

CITY OF BEAUFORT  
STATE OF SOUTH CAROLINA  
REQUEST FOR PROPOSAL

RFP NO. 2018-103



CITY OF BEAUFORT

**Henry C. Chambers Waterfront Park Day Dock  
Project**

**DUE: FRIDAY, NOVEMBER 17, 2017 by 2:00 PM**

# **CITY OF BEAUFORT, SC REQUEST FOR PROPOSAL RFP NO. 2018-103**

**SEALED PROPOSALS** will be received in the Finance Department, 2nd Floor, City Hall, 1911 Boundary Street, Beaufort, South Carolina until **2:00 P.M. ET Friday, November 17, 2017**. All qualified contractors are invited to submit proposals to the City of Beaufort for the following:

## **City of Beaufort HENRY C. CHAMBERS WATERFRONT PARK DAY DOCK PROJECT**

**SUBMIT:** One (1) unbound original and three (3) bound copies of all requested documentation must be received on or before **2:00 P.M. ET November 17, 2017**.

**ADDRESS TO:** City of Beaufort, City Hall, 2nd Floor Finance Department, Attention: Linana Washington

**MAILING ADDRESS:** 1911 Boundary St., Beaufort, South Carolina 29902

**OFFICE ADDRESS:** 1911 Boundary St., Beaufort, South Carolina 29902

**EMAIL ADDRESS:** [lwashington@cityofbeaufort.org](mailto:lwashington@cityofbeaufort.org)

**PHONE NUMBER:** 843-525-7079

**FAX NUMBER:** 843-986-5606

**MARK OUTSIDE ENVELOPE:** "RFP NO. 2018-103 HENRY C. CHAMBERS WATERFRONT PARK DAY DOCK PROJECT"

**A PRE-PROPOSAL MEETING WILL BE HELD AT 11:00 A.M. ET ON NOVEMBER 7, 2017, IN THE PLANNING CONFERENCE ROOM OF CITY HALL, LOCATED AT 1911 BOUNDARY STREET, BEAUFORT, SC 29902. ALL POTENTIAL OFFERORS ARE REQUIRED TO ATTEND.**

### **DEADLINE ENFORCED**

PROPOSALS DELIVERED AFTER THE TIME AND DATE SET FOR RECEIPT OF PROPOSALS SHALL NOT BE ACCEPTED AND WILL BE RETURNED UNOPENED TO THE OFFEROR. IT IS THE OFFEROR'S RESPONSIBILITY TO ENSURE TIMELY DELIVERY OF THEIR PROPOSALS. WEATHER, FLIGHT DELAYS, CARRIER ERRORS AND OTHER ACTS OF OTHERWISE EXCUSABLE NEGLIGENCE ARE RISKS ALLOCATED TO OFFERORS AND WILL NOT BE EXEMPTED FROM DEADLINE REQUIREMENTS. E-MAIL, TELEPHONE, OR FACSIMILE PROPOSALS WILL NOT BE ACCEPTED.

Any offer submitted as a result of this RFP shall be binding on the offeror for **NINETY (90)** calendar days following the specified opening date. Any proposal for which the offeror specifies a shorter acceptance period may be rejected.

### **Proprietary and/or Confidential Information**

Your proposal package is a public document under the South Carolina Freedom of Information Act (FOIA), except as to information that may be treated as confidential as an exception to disclosure under the FOIA. If you cannot agree to this standard, please do not submit your qualification.

All information that is to be treated as confidential and/or proprietary must be **CLEARLY** identified, and each page containing confidential and/or proprietary information, in whole or in part, must be stamped and/or denoted as **CONFIDENTIAL**, in bold, in a font of at least 12 point type, in the upper right hand corner of the page. *All information not so denoted and identified shall be subject to disclosure by the City.*

This Request for Proposal is being issued by the City of Beaufort. Direct all questions or request for clarification of this RFP by email, mail, or fax to contact information listed above.

Offerors are specifically directed not to contact any other City personnel for meetings, conferences, or technical discussions related to this request unless otherwise stated in this RFP. Failure to adhere to this policy may be grounds for rejection of your proposal.

Offerors ARE CAUTIONED that any statement made by City staff persons that materially change any portion of this RFP shall not be relied upon unless they are subsequently ratified by a formal written amendment to this RFP. Any revisions to this RFP will be issued and distributed as an addendum. All addenda, additional communications, responses to questions, etc. pertaining to the Request for PROPOSAL may be accessed on the City of Beaufort website under Quick Links – “Bid Opportunities” at [www.cityofbeaufort.org](http://www.cityofbeaufort.org).

All Offerors should consult this website for updates before submitting bids.

**THE DEADLINE FOR QUESTIONS IS: 4:00 P.M., NOVEMBER 10, 2017. ANSWERS TO SUBMITTED QUESTIONS WILL BE POSTED ON THE CITY WEBSITE BY 4:00 PM ON NOVEMBER 13, 2017.**

If the Offeror discovers any ambiguity, conflict, discrepancy, omission or other error in the RFP, Offeror shall immediately notify the City of such error in writing and request modification or clarification of the document. The Offeror is responsible for clarifying any ambiguity, conflict, discrepancy; omission or other error in the RFP or it shall be deemed waived.

The City of Beaufort reserves the right to reject any or all proposals, or any parts thereof, waive informalities, negotiate terms and conditions, and to select an Offeror that best meets the needs of the City of Beaufort and its employees.

### **Compliance with the South Carolina Illegal Immigration Reform Act**

Any Contractor entering into a service contract with the City of Beaufort must certify to the City of Beaufort that the Contractor intends to verify any new employees' status, and require any sub-consultants performing services under the service contract to verify their new employees' status, per the terms of the South Carolina Illegal Immigration Reform Act, and as set out in Title 41, Chapter 8 of the Code of Laws of South Carolina, 1976.

## **POLICY CONCERNING MINORITY AND WOMAN OWNED BUSINESS ENTERPRISES**

### **Intent**

Businesses owned and operated by women and minority persons, in general, have been historically restricted from full participation in the nation's free enterprise system to a degree disproportionate to other businesses.

The City believes it is in the community's best interest to assist minority and woman owned businesses to develop fully, in furtherance of City's policies and programs which are designed to promote balanced economic and community growth.

The City, therefore, wishes to ensure that minority and woman owned businesses (M/WBEs) are afforded the opportunity to fully participate in the City's overall procurement process and will not be discriminated against on the grounds of race, color, sex, or national origin in consideration for an award.

### **Goal for Participation**

The City adopts the State of South Carolina's goal for participation of M/WBEs: ten percent (10%) of annual controllable procurement expenditures which are defined as agreements between the City and a Vendor to provide or procure labor, materials, equipment, supplies and services to, for or on behalf of the City. However, a specific expectation has not been set for this RFP.

### **Required Forms**

Contractors submitting proposals are required to include completed forms that are found at the end of the General Terms & Conditions. The City's General Terms & Conditions, a required component of all competitive procurement proposals, may be accessed on the City's website under Quick Links – Bid Opportunities – [www.cityofbeaufort.org](http://www.cityofbeaufort.org). All proposers are to certify that they have read the General Terms & Conditions and will adhere to them as a component of the contract documents.

Contractors should also be aware that, should a contract be awarded, the City will require reports of the utilization of any minority business enterprises to be filed along with requests for payment. The City reserves the right to audit accuracy of the utilization reports that are filed.

The City of Beaufort reserves the right to reject any or all bids; to waive any informality or irregularity not affected by law; to evaluate, in its absolute discretion, the bids submitted; to award the contract according to the bid which best serves the interests of the City; or to not award the contract if the City determines that it is not in its best interest to do so.

**Proposals that are not signed will not be accepted as complete and shall not be considered. Proposals must be signed in ink (not typed) in the appropriate space(s) by an authorized officer or employee of the offeror.**

The words "Bidder", "Offeror", "Proposer", "Vendor", "Operator", "Contractor", and "Company" are used interchangeably throughout this RFP, and are used in place of the person, vendor, or corporation submitting a bid.

CITY OF BEAUFORT  
SOUTH CAROLINA  
RFP SIGNATURE PAGE  
RFP NO. 2016-109

PROPOSER'S NAME: \_\_\_\_\_

The undersigned, having become familiar with the existing conditions and the Proposal Scope of Services hereby proposed, agrees to complete the work as described in accordance with the Request for Proposal and Contract Documents.

**Proposer** warrants that no gratuities, in the form of gifts, entertainment, or otherwise, were offered or given by the **Proposer**, to any officer or employee of the City with a view toward securing the contract or securing favorable treatment with respect to any determination concerning the performance of the contract.

This offer is genuine and not made in interest of or on behalf of any undisclosed person, vendor or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; **Proposer** has not directly induced or solicited any other **Proposer** to submit false or sham bid; **Proposer** has not solicited or sought by collusion to obtain for itself any advantage over any other **Proposer** or other **Owner**.

**The words "Bidder", "Offeror", "Proposer", "Vendor", and "Company" are used interchangeably throughout this solicitation, and are used in place of the person, vendor, or corporation submitting a solicitation.**

Proposer has examined copies of all documents and of the following addenda (if applicable):

Addendum No.	Date
_____	_____
_____	_____
_____	_____

Address: Post Office Box: \_\_\_\_\_ Zip: \_\_\_\_\_  
Street: \_\_\_\_\_ Zip: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_  
Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Email: \_\_\_\_\_

\*Signature: \_\_\_\_\_ Title: \_\_\_\_\_

**Proposal will not be accepted unless signed in ink (not typed) in the appropriate space by an authorized officer or employee of the bidder.**

Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

**BID FORM**

**Day Dock at Henry C. Chambers Waterfront Park**

**GENERAL:**

Bidder herewith submits its offer to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fees, permits, licenses, and applicable taxes necessary to complete the installation of the Day Dock in accordance with the Bidding Documents.

Bidder, by submitting this Bid, affirms that it has carefully examined the Bidding Documents and other related information and data identified in the Bidding Documents, has visited the actual location of the Work, has satisfied itself as to all conditions and understands that, in signing this Bid Form, it waives all rights to plead any misunderstanding regarding same and agrees to be bound by the provisions of said Bidding Documents and all statements made therein.

The City of Beaufort reserves the right to negotiate the addition or subtraction of project components with the winning Bidder. These components may include, but are not limited to items such as: adding architectural features/finishes in order to increase aesthetic quality or decreasing the project scope in order to meet budgetary requirements.

**LUMP SUM BID:**

\$ \_\_\_\_\_

**UNIT PRICE WORK AND SCHEDULE OF VALUES:**

BIDDER offers for the Owner's consideration and use the following UNIT PRICES. The UNIT PRICES offered by BIDDER indicate the amount to be added to or deducted from the Contract Sum for each item-unit combination. UNIT PRICES include all costs to the Owner, including those for materials, labor, equipment, tools of trades and labor, fees, taxes, insurance, bonding, overhead, profit, etc. The Owner reserves the right to include or not to include any of the following UNIT PRICES in the Contract and to negotiate the UNIT PRICES with BIDDER. Information below shall be consistent with BIDDER's Schedule of Values.

**BID FORM**

NO.	ITEM	ESTIMATED QUANTITY	UNIT PRICE	UNIT OF MEASURE	COST
1	Mobilization/Demobilization	1		LS	
2	Floating Docks	2400		SF	
3	Gangway	1		EA	
4	Steel Piling	15		EA	
5	Concrete	22		CY	
6	Reinforcing Steel	1500		LBS	
7	Aluminum Railing (Concrete Ramp)	1		LS	
8	Solar Lights	24		EA	

**LUMP SUM BID**    \$ \_\_\_\_\_

COMPANY NAME: \_\_\_\_\_

CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

PHONE \_\_\_\_\_

DATE: \_\_\_\_\_

## **SECTION 011000 SUMMARY OF WORK**

### **PART 1 - GENERAL**

All work specified herein and presented on the contract drawings shall conform to or exceed the requirements set forth in the Contract Documents. In case of conflict between codes, reference standards, drawings, permits, and other contract documents, the most stringent requirements shall govern. The work comprises the provision of all labor, materials, tools, transportation, etc. necessary to construct the project in accordance with the Contract Documents.

#### **1.1 SUMMARY**

##### **A. Section Includes:**

1. Project information.
2. Work covered by Contract Documents.
3. Access to site.
4. Safety Precautions.
5. Site Maintenance.

#### **1.2 PROJECT INFORMATION**

- A. Project Name: Henry C. Chambers Waterfront Park Day Dock Project
1. Project Location: Downtown Beaufort, SC

#### **1.3 WORK COVERED BY CONTRACT DOCUMENTS AND CONTRACT**

- A. The work as identified in the Contract Drawings includes, but is not limited to:
- Installation of a 200 ft long by 12 ft wide floating dock
  - Installation of an 80 ft long ADA compliant aluminum gangway
  - Installation of fifteen (15) steel pipe piles
  - Installation of solar lighting
  - Installation of a concrete access ramp and gangway attachment with handrails

#### **1.4 FINAL SURVEY**

- A. Contractor shall perform a post construction survey of the project site. Survey will show the extents of the work and will be delivered to the Owner in hardcopy and AutoCAD compatible formats. Horizontal coordinates shall be South Carolina State Plane. Previous survey work was done by Beaufort Surveying, Inc.



**1.5 TYPE OF CONTRACT**

- A. Project will be constructed under a single prime contract based on a stipulated sum and time required to complete the project.

**1.6 COMMENCEMENT AND COMPLETION OF WORK**

- A. The Contractor shall commence work as directed by the City of Beaufort on the date of the Notice to Proceed.
- B. All work required by the Contract Documents shall be completed within 120 calendar days after the commencement of the work, as defined by the notice to proceed.

**1.7 SUBMISSION OF INFORMATION**

Submit the following information with the initial bid or when requested by the Owner:

- A. Designation of the work to be performed by the Contractor with his own forces and a list of Subcontractors and their designated work.
- B. List of manufacturers and suppliers of specified materials to be used.
- C. Contractor's Schedule of Values
- D. Bid Bond

**1.8 INSURANCE**

- A. In addition to any certificates of insurance for liability, automobile and workers compensation as required by the City of Beaufort, Marine Contractors shall provide marine insurance, specifically USL&H and Jones Act coverage for working over water or from a vessel as applicable.

**1.9 BONDS**

- A. The Contractor shall submit a 5 percent bid bond with their bid. A payment and performance bond for 100 percent of the work will be required.

**1.10 ACCESS TO SITE**

- A. General: During the construction period the Contractor shall have use of Project site for construction operations as indicated on the drawings, as indicated by requirements of this Section, and as specified by the Engineer or Owner.
- B. Material storage and work areas shall be as designated by the Owner.
- C. Use of Site: Limit use of Project site to Construction area indicated. Do not disturb portions of Project site beyond areas in which the work is indicated.
- D. Limits: Confine construction operations to the area affected by construction.
- E. The Contractor will be able to park in the general vicinity of the work site. The Contractor may or may not be assigned an area in the general vicinity of the site for storage of material.

**1.11 WORK RESTRICTIONS, NOTIFICATIONS, AND COORDINATION**

- A. Coordinate all work being performed on a daily basis with the Owner, Engineer, and other agencies having jurisdiction.
- B. Comply with all requirements set forth by US Coast Guard, US Army Corps of Engineers, and any other agencies having jurisdiction.
- C. On-Site Work Hours: Limit work to normal business working hours of 7:30 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.
- D. Submit request to the Owner at least 72 hours in advance for permission to work outside the normal working hours or on Saturdays, Sundays, or federal holidays.
- E. Submit request to the Owner at least 72 hours in advance of any utility interruptions.
- F. Obtain Owner's written permission before proceeding with any utility interruptions.
- G. Take action to prevent the spread of construction dust or debris. All debris relating to the demolition or construction activities shall be removed from the waterway, Contractor's laydown area, and from the site at the Contractor's expense.
- H. Sanitation Facilities: The Contractor shall provide temporary toilet, wash facilities, and drinking water for use by Contractor's personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

**1.12 SAFETY PRECAUTIONS**

- A. These construction documents and the construction work hereby contemplated shall be governed at all times by applicable provisions of federal regulations, including, but not limited to, the current edition, with the latest amendment(s) of the following:
- B. William-Steiger Occupational Safety and Health Act of 1970, Public Law 91-596; Part 1926 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations (29 CFR Part 1926).
- C. The Contractor shall notify the local fire department at least 24 hours prior to the start of any construction practices which may affect or impair any fire protection system or which may present a fire hazard (i.e., sanding, welding, grinding, applying hot tar, burning and utilizing of any flame producing device).
- D. The Contractor shall have and maintain an appropriate functioning fire extinguisher in the work area, for the type of work being done and the materials present. The Contractor shall comply with OSHA, NFPA, and other local safety regulations.
- E. The Contractor shall determine and employ all necessary safety precautions to protect the general public and Contractor or Subcontractor personnel during construction operations.
- F. Work vessels, barges, and other waterborne equipment must display the appropriate day shapes and/or lighting configurations as required by the US Coast Guard. In addition, all vessels shall have the appropriate safety equipment on board each vessel as required by

OSHA and the US Coast Guard.

**1.13 SITE MAINTENANCE**

- A. The Contractor shall perform daily clean-up of work site, dumpsters and storage area. All dumpsters shall be covered and watertight.
- B. The Contractor shall ensure that barges, work vessels, and equipment are secured and moored in a safe manner prior to completing work each day. Contractor shall coordinate the location of equipment and vessels left overnight with the US Coast Guard.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 011000**

**SECTION 012900  
PAYMENT PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

**1.2 DEFINITIONS**

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the work and used as the basis for reviewing Contractor's Applications for Payment.

**1.3 SCHEDULE OF VALUES**

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
  - a. Application for Payment forms with continuation sheets
  - b. Submittal schedule
  - c. Items required to be indicated as separate activities in Contractor's construction schedule
2. Submit the schedule of values to Engineer at earliest possible date, but no later than 30 days before the date scheduled for submittal of initial Applications for Payment.
3. Sub-schedules: Where the Contractor's construction schedule defines separate elements of the work and/or phasing, provide sub-schedules showing values coordinated with each element and/or each phase.

B. Format and Content: Use Project specifications table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:
  - a. Project name and location.
  - b. Owner's project number.
  - c. Contractor's name and address.
  - d. Date of submittal.
2. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
  - a. Related Specification Section or Division.
  - b. Description of the work.
  - c. Name of subcontractor.
  - d. Name of manufacturer or fabricator.

- e. Name of supplier.
  - f. Change Orders (numbers) that affect value.
  - g. Dollar value.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project specifications table of contents. Provide multiple line items for principal subcontract amounts, where appropriate.
  4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
  5. Provide a separate line item in the schedule of values for each part of the work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
  6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the work.
  7. Allowances: Provide a separate line item in the schedule of values for each Allowance, if applicable. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
  8. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
    - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
  9. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

#### **1.4 APPLICATIONS FOR PAYMENT**

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.
  1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and Final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Application for Payment Forms: Use Standard AIA Forms or other forms acceptable to Engineer for Applications for Payment.

- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.
1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
  2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
  3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the work claimed as substantially complete.
1. Include documentation supporting claim that the work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  2. This application shall reflect Certificate(s) of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the work.
- F. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
  2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  3. Updated final statement, accounting for final changes to the Contract Sum.
  4. Evidence that any claims have been settled.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 012900**

**SECTION 013300  
SUBMITTAL PROCEDURES**

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Wherever possible throughout the contract documents the minimum acceptable quality of workmanship and materials has been defined either by manufacturers name and catalog number with the salient characteristics or by reference to recognized industry standards.
- B. To ensure that the specified products are furnished and installed in accordance with design intent, procedures have been established for advance submittal of design data and for its review and approval or rejection by the Engineer.
- C. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

**1.2 DEFINITIONS**

- A. Submittals: Written and graphic information or physical samples that require Engineer's responsive action.

**1.3 SUBMITTALS**

- A. Submittals for the project are indicated throughout the Contract Documents and are presented in tabular form at the end of this Section.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

**1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS**

- A. Make all submittals of shop drawings, samples, request for substitutions and other items in strict accordance with the provisions of this section of these specifications.
- B. All submittals shall be reviewed by the Contractor before submitting to the Engineer.
- C. All submittals shall be provided to the Engineer within 30 calendar days of NTP.
- D. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the work are indicated.

3. Coordinate transmittal of submittals for related parts of the work so processing will not be delayed because of need to review submittals concurrently for coordination.
  - a. Owner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
  
- E. 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.
  1. Initial Review: Allow (5) five working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Owner will advise Contractor when a submittal being processed must be delayed for coordination.
  2. Contractor shall provide resubmittals to Engineer or Owners Representative within (5) five working days of receipt of disapproved submittal. Five days starts at the earliest date disapproved submittal is received, i.e. electronically or hard copy.
  3. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  4. Resubmittal Review: Allow the same number of days for review of each resubmittal, as in the initial review.
  
- F. Submittals: Place a permanent label or title block on each submittal item for identification.
  1. Indicate name of firm or entity that prepared each submittal on label or title block.
  2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Owner.
  3. Include the following information for processing and recording action taken:
    - a. Project name
    - b. Date
    - c. Name of Contractor
    - d. Name of subcontractor
    - e. Name of supplier
    - f. Name of manufacturer
    - g. Submittal number or other unique identifier, including revision identifier
    - h. Number, paragraph number and title of appropriate Specification Section
    - i. Drawing number and detail references, as appropriate
    - j. Location(s) where product is to be installed, as appropriate
    - k. Other necessary identification
  4. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a



transmittal form. Owner will return without review submittals received from sources other than Contractor.

- G. 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's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final submittals that are marked with approval notation from Owner action stamp.
  - 1. Submittals returned "approved as noted" are only approved if contractor and manufacturer concur with the comments, if not, the submittal is rejected and must be resubmitted.

## **PART 2 - PRODUCTS**

### **2.1 SUBMITTAL PROCEDURES**

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product.
  - 1. Manufacturers catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data shall be clearly marked to identify pertinent materials, products, or models.
  - 2. 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.
  - 3. Mark each copy of each submittal to show which products and options are applicable.
  - 4. Submit Product Data before or concurrent with Samples.

- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Make all shop drawings accurately to a scale sufficiently large to show all pertinent features of the item and its method of connection to the work. Fully illustrate requirements in the Contract Documents.
  2. Modify manufacturer's standard schematic drawings as necessary to provide additional information applicable to project.
- D. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- E. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- F. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- G. 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.
- H. 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.
- I. 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.
- J. Warranties: Submit warranty information for installed products.
- K. Maintenance Information: Submit manufacturer's maintenance requirements for the products specified.

## **PART 3 - EXECUTION**

### **3.1 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.
- B. Contractor's responsibility for errors and omissions in submittals is not relieved by Engineering review of submittals.

- C. Contractor's responsibility for deviations in submittals from requirements of contract is not relieved by review of submittals Owner or Engineer gives written acceptance of specific deviation.

### **3.2 OWNER'S ACTION**

- A. Submittals: Engineer will review each submittal, make marks to indicate corrections or revisions required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- C. Submittals not required by the Contract Documents may be returned by the Owner without action.
- D. Begin no work that requires submittals until return of submittals with Engineering approval and initials or signature indicating review.

<b>Specification Section</b>	<b>Submittal Item</b>	<b>Date Submitted</b>	<b>Date Reviewed</b>	<b>Comments</b>
011000 - 1.4	Final Survey			
011000 - 1.7A	List of Subcontractors			
011000 - 1.7B	List of Manufacturers			
011000 - 1.9A	Bid Bond			
011000 - 1.9A	Payment and Performance Bond			
012900 - 1.3	Schedule of Values			
015000 - 1.3A	Construction Site Plan			
032000 - 1.2	Epoxy Coated Bar Product Data			
033000 - 1.2A	Concrete Design Data			
033000 - 1.2B	Concrete Strength Tests			
055100 - 1.2	Warranty			
055100 - 1.2	Shop Drawings			
055100 - 1.2	Calculations			
055100 - 1.2	Connection Details			
057311 - 1.2	Shop Drawings			
057311 - 1.2	Instructions			
057311 - 1.2	Warranty			
316216 - 1.2	Shop Drawings			
316216 - 1.2	Driving Records			
355113 - 1.2	Shop Drawings			
355113 - 1.2	Warranty			
355113 - 1.2	Calculations			

**SECTION 013400  
HEAVY WEATHER PLAN**

**PART 1. GENERAL**

The requirements of this section do not supersede requirements set forth by the United States Coast Guard or other agencies having jurisdiction. Where there is a difference in requirements, Contractor shall follow the more stringent guideline.

- 1.1 The Contractor shall generate a Heavy Weather Plan in the event of Hurricane or Storm Conditions. This plan will require the completion of specific tasks prior to the arrival of a hurricane / storm. The intent is to reduce the project site's exposure to damage, allowing return of service as rapidly as possible after the hurricane / storm passes.
- 1.2 The Contractor and subcontractors shall be in a general condition of readiness during the hurricane season, which runs from June 1 to November 30 each calendar year.
- 1.3 In the event of heavy weather, Contractor shall not moor vessels, barges, boats or other waterborne equipment to existing or newly installed structures. Contractor shall not secure or tie down equipment to any existing or newly installed structures. Contractor shall move all materials, equipments, and waterborne vessels to a secure location.
- 1.4 Any damage to existing or newly installed structures as a result of failure by the Contractor to move or secure equipment, material, and vessels from the construction site during periods of heavy weather shall be repaired at no additional cost to the Owner.

**PART 2 HEAVY WEATHER PLAN**

**2.1 Contractor Responsibilities**

- A. Contractor shall have heavy weather plan in place and notify superintendents, personnel and subcontractors of required actions during heavy weather. The heavy weather plan shall address actions that include but are not limited to:
  1. Contractors shall ensure personnel are aware of requirements for securing work site in preparation for storm (e.g., contractors, trailers, and equipment).
  2. Waste pick up
  3. Emptying storage or tool sheds
  4. Removing portable toilet facilities
  5. Removing potential missile hazards on site
  6. Moving machinery, equipment, vessels and barges to a secure location.

**END OF SECTION 013400**

**SECTION 015000  
TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.1 SUMMARY**

Requirements of this Section apply to, and are a component of, each section of the specifications.

**1.2 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

**AMERICAN WATER WORKS ASSOCIATION (AWWA)**

AWWA C511 (2007) Standard for Reduced-Pressure Principle Backflow Prevention Assembly  
FCCCHR List (continuously updated) List of Approved Backflow Prevention Assemblies  
FCCCHR Manual (I988e9) Manual of Cross-Connection Control

**NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)**

NFPA 241 (2009) Standard for Safeguarding Construction, Alteration, and Demolition Operations

NFPA 70 (2011; Errata2 2012) National Electrical Code

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA) MUTCD (2009) Manual of Uniform Traffic Control Devices

**1.3 SUBMITTALS**

Engineer approval is required for all submittals. Submit the following in accordance with Section 013300 SUBMITTAL PROCEDURES:

A. Construction Site Plan

Prior to the start of work, submit a site plan showing the locations and dimensions of temporary facilities (including layouts and details, equipment and material storage area (onsite and offsite), and access and haul routes, avenues of ingress/egress to the fenced area and details of the fence installation. Identify any areas, which may have to be graveled to prevent the tracking of mud. Indicate if the use of a supplemental or other staging area is desired. Show locations of safety and construction fences, site trailers, construction entrances, trash dumpsters, temporary sanitary facilities, and worker parking areas.

## **PART2 PRODUCTS**

### **2.1 TEMPORARY CONTROLS**

#### **A. Barricades**

1. Erect and maintain temporary barricades to limit public access to hazardous areas. Securely place barricades and make clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

#### **B. Fencing and Life Safety Signage**

2. Prior to the start of work, enclose those areas at the construction site which are not within the construction fence with a temporary safety fence, including gates and warning signs, to protect the public from construction activities. The safety fence shall be bright orange where it protects work areas, shall be made of high density polyethylene grid or approved equal plastic fence from recovered materials containing 60-100 percent recovered content level plastic, a minimum of 42 inches high, supported and tightly secured to steel posts located on minimum 8-foot centers. Remove the fence from the work site upon completion of the contract.
3. "Danger Construction Area" signs shall be posted along the site and on the construction fence at intervals not to exceed 20 ft. Maintenance of the warning signage shall be the sole responsibility of the Contractor.

#### **C. Temporary Wiring**

1. Provide temporary wiring, as needed, in accordance with NFPA 241 and NFPA 70, Article 305- 6(b), Assured Equipment Grounding Conductor Program. Include frequent inspection of all equipment and apparatus.

### **2.2 EMPLOYEE PARKING**

1. Contractor employees will park privately owned vehicles in an area designated by the Owner's representative. This area will be within reasonable walking distance of the construction site.
2. Contractor employee parking must not interfere with existing and established parking requirements of the Owner.

### **2.3 AVAILABILITY AND USE OF UTILITY SERVICES**

#### **A. Temporary Utilities**

1. Provide temporary utilities required for construction. Materials may be new or used, must be adequate for the required usage, not create unsafe conditions, and not violate applicable codes and standards.

#### **B. Sanitation**

1. Provide temporary sewer and sanitation facilities that are self-contained units with both

urinals and stool capabilities. Ventilate the units to control odors and fumes and empty and clean them at least once a week or more often if required by the owner. The doors shall be self-closing. Locate the facility behind the construction fence or out of the public view.

#### C. Fire Protection

1. Provide temporary fire protection equipment for the protection of personnel and property during construction. Remove debris and flammable materials daily to minimize potential hazards.

### **2.4 TRAFFIC PROVISIONS**

#### A. Maintenance of Traffic

1. Conduct operations in a manner that will not close any thoroughfare or interfere in any way with traffic. Contractor may move oversized and slow-moving vehicles to the worksite provided requirements of the SCDOT and local authorities have been met.

#### B. Protection of Traffic

1. Maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Engineer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, will be as required by the State and local authorities having jurisdiction. Protect the traveling public from damage to person and property. Minimize the interference with public traffic on roads selected for hauling material to and from the site. Investigate the adequacy of existing roads and their allowable load limit. Contractor is responsible for the repair of any damage to roads caused by construction operations.

### **2.5 CONTRACTOR'S TEMPORARY FACILITIES**

#### A. Safety

1. Protect the integrity of any installed safety systems or personnel safety devices. If it is temporarily necessary to remove or disable personnel safety devices in order to accomplish contract requirements, provide alternative means of protection prior to removing or disabling any permanently installed safety devices or equipment and obtain approval from the Engineer.

#### B. Storage Area (If necessary)

1. Designate a temporary area around equipment and materials. Do not place or store trailers, materials, or equipment outside the designated area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Engineer away from the vicinity of the construction site but within the installation boundaries. Trailers, equipment, or materials must not be open to public view with the exception of those items, which are in support of ongoing work on any given day. Do not stockpile materials outside the designated area in preparation for the next day's work.



Park mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment within the designated area at the end of each workday.

#### C. Maintenance of Storage Area

1. Keep storage area in a state of good repair. Grassed or unpaved areas, which are not established roadways, will be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways. Should the Contractor elect to traverse them with construction equipment or other vehicles; gravel gradation will be at the Contractor's discretion.

#### D. Security Provisions

1. Provide adequate outside security lighting at the Contractor's temporary facilities. The Contractor will be responsible for the security of its own equipment; in addition, the Contractor will notify the appropriate law enforcement agency requesting periodic security checks of the temporary project field office.
2. When a warning of gale force winds is issued, take precautions to minimize danger to persons, and protect the work and nearby property. Precautions must include, but are not limited to, closing openings; removing loose materials, tools and equipment from exposed locations; and removing or securing scaffolding and other temporary work. Close openings in the work when storm is of lesser intensity pose a threat to the work or any nearby Owner property.

### **2.6 TEMPORARY PROJECT SAFETY FENCING**

Prior to commencing other work, furnish and erect temporary project safety fencing at the work site. The safety fencing must be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 42 inches high, supported and tightly secured to steel posts located on maximum 8-foot centers, constructed at the approved location. Maintain the safety fencing during the life of the contract and, upon completion and acceptance of the work, will become the property of the Contractor and be removed from the work site.

## **PART 3 EXECUTION**

### **3.1 CLEANUP**

Remove construction debris, waste materials, packaging material and the like from the work site daily. Remove daily any trash, debris, or waste that may attract animals. Any dirt or mud, which is tracked onto paved or surfaced roadways, must be cleaned away. Store within the fenced area described above or at the supplemental storage area any materials resulting from demolition activities, which are salvageable. Neatly stacked stored materials not in trailers, whether new or salvaged.

### **3.2 RESTORATION OF STORAGE AREA**

Upon completion of the project remove the bulletin board, signs, barricades, haul roads, and any other temporary products from the site. After removal of trailers, materials, and equipment from within the fenced area, remove the fence that will become the property of the Contractor. Restore to the original or better condition, areas used by the Contractor for the storage of

equipment or material, or other use. Gravel used to traverse grassed areas must be removed and the area restored to its original condition, including topsoil and seeding as necessary.

**END OF SECTION 015000**

## SECTION 017300 EXECUTION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
1. Construction layout.
  2. Installation of the work.
  3. Cutting and patching.
  4. Progress cleaning.
  5. Protection of installed construction.
  6. Correction of the work.

#### 1.2 DEFINITIONS

Refer to individual specifications sections for information and requirements regarding definitions of work items in **Section 017300 1.1A** not listed herein.

- 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 or general repair work as specified on the Contract Drawings.

#### 1.3 SUBMITTALS

Refer to individual specifications sections for information and requirements regarding required submittals.

#### 1.4 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
1. Structural Elements: When cutting and patching structural elements, notify Engineer of locations and details of cutting before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
  2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
  3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
  4. Visual Elements: Do not cut and patch construction in a manner that results in

visual evidence of cutting and patching. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Owner for the visual appearance and will equal or surpass functional performance of in-place materials.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the work.
  - 1. Before construction, verify the location and points of connection of utility services.
  - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
- C. Examine surfaces to be cut and patched and conditions under which cutting, and patching are to be performed.
  - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes and primers.
  - 2. Review proposed cutting areas for potential interferences and conflicts. Coordinate procedures and resolve potential conflicts before proceeding.
- D. Written Report: Where a written report listing conditions detrimental to performance of the work is required by other Sections, include the following:
  - 1. Description of the work.
  - 2. List of detrimental conditions, including substrates.
  - 3. Recommended corrections.
- E. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Engineer that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving any facilities unless permitted by written permission from the Owner.
- C. Field Measurements: Take field measurements as required to fit the work properly. Recheck measurements before installing each product. Where portions of the work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the work.
- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a Request For Information to Engineer.

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.

### 3.4 INSTALLATION

- A. General: Locate the work and components of the work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated

requirements.

- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

### **3.5 CUTTING AND PATCHING**

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- G. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- H. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.
- I. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
- J. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

### **3.6 PROGRESS CLEANING**

- A. General: Clean Project site and work areas daily, including common areas. Enforce

requirements strictly. Dispose of materials lawfully.

1. Comply with all State, Federal and Local regulations concerning the removal of waste material and debris.
  2. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
  3. Use containers intended for holding waste materials of type to be stored.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the work.
1. Remove liquid spills promptly.
  2. Where dust would impair proper execution of the work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- G. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- H. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### **3.7 PROTECTION OF INSTALLED CONSTRUCTION**

- A. Provide final protection and maintain conditions that ensure installed work is without damage or deterioration at time of Substantial Completion.

### **3.8 CORRECTION OF THE WORK**

- A. Repair or remove and replace defective construction.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

**END OF SECTION 017300**

## **SECTION 022200 SELECTIVE DEMOLITION**

### **PART 1 GENERAL**

This section details the requirements for removal of selected portions of the existing concrete rail on the Promenade. Contractor shall provide all labor, materials, and equipment necessary to provide selective demolition as noted on the drawings and specified herein.

#### **1.1 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2008; Change 1-2010; Change 3-2010; Errata 1-2010)  
Safety and Health Requirements Manual

#### **1.2 GENERAL REQUIREMENTS**

Do not begin demolition until authorization is received from the Engineer. Remove rubbish and debris from the project site; do not allow accumulations. The work includes demolition and removal of resulting rubbish and debris. Remove rubbish and debris from Owner's property daily, unless otherwise directed. Materials that cannot be removed daily shall be stored in areas specified by the Owner. Protect construction indicated to remain against damage during demolition. All materials and equipment designated for demolition shall become the property of the Contractor and shall be removed from Owner's property. All materials and equipment designated as salvage shall be moved to a location designated by the Owner.

#### **1.3 SUBMITTALS**

Engineer approval is required for all submittals. The following shall be submitted in accordance with Section 013300 SUBMITTAL PROCEDURES:

None

#### **1.4 REGULATORY AND SAFETY REQUIREMENTS**

Comply with Federal, State, and local hauling and disposal regulations.

#### **1.5 DUST AND DEBRIS CONTROL**

Prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.



## **1.6 PROTECTION**

### **1.6.1 Traffic Control Signs**

Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Anchor barricades in a manner to prevent displacement by wind. Notify the Engineer prior to beginning such work.

### **1.6.2 Existing Work**

Before beginning any demolition work, survey the site and examine the drawings and specifications to determine the extent of the work. Record existing work showing the condition of structures and other facilities adjacent to areas of alteration or removal. Date Stamped Digital photographs with a photo log will be acceptable as a record of existing conditions. Include in the description the location and extent of cracks and other damage and description of surface conditions that exist prior to starting work.

### **1.6.3 Items to Remain in Place**

Take necessary precautions to avoid damage to existing items to remain in place. Repair or replace damaged items as approved by the Engineer. Coordinate the work of this section with all other work indicated. Ensure that structural elements are not overloaded.

### **1.6.4 Existing Construction**

Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove dust, dirt, and debris from work areas daily.

### **1.6.5 Utility Service**

Maintain existing utilities to stay in service and protect against damage during demolition operations.

### **1.6.6 Protection of Personnel**

Before, during and after 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.

## **1.7 BURNING**

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

## **1.8 REQUIRED DATA**

The Demolition plan shall include procedures for careful removal and disposition of materials coordination with other work in progress, a detailed description of methods and equipment to be used for each operation and of the sequence of operations. The demolition plan shall clearly identify the disposal facility receiving all waste.

## **1.9 ENVIRONMENTAL PROTECTION**

Comply with the Environmental Protection Agency requirements and the requirements of other regulatory agencies having jurisdiction.

## **1.10 USE OF EXPLOSIVES**

Use of explosives will not be permitted.

## **PART 2 PRODUCTS**

Not Used.

## **PART 3 EXECUTION**

### **3.1 EXISTING FACILITIES TO BE REMOVED OR/AND SALVAGED**

#### **3.1.1 Structures to be Removed**

All structures indicated for removal shall be removed as indicated in the drawings, taking care not to leave any debris on the riverbed.

#### **3.1.1 Surveying Existing Conditions**

Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

#### **3.1.2 Unanticipated Elements**

When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Engineer.

#### **3.1.3 Surveying Existing Conditions**

Survey the condition of the existing structure and adjacent structures to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

### **3.2 PREPARATION**

#### **3.2.1 Interference**

Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and waterway.

- a. Do not close or obstruct adjacent waterway without written permission from the United States Coast Guard.

#### **3.2.2 Injury**

Conduct demolition operations to prevent injury to people and damage to adjacent structures and facilities to remain. Ensure safe passage of people around selective demolition area.

- a. Protect all structural and utility items that are to remain and are exposed during selective demolition operations.

### **3.2.3 Stability**

Provide and maintain interior and exterior shoring, bracing or structural support to preserve stability and prevent movement, settlement, or collapse of adjacent structures.

## **3.3 POLLUTION CONTROLS**

### **3.3.1 Dust and Dirt**

Use temporary enclosures and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

### **3.3.2 Transport Debris**

Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

### **3.3.3 Adjacent Structures**

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

## **3.4 SELECTIVE DEMOLITION**

### **3.4.1 Existing Construction**

Demolish and remove existing construction only to the extent required by new construction and as indicated on drawings. Use methods required to complete Work within limitations of governing regulations and as follows:

- a. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.
- b. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.

## **3.5 PATCHING AND REPAIRS**

Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

## **3.6 DISPOSAL OF DEMOLISHED MATERIALS**

### **3.6.1 General**

Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

### **3.6.2 Burning**

Do not burn demolished materials.

### **3.7 REUSE OF SALVAGED ITEMS**

Replace items damaged during removal and salvage operations or restore them as directed by the Engineer prior to reuse.

**END OF SECTION 022200**

**SECTION 032000  
CONCRETE REINFORCING**

**PART 1 GENERAL**

**1.1 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)

ACI 318 (2011; Errata 2011; Errata 2012) Building Code Requirements for Structural Concrete and Commentary

ACI 318M (2011; Errata 2011; Errata 2012) Building Code Requirements for Structural Concrete & Commentary

ACI SP-66(2004) ACI Detailing Manual AMERICAN WELDING SOCIETY (AWS)  
AWS D1.4/D1.4M(2011) Structural Welding Code- Reinforcing Steel

ASTM INTERNATIONAL (ASTM)

ASTM A631/A631M(2011) Standard Specification for Deformed and Plain, Low-carbon, Chromium, Steel Bars for Concrete Reinforcement

ASTM A184/A184M(2006e1) Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement

ASTM A185/A185M(2007) Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete

ASTM A370(2012) Standard Test Methods and Definitions for Mechanical Testing of Steel Products

ASTM A496/A496M(2007) Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement

ASTM A497/A497M(2007) Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete

ASTM A53/A53M(2012) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ASTM A615/A615M(2012) Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

ASTM A675/A675M(2003; R 2009) Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality, Mechanical Properties

ASTM A706/A706M(2009b) Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

ASTM A767/A767M(2009) Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement

ASTM A775/A775M(2007b) Standard Specification for Epoxy-Coated Steel Reinforcing Bars

ASTM A82/A82M(2007) Standard Specification for Steel Wire, Plain, for Concrete Reinforcement

ASTM A884/A884M(2006) Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement

ASTM A934/A934M(2007) Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars

ASTM C1116/C1116M(2010a) Standard Specification for Fiber-Reinforced Concrete  
ASTM E94(2004; R 2010) Radiographic Examination  
CONCRETE REINFORCING STEEL INSTITUTE (CRSI)

CRSI 10MSP(2009; 28th Ed) Manual of Standard Practice

## **1.2 SUBMITTALS**

Engineer approval is required for submittals. Submit the following in accordance with Section 013300 SUBMITTAL PROCEDURES:

Epoxy-Coated Bar Product Data

## **1.3 DELIVERY, STORAGE, AND HANDLING**

Reinforcement and accessories shall be stored off the ground on platforms, skids, or other supports.

## **PART 2 PRODUCTS**

### **2.1 REINFORCING STEEL**

Reinforcing steel shall be deformed plain steel which prior to surface preparation are prefabricated and then coated with a protective fusion-bonded coating by electrostatic spray or other suitable method.

#### **2.1.1 Epoxy-Coated Bars**

Epoxy-coated steel bars shall be deformed bar, Grade 60, and comply with the requirements of ASTM A934 / A934M.

### **2.1.2 WIRE TIES**

Wire ties shall be 16 gauge or heavier black annealed steel wire. Ties for epoxy-coated bars shall be vinyl-coated or epoxy-coated.

## **PART 3 EXECUTION**

### **3.1 REINFORCEMENT**

Reinforcement steel and accessories shall be fabricated and placed as specified and shown and approved shop drawings. Fabrication and placement details of steel and accessories not specified or shown shall be in accordance with ACI SP-66 and ACT 318. Reinforcement shall be cold bent unless otherwise authorized. Bending may be accomplished in the field or at the mill. Epoxy-coated bars shall be mill-bent prior to coating. All steel shall be bent cold unless authorized. Bars shall not be bent after embedment in concrete. Safety caps shall be placed on all exposed ends of vertical concrete reinforcement bars that pose a danger to life safety. Wire tie ends shall face away from the forms.

#### **3.1.1 Placement**

Reinforcement shall be free from loose rust and scale, dirt, oil, or other deleterious coating that could reduce bond with the concrete. Reinforcement shall be placed in accordance with ACI 318 at locations shown plus or minus one bar diameter; Reinforcement shall not be continuous through expansion joints and shall be as indicated through construction or contraction joints.

Concrete coverage shall be as indicated or as required by ACI 318. If bars are moved more than one bar diameter to avoid interference with other reinforcement, conduits or embedded items, the resulting arrangement of bars, including additional bars required to meet structural requirements, shall be approved before concrete is placed.

#### **3.1.2 Splicing**

Splices of reinforcement shall conform to ACI 318 and shall be made only as required or indicated. Splicing shall be by lapping or by mechanical or welded butt connection. Welding shall conform to AWS DI .4/D1.4M. Welded butt splices shall be full penetration butt welds.

Lapped bars shall be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than one-fifth the required length of lap or 6 inches. Mechanical butt splices shall be in accordance with the recommendation of the manufacturer of the mechanical splicing device. Butt splices shall develop 125 percent of the specified minimum yield tensile strength of the spliced bars or of the smaller bar in transition splices. Bars shall be flame dried before butt splicing. Adequate jigs and clamps or other devices shall be provided to support, align, and hold the longitudinal centerline of the bars to be butt spliced in a straight line.

#### **3.1.3 Placing Tolerances**

The spacing between adjacent bars and the distance between layers of bars may not vary

from the indicated position by more than one bar diameter nor more than 1 inch.

**3.1.5 Concrete Cover**

The minimum concrete cover over the reinforcing shall be 3 inches.

**End of Section 032000**



**SECTION 033000  
CAST-IN-PLACE CONCRETE**

**PART 1 GENERAL**

Work under this section covers the supply and installation of cast-in-place concrete for the proposed concrete ramp located on the Promenade and other miscellaneous concrete work that may be required to complete the project.

**1.1 REFERENCES**

The publications listed below form a part of this specification to the extent referenced.

**AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)**

ACI 117(2006) Standard Specifications for Tolerances for Concrete Construction and Materials

ACI 211.1(1991; R 2002) Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete

ACI 301(2005) Specifications for Structural Concrete

ACI 318/318R(2005) Building Code Requirements for Structural Concrete and Commentary  
ACI/MCP 205(2005) Manual of Concrete Practice Part 2-ACI 224R-01 to  
ACI 313R-97 ACI/MCP 305(2005) Manual of Concrete Practice Part 3:315-99 to 343R-95  
ACI/MCP 405(2005) Manual of Concrete Practice Part 4:345R-91(97) to 355.2R-04

**CONCRETE REINFORCING STEEL INSTITUTE (CRSI)**

CRSI MSP-2(1998) Manual of Standard Practice

**1.2 SUBMITTALS**

Owner approval is required for all submissions. The following shall be submitted in accordance with Section 013300 SUBMITTAL PROCEDURES:

- A. Design Data:
  - 1. Concrete mix design data shall be submitted at least 10 days prior to the start of specified work.
- B. Concrete strength tests

**1.3 DELIVERY, STORAGE, AND HANDLING**

Do not deliver concrete until vapor barrier, forms, reinforcement, embedded items, and chamfer strips are in place and ready for concrete placement. Protect materials from contaminants such as grease, oil, and dirt. Ensure materials can be accurately identified after bundles are broken and tags removed. Do not store concrete curing compounds or sealers with materials that have a high capacity to absorb volatile organic compound (VOC) emissions. Do not store concrete curing compounds or sealers in occupied spaces.

### **1.3.1 Reinforcement**

Reinforcement and other metal items shall be protected from corrosion and shall be kept free from ice, grease, and other coatings that would destroy or reduce bond.

#### **1.3.1.1 Epoxy Coated Reinforcing Steel**

Provide systems for handling coated bars which have padded contact areas, nylon slings, etc., all free of dirt and grit. Lift bundled coated bars with strong back, multiple supports, or platform bridge to prevent sagging and abrasion. Pad bundling bands where in contact with bars. Do not drop or drag bars or bundles. Store coated bars both in shop and in field, aboveground, on wooden or padded cribbing. Space the dunnage close enough to prevent excessive sags. Stack large quantities of straight bars with adequate protective blocking between layers. Schedule deliveries of epoxy coated bars to the job site to avoid the need for long term storage. Protect from direct sunlight and weather. Cover bars to be stored longer than 12 hours at the job site with opaque polyethylene sheeting or other suitable equivalent protective material.

## **1.4 QUALITY ASSURANCE**

### **1.4.1 Shop Drawings**

If required, provide drawings showing details of formwork including, but not limited to; joints, supports, studding and shoring, and sequence of form and shoring removal. Reproductions of contract drawings are unacceptable.

Design, fabricate, erect, support, brace, and maintain formwork so that it is capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the form work.

### **1.4.2 Concrete Mix Design**

Submit copies of laboratory test reports showing that the mix has been successfully tested to produce concrete with the properties specified and that mix must be suitable for the job conditions. Include mill test and all other test for cement, aggregates, and admixtures in the laboratory test reports. Provide maximum nominal aggregate size, gradation analysis, percentage retained and passing sieve, and a graph of percentage retained versus sieve size. Submit test reports along with the concrete mix design. Obtain approval before concrete placement.

## **1.5 CONCRETE SAMPLING AND TESTING**

Testing by the Contractor must include sampling and testing concrete materials proposed for use in the work and testing the design mix. Perform quality control testing during construction

## **PART 2 PRODUCTS**

### **2.1 MATERIALS FOR FORMS**

Forms shall be constructed to conform, within the tolerances specified, to shapes dimensions, lines, elevations, and positions of cast-in-place concrete members as indicated. Forms shall be supported, braced, and maintained sufficiently rigid to prevent deformation under load.

### **2.2 FORM TIES AND ACCESSORIES**

The use of wire alone is prohibited. Provide form ties and accessories that do not reduce the effective cover of the reinforcement.

### **2.3 CONCRETE MATERIALS**

#### **A. Concrete Aggregates**

1. Fine and coarse aggregates shall conform to ASTM C33.
2. Concrete aggregate shall be obtained from a single source.

#### **B. Portland Cement**

1. Cement shall conform to ASTM C 150, Type I, IA, II, or IIA. One brand and type of cement shall be used for formed concrete having exposed-to-view finished surfaces.

#### **C. Admixtures**

1. Air-Entraining Admixtures: Air-entraining admixtures shall conform to ASTM C 260.
2. Water-Reducing Admixtures: Water-reducing admixtures, retarding admixtures, accelerating admixtures, water-reducing and accelerating admixtures, and water-reducing and retarding admixtures shall conform to ASTM C 494/C494M.

#### **D. Pozzolan**

1. Fly ash or other pozzolans used as admixtures shall conform to ASTM C 618, Class C or Class F with 4 percent maximum loss on ignition and 20 percent maximum cement replacement by weight.

#### **E. Water**

1. Water shall be potable.

### **2.4 READY-MIX CONCRETE**

#### **A. Concrete shall meet the requirements of ASTM C 94/C94M.**

#### **B. Ready-mixed concrete manufacturer shall provide duplicate delivery tickets with each load of concrete delivered. Delivery tickets shall provide the following information in addition to that required by ASTM C 94/C94M:**

1. Type and brand of cement

2. Cement content in 94-pound bags per cubic yard of concrete
3. Maximum size of aggregate
4. Amount and brand name of admixtures
5. Total water content expressed by water/cement ratio

## **2.5 REINFORCEMENT MATERIALS**

REFER TO SPECIFICATION SECTION 032000 - CONCRETE REINFORCING

## **2.6 JOINT MATERIALS**

### **C. Preformed Joint Filler Strips**

1. Provide preformed joint fillers with a thickness equal to the width of the joint required and furnish in lengths equal to the width of the slabs in which they are installed. Use preformed joint filler shaped so that, after installation, the upper and lower surfaces conform to the shape of the slab and subbase surfaces. Position the lower surface of the preformed joint filler on or below the surface of the base while the upper surface is  $\frac{1}{2}$  inch below the surface of the slab unless otherwise specified.
2. A preformed material composed of 100% scrap tire rubber, shredded and fused into cohesion with a non-toxic; odorless, polyurethane binder complying with the physical properties given in (ASTM D 1752, Type I) is also allowed: Only shredded material treated to resist most types of microbes, oils, fungi, and biological growth is acceptable.

## **2.7 WATER-VAPOR BARRIER SUBGRADE COVER**

A. Cover shall be water-resistant barrier paper, reinforced, conforming to FS UU-B-790, Type I, Grade B, Style 4; or clear polyethylene sheeting, 0.152 millimeter 6-mil, conforming to ASTM D 2103 and ASTM D4397

## **2.8 CONCRETE CURING MATERIALS**

### **A. Absorptive Cover**

Cover for curing concrete shall be burlap cloth made from jute or kenaf, weighing 300 grams/10.58 ounces plus or minus 3-5 percent per square meter yard when clean and dry, conforming to ASTM C 171, Class 3; or cover may be cotton mats as approved.

### **B. Moisture-Retaining Cover**

Cover for curing concrete shall be waterproof paper conforming to ASTM C 171, regular or white, or polyethylene sheeting conforming to ASTM C 171, or polyethylene-coated burlap consisting of a laminate of burlap and a white opaque polyethylene film permanently bonded to the burlap; bw-Jap shall conform to ASTM C 171, Class 3, and polyethylene film shall conform to ASTM C 171.

## 2.9 CLASSIFICATION AND QUALITY OF CONCRETE

### D. Concrete Classes and Usage

1. Concrete classes, compressive strength, requirements for air entrainment, and usage shall be as follows:
  - a. Min. 28 Day Compressive Strength Requirement - 5000psi
  - b. Air -Entrained

### E. Limits for Concrete Proportions

1. Limits for maximum water/cement ratio and minimum cement content for each concrete class shall be as follows:
  - a. Max Water/Cement Ration - 0.40

### F. Maximum Size of Aggregate

1. Size of aggregate, designated by the sieve size on which maximum amount of retained coarse aggregate is 5 to 10 percent by weight, shall be as follows:
  - a. Size of Aggregate -1-1/2"
  - b. Size Number -467

### G. Slump

1. Slump shall be not less than 1 inch and not more than 3 inches.

### H. Total Air Content

1. Total air content by volume shall be 4 to 6 percent.
2. Concrete exposed to freezing and thawing or subjected to hydraulic pressure shall be air-entrained by addition of approved air-entraining admixture to concrete mix.

## PART 3 EXECUTION

### 3.1 EXAMINATION

Do not begin installation until substrates have been properly constructed; verify that substrates are plumb and true.

If substrate preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation before processing.

Check field dimensions before beginning installation. If dimensions vary too much from design dimensions for proper installation, notify Engineer and wait for instructions before beginning installation.

### 3.2 PREPARATION

Determine quantity of concrete needed and minimize the production of excess concrete. Designate locations or uses for potential excess concrete before the concrete is poured.

### 3.2.1 General

Surfaces against which concrete is to be placed must be free of debris, loose material, standing water, snow, ice, and other deleterious substances before start of concrete placing.

Remove standing water without washing' over freshly deposited concrete. Divert flow of water through side drains provided for such purpose.

### 3.2.2 Subgrade Under Foundations and Footings

When subgrade material is semi porous and dry, sprinkle subgrade surface with water as required to eliminate suction at the time concrete is deposited. When subgrade material is porous, seal subgradesurface by covering surface with specified vapor retarder; this may also be used over semi porous, dry subgrade material instead of water sprinkling.

### 3.2.3 Subgrade Under Slabs on Ground

Previously constructed subgrade or fill must be cleaned of foreign materials and inspected by the Contractor for adequate compaction and surface tolerances as specified.

Actual density of top 12 inches of subgrade soil material-in-place must not be less than the following percentages of maximum density of same soil material compacted at optimum moisture content in accordance with ASTM D1557.

SOIL MATERIAL	PERCENT MAXIMUM DENSITY
Capillary water barrier	100
Cohesionless soil material	100
Cohesive soil material	95

## 3.3 REINFORCEMENT FABRICATION AND INSTALLATION

### A. General

Details of reinforcement shall be in accordance with ACI/MCP 405, ASTM E 648, ACI/MCP 305 and ACI 318/318R, and as specified.

B. Fabrication- Reinforcing bars shall be shop fabricated to conform to shapes and dimensions indicated for reinforcement, and as follows:

1. Fabrication tolerances shall be in accordance with ACI/MCP 205, ACI/MCP 305 and ACI 318/318R, ASTM E 648 and ACI117.
2. Hooks and bends shall be in accordance with ACI/MCP 405, ASTM E 648, ACI/MCP 305 and ACI318/318R.
3. Reinforcement shall be bent cold to shapes as indicated. Bending shall be done in

the shop. Rebending of a reinforcing bar that has been bent incorrectly shall not be permitted. Bending shall be in accordance with standard approved practice and by approved machine methods.

4. Tolerance on nominally square-cut, reinforcing bar ends shall be in accordance with ACI/MCP 305 and ACI318/318R.
5. Reinforcing bars shall be delivered bundled, tagged, and marked. Tags shall be metal with bar size, length, mark, and other information pressed in by machine. Marks shall correspond with those used on the placing drawings.
6. Reinforcement which has any of the following defects shall not be used:
  - a. Bar lengths, depths, and bends beyond specified fabrication tolerances
  - b. Bends or kinks not indicated on drawings or approved shop drawings
  - c. Bars with reduced cross-section due to rusting or other cause
  - d. Defective reinforcement shall be replaced with new reinforcement having required shape, form, and cross-section area.

### **3.4 PREPARATIONS FOR CONCRETE PLACING**

#### **A. General**

1. Surfaces against which concrete is to be placed shall be free of debris, loose material, standing water, snow, ice, and other deleterious substances before start of concrete placing.
2. Standing water shall be removed without washing over freshly deposited concrete. Flow of water shall be diverted through side drains provided for such purpose.

#### **B. Concrete Placing**

1. Weather Limitations and Protection
2. Concrete shall not be placed when the temperature of the atmosphere is below 40 degrees F, nor during rain, sleet, or snow, unless protection is provided.
3. Protection shall be provided during cold weather in accordance with ASTM E 648, ACI/MCP 205 and ACI301.
4. During inclement weather, protection material shall be watertight to prevent entry of rain, sleet, or snow onto surfaces to receive concrete and into fresh concrete.
5. Protection materials shall be stored at project site for use in event of unforeseen weather changes after start of concrete placing operations.

#### **C. General Placing Requirements**

1. Concrete shall be deposited continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause formation of seams or planes of weakness within the section. If a section cannot be placed continuously,

construction joints shall be provided as specified.

Concrete placing shall be performed at such a rate that concrete, which is being integrated with fresh concrete is still plastic. Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to rehandling or flowing. Concrete shall not be subjected to procedures, which will cause segregation.

2. Concrete to receive other construction shall be screeded to proper level to avoid excessive skimming or grouting.
3. Concrete, which becomes non-plastic and unworkable or does not meet quality control limits as specified or has been contaminated by foreign materials shall not be used. Use of retempered concrete will not be permitted. Rejected concrete shall be removed from the site.
4. During concrete placing operations, concrete shall be consolidated by mechanical vibrating equipment so that concrete is worked around reinforcement and other embedded items and into corners. Concrete placed in beams and girders of supported slabs and against bulkheads of slabs on ground shall be consolidated by mechanical vibrators as specified. Consolidation operations shall be limited to time necessary to obtain consolidation of concrete without bringing an excess of fine aggregate to the surface. Concrete to be consolidated shall be as dry as practical and surfaces thereof shall not be manipulated prior to finishing operations. Concrete shall be brought to correct level with a straightedge and struck-off. Bull floats or darbies shall be used to smooth surface, leaving it free of humps or hollows. Sprinkling of water on plastic surface shall not be permitted.

### **3.5 FINISHING OF FORMED SURFACES**

#### **A. Non-Slip Broom Finish**

1. Immediately after completion of trowel finish, surface shall be slightly roughened by brooming with a fiber-bristle brush in a direction transverse to that of main traffic

### **3.6 CONCRETE CURING AND PROTECTION**

#### **A. General**

1. Freshly placed concrete shall be protected from premature drying and cold or hot temperature and shall be maintained without drying at a relatively constant temperature for the period of time necessary for hydration of cement and proper hardening of concrete.
2. Initial curing shall start as soon as free water has disappeared from surface of concrete after placing and finishing. Concrete shall be kept moist for minimum 72 hours.
3. Final curing shall immediately follow initial curing and before concrete has dried. Final curing shall continue until cumulative number of hours or fraction thereof (not necessarily consecutive) during which temperature of air in contact with the concrete is above 50 degrees F has totaled 168 hours. Rapid drying at end of final curing period shall be prevented.



**B. Curing Methods**

1. Curing shall be accomplished by moist curing, by moisture-retaining cover curing, and by combinations thereof, as specified.
2. Moist curing shall be accomplished by any of the following methods:
  - a. Keeping surface of concrete wet by covering with water
  - b. Continuous water spraying
  - c. Covering concrete surface with specified absorptive cover for curing concrete saturated with water and keeping absorptive cover wet by water spraying or intermittent hosing. Absorptive cover shall be placed to provide coverage of concrete surfaces and edges with a slight overlap over adjacent absorptive covers.
3. Moisture-cover curing:
  - a. Moisture-retaining cover curing shall be accomplished by covering concrete surfaces with specified moisture-retaining cover for curing concrete. Cover shall be placed directly on concrete in widest practical width, with sides and ends lapped at least 75 millimeters (3 inches). Cover shall be weighted to prevent displacement; tears or holes appearing during curing period shall be immediately repaired by patching with pressure-sensitive, waterproof tape or other approved method.

**C. Temperature of Concrete During Curing**

1. When temperature of atmosphere is 40 degrees F and below, temperature of concrete shall be maintained at not less than 55 degrees F throughout concrete curing period. When necessary, arrangements shall be made before start of concrete placing for heating, covering, insulation, or housing as required to maintain specified temperature and moisture conditions for concrete during curing period.
2. When the temperature of atmosphere is 80 degrees F and above or during other climatic conditions which will cause too rapid drying of concrete, arrangements shall be made before start of concrete placing for installation of wind breaks, of shading, and for fog spraying, wet sprinkling, or moisture-retaining covering of light color as required to protect concrete during curing period.
3. Changes in temperature of concrete shall be uniform and shall not exceed 5 degrees F in any 1 hour nor 50 degrees F in any 24-hour period.

**D. Protection After Curing**

1. Finished concrete surfaces shall be protected from damage by construction operations.

**END OF SECTION 033000**

**SECTION 055100  
ALUMINUM GANGWAYS**

**PART 1 GENERAL**

Furnish and install a truss-type aluminum gangway and related hardware to provide access to the floating dock as specified herein and as shown on the Contract drawings.

**1.1 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

**AMERICAN WELDING SOCIETY (AWS)**

AWSD1.1/D1.1M	(2006; Errata 2006) Structural Welding Code -Steel
AWSD1.2	(2003) Structural Welding Code-Aluminum ASTM
INTERNATIONAL(ASTM) ASTM A123/A123M	(2002) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A36/A36M Steel	(2005) Standard Specification for Carbon Structural Steel
ASTM A572/A572M	(2007) Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM B26/B26M	(2005) Aluminum-Alloy SandCastings
ASTM B209 Aluminum-	(2007) Standard Specification for Aluminum and Alloy Sheet and Plate
ASTM B210 Aluminum-	(2004) Standard Specification for Aluminum and Alloy Drawn Seamless Tubes
ASTM B308/B308M	(2002) Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles
ASTM B429 Tube	(2002) Aluminum-Alloy Extruded Structural Pipe and Tube
ASTM F593 Studs	(2002e2) Stainless Steel Bolts, Hex Cap Screws, and
ASTM F594	(2002) Stainless Steel Nuts

## 1.2 SUBMITTALS

Engineer approval is required for all submittals. The following shall be submitted in accordance with Section 013300 SUBMITTAL PROCEDURES:

Manufacturer's Warranty  
Gangway Design/Shop Drawings  
Gangway Design Calculations  
Connection Details

Submit the drawings and calculations as one package for approval prior to fabrication. Calculations shall include the design of the gangway and transition plates. Drawings and calculations must be signed and sealed by a South Carolina registered Professional Engineer.

## 1.3 QUALIFICATIONS

### Manufacturers Qualifications

Manufacturer shall have experience with three recent projects with similar design requirements. Manufacturer shall have at least 5 years of experience in the successful production of gangways.

### ManufacturersWarranty

Provide warranty that the gangway will be free of defects in materials, workmanship, design, or fabrication, and will meet the criteria specified for a period of three years. Such warranty shall start upon final acceptance of the work or the date the Owner takes possession, whichever is earlier.

### Product Identification

Completed gangways shall bear an identification plate with the following:

- A. Manufacturer's name
- B. Product serial number
- C. Date of fabrication
- D. Live load capacity

## 1.4 QUALITY ASSURANCE

### A. Gangway Design Calculations

Submit gangway design calculations. Gangways shall be designed in accordance with the latest edition of the AA ADM1, "Aluminum Design Manual and Specification for Aluminum Structures," using allowable stresses.

### B. Gangway Design Drawings

Submit gangway design drawings complete with information for the fabrication, handling, and erection of the gangway. Drawings shall not be reproductions of Contract drawings. Design drawings of gangway (including connections), transitions, and shackle connections shall be prepared and sealed/stamped by a licensed professional engineer registered in the State of South Carolina, and submitted for approval prior to fabrication.

## 1.5 SYSTEM CHARACTERISTICS

### A. Gangway

Furnish and install aluminum truss-type gangways of the general configuration and dimensions indicated on the contract drawings, complete with handrails, intermediate rails, low-friction end, and utility supports. Gangway shall be designed to be fully compliant with ADA Requirements. Gangway connections and transitions shall be achieved with transition plates and as shown on the contract drawings, and shall safely carry the design loads described herein. The top chord of the truss shall not be more than 42 inches above the walkway surface. Gangways shall provide safe access between the platform and the floating dock and contain a non-skid walking surface.

### B. Low-friction End

The end of the gangway (contacting the gangway wear plate) shall include a low-friction surface as recommended by the gangway manufacturer.

## 1.6 DESIGN REQUIREMENTS

### Design Criteria

- A. Decking shall be designed to withstand a live load of 100 pounds per square foot. allowable deflection shall be  $L/240$  where "L" is the freespan in between stringers or side members in inches.
- B. The gangway structures shall be designed to withstand a minimum uniform live load of 100 pounds per square foot applied vertically. Allowable deflection shall be  $L/180$  where "L" is the length of the gangway in inches.
- C. All gangways shall be equipped with ADA compliant transition plates at the low friction end.
- D. The gangway manufacturer shall also include safety chains (one on each side of the gangway) to connect the gangway to the fixed structure. The safety chain shall be stainless steel, Type 316, and shall be sized by the manufacturer such that it will support the full weight of the gangway under combination of dead load and live load loading conditions. Gangway manufacturer shall design and specify hardware connection to the fixed structure.

## PART 2 PRODUCTS

### 2.1 GANGWAY

#### A. Aluminum

Structural aluminum shall be alloy 6061-T6 conforming to ASTM B 209, ASTM B 210, ASTM B 308/B 308M or ASTM B 429.

**B. Fasteners**

Fasteners shall be ASTM F 593 (bolts) and ASTM F 594 (nuts) stainless steel Type 316.

**C. Insulators**

Any potentially corrosive installation of dissimilar metals shall be properly insulated to minimize or eliminate corrosion in a marine environment.

**D. Decking**

Deck material and connections shall be submitted for approval.

**2.2 MATERIAL COMPATIBILITY**

Contact between aluminum and dissimilar metals shall be avoided, except for the use of compatible stainless steels. Where potential for galvanic corrosion exists, the aluminum shall be isolated from direct contact with the other material by use of suitable non-conducting insulators or bushings.

**PART 3 EXECUTION****3.1 GANGWAYS****A. Welding**

Welding shall be in accordance with AWS D1.1/D1.1M or AWS D1.2 as applicable. Weld splatters and rough edges shall be removed from all exposed surfaces. All welding shall be performed by certified welders with current certifications. Certification shall be provided upon request.

**B. Installation**

Mill stamps shall be removed prior to installation. Install the gangway so as to provide flush transitions.

Ensure the gangway functions freely through the extreme tide ranges and floating dock's allowable movements indicated on the Contract drawings.

**END OF SECTION 055100**

**SECTION 057311  
ALUMINUM RAILINGS**

**PART 1 GENERAL**

This specification covers the aluminum handrails for the new concrete ramp located on the Promenade as shown on the Contract Drawings.

**1.1 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

**AMERICAN WELDING SOCIETY (AWS)**

AWSD1.1/D1.1M (2010) Structural Welding Code

**ASTM INTERNATIONAL(ASTM)**

ASTM A153/A153M (2009) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM B26/B26M (2009) Standard Specification for Aluminum-Alloy Sand Castings

ASTM B429/B429M (2010) Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube

**1.2 SUBMITTALS**

Approval is required for all submittals. The following shall be submitted in accordance with Section 013300 SUBMITTAL PROCEDURES:

Shop Drawings

Installation Instructions

Warranty

**1.3 DESIGN REQUIREMENTS**

- A. Railing assemblies and attachments shall be designed, fabricated, and installed in order to support:
1. 200 pounds concentrated loading applied at any point in any direction.
  2. 50 pounds per linear foot uniform load applied horizontally to the top of the rail.

## **PART 2 PRODUCTS**

### **2.1 SYSTEM DESCRIPTION**

The handrails shall be manufactured by the gangway manufacturer and shall be of similar size and appearance as the gangway railing. Handrails shall be fabricated as to be fully compliant with ADA Requirements.

Provide complete, detailed fabrication and installation drawings. Pre-assemble items in the shop to the greatest extent possible. Disassemble units only to the extent necessary for shipping and handling. Clearly mark units for reassembly and coordinated installation.

### **2.2 GENERAL FABRICATION**

Use materials of required size and thickness to produce adequate strength and durability in finished product for intended use. Work materials to dimensions indicated on approved detail drawings, using proven details of fabrication and support. Use type of materials indicated or specified for the various components of work.

Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

Weld corners and seams continuously and in accordance with the recommendations of WS D1.1/D1.1M. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.

Form exposed connections with hairline joints that are flush and smooth, using concealed fasteners wherever possible.

Provide stainless steel bolts to anchor handrail to new ramp. Fabricate anchoring devices and space as required to provide adequate support for the intended use of the work.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION INSTRUCTIONS**

Install railing in accordance with the manufacturer's installation instructions and shop drawings. Install railing posts plumb and level. Do not install bent, bowed, or otherwise damaged components. Secure railing with stainless steel fasteners in accordance with the manufacturer's recommendations.

**END OF SECTION 057311**

**SECTION 316216  
STEEL PIPE PILES**

**PART I - GENERAL**

**1.1 DESCRIPTION**

- A. Under this Work, the Contractor shall furnish and install steel pipe piles of the sizes shown in the Contract Drawings.

**1.2 QUALIFICATIONS**

- A. All steel pipe piles shall be furnished by a marine contractor having a minimum of five years' experience in the installation of similar type units.

**1.3 SUBMITTALS**

- A. Driving Records: Submit driving records for each pile to the Engineer no later than 2 days after driving. Include project name and number, name of Contractor, pile location and number, type and size of hammer used, type of pile driving cap used, rate of operation of pile driving equipment, pile dimensions, elevation of tip, continuous record of number of blows for each foot of penetration, pile deviation, and any unusual occurrences during pile driving.
- B. Shop Drawings: Contractor shall submit steel pipe pile shop drawings to Engineer prior to installation. Shop drawings shall include pile length, diameter, wall thickness, manufacturer, information on galvanization process, and yield strength.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials to project site in such quantities and at such times to assure continuity of pile driving operations to project schedule.
- B. Store piles in orderly groups above ground and blocked during storage to minimize possible distortion of members. Piles exhibiting variations beyond tolerance limits will be considered distorted and may not be used in the work.

**1.5 JOB CONDITIONS**

- A. Site Information: Data indicated and referenced in the plans are not intended as representations or warranties of continuity of such conditions. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn thereby from the Contractor. The data made available is for convenience of the Contractor.
- B. Additional test borings and other exploratory operations may be made by the Contractor at no additional cost to Owner.



## **PART II - PRODUCTS**

### **2.1 MATERIALS**

- A. Steel Pipes shall be of ASTM A252 Grade 3 with a minimum yield stress of 45 ksi, minimum outside diameter of 18 inches; minimum wall thickness shall be 0.50 inches.
- B. The top 50 ft of the piles shall be hot-dip galvanized after fabrication. All steel pipe piles shall be galvanized per ASTM A 123 requirements and shall have a minimum coating thickness of 8 mils. Prior to coating steel, abrasive blast clean per SSPC-SP-10.
- C. Pipe piles may be spliced with full penetration welds. All welding must be in accordance with current American Welding Society Codes and Publications.
- D. Each steel pipe pile shall be equipped with open-ended cutting shoes.

## **PART III - EXECUTION**

### **3.1 DRIVING EQUIPMENT**

- A. General: Provide pile driving equipment of type generally used in standard pile driving practice, operated at manufacturer's specified rate, to develop required rated energy per blow.
- B. Hammer: Provide pile driving hammers of sufficient capacity, size and type able to deliver consistently effective dynamic energy, suitable to drive piles into subgrade material into which they are to be driven.
- C. Driving Caps: Equip hammer with cast steel or structural steel driving cap, with grooved base conforming to pile shape. Keep bearing surfaces of grooves true and smooth.
- D. Leads: Use fixed or rigid type pile driver leads that will hold pile firmly in position and alignment and in axial alignment with hammer.

### **3.2 PRE-DRIVING PILES**

- A. Pile Length Markings: Mark each pile's length with a horizontal line, at 1'-0" intervals, and the number of feet from pile point at 5'-0" intervals.

### **3.3 DRIVING PILES**

- A. Carefully plumb leads and pile before driving. Take care during driving to prevent and to correct any tendency of piles to twist or rotate.
- B. When handling and driving long piles, take special precautions to insure against overstress or leading away from a true position when driving. When high-resistant strata lying near the surface must be penetrated, spud piles may be used, when authorized by the Engineer, to minimize hard driving of long piles during early stages of driving operations.
- C. Driving Tolerances: Drive piles within following maximum tolerances:

1. Location: 3" from location indicated.
  2. Plumbness: Maintain 1" in 10'-0" from vertical.
- D. Damaged or mis-driven Piles: No payment will be made for rejected piles, including piles driven out of place or tolerance, imperfect piles, or piles damaged in driving or handling.
- E. Withdraw piles rejected after driving, and replace with new piles.
- F. Cutting-Off: Cut-off tops of driven piles and dispose of excess materials off site. Steel pipe piles shall be driven to the minimum embedment shown in the Contract Drawings
- G. The tops of the steel pipe piles shall be capped with a heavy duty white PVC cap. Cap shall be affixed to the pile using stainless screws and 5200 Marine Adhesive Sealant placed around entire circumference of cap and pile.

**END OF SECTION 316216**

**SECTION 355113**  
**ALUMINUM FLOATING DOCKS**

**PART 1 GENERAL**

Furnish and install prefabricated aluminum floating docks, pile guides, cleats, fendering and other marine accessories necessary to perform the work.

The deck and frame structural components of the floating docks shall be designed with minimum safety factors on working stress, which conform to those set forth in the latest issue of the Aluminum Association "SPECIFICATIONS FOR ALUMINUM STRUCTURES" for buildings and similar type structures. The installing contractor shall be a qualified Marine Contractor or General Contractor licensed in the State of South Carolina and shall be capable of securing building or construction permits. The manufacturer/supplier shall have a minimum of 5 years continuous experience in commercial gangway fabrication and may be required to submit a list of previous experience on similar projects.

**1.1 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/DI.IM (2006; Errata 2006) Structural Welding Code - Steel AWS D1.2 (2003)

Structural Welding Code - Aluminum

ASTM INTERNATIONAL (ASTM)

ASTM B 209 (2007) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

ASTM B 210 (2004) Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes

ASTM B 308/B 308M (2002) Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles

ASTM B 429 (2002) Aluminum-Alloy Extruded Structural Pipe and Tube ASTM F 593

(2002e2) Stainless Steel Bolts, Hex Cap Screws, and Studs ASTM F 594 (2002) Stainless Steel Nuts

**1.2 SUBMITTALS**

Engineer approval is required for all submittals. The following shall be submitted in

accordance with Section 013300 SUBMITTAL PROCEDURES:

#### Manufacturer's Warranty

Shop drawings and calculations showing all dimensions, connections, and anchorage locations.

Submit the drawings and calculations as one package for approval prior to fabrication.

## **PART 2 QUALIFICATIONS**

### **2.1 Manufacturer's Qualifications**

The manufacturer shall have a minimum of 5 years continuous experience in commercial dock fabrication.

### **2.2 Manufacturer's Warranty**

Provide warranty that the gangway will be free of defects in materials, workmanship, design, or fabrication, and will meet the criteria specified for a period of three years. Such warranty shall start upon final acceptance of the work or the date the Owner takes possession, whichever is earlier.

### **2.3 Product Identification**

Completed docks shall bear an identification plate with the following:

- A. Manufacturer's name
- B. Product serial number
- C. Date of fabrication
- D. Live load capacity

### **2.4 Quality Assurance**

- A. Approved Manufacturer: CMI/Gator Dock and Marine, LLC.
- B. Design of the aluminum members for the frame shall conform to the current edition of the Aluminum Association "SPECIFICATIONS FOR ALUMINUM STRUCTURES."
- C. Aluminum welding for the dock frame shall be in accordance with AWS D1.2 Structural welding code and shall be performed by experienced operators.
- D. All exposed surfaces and their welded joints shall be smooth and free of sharp or jagged edges. Welds shall be sufficient size and shape to develop the full strength of the parts connected by the welds.

## **PART 3 TECHNICAL REQUIREMENTS**

### **3.1 Technical**

The following requirements are a minimum and must be met by each dock fabricator in accordance with the requirements of the section entitled GENERAL.

### **3.2 Materials**

#### **A. Frame**

Aluminum extrusions for dock structures shall be aluminum alloy 6061-T6 "E" channels extruded in accordance with the requirements of applicable sections of Federal Specifications QQ-A-200. Miscellaneous aluminum may be 6063-TS or 5052-H32.

#### **B. Flotation**

Flotation shall consist of rigid urethane foam utilizing a two-component polymeric MDI system designed for Marine Flotation applications injected into aluminum shells to 2.0 pounds per cubic foot. Expanded polystyrene flotation with or without polyethylene casings shall be prohibited

#### **C. Decking**

Aluminum decking shall be symmetrically extruded slats with integrated ribs and mechanical knurling to provide a non-skid surface. Decking to be aluminum alloy 6061-T6.

#### **D. Cleats**

Cleats shall be cast aluminum alloy meeting the requirements of the Federal Specifications QQ-A-571F and QQ-A-601E.

#### **E. Hardware**

All hardware shall be stainless steel type 304.

#### **F. Fenders**

Fenders and bumpers shall be comprised of UHMW polyethylene as shown on the contract drawings.

#### **G. Pile Guides**

Pile guides shall consist of an aluminum or stainless steel frame. Pile guides shall be equipped with UHMW polyethylene rubbing pads located above the level of the deck.

#### **H. Frame**

the aluminum frame and decking shall be designed to withstand the full calculated dead load of all framing and accessories combined with a live load of 50 pounds per square foot. Allowable deflection shall be  $L/180$  where "L" in inches is the freespan between cross members.

#### **I. Flotation**

All floating docks shall be designed for a minimum freeboard of 8 inches under full dead plus live load, and 10 inches under a dead load plus concentrated load of 400 pounds applied at any location on the dock walking surface. Additional flotation shall be added to support the gangway dead loads without creating undue distortion to the dock.

Poly floats shall be designed for a minimum of 20 psf live load providing a minimum of 16 inches unloaded freeboard.

**J. Accessories**

- A. Cleats shall be designed to withstand a mooring line load of 1500 pounds in any direction.
- B. Hinged or bolted floating dock module connectors shall be able to withstand a load of 3,000 pounds applied to the full connector.
- C. Anchoring devices for floating docks shall allow free movement of the dock, while minimizing damage due to normal dock movement caused by tides, boat wakes, water fluctuation and seasonal winds. Anchoring devices shall be of sufficient number to restrain a uniform lateral force of 150 pounds per linear foot applied along the entire length of the dock.

**K. Fabrication**

Design and manufacture dock units and connections to survive the forces created by the following conditions:

**Daily Operating Wind-Generated Wave Conditions**

Wave Height 0.92 ft

Wave Period 1.78 ft

Wave Length 16.17 ft

**Frame**

- A. All aluminum structural members shall be welded in accordance with the American Welding Society Structural Welding Code D1.2.
- B. Individual dock sections shall be sequentially numbered, matched, and pre-drilled in the shop prior to shipment.

**Flotation**

- A. Flotation: All flotation shall be fully installed in the shop. Selected floats may be removed to facilitate shipping.

**Railing**

- A. Railing assemblies and attachments shall be designed, fabricated, and installed to support:
  - 1. 200 pounds concentrated loading applied at any point in any direction.
  - 2. 50 pounds per linear foot uniform load applied horizontally to the top of the rail.
- B. Top rail and bench shall be composite lumber. Color of composite lumber shall be grey.

**Accessories**

- A. Aluminum decking shall be spaced with not more than 3/8-inch air space between the slats. Asymmetric/interlocking decking slats shall be prohibited to prevent water pooling on dock surface. The legs of each decking slat shall be welded to the side

members and to any longitudinal with a minimum of 1-1/4 inches of weld per leg. The decking slats shall be placed transversely on the dock.

- B. Cleats on aluminum decked docks shall be welded with a continuous fillet weld. All cleats shall be installed in locations shown on the plans.
- C. Hinge mount extrusions shall be welded to the frame of the dock with a continuous fillet weld unless otherwise shown on the plans. Non-hinged dock module connectors shall be shown on the plans.
- D. Anchoring devices, including pile guides, shall be bolted or welded to the piers and docks in locations and according to the details shown in the plans. Framing shall be braced at pile guides.

#### **PART 4 INSTALLATION**

- A. Docks shall be anchored with pile guides or other anchoring devices bolted to the aluminum frame, Floating docks must move freely during the entire cycle of water level extremes with the normal expected wind condition.
- B. Any potentially corrosive installation of dissimilar metals shall be properly insulated to minimize or eliminate corrosion in a marine environment.
- C. Contractor shall field locate and verify the proper operation of floating dock and gangway through all tidal cycles prior to driving anchoring piles.

**End of Section 355113**