or delays caused by the Contractor's operations. Notify the Owner of any movements detected and immediately take any remedial measures required to prevent damage to the existing structures.

G. Field Coating Repair: Repair all galvanized surfaces removed or damaged during welding, shipping, or erection in accordance with ASTM A780 and ASTM A123.

H. Pile Damage: The Contractor shall remove and replace, at no additional cost to the Owner, any pile that is damaged as determined by the Owner.

3.02 FABRICATION

A. Pile Markings: Mark piling with lines of high visibility paint or ink on one-foot intervals from bottom to top. The length from tip shall be marked with the length in five-foot increments, and one-foot increments marked with a line. All markings shall be clearly visible from all sides and legible to the naked eye at a distance of 75 feet. At all times during driving, the marked portion of the pile shall remain visible to the Owner. Paint markings on galvanized pile sections shall be of material approved by the galvanizing manufacturer that is not detrimental to the pile or the pile coating.

B. Pile Dimensional Tolerances shall be as follows:

1. Overall length: ± 3 inches
2. Deviation from a straight line shall not exceed length/1,000 along the entire length of pile.

C. Splices

1. All splices are to be shown on the Shop Drawings and designated as being either shop splices or field splices.
2. Shop Splices: piles that have a total length of 40 feet or less shall be supplied full length with no splices. Piles that are longer than 40 feet and less than 80 feet shall have a maximum of one splice and shall be installed with the longer section on top and located below the mudline. Splices shall be shop welded full penetration groove welds with a backing ring in conformance with AWS D1.1 unless otherwise approved by the Owner. Shop splices shall be inspected in accordance with the requirements of this Section. In no case shall a spliced portion of a pile be less than 10 feet in length.
3. Field Splices: The Contractor shall not mobilize with the intent of performing field splices without explicit written permission of the Owner.

3.03 CONTRACTOR RESPONSIBILITIES

A. Coordinate and verify the fabrication/manufacture work performed for the floats, boat ramp, and pile installation work to ensure that adequate pile and pile frame system can be properly carried out and that each individual item can operate in accordance with the intent shown in the Contract Drawings. Failure to coordinate work between fabricators and field conditions that may affect the design and fabrication shall not constitute grounds for additional compensation.

B. Sequencing: Scheduling of pile installation, float fabrication, and float installation shall be conducted with consideration for hard driving conditions. The contractor is to sequence the work such that the as-built locations of the driven piling can be used to locate the pile hoops on the float.

C. Any special inspection or testing herein shall be Contractor-provided.

3.04 PILE DRIVING

A. Permit Requirements: Pile installation shall also be conducted in accordance with the Owner provided regulatory permits including requirements for sound attenuation.

B. Piling shall be installed in accordance with WSDOT Standard Specification Section 6-05.3(11) – Driving Piles and the requirements of this Section and the Contract Drawings.

C. All piles installation shall be conducted with the Owner present. The Contractor shall assist the Owner in monitoring the pile driving.

D. Records: The Contractor shall keep a complete and accurate record of each pile driven, indicating the following:

1. Pile location.
2. Plumbness and direction of lean.
3. Diameter and original length.
4. Mudline elevation, tip elevation, and cutoff elevation.
5. Penetration in blows per foot for entire impact-hammer driven length, penetration in inches per minute for entire vibratory-hammer driven length, and penetration for the pile.
6. Total driving time in minutes and seconds for each pile.
7. Hammer data including rate of operation, model, and size, unusual pile behavior, or circumstances experienced during driving such as re-driving, heaving, weaving, obstructions, and unanticipated interruption.
8. The Contractor shall submit a copy of “pile driving record tests” including Project Record Drawings to the Owner. The Contractor shall submit a complete record of all the installed piles to the Owner. The pile records shall be current, and the as-built locations shall be noted on the Project Record Drawings.

E. Installation Templates: Steel piles shall be installed using location templates as needed to achieve the specified location tolerances.

F. Pile driving shall occur only during daylight hours.

G. Jetting methods may not be used for pile installation.

H. Pile Driving Equipment: Sufficiently sized vibratory or impact hammers shall be used to install steel piles. Use a pile hammer having a delivered force or energy suitable for the total weight of the pile and the character of subsurface material to be encountered. Operate hammer at the rate(s) recommended by the manufacturer throughout the entire period. All pile installation shall be attempted first with a vibratory hammer.

I. Premature Refusal: If the piles meet refusal as determined by the Owner prior to reaching their specified tip elevation while using a vibratory hammer, the Contractor shall use an impact hammer to install the piles the remainder of the distance needed to achieve the specified pile depth. Sufficiently sized vibratory hammer shall be used to install steel piles. Selection of the hammer necessary to drive the piles to the required tip elevation is the responsibility of the Contractor. The selected hammer shall be such that it does not damage the piles as determined by a wave equation analysis. The Contractor shall repair damage to piling caused by use of pile hammer with excess delivered force or energy at no additional cost to the Owner.

J. Wave Equation Analysis Results and Driving Recommendations: Submit the pile and complete driving equipment data form to the Owner and a wave equation report of the wave equation results sealed by a Licensed Professional Engineer (State of Washington) for specific equipment to be used for this work. This report shall include all input parameters assumed in the analysis and complete results of the analysis including items required in this and other sections of this Section. The wave equation analysis shall be used to assess the ability of the proposed driving system to install the pile to the required capacity and desired penetration depth within the allowable driving stresses. The wave equation analysis shall be performed for all tip elevations. The limiting penetration rates and ultimate pile capacities shall be submitted in both tabular and graphical formats, and shall be in a manner that can be readily used by field personnel. The results of the bearing graph analysis shall be used to determine limiting penetration rates (blows/inch) such that axial stresses in the piles do not exceed 90 percent of the pile yield stress. The bearing graph analysis shall provide ultimate pile capacities versus blow counts for each hammer being used.

K. Driving Tolerances: Falsework and bracing must be of such a nature as to offer complete assurance of plumbness and alignment. Crooked alignment to avoid interference from obstructions will not be permitted; and such obstructions, when encountered, must be removed before proceeding with driving operations.

1. Drive piles within the following maximum tolerances. Piles that fail to meet minimum pile tolerance requirement shall be rejected and shall be removed and re-driven by the Contractor at no additional cost to the Owner. If redriving is attempted and failed, the Contractor shall contact the Owner for guidance. The Contractor shall not be compensated for any delays associated with piles being driven out-of-tolerance. Additional work required due to improper location or installation is the Contractor's responsibility. Lateral pulling of pile heads to proper location will not be allowed under any circumstances.

    a. Location: Pile top within 1 inches of design location shown.
    b. Plumbness and Deviation from Batter: Plumbness within 0.5 percent (1/4 inch in 4 feet) of true vertical. However, in no case shall an un-plumb pile result in a pile location that is more than 2 inches away from those shown in the Contract Drawings.
    c. Top of Pile and Pile Tip: The final top of pile and pile tip elevations are indicated on the Contract Drawings. Should a pile be determined to have reached refusal by the Owner during installation the Contractor shall cut-off the top of the pile at the required elevation (+/- 1 inch tolerance) following completion of restrikes and with the Owner's approval.

L. The Owner reserves the option, based on the results of pile driving, to modify the tip penetration requirements. Pile refusal criteria shall be developed by the Contractor in consultation with the Owner in order to obtain the necessary capacities.

M. Achieving Minimum Tip Elevation: Once pile driving has started, each pile shall be driven continuously until the required tip elevation is achieved with exception for equipment break down and change of pile hammer.

N. Interruptions to Driving. When driving must be interrupted, the continued driving after such intermission shall be performed for at least one minute before the average penetration per blow is measured for determining whether the required resistance has been reached.

O. Additional pile driving requirements are as follows:

1. Steel Piling Installation –Piles

    a. Piles shall be positioned to work with pile cap installation tolerances to create a level and aligned structure as shown the Contract drawings

2. Steel Piling Installation – Float Piles

    a. Float piles shall be positioned within the pile hoops in such a manner as to allow the full float movement through the full range of design water level variation without binding.

P. Obstructions: If obstructions are encountered that result in sudden, unexpected change in penetration resistance and deviation from specified tolerances, the Contractor may be required to perform one or all of the following. If damage occurs to a pile due to the Contractor attempting to drive through obstacles, the damaged pile will be replaced at no additional cost to the Owner. The Contractor shall receive Owner approval prior to proceeding with any of the following activities:

1. Removal of obstruction.
2. Extraction, repositioning, and redriving of piles.
3. Clearing of an obstruction by driving HP piles.
4. Drill through control pile to remove soil plugging the tip.

Q. Cut-off: The top of driven piles shall be cut-off to a flat surface at the elevation shown in the Contract Drawings. Cutoff shall include all portions of the pile top damaged during driving. Use tools that will not damage area below cut surface. The Contractor shall be responsible for removal and off-site disposal of all cut-off pile pieces. No additional payment shall be made for removal and disposal the pile cut-off. With permission of the Owner, piles may be driven past tip elevations to avoid excessive cut-off lengths at no additional cost at the Contractor's risk. The pile cut-off location shall be prepared for the pile cap by removing any sharp edges, burrs, or other imperfections that may damage the pile cap.

3.05 FINISHES

A. Piling Bird Caps. The pile caps shall be black in color and shall be fiberglass with a gel coating or HDPE. The piling cap shall be installed with a contractor-selected adhesive. The adhesive/sealant shall be applied around the full circumference of the inside of the cap and the outside of the pile. Install the cap in a manner assuring a uniform bonding surface around the interface between the pile and cap. Piling cap shall be additional secured to the pile with four self-tapping stainless screws. Mask the outside surface of the pile cap and pile before application of the adhesive/sealant and remove after application in a manner that avoids deposition of excess material on the exposed surfaces. Do not allow any materials to enter the water.

3.06 SOUND ATTENUATION

A. Use of an impact hammer for piles located below OHW will require the use of sound attenuation in accordance with regulatory permit requirements.
B. The design of the sound attenuation system is the sole responsibility of the Contractor. It is the Contractor's responsibility to interpret permit performance or system requirements and ensure that a compliant sound attenuation system appropriate for all potential site conditions is provided.
C. The Contractor is to design, furnish, install, and operate a bubble curtain system to attenuate underwater sounds and pressures caused by impact pile driving of steel piles driven in water.
D. Impact driving of steel piles below the water line shall at a minimum require the use of a bubble curtain around the pile during pile driving operations.
E. Other sound attenuation methods may be used if allowed by the applicable project permits and local, state, federal law and with prior approval by the Owner.
F. Regardless of the sound attenuation method used, the selected system shall provide sound attenuation such that the maximum measured sound level within the water column measured outside of the system limits shall be 187 decibels, unless otherwise stipulated in the project permits. The Contractor is responsible for monitoring the effectiveness of their sound attenuation system, and if this noise level is exceeded, the attenuation measures or pile installation methods and equipment shall be modified to bring the pile driving operation into compliance at the Contractor's expense.
G. Currents at the site are expected to vary in velocity and direction. Also, water elevations will vary. The sound attenuation system shall be designed considering the possible environmental variables that are present at the project site. The system shall be designed to provide the specified sound attenuation for the full exposed underwater height of the pile. The system shall be adequately weighted and supported to be both vertically and horizontally stable once installed.
H. The sound attenuation system shall be designed so as not to damage the pile coating.

3.07 PILE ACCEPTANCE CRITERIA

A. The Contractor shall submit the as-built pile geometries stamped by a licensed surveyor immediately after driving. The as-built pile geometries shall include horizontal coordinates at a stated elevation, and plumbness (direction of lean, extent of lean defined in inches over 4 feet).
B. The Contractor shall submit float-pile interaction verification in the form of AutoCAD drawings in .dwg format for the piles immediately after driving to confirm that floats can operate freely without binding on the piles for all anticipated water levels:

    1. Plan view showing as-surveyed pile locations indicating direction and extent of lean.
    2. Plan view showing outline of floats, location and interior dimensions of pile hoop, and pile locations at low pool.
    3. Plan view showing outline of floats, location and interior dimensions of pile hoop, and pile locations at high pool.
    4. Notes about any corrections to pile hoop geometry to accommodate pile locations.

C. The Contractor shall not demobilize pile driving equipment prior to Owner acceptance of pile as-built pile geometries and float-pile interaction drawings. Communication between the Contractor, the float fabricator, and the Owner may be required to confirm feasibility of any corrections to pile hoop geometries required to accommodate pile locations.
D. Piles may be rejected (not accepted) by the Owner if any one of the following conditions exist:

    1. Piles have not been installed to the minimum tip elevation and minimum penetration resistance as determined by the Owner.
    2. Piles are not installed within the specified tolerances for location, plumbness, or cut-off elevation.
    3. Piles will not result in floats that operate freely without binding for all anticipated water levels.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Hot-mix asphalt patching.
2. Hot-mix asphalt paving.

1.02 APPLICABLE PUBLICATIONS

A. Standard Specification for Road, Bridge, And Municipal Construction, 2014; Washington State Department of Transportation.

1.03 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.04 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project Site.

1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
   a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
   b. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

1.05 ACTION SUBMITTALS

A. Product Data for Asphalt Pavement:

1. Job-Mix Design: For review and approval of the Owner Representative.
2. Aggregate Source Information
3. Aggregate Sieve Analysis

B. Certificates of Compliance and/or bill of lading for the following:

1. Commercial HMA
2. Mineral Filler
3. Asphalt Binder

C. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.

1.06 QUALITY ASSURANCE

A. General: Evaluation and acceptance will be by Commercial Evaluation as described in the WSDOT Standard Specification Section 5-04 - Hot Mix Asphalt. The Owner Representative may require discretionary sampling and testing of HMA. Statistical and non-statistical evaluation and acceptance procedures described in WSDOT Standard Specification Section 5-04 - Hot Mix Asphalt do not apply.

B. Testing Agency: The Contractor will engage a qualified testing agency to perform tests and inspections.

C. The Contractor shall replace and compact hot-mix asphalt where core tests were taken, incidental to the Contract.

D. Evaluation: If sampled and tested, HMA having all constituents falling within the tolerance limits of the mix design shall be accepted with no further evaluation. When one or more constituents fall outside of the tolerances, the Owner Representative may either require removal and replacement or a cost adjustment.

E. Reject Mixture Without Testing: The Owner Representative may reject any batch, load, or section of paving that appears defective in gradation or asphalt binder content without sampling. Rejected sections of paving shall be removed and replaced at no additional cost to the Owner.

F. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

PART 2 - PRODUCTS

2.01 AGGREGATES

A. General: Production of Aggregates shall meet the requirements of WSDOT Standard Specification Section 3-01 - Aggregates.

B. Class: The aggregate gradation shall be Class ½ inch.

2.02 ASPHALT MATERIALS

A. General: Materials shall meet the requirements of WSDOT Standard Specification Section 5-04.2 - Materials.

B. Asphalt Binder: The grade of asphalt binder shall be PG 58-22.

PART 3 - EXECUTION

3.01 GENERAL

A. Production, haul, preparation, placement, compaction, control, joints, spreading and finishing, and surface smoothness shall meet the requirements of WSDOT Standard Specification Section 5-04.3 - Construction Requirements.

B. The Contractor shall pave the entire width of roadway patching during each day of paving activity.

3.02 PATCHING.

A. Pavement Patching: Production, haul, preparation, placement, compaction, control, joints, spreading and finishing, and surface smoothness shall meet the requirements of WSDOT Standard Specification Section 5-04.3(5)E - Asphalt Repair Requirements.

B. Pavement Cutting: Removal of existing asphalt pavement shall be accomplished by completely saw-cutting the perimeter of the area to be patched. The saw cut shall reach a depth that is equal to or exceeds the existing asphalt pavement depth.

C. Upon completion of asphalt patching, the contractor shall apply a bituminous fog seal or approved sealant to all patch perimeters to ensure a watertight bond between the new patch and the existing pavement. The sealed area shall extend a minimum of 3 inches beyond the edge of the patch and be uniformly applied to prevent moisture intrusion, raveling, and premature deterioration. All surfaces shall be clean, dry, and free of debris prior to sealing. The sealant shall be applied at the manufacturer's recommended rate and allowed to cure fully before opening the area to traffic.

3.03 WASTE HANDLING

A. General: Handle asphalt-paving waste according to approved waste disposal practices.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. The work under this item shall consist of all labor, materials, tools and equipment necessary to fabricate, pre-assemble, and install the boat ramp boarding floats, lifeguard float and kayak access float.

B. The Contractor is responsible for developing the final design drawings/calculations based on site conditions, design criteria, ADAAG, Contract Drawings, and Section requirements for each of the following:

1. Boat ramp boarding floats: The Contractor designed handling float systems consisting of 8-foot wide welded aluminum tube frame modular floats including connection hardware, accessories such as shoremounts, cleats, grounding legs, hinges, walers and rubstrips, pile guides, and foam filled polyethylene tubs.
2. Lifeguard float: The Contractor designed 12-foot wide by 24-foot long welded aluminum tube frame modular floats including connection hardware, accessories such as, gangway roller, hinges, walers and rubstrips, pile guides, and foam filled polyethylene tubs.
3. Kayak access float: The Contractor designed kayak float system consisting of HDPE molded floats, connecting hardware, pipe handrail and connections, cleats, and accessories.

1.02 REFERENCES

Americans with Disabilities Act (ADA)

ADA Standards for Accessible Design

American Welding Society (AWS)

D1.1 Structural Welding Code – Steel
D1.2 Structural Welding Code – Aluminum

American Society for Testing and Materials (ASTM)

ASTM B308 Standard Specification for Aluminum Alloy 6061-T6 Standard Structural Profiles

Federal Supply Service of the General Services Administration

HH-I-524C Flotation foam

International Code Council (ICC)

International Building Code (latest edition)

Federal Supply Service of the General Services Administration

HH-I-524C Flotation foam

1.03 CONTRACTOR RESPONSIBILITIES

A. The Contractor shall coordinate and verify the fabrication/manufacture work performed for the floats and pile installation work to ensure that the pile and pile hoops can operate in accordance with the intent shown in the Contract Drawings. The Contractor shall also verify that the float dimensions are compatible with the design pile locations before float fabrication. Failure to

coordinate work between fabricators and field conditions that may affect the design and fabrication shall not constitute grounds for additional compensation.

B. The Contractor shall coordinate and verify the fabrication/manufacture work performed for the boarding floats and boat ramp and pile installation work to ensure that the pile and pile frame system installation can be properly carried out and that each individual item can operate in accordance with the intent shown in the Contract Drawings.

C. Sequencing: Scheduling of pile installation, float fabrication, and float installation shall be conducted with consideration for hard driving conditions. The Contractor is to sequence the work such that the as-built locations of the driven piling can be used to locate the pile guides on the float.

D. Contract Drawings show the design concept which shall be the basis for the Contractor's float and kayak access float design and the final overall dimensions of the floats, pile guide conceptual design, float hinge conceptual design, shoremount assembly conceptual design, framing layout conceptual design, approximate pile locations, and approximate flotation sizes and locations.

E. The Contractor shall be responsible for designing the floats and kayak access float. Shop drawings and design calculations shall be generated by the Contractor for the entire float assembly including the pile guides, shoremount assembly, hinges, float frame, float accessories (cleats, decking), flotation, support connections and abutment connection, and shall be stamped by a Professional Engineer licensed in the State of Washington. The Contractor's Engineering calculations shall be included with the Shop Drawing submittal.

F. The floats are to be designed to resist all loads described herein including wind/wave forces on the float, vessel impact, forces due to grounding (if applicable), and loads from the pile guides, hinges, and cleats.

G. The Contractor designed flotation shall cause the floats to meet the freeboard criteria and provide a stable, level walking surface.

H. The Contractor's float design shall include counterweights to offset the weight of the pile guides.

1.04 QUALIFICATIONS

A. Manufacturer Qualifications. Procure the services of float manufacturer(s) that have the following qualifications:

1. The aluminum frame floats shall be fabricated by firms with a minimum of five (5) consecutive years of recorded experience in the design, manufacturing, and installation of similar aluminum float systems as their primary business. Float manufacturer shall have successfully completed at least 10 similar float projects within the past 5 years.
2. The kayak access float shall be fabricated by firms with a minimum of five (5) consecutive years of recorded experience in the design, manufacturing, and installation of similar kayak float systems. Float manufacturer shall have successfully completed at least 5 similar float projects within similar scope.

B. Qualification of Workers. Provide sufficient supervisors and skilled workers who shall be thoroughly familiar with the type of fabrication involved and the techniques required for the proper execution of the work.

C. Engineer Qualifications. The Engineer of Record for the floats structural design shall be a registered professional engineer in the State of Washington and who is experienced in the design of floating structures. The Engineer shall have at least five years documented work experience in the design of float structures with at least 10 similar projects of similar scope. The Engineer of

Record for the kayak float system shall be a registered professional engineer in the United States and who is experienced in the design of floating structures.

D. Welder Qualifications. Welders shall be currently certified in accordance with AWS D1.2 for aluminum welding, submit qualification test reports, and bearing witness certification of independent laboratory and inspection service.

1. If any welder has not been engaged in the welding process for three or more months, they must requalify before performing any structural welding work.

E. Inspector Qualifications. Inspection of the aluminum welding procedure and completed welds shall be conducted by an AWS Certified Weld Inspector (CWI) that shall have a minimum of 5 years of documented weld inspection experience.

1.05 QUALITY ASSURANCE

A. Quality Assurance. The float manufacturer must have an ongoing quality assurance program approved by a qualified, independent source. The fabricator shall provide proof of this qualification, and shall not begin fabrication until receiving approval of this document.

B. Tests and Inspections. An Independent Inspector shall perform tests and inspections of work under this Section. Costs associated with tests shall be included in Contractors project costs. Contractor shall cooperate in all respects to allow and assist in testing.

C. Welding. Fabricate and install aluminum in accordance with AA Aluminum Design Manual and additional requirements herein.

D. Materials. Miscellaneous metals and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical, and section property requirements prior to delivery to the site. Testing of miscellaneous metals for mechanical properties shall be performed after the completion of all rolling and forming operations. Testing of miscellaneous metals shall meet the requirement of ASTM A6.

E. Quality Control Plan. The Contractor shall have a quality control plan in place that dictates the means and methods that the Contractor’s quality assurance staff is to use to ensure product consistency and quality.

1.06 PERMITS

A. The float manufacturer shall coordinate with Owner during their engineering design to ensure local building official requirements are incorporated into their design. Revisions to the Contractor’s engineering plans or design concepts as a result of building official requests for changes will not result in additional compensation to the float manufacturer. The Contractor shall be responsible to adhere and conform to all applicable provisions, conditions, and requirements of the permits and conduct work in accordance with the permits.

B. Any conflicts between these Sections and the project permits will be brought to the attention of the Owner. Nothing whatsoever shall be deemed to authorize violation of the project permits.

1.07 MATERIAL TESTS

A. Metal Products. Miscellaneous metals and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical, and section property requirements prior to delivery to the site. Testing of miscellaneous metals for mechanical properties shall be performed after the completion of all rolling and forming operations. Testing of miscellaneous metals shall meet the requirement of ASTM A6.

1.08 SUBMITTAL REQUIREMENTS

A. Calculations. Structural calculations and flotation calculations and shop drawings shall be affixed with the appropriate stamps and signatures of a registered professional engineer in the State of Washington and who is experienced in the design of floating structures.

B. Shop drawings showing each of the handling float assembly components and shore connections shall be submitted by the Contractor to the Owner for approval. The shop drawings shall include layout plans, elevations, cross sections, construction details, dimensions, materials, hardware finishing details and colors of the floats to be fabricated for the project. The shop drawings shall comply with performance criteria specified in this contract. Fabrication of the floats shall not begin until the shop drawings are approved.

C. The Contractor shall be responsible for assembling the information required to conduct the coordination and checks for the adequate fabrication/manufacture of the floats and the submittal of all necessary data to the Owner for review as required by this and other related Sections. Fabrication of floats shall not occur until all preconstruction submittals are approved by the Owner.

D. The principal dimensions and layout of the floats are shown in the Contract Drawings. The Contractor shall examine the site prior to preparing shop drawings to verify affected utility locations and dimensions and all physical conditions and surroundings. The Contractor shall notify the Owner, in writing, of any unsuitable conditions. Commencement of work without such notification shall be construed as acceptance of all conditions. The Contractor shall submit documentation confirming that they have verified site conditions.

E. Owner's review of the Contractor-proposed design will be for general conformance only and it shall remain the responsibility of the Contractor to conform to all requirements of the Contract.

1.09 SUBMITTALS

A. Manufacturer's experience: submit a description of float manufacturer identifying experience and qualifications as required herein for review by the Owner.

B. Material certificates: submit manufacturers' mill certificates and certificates of compliance for the following materials. Submittal shall include a document that links components to their corresponding mill certificates and/or certificates of compliance.

1. Aluminum
2. Fasteners
3. Grating
4. Expanded Polystyrene Core (EPS)
5. Plastic Lumber
6. Dock Hardware Items
7. Rubstrip Items
8. Galvanizing

C. Submit shop drawings (minimum sheet size 11 inch x 17 inch) showing the float manufacturer's recommended details and materials for the work and the following:

1. Details of float construction and erection
2. Connections for work of other trades
3. Details of walers, rubstrips, rub blocks, hardware and miscellaneous metal fabrications
4. Shoremount connection
5. Float dimensions
6. Flotation drum dimensions and fabrication data

D. Material cut sheets: Submit manufacturer's catalog sheets showing compliance with these Sections for all standard manufacturers' items.

E. Flotation installation. Submit float erection drawings and assembly manual descriptions including parts list.

F. Project record drawings. Submit a complete and accurate record of all floats manufactured for this project. The record shall include float identification, date completed, and all quality assurance tests and inspection items performed on the float.

G. Operation and maintenance (O&M) manual. Submit a float manufacturer provided Operation and Maintenance Manual to the Owner which describes the float system capacities, operational parameters, and maintenance requirements.

H. Weld inspection reports. Complete weld inspection reports for all weld inspections conducted by independent testing lab for all welded components in their final state, as well as in-process verification of compliance with the relevant submittals, codes, and Sections.

I. Welder qualification and weld procedures. Submit welding procedure specifications (WPS) and weld procedure qualification records (PQR) for each type of welding required in the manufacture of the float system to the Owner for approval. PQRs shall be approved prior to commencement of fabrication.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials shall comply with the following requirements.

1. Metal Products: See Section 05 14 00 – Aluminum Structures and Section 05 50 00 – Miscellaneous Metals.
2. Welding Filler Wire: See Section 05 14 00 – Aluminum Structures and Section 05 50 00 – Miscellaneous Metals .
3. Grating: Provide Fibergrate EcoGrate 62 with an integrally applied grit traction surface as manufactured by Fibergrate Composite Structures Inc. or approved equal.
   a. Color shall be gray, ADA compliant, with a minimum of 60 percent net open area, 1-inch deep.
   b. Grating clips shall be 316 stainless steel and installed at 2 foot 0 inch on center max spacing and 100% edge supported. Attach grating in accordance with the manufacturer's recommendations using minimum 1/4 inch tamper resistant socket pin-head stainless steel machine screws or approved equal and can be removed and reinstalled from above the float deck. Three corresponding socket tools shall be provided to the Owner for maintenance purposes.
4. Hinge components: The hinge system connection rod, nuts, washers, and cotter pin shown in the Contract Drawings shall be hot dip galvanized steel with UHMW bushing.
5. Fasteners: All fasteners shall be suitable for marine environments. All bolts and shall be marine grade hot dipped galvanizing steel unless otherwise noted. Nuts shall be marine grade hot dipped galvanizing unless otherwise noted. Fasteners between any galvanized steel components shall be hot-dip galvanized ASTM A325 in accordance with ASTM A123 or A153 as applicable or marine grade type 316 stainless steel. All dissimilar metals (including base materials and fasteners) shall be isolated with appropriate protection measures. These measures shall be indicated in the shop drawings.
6. Threadlocker: All threaded connections shall be secured with Loctite® 243 in accordance with the manufacturer's recommendations. Clean and dry surfaces per manufacturer's instructions prior to installation.

7. Markings: All floats shall be clearly identified on one side and one end between the bottom of the waler and the waterline with the date of manufacture, specific float type, and job number.
8. Material quality: All float modules including polyethylene tubs shall be supplied free of defects with no signs of damage. Float modules delivered to job site shall be stored out of the way of traffic and shored up off the ground surface. The floats shall be stored on site as required to prevent damage such as overstressing, warping or twisting. Any damaged materials shall be rejected and removed from the job site and replaced at the Contractor's expense.
9. Polystyrene foam/EPS core: Float core blocks shall be a rigid block of closed-cell virgin expanded polystyrene in accordance with ASTM D-1621 or Federal Specification C-578-85. Foam shall be Type 1 foam core. All foam billets shall be fully encapsulated with a minimum of 60 mils of spray polyurethane.
10. EPS material shall meet the following minimum requirements:
    a. Density – between 0.95 and 1.20 pounds per cubic foot.
    b. Contain not greater than 5% regrind material.
    c. Compressive strength – 10 psi at 10% deformation.
    d. Flexural strength – 25 psi.
    e. 3% maximum water absorption by volume as tested by ASTM C-272.
    f. Billets shall have a dimensional tolerance of plus or minus 1/8 inch.
    g. Polyethylene Tubs (Flotation Drums): Tub shells shall be roto-molded from medium density polyethylene material conforming to ASTM D 4976 and ASTM D 1998-04 containing UV ray inhibitors to protect against ultraviolet deterioration and have a minimum wall thickness of 0.20 inch. Tubs shall be black in color. Each tub shall be completely filled with foam. Tubs shall be attached by bolting to structural members to minimize flexing and deformation of the tub. The use of shims or spacers between the dock system and the tub to achieve required flotation will not be permitted. Tub float shells/drums shall be as manufactured by Den Hartog Industries, Inc. or approved equal. Flotation drums shall be fully attached, at all bolting locations, to the underside of the float frames with minimum 3/8 inch diameter fasteners.
11. Pile Guide Rub Blocks: Pile rub blocks shall be UV stabilized (partially or fully cross linked) UHMW PE with curved edges. Rub block support shall be fastened integral with pile guide.
12. Pile Guide Barrier Panels: Pile guide barrier panels shall be chamfered UV stabilized (partially or fully cross linked) UHMW PE with chamfered edges and yellow in color.
13. Rubstrips and Grounding Legs: Rubstrips shall be installed on all exposed edges and ends of floats as shown and shall be fabricated of fiberglass reinforced plastic lumber. All plastic lumber used for framing, rubstrips, and associated items shall be Fiberforce by Tangent Materials or approved equal. Plastic lumber shall be gray in color unless otherwise approved by the Owner. All plastic lumber shall be UV stabilized. Rubstrips shall be milled to meet project specific dimensions and be aligned with minimum number of holes necessary to secure the rubstrips to the floats. Top and bottom edges of rubstrips shall be chamfered or rounded.
14. Boarding Float Cleats: Cleats shall be heavy duty 8-inch stainless steel cleats thru bolted to float framing. Cleats shall be mounted on 2-inch thick UHMW bearing blocks between the framing and the base of the cleat. Size the bearing block to be slightly larger than the overall footprint of the cleat. Cleats shall be installed with Stainless Steel 316 thru bolts and SS dock washer.

2.02 WARRANTY

A. Except for the polyethylene tubs, each component of the float system shall carry an unconditional warranty for two (2) years from the date of final acceptance. The polyethylene tubs used shall carry an unconditional warranty for ten (10) years from the date of final inspection.

B. Contractor shall provide written warranty, guarantee, instruction sheets and parts lists which are furnished with certain articles or materials incorporated into the work to be delivered to the Owner in a three-ring binder format before final completion.

C. After 1-year from final inspection, freeboard under all dead loads shall not be more than ½ inch lower or 1 inch higher than that recorded by the Owner at the time of final inspection.

PART 3 - EXECUTION

3.01 FLOAT DESIGN CRITERIA

A. The following criteria shall be considered as minimum requirements which shall apply to the Contractor designed floats unless otherwise noted. Mere conformance to the design parameters provided in this Section does not guarantee approval of the final design. The Contractor shall subject the proposed floats to thorough engineering analysis using all relevant criteria in applicable state and local codes as well as the requirements of this Section and the Contract Drawings.

B. Float Flotation. The Contractor shall be responsible for confirming float flotation tubs sizes and number and make necessary adjustments to the flotation design as needed.

1. There should be sufficient flotation to meet the specified freeboard and to prevent the float from having a slope that exceed 1% in either direction from all dead loads including the gangway dead load. The freeboard shall be within 1” all around the perimeter of the installed float including the landing float.
2. The Contractor shall make allowance in buoyancy calculations for float manufacturing tolerances. The Contractor shall be responsible for coordination of the final location of the installed gangway and the landing float and adjusting all flotation to ensure the floats freeboard matches the adjacent connected floats.

C. Float Dimensions

1. The Contractor shall be responsible for determining float framing dimensions. Sufficient frame depth shall be provided to support the dead load including framing and connecting hardware, and all other permanently attached utilities (if any), equipment, or structures, at the specified freeboard and within required tolerances to achieve optimum float stability. The Contractor shall make allowance in buoyancy calculations for float manufacturing tolerances.
2. Boarding float units are not to exceed 20 feet in overall length.

D. Dead Load (DL):

1. DL shall consist of the float system, rubstrips, pile guides, transition plates, utilities, gangways, ladders and all other attached appurtenances.
2. Float units shall be constructed to include allowances for future DL if any are identified by the Owner such as utility and hardware DL including those identified on the Contract Drawings.
3. Under all DL, all exposed elements including any utilities and the float connection system such as connecting hardware, cleat hardware, and rub strips shall be greater than or equal to 6-inches above the water surface.

E. Uniform Live Load (ULL): 20 pounds per square foot

F. Uniform Snow Load (USL): 30 pounds per square foot

G. Deflection: Maximum deflection of (member span)/240.

H. Live Point Load (LPL): 400 lb applied at any point on the facility deck not closer than 12 inches from the edge of the float.

I. Freeboard (measured at all four corners) for floats:

1. BOARDING FLOATS
   a. DL Only: 14 inch minimum / 18 inch maximum to top of deck. 4-inch minimum to bottom of float framing.
   b. DL + ULL: 6 inch minimum to top of deck.
   c. DL + LPL: 6 inch minimum to top of deck.

2. LIFEGUARD FLOAT
   a. DL Only: 8 inch minimum / 12 inch maximum to top of deck.
   b. DL + ULL: 2 inch minimum to top of deck.
   c. DL + LPL: 6 inch minimum to top of deck.

J. The facility shall be designed to withstand handling and erection loading.

K. Level Tolerances: The deck of the float system shall be within the following level tolerances for the life of the system.

1. Maximum transverse tilt angle for floats: 1 degree under DL
2. Maximum longitudinal slope for floats: one (1) inch per twenty (20) feet under DL.
3. ADA barrier free requirements for trip hazards for boarding floats.
4. Maximum vertical and horizontal differential between adjacent floats at any point across the float connection: 1/8 inch.

L. Facilities must be designed to withstand environmental and impact loading with tied up boats:

1. Float system must withstand 115 mph, exposure ‘D’ category winds and a 2.0 feet significant wave height and 3.0 seconds peak wave period, respectively from any direction. Apply wind load on exposed over-water vessel profiles. Floats shall be designed to resist a minimum wave load of 200 pounds per linear foot along the full length.
   a. Lateral Impact berthing load: Forward velocity of 1.0 knots, vessel berthing angle of 20 degrees for the maximum design vessel, which consists of a 20-foot-long power boat with a maximum draft of 2.0 feet.

M. The facility shall be designed to resist the operational wind loads applied in conjunction with the lateral impact berthing load.

N. Facility must be designed to withstand all handling and erection loads.

O. If any loads other than those indicated are anticipated by the Contractor, this issue shall be brought to the attention of the Owner immediately.

P. Water Elevations. See Contract Drawings.

3.02 GENERAL FLOAT REQUIREMENTS

A. Framing. The Contractor shall design the float framing layout for the floats. The layout implemented shall consist of tubular-frame construction, with members meeting the minimum

quantity, size and dimensions shown in the Contract Drawings. No vertical truss-frame designs shall be allowed.

B. Grounding Legs. Boarding floats shall have legs on all four corners, along the outside edge of the floats.

C. Weep Holes. Float frame shall not contain any cavities that could cause water to accumulate – the Contractor shall design the float framing to be free draining. Drainage shall be provided with minimum 3/8-inch diameter weep holes. Weep holes shall be stuffed with steel wool (stainless) to keep insects from nesting in the float frame. Weep hole shall be provided at each end of the underside of all members to provide drainage at all anticipated service orientations.

D. Unused Holes. All unfilled holes on the top side of members shall be tapped and filled with threadlocked machine screws.

E. Boarding Float Hinges. The Contractor shall design the float hinge. Motion attenuating hinges may be used, but the Contractor must provide supporting evidence of longevity for Owner approval. To prevent a contractor's bid from being dependent on a proprietary hinge design, it is required that a contractor propose a barrel hinge in accordance with the design concept presented in the Contract Drawings. Any alternate hinge designs will be evaluated as a substitution in accordance with the Specific Requirements. The design of the float hinge shall ensure that the floats can be disconnected easily, from each other, when required.

F. Abutment Connection. The abutment connection is to be hot-dip galvanized steel.

G. Nonslip Surface. Provide nonslip arc spray (metalizing) to exposed aluminum walking surfaces of the floats.

H. Pile Guides. Assemblies shall be designed and fabricated such that the required rub block spacing and alignment with respect to guide piles are obtained. The required clearance tolerances between lateral rub blocks and piles shall allow unrestricted motion as listed below within the design water elevation range (max pool to low pool). The longitudinal rub blocks shall be spaced such to allow free movement of the float with no binding over the full range of anticipated water levels. Pile guide/guide openings shall be designed to account for the cumulative width of the pile.

I. Pile Guide Connections. The Contractor shall design the pile guide connection. The connection design shall include consideration for theft-prevention. The pile guide bolts shall be bolted through the float frame and have lock-nuts and a cotter pin. The float grating might need to be locally removed to facilitate installation or maintenance of the external pile guides. The final installation shall ensure easy removal of the floats from the piles. Grating at external pile guides shall be shipped loose to facilitate field installation.

J. Pile Guide Adjustability. The Contractor shall design the pile guides to allow for pile installation tolerances as specified below.

1. Transverse tolerance: the pile guide shall provide un-binding performance with the use of side-to-side shims capable of adjusting each contact face by one inch. The pile guide design shall provide between 1.5 inches and 2.0 inches of clearance around the sides of the pile the installed position. Pile guides shall be designed based on the as-built pile locations.
2. Longitudinal tolerance: the pile guide shall provide un-binding performance for all water levels. Pile guides shall be designed based on the as-built pile locations.

K. The Contract Drawings provide general geometric, structural, and service features of the floats based on the operational requirements expected at the sites where the float systems are to be

installed. It shall be however, up to the float manufacturer to design and provide members and connections of adequate size, type, and spacing of sufficient structural capacity which comply with other required criteria for all components including float frames, frame support, pile guides, decks, etc. in accordance with the specified performance requirements.

L. The float manufacturer shall verify that the location and orientation of the supports is adequately suited for grounding.

M. Connections shall be noiseless and non-wearing. Float connections shall be designed to distribute loads based on the relative flexibility of the piling and dock assembly. Connection designs shall consider joint rotation effects so that contact, abrasion, or subsequent damage between unprotected float elements does not occur due to wind, wave, and live load effects.

N. Boarding Float sections shall be designed to accommodate grounding.

1. All float sections shall have plastic lumber grounding legs with UHMW grounding pads on the bottom of each float section which is to serve as sacrificial surface and prevent damage to the float tubs and frame structure due to repeated grounding. The grounding pads shall be attached to grounding legs that are to be integrally connected to the float frame. The grounding pads and the support posts shall be capable of protecting the float tubs and supporting all dead and superimposed loads.
2. Float frame shall meet capacity requirements as identified in the floats section of this Section.
3. Float frame shall be designed to accommodate grounding on uneven surfaces. The float frame shall be designed such that the frame can be supported on any three of the four legs. The hinges shall be capable of transferring these grounding loads to adjacent float modules.

O. Float frame shall not restrict the capability for the float tubs to be maintained or removed.

P. Final location and size of the float support frame members shall be determined by the Contractor and submitted to the Owner for approval.

Q. Boarding floats shall be level, stable, and non-binding at hinges in grounded position.

R. Pile guides shall be adjusted in the field at the time of float installation to provide adequate stability in the transverse direction (cross float direction). Pile guide UHMW panels shall be designed to be shimmed or adjusted in the field to provide an appropriate fitting pile guide.

S. All connection assemblies (shoremount, float hinges) must be designed so that rotation of the connection will not overstress the float structure at any water level. Calculations shall be submitted by the Contractor demonstrating the capacity of the Contractor designed float-to-float connection detail along with the shop drawings.

T. All exposed connectors (bolted, screwed, etc.) shall be countersunk on all sides and ends.

U. Isolators (HDPE, UHMW, or other durable plastic material) shall be provided at all locations where dissimilar metals or materials (concrete or other absorptive materials) will or might come into contact.

V. The floats shall be designed and constructed as required to provide smooth and aligned mooring faces.

W. Walking surface gaps between float modules, differences in height with respect to adjacent float modules, float transition plate, and connection hardware shall be in accordance with ADA requirements.

X. An ADA compliant access corridor surface shall be provided from the beginning of the handling float to the edge of the end handling float module during all operational conditions (grounded, partially floating, and fully floating).

Y. Exposed Fasteners. Countersink rubstrip fasteners to prevent protrusions beyond the face of the rubstrips.

3.03 KAYAK ACCESS FLOAT

A. Primary Material. Hand welded High Density Polyethylene (HDPE) sheet plastic, using non-rotationally molded floats. Use individual sheets for sides, ends, bottoms, and tops. Minimum wall thickness of 0.150 inches and completely encapsulated expanded polystyrene (EPS) foam. Provide a lid or top surface with a 2-1/2” lip around the entire float. Provide HDPE material that is white in color.

B. Expanded Polystyrene. Completely encapsulated EPS shall be 100% virgin material and be of a closed cell nature allowing no more than 3% water penetration. Floatation shall not have air pockets in any form. All EPS foam block used in the manufacturing process will be pre-cut and hand trimmed to exact size, then hand loaded into each float section to ensure 100% foam filled, air-tight encapsulation.

C. Aluminum Framing. Sections will have a marine grade aluminum frame surrounding the entire perimeter which will be minimum 2” x 2” x .125” square tubing with radius corners made of 6061-T6 series aluminum. Each aluminum frame will be attached to the float section or HDPE top with minimum 5/16” x 2-3/4” 304 series Stainless Steel carriage bolts.

D. Live Load. 20 pounds per square foot minimum.

E. Connections. The connection between the kayak access float and the existing boarding float shall be thru bolted directly into the existing boarding float framing system. Locations for the connections will be designed by the fabricator. All Attachments will bolt into the framing system with 304 series Stainless Steel hardware.

F. Overhead Assist Bars, Side Assist Railing - Materials used will be 1-1/4” schedule 40 aluminum pipe, attaching to the surface of each float with 304 series Stainless Steel hardware, being bolted through the 2” x 2” x .125” aluminum framing system on the kayak float.

G. Transition Plate. Transition plate shall be level and installed with max ¼” max lip for all surfaces per ADA requirements. The slope of the transition plate shall not exceed 1:12 in the dead load condition. The transition plate shall have non-slip surface.

3.04 FABRICATION

A. General: Aluminum items shall be fabricated in accordance with AA specifications for aluminum structures and AWS D1.2, Structural Welding Code Aluminum. Fabricate aluminum members in accordance with the approved Shop Drawings. Where structural joints are welded, the detail of the joints, welding technique, weld quality and appearance, and methods for correcting defective welds shall conform to the AWS D1.2. The floats shall be fabricated only by AWS certified welders. All fabrication shall proceed in a skillful workmanship like manner.

B. Fabrication facility: The fabrication facility shall be adequate to perform the work. The facility shall provide adequate work space, equipment, trained personnel, qualified oversight, and protection from the elements as required.

C. Coated foam core block quality: The fabricator is responsible for the quality of the coated float core blocks. The manufacturer of these blocks shall have a quality program in place to monitor

coating thickness and shall visually inspect for any holes in the coating that expose the polystyrene core. Any coating discrepancies discovered prior to shipment shall be re-coated with the original coating system. Application of the coating shall be accomplished in such as manner as to minimize holes caused from trapped gasses within the polystyrene in accordance with the coating manufacturer's recommendations. The fabricator shall not withhold any information from the Owner during fabrication and shall assist the Owner during investigations into the quality of the work being performed.

D. Schedule: The Contractor shall keep the Owner aware of the status of fabrication by providing a fabrication schedule consisting of the starting and completion dates of the various states of work.

E. Records: The fabricator shall maintain in a safe place within the fabrication facility a single copy of all up-to-date Contract Drawings, Specifications, technical memorandums, RFIs, approved submittals, change orders, and shop drawings. These records shall be made immediately available to the Owner upon request.

F. Project Record Drawings: A red-lined set of as-built drawings shall be submitted to the Owner. These documents shall accurately record variations in the work from the original Project requirements.

G. Continuity of work: The fabricator shall carry on the work and adhere to their submitted schedule during all disputes or disagreements with the Owner. No work shall be delayed or postponed pending the resolution of any disputes or disagreements unless otherwise approved by the Owner in writing.

H. Repair of nonconforming work: At the Owner's discretion, the fabricator shall replace or repair any work found by the fabricator, fabricator's inspector, or Owner to not be in conformance with the relevant codes, Specifications, and Contract Drawings at the Contractor's expense. All such direction shall be provided in writing.

I. Materials delivery and storage: Materials delivered to the site shall be new and undamaged and shall be accompanied by certified test reports. Fabrications shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion or damage. Storage of metal materials and/or fabrications should also facilitate required inspection activities.

J. Finished surfaces: Floats shall be assembled so that a smooth and aligned mooring face is provided.

K. Arc spray metalizing for traction surface of abutment and hinge components shall be performed in accordance with AWS C2.23. Steel substrate shall be prepared to SSPC-SP/NACE No. 1 white metal blast finish with a minimum angular profile depth of 2.5 mils. After blasting, dust and spent adhesives shall be removed from the surface by oil-free pressurized air, brushing, or vacuum cleaning. Minimum dry coating thickness of the traction surface shall be in accordance with the manufacturer's recommendations, but not less than 12 mils. Base layer of metalizing shall be applied prior to use of high traction metalizing in accordance with high-traction metalizing product manufacturer's recommendations.

3.05 INSPECTION

A. All welding activities shall be monitored by the Contractor's in-house quality control in accordance with AWS D.1 requirements, as applicable, including but not exclusively fabrication tolerances, material preparation, joint fit-up, consumable control, preheat temperatures, interpass temperatures, and overall conformance with the shop drawings.

B. All finished work shall be inspected prior to shipment by an independent, third-party AWS Certified Welding Inspector hired by the Contractor. In addition, each welder needs to be observed by the third-party inspector during preparation and welding at least twice during the duration of the work – preferably at the start and middle of the production work.

C. Welding shall be inspected in accordance with Section 05 50 00 – Miscellaneous Metals.

3.06 DELIVERY

A. The Contractor shall be responsible for delivery, unloading and installing the floats.

B. The Contractor shall notify the Owner at least 3 days in advance of the delivery, the time and date of the delivery and expected completion of installation.

C. The Contractor shall be responsible for any damage to the floats from shipment, any damage resulting from handling, storing/staging, and installation shall be repaired (or float unit replaced) at the Contractor's expense.

3.07 CONSTRUCTION REQUIREMENTS

A. The Contractor shall schedule float fabrication and pile delivery schedule to allow for proper installation of piles, and construction of float pile guides to match the as-built pile locations.

B. All bolts and other connections shall be tightened as required after complete installation of each float module in the water and before final inspection.

C. Float installation shall be conducted in accordance with float manufacturers written instructions. The handling float system including all hardware and accessories shall be fabricated and securely fastened to resist all conditions normally encountered at the boat ramp for vessels of similar sizes. All work shall conform to the approved shop drawings and Contract Documents. Construction details, finishing details and colors shall be consistent throughout. Work shall be accurately set to established lines and elevations, and securely fastened in place. Cutting, drilling and punching shall produce clean true lines and surfaces. Exposed surfaces of work shall have a smooth finish.

D. Floats shall be leveled in the field to meet cross slope and freeboard requirements.

E. Rubstrips shall have countersunk bolted connections. Mounting shall accommodate thermal expansion.

3.08 SPARE PARTS

A. Spare Parts: The Contractor is to furnish the following spare parts to the Owner with the delivery of the floats. The spare parts shall be shipped loose and clearly labeled.

B. Grating panels: The Contractor shall supply an additional 5% of the required quantity of grating panels.

C. Rubstrip: The Contractor shall supply an additional two ten-foot sections of rubstrip that have been made fully ready for installation.

D. Flotation tubs: The Contractor shall supply an additional flotation tub of each of the sizes used in construction of the float system.

E. Cleats: The Contractor shall supply an additional 8 cleats.

END OF SECTION