DIVISION 1

GENERAL DESCRIPTION, SCOPE OF WORK AND SPECIAL CONDITIONS

1-1 SCOPE

A. The Specifications and Plans are intended to cover a complete project. It should be distinctly understood that failure to mention any work which would normally be required to complete the project shall not relieve the Contractor of his responsibility to perform such work. The work to be done under this Contract includes, but is not limited to, furnishing all plants, materials, tools, equipment, transportation, management, and labor necessary to perform all work in strict accordance with these Specifications and Plans.

B. The work consists of the following items:

1. Installation and maintenance of sediment and erosion control practices.
2. Demolition and removal of existing boat launch, pier structure, concrete structure & concrete pad, and gravel road.
3. Clearing and grubbing and grading the area within the limit of disturbance (LOD).
4. Installation of a fixed timber pier with ADA gangway and kayak launch floating dock.
5. Construction of a reinforced concrete boat ramp and bituminous paving, striping and signage.
6. Installation of a fixed timber fishing pier and miscellaneous accessories.
7. Restoration of graded and disturbed areas.
8. Landscape and buffer planting.

C. The in-water work shall be performed by a marine Contractor with a minimum of five (5) years documented experience and one that has previously constructed at least two (2) concrete boat ramps.

D. The work shall be done under contract with and the supervision of the M-NCPPC.

E. The work shall be completed in all its parts in the time specified and in strict accordance with the terms and conditions of the Contract. Any deviation shall be subject to the approval of the M-NCPPC.

F. The Contractor shall strictly follow the requirements of all permits issued for the proposed construction.

G. The Contractor shall assume all responsibility for the project and the construction site until accepted by the M-NCPPC.

H. The Contractor shall be prepared to deliver a finished project in every particular

without extra charge, unless specifically provided for within the Contract.

I. This Contract shall be constructed under all the provisions of the Maryland State Highway *Standard Specifications for Construction* and *Standard Details for Construction*, current edition, and subsequent addenda thereto, so far as the same may be applicable. These documents are considered as part of this Contract together with Plans, Specifications, Advertisement, Information to Bidders, Proposal, and addenda which all together form a part of the Contract and the Provisions of all these shall be as binding upon the parties as if they were here fully set forth.

J. The Special Provisions are supplemental to the Standard Specifications and form part of the Contract. In case of conflict between the "Standard Specifications" and these Special Provisions, the latter shall govern.

K. By submitting a proposal, the bidder verifies that he shall not present claims relating to failure to comply with Section GP-2.04 of the Maryland State Highway *Standard Specifications for Construction and Materials,* Site Investigation.

1-2 PROJECT SITE

A. The project site is located at Patuxent River Park off Croom Airport Road in Upper Marlboro, Maryland. The location is shown on the location map on the Contract Plans.

B. All work performed in tidal waters shall be conducted by a Licensed Marine Contractor with the Marine Contractor's Licensing Board (MCLB) in accordance with Chapter 286 of the 2010 Laws of the State of Maryland.

C. The Contractor, before submitting a proposal for this project, shall visit the construction site and thoroughly familiarize himself with all existing conditions both above and below ground.

D. The Contractor shall satisfy himself as to the accuracy and completeness of these Specifications and Plans regarding the nature and extent of all work described.

E. Because of the proximity of improved properties, the Contractor shall exercise extreme care in his construction operations. The Contractor shall secure the approval of the M-NCPPC prior to or at the Pre-construction Meeting for the particular method of ingress and egress, trimming or removal of trees along the access road, placement and storage of materials and equipment, etc. All work must be kept within the LOD as specified on the Plans.

F. The existing topography, bottom profiles, depth contours and/or bank alignment shown on the Plans were correct when surveyed. However, because of the interim erosion and littoral transport, the Contractor shall satisfy himself as to all conditions at the time of bidding this project and include in his proposal any

changes that would be necessary to accomplish a complete and functional project.

G. The Contractor shall use the horizontal and vertical survey control points shown on the Contract Plans to lay out the lines of work, stake out the location of all proposed structures and test the levels of all construction. No other datum or control points will be accepted.

H. Should there be any discrepancies between Plans, Specifications and/or field conditions after bidding and prior to the beginning of work, the Contractor shall bring such discrepancies to the attention of the M-NCPPC at the Pre-construction Meeting.

I. The Contractor shall take all necessary precautions and measures to protect all properties from damage. He shall repair all damage caused by this operation to all public and private property including roads, gates, fences, signs, walks, curbs, utilities, trees, shrubs, plantings, etc., and leave the property in good condition and/or at least equivalent to the condition found.

J. The Contractor shall at all times keep the premises free from accumulation of waste materials and rubbish, surplus materials, etc., and shall leave the work area completely clean.

K. The work under this Contract includes all necessary items required for good, safe, and sanitary construction practices and administration of the project. These requirements are subject to the approval of the M-NCPPC.

L. The Contractor shall provide and maintain nearby, in a sanitary condition, such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the Health Department of Prince George's County or other authorities having jurisdiction and shall commit no public nuisance.

M. The Contractor shall at all times conduct the work in such a manner as to ensure the least obstruction practicable to normal activities at and around the project site. The convenience and service of the general public and employees shall be maintained in an adequate and satisfactory manner. Material stored at the job site shall be placed so as to cause as little obstruction to these nearby operations as practicable.

1-3 CONTRACT DOCUMENTS AND SCHEDULE OF PLANS

The Contract Documents consist of these Specifications and any and all subsequent addenda or additions thereto, and the Plans as listed below.

Jackson's Landing Boat Ramp Site Development Fine Grading Permit Approved Plans – consisting of Sheets 1 – 8 of 8, Issuance Date June 10, 2024.

Jackson's Landing Boat Ramp Building Permit Approved Plans – consisting of Sheets 1

– 9 of 9, Issuance Date June 26, 2024.

Jackson's Landing Boat Ramp Buffer Management Plan – consisting of Sheets 1-2 of 2, dated March 2023.

1-4 SPECIAL INSTRUCTIONS TO THE CONTRACTOR

A. The Contractor shall videotape the project areas prior to beginning work. The County shall be notified 48 hours prior to the scheduled videotaping of the site and will have a representative present to identify other areas that may be affected by the proposed construction. The Contractor shall be responsible for the repair, replacement and/or reconstruction of any property destroyed or damaged as a result of this Contract. This shall include all work areas at Patuxent River Park, access roads, stockpile areas, public and/or privately constructed driveways, gates, signs, trees, fences, buildings, landscaping, utility lines and other permanent items. All claims will be verified by the M-NCPPC through the videotape log of the area. The videotape shall be submitted to the County prior to mobilization of any equipment for the Contract.

B. Prior to construction, the Contractor shall conduct a general cleanup of the site to include tires, trash, rubble, and other debris and shall dispose of all debris off-site.

C. Contractor shall stake-out the limits of construction prior to initiation of work and obtain approval from the M-NCPPC or its agent. Cost for stake-out and any initial surveying of the project areas shall be included in the lump sum bid price for mobilization/demobilization.

D. The Contractor shall determine the specific location of all utilities, above and below ground, and shall take whatever precautions are necessary to prevent damage to them during construction. If any utilities are damaged due to construction activities, the Contractor shall make all necessary repairs prior to the completion of the project, at his own expense.

E. The Contractor will be required to restore any area(s) and/or utilities disturbed during construction, prior to the completion of the project, to a condition equal to or better than that which existed at the time of Award of Contract.

F. Extreme care shall be exercised when transporting heavy equipment and materials to the project site. Any damage to public or private roads, sidewalks and other paved areas due to Contractor negligence shall be repaired by the Contractor prior to the completion of the project and at his own expense. The repair shall be to a condition equal to or better than existing at the time of Award of Contract as required by the M-NCPPC.

G. Due to uncontrollable conditions that may occur, the M-NCPPC reserves the right to increase or decrease the quantity of excavation, or any item of work to be completed under this contract by not more than 25 percent of the total original

bid.

H. For the purpose of this Contract, extra work shall be considered work ordered by the M-NCPPC, in writing, above the contingent quantities and allowable increases of bid items as specified herein, in accordance with the unit price specified. The Contractor must obtain written approval by the DPW Project Manager before undertaking any work involving extra cost. Problems or changed conditions must be called to the attention of the Inspector or the DPW Project Manager immediately.

I. Standard Contractor work hours are between 7:00 a.m. and 7:00 p.m., Monday through Friday. All construction and dredging activities shall be carried out in strict conformance with the day/night noise standard prescribed by Maryland Department of Environment (MDE), Title 26, Control of Noise Pollution (26.02.03). The Contractor shall request the approval of the M-NCPPC for any work performed between 7:00 p.m. and 7:00 a.m. Monday through Friday and any work performed between 7:00 p.m. Friday through 7:00 a.m. Monday by submitting the request in writing to the M-NCPPC forty-eight (48) hours in advance of the night-time and/or weekend work activities.

J. The Contractor shall maintain suitable traffic safety signs, equipment, and manpower to provide traffic control as required by the M-NCPPC. This may include requirements for signage and flaggers. The Contractor shall provide all labor and equipment to maintain the roadways free of dirt and/or debris as specified and as directed by the County.

K. The Contractor shall be fully and solely responsible for the protection of the public from any construction activities or unfinished work areas. The Contractor shall erect barricades and post warning signs indicating that the construction area is restricted to Contractor personnel only, except as outlined below.

L. The Contractor shall maintain accessibility to the buildings and parking lots currently in use next to Jackson's Landing site area.

M. Channel traffic consists of recreational and commercial craft. The M-NCPPC will not undertake to keep the channel free from vessel or other traffic. The Contractor will be required to conduct the work in normal navigational conditions. The Contractor will be required to conduct the work in such manner as to obstruct navigation as little as possible. Upon completion of the work, the Contractor shall promptly remove his plant, including ranges, buoys, piles, anchors and other marks placed by him under the Contract in navigable waters or on shore.

N. The Contractor shall preserve the structural integrity of adjacent existing piers, buildings, and parking lot and protect them from damage during construction. The Contractor, at his own expense, shall repair any damage sustained to any existing structures to the satisfaction of the M-NCPPC or its agent.

O. The Contractor's attention is directed to the fact that work shall be performed near

overhead power lines. Equipment shall not be operated any closer to a power line than the "absolute limit of approach" in accordance with the Maryland Occupational Safety and Health Law, §6-101 through 6-104, also known as the Maryland Labor and Employment Code 6-101.

P. The *Standard Specifications for Construction* and *Standard Details for Construction* apply to any work not specifically covered in these Special Provisions or on the Plans. Sometimes the conditions of the project may require a slight modification to the Standard Specifications or Details. If this appears to be the case, the Contractor should consult the Inspector and/or M-NCPPC or its agent.

Q. The Contractor must submit a satisfactory construction schedule before starting work. The M-NCPPC must be notified ten (10) days prior to the start of work.

R. The Contractor must submit all Shop Drawings to the M-NCPPC ten (10) days prior to the start of work.

S. The Contractor is responsible for making all necessary notifications required by the Plans, Specifications, and Permits. This shall include, but not be limited to, notifying the following agencies: the Maryland Department of Environment Compliance Program (410-537-3510), the M-NCPPC project manager. The Contractor must also call Miss Utility (1-800-257- 7777) to identify any utilities on the site before starting work. Written notification is to be made ten (10) days prior to starting work.

T. NOTIFICATION OF THE COAST GUARD: Prior to commencement of any over-water work on this Contract, the Contractor will be required to notify the Commander, Fifth Coast Guard of his intended operations. The Contractor shall request, in writing, to the U.S. Coast Guard (USCG), that a Local Notice to Mariners be issued regarding the authorized work. The written request shall include the location of work, description of activities, the type of construction equipment to be used and the expected duration of the work on the waterway. The written request should be addressed to the following:

Commander (AOWA)
U.S. Coast Guard, Atlantic Area Federal Building
431 Crawford Street
Portsmouth, Virginia 23704-5004
Fax Number: (757) 391-8100

U. AIDS TO NAVIGATION: The Contractor shall coordinate with the USCG or the Department of Natural Resources (DNR) regarding temporary relocation of aids to navigation to support construction operations. It may also be required that the Contractor contact the National Oceanic and Atmospheric Administration (NOAA), National Ocean Survey, when aids to navigation are relocated so that the aids are properly marked on the appropriate nautical chart. The National Ocean

Survey may be contacted at:

NOAA, National Ocean Survey
Marine Chart Division
Nautical Data Branch
(N/CS26)
Station 7350
1315 East-West

Department of Natural Resources
Hydrographic Operations 580
Taylor Ave
Annapolis, Maryland 21401
410.643.6521
Attn: Ann Williams

V. There shall be a Pre-construction Meeting before the work is started. At that time, requirements for sediment and erosion control will be discussed in detail. The Contractor is responsible for any sediment and erosion control measures required by regulatory authority regardless of whether or not they are explicitly stated in the Contract Documents. Sediment and erosion control measures must be in place and approved by the M-NCPPC and the Maryland Department of Environment before the work is started.

W. Sediment Control: Sediment control will be provided by the measures shown on the Plans. The Contractor shall regularly inspect the sediment control devices and perform any maintenance required during the contract period. The Contractor shall complete all work in accordance with the *2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control* and the approved Plans.

X. The Contractor must be sensitive to the adjacent property owners. The Contractor shall immediately advise the Inspector and the M-NCPPC of any problems involving the adjacent property owners.

Y. For contingent items, where unit prices apply, the Contractor must have written approval of the M-NCPPC before proceeding with the item.

Z. All debris created during the Contractor's work shall be removed from the premises by the Contractor and shall become the property of the Contractor unless otherwise shown. The County assumes no responsibility of reuse of materials. The off-site disposal of demolition debris shall be performed by the Contractor and shall be transported only to a regulated solid waste or recycling facility. Failure by the Contractor to properly dispose of material may result in non- payment by the M-NCPPC for all services performed by the Contractor under this contract.

AA. It is the Contractor's responsibility to ensure that all required and necessary road signage and traffic control devices are used during transportation of material to ensure public safety.

1-5 PERMITS

The Contractor shall adhere to the terms and conditions of the various permits issued for this project. These include permits from U.S. Army Corps of Engineers, the Maryland

Department of the Environment, Prince George's County, and any other applicable permits. Prince George's County permits include Site Fine Grading Permit, Building Permit, and Soil Conservation District Exemption. The Contractor shall strictly follow the requirements of all permits issued for the proposed construction.

1-6 WAGE RATES

The Contractor specifically agrees to conform to all provisions of the Labor Law of the State of Maryland applicable to the employment of labor at the site of the project.

END OF DIVISION

DIVISION 2

DEMOLITION AND REMOVAL OF EXISTING STRUCTURES

2-1 SCOPE

A. The work to be done under this Division includes, but is not limited to, furnishing all plants, materials, tools, equipment, transportation, management, and labor necessary to perform all work in strict accordance with these Specifications and Plans for demolition and removal work as shown on the Plans and as herein specified or as directed by the M-NCPPC.

B. This work shall include, but is not limited to, demolition, removal, and disposal of:

1. existing boat launch and pier structures including creosote pressure treated timber piles;
2. existing gravel road, concrete structure & concrete pad; and
3. miscellaneous items and other obstructions in the way of new construction.

2-2 DISPOSAL

All materials and debris resulting from demolition and removal work shall become the property of the Contractor and shall be disposed of off-site at an approved disposal site.

2-3 CONSTRUCTION METHODS

A. All demolition of existing structures shall be in accordance with the Section 405 *Removal of Existing Structures* of *Standard Specifications for Construction and materials*, latest edition, and/or as specified of the Plans.

B. The Contractor shall exercise care in performing demolition and removal work in order not to damage adjacent areas.

C. The timber pier, including piles, pile caps, stringers, tie-backs, steps, etc., shall be demolished and removed from the site.

D. Remove miscellaneous items as shown on Plans and necessary for construction.

2-4 MEASUREMENT AND PAYMENT

The Demolition and Removal of Existing Structures will have no measurement for payment since the cost shall be included in the lump sum (LS) bid price under Bid Items No.3 ‘Demolition of Existing Boat Ramp, Kayak Launch, Piers & Piles’. The payment will be full compensation for the demolition, removal, and proper disposal of existing piles, pier, concrete pad and structure, and miscellaneous structures; and all labor, equipment, tools and incidentals necessary to complete the work.

END OF DIVISION

DIVISION 3

TIMBER CONSTRUCTION

PART 1 – GENERAL

3-1.1 SCOPE

A. The Contractor shall furnish all labor, materials and equipment necessary to construct the timber piles (pier and flank wall piles), fixed pier and flank walls as shown on the Drawings, as described in these Specifications and as directed by the M-NCPPC or its agent.

B. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to work. If the Contractor observes that the Specifications and/or Drawings are at variance therewith, he will give the M-NCPPC or its agent prompt written notice thereof. If the Contractor performs any work knowing to be contrary to such laws, ordinances, rules and regulations, and without such notice to the M-NCPPC or its agent, he will bear all costs arising therefrom.

PART 2 – PRODUCTS

3-2.1 TIMBER

All timber shall be Southern Yellow Pine unless otherwise approved by the M-NCPPC or its agent. Timber shall be free from all defects which will impair its strength and durability. All timber shall comply with the following specifications.

A. Lumber: All timbers, dimensional lumber, and boards shall be graded and carry an identifiable grade mark in accordance with the Grading Rules of the Southern Pine Inspection Bureau. The in-place length of lumber shall be as shown on the Plans. Lumber shall comply with the following Specifications.

1. For flankwall construction: Wales, Butt Blocks, Liners, Sheeting, and Cap boards: Grade No. 1 Dense, SYP, moisture content less than or equal to 19%, Fb = 1,500 psi minimum before treatment and surfaced on surfaced four sides (S4S).
2. For pier construction: Stringers, Split Pile Caps, Decking, Cross Braces, Posts and Railings: Grade No. 1 Dense, SYP, moisture content less than or equal to 19%, Fb = 1,500 psi minimum before treatment and surfaced on surfaced four sides (S4S).
3. For toe wall construction: Sheeting and Wheel Stop: Grade No. 1 Dense, SYP, moisture content less than or equal to 19%, Fb = 1,500

psi minimum before treatment and surfaced on surfaced four sides (S4S).

B. Round Timber Piles: Piles shall meet the requirements of the ASTM D25 – Class B "Standard Specifications for the Round Timber Piles," except as modified by the Contract Drawings and Specifications.

1. Piles shall be cut from sound, live trees and shall be free from decay and insect attack. Piles shall be cut from above the ground swell and have a gradual taper from the butt to the tip or from three feet below the butt to the tip as specified on the Contract Drawings. Piles shall be free from defects such as holes, scars, checks, shakes, splits, twist of grain, compression wood and knots as required by ASTM Specification D25.
2. Sizes: In place length of piles, minimum butt and tip diameter, minimum butt and tip circumference, and pile taper shall be as specified in the Contract Drawings. Pile length shall be sufficient to achieve ten (10) tons minimum bearing on each pile and drive to the elevation shown on the Contract Drawings.
3. Sapwood: Piles shall have a minimum sapwood thickness of three (3) inches. The sapwood shall be measured continuously along the radius at mid-point of length and the butt of the pile.
4. Straightness: Piles shall be within a straightness requirement where a line drawn from the center of the tip to the center of the butt does not fall outside the center of the pile at any point by more than 1 1/4 percent of the length of the pile, or shall lie entirely within the body of the pile, whichever is less.
5. Peeling and Cutting: Prior to treatment, piles shall be clean peeled of all outer bark and at least a minimum of 80 percent inner bark. The butts and tips of piles shall be sawed square with the axis of the pile. The allowable tolerance shall be 10% from the square.

3-2.2 HARDWARE

A. All hardware to be used for the construction of the flankwalls, piers and toe wall shall be manufactured from good, commercial quality material and shall meet the minimum requirements of the following specifications:

B. Bolts shall be hot forged and meet ASTM specification A-307 for Grade A steel.

C. Nuts shall be hexagonal heads and meet ASTM specification A-307 for Grade A steel.

D. NYDD Washers and Standard Cut Washers shall be fabricated from a commercial grade steel and shall conform to ASTM Specification Designation F844-83 with the exception that galvanizing shall be as outlined in these specifications.

E. Nails, spikes, bolts, and similar fastenings shall be furnished and placed as required. Where information is not given on the Plans, the type and size of the

fastenings shall be such as to draw the members into place and securely hold them in position.

F. Spikes and Nails and other parts coming under the heading of "Hardware" shall be composed of carbon steel and shall meet the requirements of Federal Specifications FF-N-105.

G. All of the above hardware shall be hot-dipped galvanized in accordance with ASTM designation A-153. The zinc coating shall be Class A and a minimum of 2.0-ounces of zinc per square foot of hardware surface.

H. Threads on all threaded fasteners shall be of the rolled or cut type. All threads shall be cut prior to being galvanized.

I. Nails shall be Maze Stormguard "PTL" stock no. T447-A, top quality double-dipped zinc-coated made with stiff wire with anchor-down shank. Nailed connections are to be 20d.

J. Deck Fasteners for Southern Yellow Pine decking shall be 4" Decktite 316 stainless steel or equal.

3-2.3 MISCELLANEOUS MATERIALS

A. Water-borne preservative solution of CCA-Type C for the treatment of field cuts, trimmed areas, and holes for CCA treated lumber only, shall meet the requirements of AWPA M4-91, Standard for the Care of Preservative-Treated Wood Products.

B. All field cuts and trimmed areas for CCA treated lumber shall be given a treatment of an approved waterborne preservative solution of CCA-Type C prior to assemble. The CCA solution shall meet the specified requirements.

C. Field Coatings: After all hardware is installed, all field cuts shall be scraped and brushed clean and given two coats of ZINC-X as manufactured by INSL-X Products Corporation, Stony Point, New York, or an approved equal. All coatings shall be in accordance with the Manufacturer's specifications.

D. Asphalt roofing cement for coating all exposed hardware shall be high grade, waterproof cement, easily spread by trowel to ⅛ -inch in one coat, meeting the requirements of ASTM-D-4586-93 Type I Specification. Use Clipper Ship Roofing Cement MP-51 or an approved equal product.

E. Bench support legs shall be galvanized and match the existing support legs in size and thickness.

3-2.4 TREATMENT

All piles and lumber shall be treated with preservative by the pressure process in accordance with the following requirements.

A. Piles and lumber shall be squared to length in accordance with the Contract Drawings before treatment.

B. C.C.A. Treatment:

1. All timber piles, T&G sheeting for the boat ramp toe wall, and wheel stop shall be pressure treated with C.C.A Type C in accordance with requirements of the American Wood Preservatives Association. Standard P5 to a final net retention of not less than 2.5 pounds of chromated copper arsenate per cubic foot of wood as determined by chemical assay according to AWPA Standard A2.
2. All split caps, stringers, cross braces, wales, butt blocks, flankwall sheeting and liners shall be treated with CCA-Type C, in accordance with the requirements of AWPA Standard P5-07 Waterborne Preservative, having a minimum net retention of 1.0 pound per cubic foot of wood as determined by Standard Methods for Analysis of Waterborne Preservatives and Fire Retardant Formulations according to AWPA Standard A2-07.
3. The methods of application shall conform to AWPA Standards U1 for marine piles and lumber subject to marine borer exposure.

C. CA-C Treatment:

1. All capboards, railings and fixed pier decking shall be treated with CA-C, in accordance with the requirements of AWPA Standard P5-07 Waterborne Preservative, having a minimum net retention of 0.06 pound per cubic foot of wood as determined by Standard Methods for Analysis of Waterborne Preservatives and Fire Retardant Formulations according to AWPA Standard A2-07.

D. The penetration requirements shall be as per AWPA Standards U1.

E. To ensure proper fixation of the CCA and CA-C preservatives, the treated timber shall remain at the treatment plant a minimum of three (3) days prior to shipment or use.

F. In general, treated lumber shall be bundled and branded or tagged after treatment for identification. Branding of piles shall be accomplished three (3) feet from the butt by burning on the surface with legible lettering the supplier's brand, plant designation, date of treatment, species of timber, type of preservative and retention of preservative. Lumber shall be tagged with the following information: the supplier's brand, plant designation and date.

3-2.5 CERTIFICATION

Prior to delivery of materials to the construction site, the Contractor shall supply to the M-NCPPC or its agent the following certifications:

A. A notarized Certificate attesting to the fact that all piles meet the requirements of the Contract Drawings and Specifications as to species, grade, strength, finish and size.

B. A notarized Certificate of Treatment from the supplier indicating that all piles meet the Specifications as to type of CCA treatment used, method of application and final net retention by assay in pounds per cubic foot. The Certificate shall include the number of pieces involved and their description. Accompanying the Certificate shall be a copy of the Charge Report and a copy of the chart obtained from the combination recorder. A date shall be shown when the gauges recorder where certified by a particular inspection agency.

3-2.6 INSPECTION AND TESTING

A. In ordering materials, the Contractor is required to notify M-NCPPC or its agent, of the source from which he proposes to obtain all timber materials. He shall make available to the material supplier and independent firm copies of the Contract Drawings and Specifications.

B. M-NCPPC reserves the right to reject any individual timber pieces not meeting the specified requirements. The Contractor shall be responsible for the replacement of any materials rejected at the project site, at no additional cost to the M-NCPPC.

PART 3 – EXECUTION

3-3.1 STORAGE OF MATERIALS

The method of storing and handling materials at the construction site shall be such as to avoid injury and to protect them against weather. Piles shall be arranged so that they are not subjected to unequal forces which will tend to twist or warp them. Lumber shall be stored twelve (12) inches about the ground to provide ventilation, piled to shed water and to prevent warp. The M-NCPPC or its agent will require suitable covering to protect materials from the weather.

3-3.2 METHODS OF CONSTRUCTION

A. Lumber:

a. All field cuts and trimmed areas and holes for treated lumber shall be given a treatment of an approved water-borne preservative solution prior to assembly. The solution shall meet the specified requirements.
b. The Contractor's attention is directed to the careful assembly of wales, butt blocks, liners, cross bracing, stringers, split pile caps, and railings. All materials shall be accurately assembled, set, regularly spaced, and coursed; and they shall be true to line, even, square, plumb, tight, and level.
c. In the installation of bolts, all bolt holes shall be of a minimum diameter to assure a tight and driving fit. Holes shall be of a diameter such that bolts and rods are inserted by light tapping. All counterbored holes for the installation of washers shall not be more than one (1) inch in depth.

d. All bolts shall have a 1/4-inch length of thread outside the face of all nuts after cutting and trimming of bolt ends is completed.
e. In the installation of bolts, all bolt holes shall be of a minimum diameter to assure a tight and driving fit. Holes shall be of a diameter such that bolts are inserted by light tapping. All counter-bored holes for the installation of the three (3) inches by 1/4 inch washers shall not be more than one (1) inch in depth. All counter-bored holes shall be coated with "Clipper Ship Roofing Cement, MP51" to a minimum thickness of 1/8 inch, or an approved equal. All bolt holes bored after treatment shall be treated with two (2) coats of prepared concentrated preservative solution. Any unfilled holes after being treated with preservative shall be plugged with treated plugs.
f. Washers: Bolt heads or nuts, which come in contact with the timber, shall be fitted with a washer of the size and type specified. After all nuts are adequately tightened, the protective threads on the bolt shall be burred.
g. Countersinking: Countersinking shall be done wherever smooth faces are required.
h. Connectors: Connector holes 1/16 inch larger than the connecting bolts shall be bored through members to be connected. Care must be taken to keep the bolt hole perpendicular to the face of the timber.
i. Framing: All timber shall be accurately cut and framed to close fit in such manner that the joints will have even bearing over the entire contact surfaces. No shimming will be permitted in making joints nor will open joints be accepted.
j. Beams: Timber beams shall be placed to secure an even and uniform bearing over the tops of the supporting post or piles and to secure an even alignment of their ends. All caps shall be secured as indicated on the Plans.
k. Nailing: Nail without splitting wood. Pre-bore as required. Replace split members.
l. Screws: Pre-bore holes for lag screws and wood screws, same diameter as root of thread; enlarge holes to shank diameter for length of shank. Screw, do not drive, lag screws and wood screws.
m. After assembly of each component part, all counter bored holes, all ends of bolts and rods shall be coated with asphalt roofing cement.

B. Timber Piles

a. All piles and lumber, whenever possible, shall be cut to size, trimmed, and bored before assembly.
b. The Contractor shall drive test piles prior to ordering piles to confirm adequate bearing capacity and the required pile length. Test piles shall be driven by gravity, steam or diesel hammer as approved by M-NCPPC or its agent. Any hammer which does not perform satisfactorily on piles being driven, regardless of prior approval, shall be replaced by a hammer acceptable to M-NCPPC or its agent. Driving shall be continuous without intermission until the pile has been driven five (5) feet past the required penetration. In general, the penetration for the piles shall not be less than shown on the Contract Drawings even in hard material.

c. All piles as shown on the Contract Drawings shall be driven by gravity, steam or diesel hammer as approved by M-NCPPC or its agent. Any hammer which does not perform satisfactorily on piles being drivel, regardless of prior approval, shall be replaced by hammer acceptable to M-NCPPC or its agent. Driving shall be continuous without intermission until the pile has been driven to the required penetration. In general, the penetration for any pile shall not be less than shown on the Contract Drawings even in hard materials. Jetting or auguring is permissible in hard materials, if approved by M-NCPPC or its agent, but the last two (2) feet of penetration must be driven without damage to the pile. In any event, the penetration of the piles shall be such as to have a bearing value of ten (10) tons. If necessary, steel tips shall be added to the piles to facilitate hard material.
d. Each pile is expected to provide adequate pile bearing capacity. If, during operations, the Contractor finds inadequate bearing on piles, he shall stop driving and immediately contact M-NCPPC or its agent. The Contractor is advised that in the event that the length of the piles shown on the Contract Drawings is found to be inadequate on the basis of bearing value, longer replacement piles may be required.
e. Broken or shattered piles shall not be accepted. Piles shall not be more than three (3) inches out of place and not more than two (2) percent out of the plumb. Piles damaged by overdriving or which do not conform to the above tolerances shall be removed and replaced with new piles at the Contractor's expense.
f. During driving, the top of piles shall be protected from damage by using a head or cap. The head or cap shall cover the entire surface of the top of the pile. Trimming the top of the pile to fit the cap shall be kept to a minimum. Damage to the top of the pile shall be restricted to the top six (6) inches.
g. After driving, the length of piles remaining above the elevation of cutoff shall not be more than 6 inches for damaged piles. The top of piles shall be sawed to a true plane of elevation fixed by the Contract Drawings. Cut-off of piles shall not take place without the approval of M-NCPPC or its agent. If the pile tops are not damaged, full length driving will be required. Pile tops shall then be trimmed and waterproofed.
h. All materials shall be accurately assembled, set, regularly spaced, and coursed; and they shall be true to line, even square, plumb, tight, and level.

C. Benches shall be reconstructed in-kind. Contractor shall submit shop drawing for approval prior to ordering materials.

PART 4 – MEASUREMENT

A. No measurement for payment of timber construction for the fixed piers will be made since the cost shall be included in the lump sum Bid Item No. 4 "Fixed Timber Pier" and Bid Item No. 19 'Fixed Timber Fishing Pier'. The payment will be full compensation for the installation of the timber piles, stringers, split caps, railing, decking and other components of the fixed pier structure. This shall

include all materials, labor, equipment, tools and incidentals necessary to complete the work. Shorter or longer piles as required to reach bearing capacity will be measured by linear feet installed and payment shall be included in the unit price Bid item No. 34 '12" CCA-Treated Timber Vertical Piles.'

B. No measurement for payment of timber construction for the flankwalls will be made since the cost shall be included in the lump sum Bid Item No. 14 "Flankwalls". The payment will be full compensation for the installation of the timber piles, wales, liners, capboard, and sheeting. This shall include all materials, labor, equipment, tools and incidentals necessary to complete the work.

C. No measurement for payment of timber construction for the toe wall will be made since the cost shall be included in the lump sum Bid Item No. 13 'Concrete Boat Ramp & Abutment'. The payment will be full compensation for the installation of the wheel stop and sheeting. This shall include all materials, labor, equipment, tools and incidentals necessary to complete the work.

D. Measurement for payment of timber construction for the benches will be made per bench installed and shall be included in the unit price Bid Item No. 21 'Benches'. The payment will be full compensation for the installation of the benches. This shall include all materials, labor, equipment, tools and incidentals necessary to complete the work.

END OF SECTION

DIVISION 4

FLOATING PIER

4-1 SCOPE

The work to be done under this Division includes, but is not limited to, furnishing all materials, tools, equipment, transportation, management, and labor necessary to perform all work in strict accordance with these Specifications and Plans for the ordering, assembling, manufacturing and/or supplying, and installation of the prefabricated floating boat ramp pier and the kayak pier, anchorage to piles, and other hardware and accessories as may be shown or enumerated on the Plans. All materials shall be as manufactured by Gator Dock & Marine, Sanford, Florida, (407) 323-0190 or approved equal. Manufacturer shall provide final Shop Drawings to the M-NCPPC or its agent, for approval prior to fabrication.

4-2 MATERIALS

Floating Pier: The floating pier will be six (6) feet by sixty-eight (68) feet and six (6) feet by fourteen (14) feet, as shown on the Plans and will be Gator Dock or approved equivalent. See Plans for details or contact Gator Dock & Marine, Inc. @ (407) 323-0190. Shop Drawings for floating docks must be submitted to the M-NCPPC prior to ordering for approval.

Kayak Pier: The kayak floating pier will be approximately twenty (20) feet by twenty (20) feet, as shown on the Plans and will be Gator Dock or approved equivalent. See Plans for details or contact Gator Dock & Marine, Inc. @ (407) 323-0190. Shop Drawings for floating docks must be submitted to the M-NCPPC prior to ordering for approval.

A. Aluminum extrusions for pier, deck, and structures shall be aluminum alloy 6061-T6 extruded in accordance with the requirements of applicable sections of Federal Specifications QQ-A-200.

B. Flotation shall consist of 2.0 pounds per cubic foot urethane utilizing the froth-in-place method. The urethane foam shall be injected directly into a fully encased 6061-T6 box frame of similar design to the floating dock walking surface frame. Expanded polystyrene flotation with or without polyethylene casings shall be prohibited.

C. Pier bumpers shall be composed of non-marring, non-yellowing marine grade extruded vinyl. Pier fendering shall be installed with aluminum pop rivets on metal piers and aluminum nails on wood piers. Optional heavier fenders are available.

D. Cleats shall be composed of cast aluminum alloy meeting the requirements of the Federal Specifications QQ-A-571F and QQ-A-601E and shall be a minimum of 12”.

E. Stainless steel bolts, rods, nuts, washers and screws shall be type 304.

F. Wood fenders shall be Southern Pine No. 1 Structural (1200# extreme fiber bending) Stress Grade with a minimum CCA (Copper Chromium Arsenate) content equal to 0.40 pounds per cubic foot. All wood shall comply with American Softwood Lumber Standard PS 20-70. Each piece of lumber shall be identified by the grade and treatment mark of recognized organization or independent agency certified by the American Lumber Standards Committee, Washington, DC to grade the species. All lumber specified for treatment shall be treated to the requirements of American Wood Preservers Bureau AWPB LP-22.

G. Rollers for either pile guides shall be UHMW polyethylene with black ultra-violet light inhibitor added.

H. ADA gangway shall be as specified on the plans. Contractor shall submit shop drawing for review and approval prior to fabrication.

4-3 DESIGN REQUIREMENTS

A. Structures:

1. Floating docks shall be designed to withstand a minimum uniform live load of forty (40) pounds per square foot applied vertically. The flotation shall be sized to provide a minimum freeboard of nine (9) inches under a dead load plus concentrated load of 400 pounds applied at any location on the dock walking surface and shall provide a minimum of 18 inches freeboard under dead load only.

2. Aluminum decked floating docks shall be designed such that the decking shall not have an unsupported length exceeding 32 inches. Where wood fendering is used the minimum size member shall be two (2) inches by eight (8) inches, secured at minimum spacing of three (3) feet O.C. with 3/8 inches type 304 stainless steel bolts countersunk below the wearing surface of the exposed side.

3. All design requirements for structures not enumerated in the Plans or Specifications shall conform to the latest revised Gator Dock & Marine's Standard Plans or equivalent.

B. Accessories:

1. The extruded aluminum ribbed decking shall be designed to withstand a combined dead load and live load of 100 pounds per square foot per individual slat. Allowable deflection shall be L/180 where "L" is the freespan between cross members in inches.

2. Cleats shall be designed to withstand a mooring line load of 1,500 pounds

in any direction.

3. Hinged or bolted floating dock module connectors shall be able to withstand a load of 3,000 pounds applied to the full connector.

4-4 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.

4-5 FABRICATION REQUIREMENTS

A. Structures:

1. All floating dock units shall be sequentially numbered with matched hinges fitted in the shop prior to shipment. Cleats and other accessories shall be welded or bolted as shown in the Plans. Vinyl or wood fendering shall be installed in the shop.

2. All fabrication requirements for structures not enumerated in the Plans or Specifications shall conform to the latest revised Gator Dock & Marine's Standard Plans or equivalent.

B. Accessories:

1. Cleats on aluminum decked docks shall be bolted to an angle welded to the inside of the side rail using stainless steel studs, bolts, and nuts. All cleats shall be installed in locations shown on Shop Drawings.

2. Hinge mount extrusions shall be welded to the frame of the dock with a continuous filled weld unless otherwise shown on the Plans. Non-hinged dock module connectors shall be shown on the Shop Drawings.

3. Anchoring devices, including pile guides, shall be bolted, or welded to the piers in locations and according to the details shown in the Shop Drawings. Framing shall be braced at pile guides.

4. Vinyl fendering installed over wood shall be secured with aluminum nails at not more than six (6)-inch intervals along the top and 12-inch intervals along the bottom. Heavy-duty vinyl corner fenders shall be installed in the locations as shown on the Shop Drawings.

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

6. All fabrication requirements for accessories not enumerated in the Plans or Specifications shall conform to the latest revised Gator Dock & Marine's

Standard Plans or equivalent.

4-6 CONSTRUCTION REQUIREMENTS- STRUCTURES

A. The floating dock shall be anchored with pile guides or other anchoring devices bolted to the aluminum frame. The floating dock must move freely during the entire cycle of water level extremes with the normal expected wind condition.

B. All Construction Requirements not enumerated in the Plans or Specifications shall conform to the latest revised Gator Dock & Marine's Standard Plans or equivalent.

4-7 MEASUREMENT AND PAYMENT

The Floating Pier will have no measurement for payment since the cost shall be included in the lump sum (LS) bid price for Bid Item No. 15 'Floating Pier' and Bid Item No. 8 "Kayak Launch Floating Dock". The payment shall be full compensation for furnishing, hauling, and placing of all materials including floating pier, cleats, steel pile, hinges, etc. and all labor, equipment, tools, activities and incidentals necessary to complete the work.

The ADA Gangway will have no measurement for payment since the cost shall be included in the lump sum (LS) bid price for Bid Item No. 5 "ADA Accessible Gangway." The payment shall be full compensation for furnishing, hauling, and placing of all materials, labor, equipment, tools, activities and incidentals necessary to complete the work.

END OF DIVISION

DIVISION 5

PILE CAPS

PART 1 - GENERAL

5-1.1 SCOPE

The work to be done under this division includes, but is not limited to, furnishing all plants, materials, tools, equipment, transportation, management, and labor necessary to perform all work in strict accordance with these Specifications and Contract Drawings for furnishing and installing new polyethylene pile caps on all timber pier piles and steel anchor piles.

5-1.2 DELIVERY AND STORAGE

A. Deliver materials to the site in an undamaged condition.

B. Store materials in a protected location in a manner that will prevent damage.

PART 2 - PRODUCTS

5-2.1 PILE CAPS

Black, plastic pile-caps shall be used on all piles. They shall be molded from 3/16 inch thick, ultra-violet resistant, low-density polyethylene.

5-2.2 FASTENERS

No. 10 Ga., 1-1/4 inch barbed, cooper roofing nails for shall be used to attach pile caps to wood piles and epoxy adhesive shall be used to attach pile caps to the steel piles.

5-2.3 MISCELLANEOUS MATERIALS

Asphalt roofing cement for coating timber pile tops shall be high grade, waterproof cement, easily spread by trowel to 1/8-inch in one coat, meeting the requirements of ASTM-D-4586-93 Type I Specifications. Use Clipper Ship Roofing Cement MP-51 or an approved equivalent.

PART 3 - EXECUTION

5-3.1 INSTALLATION OF PILE CAPS

A. In order to ensure minimal trimming of timber pile tops for proper fit, the Contractor shall measure each pile butt prior to ordering pile caps.

B. Timber pile tops shall be beveled and the end grain coated with asphalt roofing cement as outlined in these specifications.

C. The Contractor shall measure each steel diameter prior to ordering pile caps.

D. The tops of all steel piles shall be thoroughly cleaned prior to installation of pile caps.

5-3.2 NAILING

Drill 5/32-inch pilot holes no more than two (2)-inches on centers around the circumference of the cap skirt and fasten pile caps to timber piles using copper roofing nails.

5-3.3 EPOXY ADHESIVE

Fasten pile caps to steel piles using epoxy adhesive recommended by the manufacturer.

PART 4 – MEASUREMENT

A. No measurement for payment for the timber pier piles' pile caps will be made since their cost shall be included in the unit price for Base Bid Item No. 4 "Fixed Timber Pier" and No. 19 "Fixed Timber Fishing Pier." The payment will be full compensation for the installation of the pile caps. This shall include all materials, labor, equipment, tools and incidentals necessary to complete the work.

B. No measurement for payment for the steel piles' pile caps will be made since their cost shall be included in the unit price for Base Bid Item No. 17 "Steel Piles for Floating Piers." The payment will be full compensation for the installation of the pile caps. This shall include all materials, labor, equipment, tools and incidentals necessary to complete the work.

END OF SECTION

DIVISION 6

STEEL PIPE ANCHOR PILES

PART 1 – GENERAL

6-1.1 SCOPE

A. The work to be done under this division includes furnishing all materials, tools, equipment, transportation, management, and labor necessary to perform all work in strict accordance with these Specifications and Contract Drawings for fabrication and installation, by driving, all steel piles, including cut-offs and dowels, as indicated on the Contract Drawings.

B. Work shall include, but is not limited to, providing steel pipe anchor piles and caps, and driving piles at specified locations and depths.

6-1.2 REFERENCES

A. AISC: American Institute of Steel Construction.

B. ASTM: American Society for Testing and Materials.

C. ASTM A53: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

D. ASTM A252: Standard Specification for Welded and Seamless Steel Pipe Piles

E. ASTM A500: Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shape.

F. ASTM A501: Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing

G. AWS: American Welding Society.

H. AWS D1.1: Structural Welding Code – Steel

I. IBC: International Building Code.

J. IBC Chapter 17: Structural Tests and Special Instructions

6-1.3 SUBMITTALS

A. Pile-Driving Equipment: Include type, make, maximum rated energy, rated energy per blow of hammer, weight of striking part of hammer, weight of drive

cap, details, type and structural properties of hammer cushion and details of follower and jetting equipment.

B. At least two weeks prior to mobilization at the site, submit data fully describing all proposed pile installation equipment including hammers, rams, driving cushions, pile caps, and cap blocks. See Attachment 1, Pile and Driving Equipment Data form.

C. Product Data: For each type of pile product, accessory, and paint indicated

D. Shop Drawings: Show fabrication and installation details for piles, including splices and tip details.

1. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length and type of each weld.

2. Indicate locations, sizes, type and arrangement of reinforcement.

E. Welding certificates: Copies of certificates for welding procedures and personnel.

F. Qualification Data: For installer, professional engineer and testing agency.

G. Submit certification of yield strength and weldability of steel products by process acceptable to the Engineer, mill certificates of chemical and physical properties, or equivalent.

6-1.4 QUALITY ASSURANCE

A. M-NCPPC or its agent will provide special inspection of pile driving activities.

B. Comply with requirements to the following publications:

1. AISC's "Specifications for Structural Steel Buildings—Allowable Stress Design and Plastic Design"

C. Welding Standards: Qualify welding procedures and personnel according to AWS D1.1, Division 1 Section "Structural Welding Code--Steel."

6-1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver piles to site in such quantities and at such times to ensure continuity of installation. Handle and store piles at site to prevent physical damage.

1. Protect pile coatings and touch up damage to coatings before driving piles.

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.

6-1.6 PROJECT CONDITIONS

Protect structures, underground utilities, and other construction from damage caused by pile driving.

PART 2 – PRODUCTS

6-2.1 STEEL PILE PIPES

Steel Pipe: Meet the requirements of A 252, Grade 2. (Fy = 60 ksi); seamless or welded – twelve (12) inches diameter, 0.5 inch wall thickness.

6-2.2 PILE ACCESSORIES

Splice Coupling: Manufacturer's Standard splice coupling, rolled from ASTM A 36/A 36/M, carbon-steel bar or cast from heat-treated carbon steel, ASTM A 27/A 27M, Grade 65-35 (Grade 450-240), with interior stop and internally tapered for friction fit driving.

6-2.3 PAINT

Paint: SSPC-Paint 16; self-priming, two-component, coal-tar epoxy polyamide, standard black color.

6-2.4 FABRICATION

A. Fabricate and assemble piles in-shop to greatest extent possible.

B. Provide backing bar and pile caps of the same steel as the piling. Fasten to piles with welded connections as shown on the Contract Drawings.

C. Fabricate full-length piles, to greatest extent possible, to eliminate splicing during driving.

1. Splice Coupling: Fit splice coupling into position and weld to adjoining steel pipe pile sections according to manufacturer's written instructions and AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.

2. Welded Splices: Accurately mill, meeting ends of steel pipe piles, and bevel for welding. Continuously weld pile according to AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.

3. Welds joining piles shall be complete penetration groove welds.

4. Splice piles during fabrication or field work.

D. Fit and weld driving points to tip of pile according to manufacturer's written instructions and AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.

E. Pile-Length Markings: Permanently mark each pile with horizontal lines at twelve (12) -inch (300 mm) intervals; mark the distance from pile tip at 60-inch (1500 mm) intervals. Marks and numbers shall be readily seen from a minimum distance of 15 feet.

6-2.5 SHOP PAINTING

A. Surface Preparation: Clean surfaces to be painted. Remove loose rust and loose mill scale, and remove spatter, slag, or flux deposits. Prepare surfaces according to SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."

B. Painting: Immediately after surface preparation, apply first coat of paint according to manufacturer's written instructions to provide a dry film thickness of not less than eight (8) mils (0.2 mm).

1. Apply second coat to provide a dry film thickness of not less than eight (8) mils (0.2 mm), resulting in a two (2)-coat paint system thickness of not less than 16 mils (0.4 mm).

2. Mark pile lengths after shop painting.

6-2.6 PILE-DRIVING EQUIPMENT

A. Driving equipment shall be of a type generally used in standard pile-driving practice and shall be operated at the manufacturer's specified rate to develop the required rated energy. Driving equipment shall be in good repair and operating condition and shall be capable of being operated as recommended by the manufacturer.

B. Pile Hammer: Air-, Steam-, or diesel- powered type capable of developing ultimate pile capacity indicated considering length and weight of pile and character of subsurface material anticipated. Hammer must be capable of consistently delivering energy to drive pile within the range recommended by hammer manufacturer for length and weight of pile and character of subsurface material anticipated.

C. Hammer Cushions and Driving Caps: Between hammer and top of pile, provide hammer cushion and steel driving cap recommended by hammer manufacturer for type of pile.

D. Leads: Use fixed or rigid-type pile-driver leads that will hold full length of pile firmly in position and in axial alignment with hammer. Extend leads to within 24 inches (600 mm) of elevation at which pile enters ground.

PART 3 – EXECUTION

6-3.1 DRIVING EQUIPMENT

A. Maintain all pile-driving equipment in safe operating condition at all times.

B. Any equipment or method which results in regular or repeated damage to piles during driving, or is detrimental to the bearing capacity of piling already driven, will be rejected by the M-NCPPC or its agent.

6-3.2 DRIVING PILES

A. General: Locate each pile accurately in accordance with the drawings. Reference cut-off elevation of each pile to bench marks established by the M-NCPPC or its agent.

B. Continuously drive each pile to tip elevation as shown on the Contract Drawings, and to satisfactory embedment and driving resistance as directed by the M-NCPPC or its agent.

1. Drive piles to embedment lengths or blow counts that achieve pile capacity in accordance with the contract documents.
2. The Engineer reserves the right to modify driving criteria depending on the equipment used, field conditions encountered, and observations made during pile installation.
3. The Contractor will not be responsible for counting blows per foot.

C. Carefully maintain the center of gravity for each group of piles to conform to the locations shown on the Contract Drawings and/or Pier Manufacturer's Shop Drawings.

D. Carefully plumb the leads and the pile before driving. Take care during driving to prevent and to correct any tendency of piles to twist or rotate.

E. Pile Splices: Splice piles, if required, during installation and align pile segments concentrically.

1. Maintain a minimum distance to the first welded splice, a minimum length for pipe sections, and a maximum number of splices for each pile as directed by the M-NCPPC or its agent.

F. Driving Tolerances: Drive piles without exceeding the following tolerances, measured at pile heads:

1. Location: Four (4) inches (100 mm) from location indicated after initial driving, and six (6) inches (150 mm) after pile driving is completed.

2. Plumb: Maintain one (1) inch (25 mm) in ten (10) feet (3 m) from vertical, or a maximum of four (4) inches (100 mm), measured when pile is above the ground in leads.

3. Piles exceeding these deviations may be pulled into position only upon prior approval by the M-NCPPC or its agent.

4. Piles out of tolerance will be rejected and shall be removed and replaced with new piles.

G. Measure tolerances when piles are released from the driving template, unless the template is used to form the pile cap.

H. Withdraw damaged or defective piles and piles that exceed driving tolerances and install new piles within driving tolerances. Fill holes left by withdrawn piles as directed by the M-NCPPC or its agent.

1. Fill holes left by withdrawn piles that will not by filled by new piles using cohesionless soil material such as gravel, broken stone, and gravel-sand mixtures. Place and compact lifts not exceeding 72 inches (1800 mm).

I. The Contractor shall employ a competent field person to:

1. Survey the location and alignment of each pile to verify that it meets contract requirements. Submit field notes to the M-NCPPC or its agent on the same day as the work.
2. Survey and verify the alignment of joined pile sections before and after driving.

J. Jetting for installation of piling is prohibited.

K. Avoid excessive driving, as established by the M-NCPPC or its agent.

L. Cutting Off: Cut off tops of driven piles square with piles axis as necessary to achieve top elevations indicated.

M. Welding:

1. Fabricate accurately to lines and dimensions shown on the drawings.
2. Make no more than one field splice and one shop splice per pile unless permitted otherwise by the Engineer. Splice piles by complete joint penetration weld. Carefully align and hold pieces firm and concentric until welding is complete. Provide backing bar (minimum 1/4 inch thick) for all splices. Underwater welding for pile splicing is prohibited. Splices shall develop the full strength of the pile in tension, bending, and bearing.
3. Workmanship and technique shall be of the same standard as for structural steel assembly.

N. Pile-Driving Records: Maintain accurate driving records for each pile, compiled to attest to by a qualified professional engineer. Include the following data:

1. Project name and number
2. Name of Contractor
3. Type of pile and data casting
4. Pile location in pile group and designation of pile group
5. Sequence of driving in pile group
6. Pile dimensions
7. Ground elevation
8. Elevation of tips after driving
9. Final tip cutoff elevations of piles after driving pile group
10. Records of redriving
11. Elevation of splices
12. Type, make, model, and rated energy of hammer
13. Weight and stroke of hammer
14. Type of pile-driving cap used
15. Cushion material and thickness
16. Actual stroke and blow rate of hammer
17. Pile-driving start and finish of times, and total driving time
18. Time, pile-tip elevation, and reason for interruptions
19. Number of blows for each twelve (12) inches (300 mm) of penetration, and number of blows per one (1) inch (25) of the last six (6) inches (150 mm) of driving
20. Pile deviations from location and plumb
21. Preboring, jetting, or special procedures used
22. Unusual occurrences during pile driving

6-3.3 PIPE PILE ASSEMBLY AND FIT-UP

A. Pipe pile assembly shall follow the applicable sections of AWS D1.1, Chapter 5, Fabrication, and as modified below:

1. Articles 5.22.1.1 through 5.22.3.1 shall be used as noted for butt joints. Article 3.3.3 shall be modified as noted in the following: In the second sentence, delete "…or 1/8 inch (3 mm), whichever…."; also delete the second to the last sentence, which reads, in part, "In correcting . . . in twelve (12) inches (305 mm)."
2. Joint root offset shall not exceed ten (10) percent of the joined material thickness or 1/16 inch for butt joints landing on backing bars (Article 5.22.31).

B. All piling, piling assembly, and fit-up shall meet the requirements of ASTM A252 for welded and seamless pile, Article 12, Permissible Variations in Weights and Dimensions, Article 13, Straightness, and Article 14, Workmanship, Finish, and Appearance.

C. All joining sections shall be field-matched and marked for verification to minimize outside diameter differences and shall meet a maximum of 1/16 inch landing difference on each side (total of 1/8 inch).

D. No pressure tests are required for ASTM A53 pipe.

E. Measure and record pile assembly alignment according to ASTM A252, Article 14, Workmanship, Finish, and Appearance, and verified before calling for acceptance testing by the M-NCPPC or its agent. Check and record each joint according to ASTM A252 and AWS, Chapter 6.

F. Dents, gouges, or arc strikes in the piling greater than 1/8 inch shall be removed or repaired as required under AWS. Pile deficiencies greater than 1/8 inch will be rejected and pipe shall be removed from the site and replaced by the Contractor at no additional cost to the client.

G. Align field splices by means that will hold both the receiving end and adjoining end in concentric alignment without deflections due to pile dead load or construction techniques or equipment. Take alignment measurements and record after tack welding and after final joining weld. Any out-of-tolerance assembly will be rejected. Remove sections and repair or replace sections and reassemble at no additional cost to the owner. If misalignment of pile sections is found either by the Contractor's inspection or the M-NCPPC's inspection, work will be stopped, the Contractor shall submit to the M-NCPPC or its agent a work plan for correcting alignment and for eliminating future alignment problems, including equipment modifications, installation procedural changes, and labor practices before work may be started again. M-NCPPC will not grant either a contract time extension or additional compensation for the Contractor's delays in production due to pile and joint misalignment.

6-3.4 OBSTRUCTIONS DURING DRIVING

A. Minor obstructions are obstructions encountered within ten (10) feet of mud line. Should an obstruction at any greater depth stop the advancement of a pile, it will still be classed as a minor obstruction unless the same obstruction also stops the advancement of a second pile adjacent to the first. No extra payment will be made for the removal of a minor obstruction.

B. Major obstructions are obstructions not classed as minor. Additional work directed by the Engineer to acceptably complete the installation of the pile after encountering a major obstruction will be considered extra work under the terms of the General Conditions. A major obstruction will be determined as such after engineering review of pertinent field conditions and driving data. In addition, the M-NCPPC or its agent reserves the right to require the Contractor to demonstrate, at no additional cost to M-NCPPC, that the pile cannot be driven by conventional means.

6-3.5 FIELD QUALITY CONTROL

A. Weld Testing: In addition to visual inspection, welds shall be tested and inspected according to AWS D1.1 and the inspection procedures listed below, at testing agency's option. Correct deficits in work that test reports and inspections indicate does not comply with the Contract Documents.

1. Liquid Penetrant Inspection: ASTM E 165
2. Magnetic Particle Inspection: ASTM E 709; performed on root and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
3. Radiographic Inspection: ASTM E 94; minimum quality level "2-2T"
4. Ultrasonic Inspection: ASTM E 164

6-3.6 TOUCHUP PAINTING

A. Clean field welds, splices, and abraded painted areas and field-apply paint according to SSPC-PA 1. Use same paint and apply same number of coats as specified for shop painting.

1. Before driving piles, apply touchup paint to surfaces that will be immersed or inaccessible after driving.

6-3.7 DISPOSAL

Remove withdrawn piles and cutoff sections of piles from site and legally dispose of them at an approved disposal site.

6-3.8 REJECTED PILES

A. The Contractor will not be granted time extensions or additional compensation for work that fails inspection and is rejected.

B. Perform associated remedial work necessary to acceptably complete the pile installation as required by the applicable code. Such remedial work may include, but is not limited to, installation of additional piling, construction of additional framing, and removal and reinstallation of piling. No extra payment or time extensions will be made for remedial work required to acceptably complete pile installation.

C. No payment or time extension for furnishing, driving, cut-off, or extending will be made for any piling installed by the order of M-NCPPC or its agent to correct or replace piles which are out of tolerance, misaligned, broken, incorrectly oriented, or otherwise violate these specifications, or for removing and reinstalling any piling incorrectly installed.

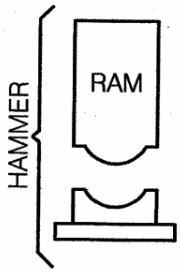
PART 4 – MEASUREMENT

Measurement for payment for these items of work will be made per unit price for Base Bid Item No. 17 “Steel Piles for Floating Pier.” The payment will be full compensation for the installation of the steel pile. This shall include all materials, labor, equipment, tools and incidentals necessary to complete the work.

ATTACHMENT 1

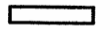
PILE AND DRIVING EQUIPMENT DATA
THE PORT OF PORTLAND

PILE DRIVING CONTRACTOR: _____

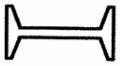


HAMMER (MANUFACTURER: _____ MODEL: _____
(MAX. RATIO ENERGY: _____ @ _____ LENGTH OF STROKE
TYPE: _____

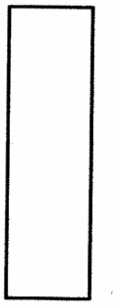
RAM (RAM WEIGHT: _____ RAM LENGTH: _____
((For diesel hammers)
(RAM CROSS SECTIONAL AREA: _____



ANVIL (With diesel hammers) ANVIL WEIGHT: _____



HAMMER (MATERIAL: _____
CUSHION (



(CAPBLOCK) (THICKNESS: _____ PLAN DIMENSIONS: _____

PILE CAP (PILE CAP WEIGHT: _____

(HELMET)

(PILE TYPE: _____
(LENGTH (In Leads): _____ DIAMETER: _____
PILE (WALL THICKNESS: _____ WEIGHT/FT _____
(DESIGN CAPACITY (Tons): _____
(DESCRIPTION OF SPLICES: _____
(DESCRIPTION OF TIP: _____

NOTE:

* SUBMIT ADDITIONAL SHEETS FOR PROPOSED ALTERNATIVE HAMMERS AND DRIVING EQUIPMENT.
* PROVIDE ALTERNATE EQUIPMENT DATA OF AVAILABLE EQUIPMENT IN CASE OF EQUIPMENT BREAKDOWN.

SUBMITTED BY: _____ TELEPHONE NUMBER: _____
_____ DATE: _____

END OF SECTION

DIVISION 7

REINFORCED CONCRETE BOAT RAMP AND ABUTMENT

7-1 SCOPE

The work to be done under this Division includes, but is not limited to, furnishing all plants, materials, tools, equipment, transportation, management, and labor necessary to perform all work in strict accordance with these Specifications and Plans to install the concrete boat ramp and concrete abutment, undercut subgrade and #8 stone installation, forms, ties, accessories as shown on the Plans, as described in these Specifications, and as directed by the M-NCPPC or its agent.

7-2 SHOP DRAWINGS

Submit Shop Drawings of reinforced steel to the M-NCPPC or its agent, for approval. Shop Drawings shall be prepared in accordance with the *Manual of Standard Practice for Detailing Reinforced Concrete Structures*, ACI 315.

7-3 MATERIALS

A. Concrete: All concrete shall be ready-mixed concrete mixed in accordance with ASTM C-94 and ACI 304-73 with a 28-day compressive strength of 4,000 pounds per square inch (psi), as indicated on the Plans.

B. Cement: All cement shall be Portland Type II cement in accordance with ASTM C-150 and shall be of one brand.

C. Aggregate: All aggregate shall be in accordance with ASTM C-33 and ACI 211.1-74 and 304-73. All coarse aggregate shall be #8 stone and shall not exceed 3/4 inch in size.

D. Geotextile Fabric (woven):
The geotextile fabric shall be a porous, plastic sheet of woven, calendared and palmered filament yarn. The plastic yarn shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of propylene, ethylene, ester, amide, or vinylidene-chloride, and shall contain stabilizers and/or inhibitors added to the base plastic if necessary to make the filaments resistant to deteriorations due to ultra-violet light and heat exposure. The fabric shall conform to the following minimum requirements:

PROPERTY	TEST METHOD	CRITERIA
AOS	ASTM D-4751	70-100 U.S. Standard Sieve No.
% Open Area	COE CW-02215-86	5% or more
Tensile Strength	ASTM D-4632	200 lb. All principal directions
Burst Strength	ASTM D-3786	500 psi
Puncture Strength	ASTM D-6241	135 lb.
Abrasion Resistance	ASTM D-4157/D-4158	60 lb.
Seam Breaking Strength	ASTM D-1683	195 lb.
Clogging Resistance Fabric		(AOS in mm ÷ 0.149) ≥ 1 or Gradient Ratio ≤ 3.0
Water Permeability Coefficient (Permeability)	ASTM D-4491	0.02 cm/sec
Ultra-Violet Stabilization	ASTM D-4355	90% retained strength

1. Seams:
   Seams of fabric shall be sewn with thread meeting or exceeding specifications given for plastic yarn and shall be bonded by cementing or calendaring. Seams shall be tested in accordance with method ASTM D-1683, and the seam strength shall meet the strength specified herein but shall not be less than 90 percent of the tensile strength of the imaged fabric in any principal directions.

2. Acceptance of Fabric:
   All plastic geotextile fabrics to be used shall be tested for compliance with the above specifications. The Contractor shall submit in duplicate a certificate or affidavit signed by a legally authorized person from the company manufacturing the fabric. The certificate shall state that chemical, physical and manufacturing requirements are met as specified herein. In addition, evidence of a service record of any geotextile fabric not previously approved by the M-NCPPC shall be submitted, proving successful performance in projects of similar scope. Approval of the geotextile fabric shall be obtained from the M-NCPPC prior to installation.

E. Water: All water used for mixing concrete shall be from a potable source.

F. Steel Reinforcing Bars: All steel reinforcing bars shall be deformed new billet steel conforming to the requirements of ASTM A-615, with a minimum yield strength of 60,000 psi. All reinforcing shall be epoxy coated.

G. Epoxy Coating: The epoxy coating material used shall be a powered epoxy resin

and shall conform to the requirements or ASTM A 775/A 775M-89a in addition to the following:

1. In order to detect defects in the coating, the color of the epoxy coating material shall be a bright color to contrast with the normal color or reinforcing steel and rusting (e.g. orange, red, green, yellow, etc. and not brown or any color in the rust family).

2. Patching or repair material, compatible with the coating and inert in concrete, shall be made available by the epoxy resin Manufacturer. The material must be suitable for repairs to be made by the fabricator and/or Contractor, for areas of the coating damaged during fabrication or handling in the field. The material furnished shall be capable of being placed at ambient temperatures as low as 35 degrees Fahrenheit (F) and shall have a curing rate at 35 degrees F such that concrete can be placed one hour after patch is made. Color of patching material shall be similar to the color of the coating.

3. Application of Epoxy Coating: Reinforcing bars shall be coated after fabrication and shall meet the following requirements in addition to those specified in ASTM 775/A 775M-89a. The Contractor shall furnish the M-NCPPC or its agent, written certification that the application of epoxy coatings, durability of epoxy coatings and repairs to the coating have been performed in accordance with ASTM 775/A 755M-89a and the following:

    a. The flexibility of the coating shall be such that a minimum of two (2) #5 reinforcing bars per lot shall be capable of being bent 120 degrees over a wood mandrel of three (3) inch radius without visible evidence of cracking of the coating. The bending test shall be conducted at room temperature after the specimen has been exposed to room temperature for a sufficient time to ensure that it has reached thermal equilibrium. A temperature in the range of 68 degrees to 85 degrees F (20 degrees to 30 degrees C) shall be considered room temperature.

    b. The surface of the reinforcing steel to be epoxy coated shall be blasted to near white metal in accordance with the current specification on the Steel Structure Painting Council Surface Preparation Specification SSPC-SP 10. All traces of grit and dust from the blasting operation shall be removed. The coating shall be applied to the cleaned surface after cleaning and before visible oxidation of the surface occurs. The surface shall be free of oil, grease, and similar surface contaminants.

    c. The coating shall be checked after curing for continuity of coating and shall be free from holes, voids, contamination, cracks, and

damaged areas. In addition, there shall not be more than two (2) holidays (pinholes not visually discernible) in any linear foot of the coated bar. A holiday detector shall be used in accordance with the Manufacturer's instructions to check the coating for holidays.

d. That the resistance of the coating to abrasion by a Tabor abraser, or its equivalent, using CS-10 wheels and a 1,000 grams load per wheel shall be such that the weight loss shall not exceed 100 mg. per 1,000 cycles.

e. The film thickness after curing shall be 7 mils ±2 mils applied to a uniform smooth coat. Thickness of the film shall be measured on a representative number of bars from each production lot by the same method as outlined in ASTM G-12 for measurement of film thickness of pipeline coatings on steel.

f. The coating film shall be cured and/or post-cured to a fully cured condition; a representative proportion of each production lot shall be checked by the coating applicator, using the method found most effective for measuring cure, to ensure that the entire production lot of coating applied to reinforcing steel is in the fully cured condition.

4. Product Storage and Handling:

a. General: Protect products in such a manner as to prevent damage, bending, or undue rusting. Store at site to permit easy access for proper inspection and identification of each shipment. Separate material of each shipment for size and shape.

b. Packing: Reinforcement must be tagged as required to indicate respective mill test and job condition. Coated bars shall be bundled together for shipment using excelsior or equivalent, and plastic or padded metal bands. All personnel responsible for loading or unloading coated bars shall use caution to avoid dragging or dropping the bundles. If, during shipment, any damage results, the damaged product shall be repaired as directed by the M-NCPPC or its agent, at the expense of the Contractor.

c. Storing: Bundles shall be stored at the site on suitable blocking or platforms at least 4 inches above the ground or vegetation. They shall be kept free from accumulations of dirt, oil, or other foreign material. Blocking shall be sufficiently close to avoid bending and distortion of the bars. Any damage to coating or distortion of the bars as a result of improper storage procedures shall be corrected to the satisfaction of the M-NCPPC or its agent, at the expense of

the Contractor.

7-4 SUBGRADE PREPARATION

A. The Contractor shall retain, at his expense, a geotechnical engineer, registered in the State of Maryland, to approve the required undercut depth and placement of #8 stone under the concrete boat ramp. The Contractor shall remove the unsuitable subgrade material to a depth, as directed by the geotechnical engineer for the boat ramp construction. After the depth of excavation is achieved, woven geotextile fabric shall be placed on the undisturbed subgrade.

B. #8 stone shall be placed in a thickness of not more than eight (8) inch lifts (maximum thickness before compaction) where directed on the Plans.

C. Geotextile fabric (woven) shall be placed on the final approved subgrade and against plywood forms or sheeting on the side of the proposed concrete ramp.

D. Unsuitable material containing debris, rubble and trash must be disposed of off-site at an approved upland disposal site at the Contractor's expense.

7-5 CONCRETE PROPORTIONING

A. Each cubic yard of concrete shall contain a minimum of six (6) bags of cement.

B. Water-cement ratio shall not exceed six (6) gallons of water per bag of cement.

C. The proportion of coarse aggregate to fine aggregate shall be such as to produce a concrete of the greatest workability and density.

D. Concrete exposed to the air shall have an air entrainment of 6 percent ±1 percent.

7-6 CONTROL TESTS

A. Testing Laboratory: The Contractor shall retain the services of a testing laboratory and pay for all costs of taking samples, making tests, and submitting reports of tests to the M-NCPPC or its agent. The Contractor shall submit the laboratory testing results for the strength of concrete proposed for the project for the approval of the M-NCPPC or its agent, prior to construction.

B. Extent of Tests: The testing laboratory shall take samples and make tests as hereinafter listed for fresh concrete placed for the boat ramp.

1. Compression and Strength Tests: Each test shall consist of four (4) standard six (6) inch diameter by 12 inch high cylinders; two cylinders to be tested at the age of seven (7) days and two cylinders at the age of 28 days in accordance with ASTM C 172.

2. Slump Tests: Tests for slump shall be made at the place of deposit and in accordance with ASTM C 143. Tests shall be made periodically where cylinders are made, and as often in the opinion of the M-NCPPC or its agent, when a change in consistency of the concrete mix is noted. Slumps for the boat ramp shall be four (4) inch maximum.

C. Concrete Delivery Tickets: The Contractor shall submit copies of concrete delivery tickets to the M-NCPPC or its agent, for review, approval, and record.

7-7 PLACEMENT OF REINFORCEMENT AND CONCRETE

A. The concrete shall be placed as near as possible to its final location to avoid segregation and shall be placed in the sections as shown on the Plans in a continuous operation. Concrete shall be discharged into forms within 1-1/2 hours after the cement has been added to the water and aggregate.

B. The Contractor shall place the concrete to the thickness and grades as shown on the Plans.

C. Concrete, after being placed, shall be thoroughly compacted, and shall be spaded, tamped, and vibrated to prevent honeycombing and irregularities in the finished surface.

D. The Contractor shall provide continuous steel reinforcement along the longitudinal axis of the concrete anchor unless otherwise approved by the M-NCPPC or its agent. The splices for longitudinal reinforcement shall be to a minimum and as detailed on the Plans. All reinforcement shall be placed in accordance with ACI 318-83.

E. Reinforcement:

1. The Contractor is alerted to the fact that these bars must be loaded and unloaded with protective slings, etc. as well as a sufficient number of same to avoid deflection of bars which may result in the cracking of epoxy coating. Prior to placing reinforcing bars, each bar shall be examined for areas not coated and for damage to epoxy coating. Hairline cracks and minor damage on fabrication bends without bond loss need not be repaired. Areas to be patched include cuts or mashed areas visible to the naked eye, all uncoated areas, sheared or cut ends of coated bars and any areas where entire coating is removed due to damage during fabrication, abrasion or chipping. The maximum thickness of coating on all repairs shall be 12 mils. All areas oxidized must be cleaned to the satisfaction of the M-NCPPC or its agent, prior to placing epoxy. Ambient temperature at the time of patching shall be not less than 35 degrees F. Repairs shall be made during dry weather conditions. No concrete shall be poured on a

repaired area until the repaired material has been allowed to cure for one hour.

2. The reinforcement shall be accurately placed in positions and spacings shown and securely supported and fastened to prevent displacement before or during concrete placement. Reinforcing steel, bar supports, and splice devices shall be placed in accordance with CRSI *Manual of Standard Practice*, latest edition, and ACI 315 and ACI 318.

3. The Contractor shall use approved accessories to hold reinforcement at proper distances from surrounding surfaces, with minimum coverage as indicated. The coated reinforcing bars shall be placed on supports. The supports that are made of wire or reinforcing shall be epoxy coated as specified above. The reinforcing steel shall be held in place by use of plastic-coated tie wires fabricated for this purpose. Tying reinforcing steel with wire to nails in the forms or using wood spacers is not permitted.

4. The Contractor may move concrete reinforcing steel as necessary to avoid interference with other reinforcing steel or other embedded items upon receipt of approval from the M-NCPPC or its agent.

F. A final visual inspection of the coated steel at the construction site will be made by the M-NCPPC or its agent, after the steel is in place and immediately prior to placing the concrete. Any areas designated by the M-NCPPC or its agent, which meet the criteria mentioned above necessitating repair shall have the epoxy patched.

G. Wire tie reinforcement together at all points where bars cross. Welding or tack welding of reinforcement bars to other bars or to plates, angles, etc. is prohibited. The Contractor shall cut loose ends and turn wire twists inside of the section and bend so that placement of concrete will not force ends to expose concrete surfaces. Work shall be performed in accordance with CRSI Recommendations.

H. Reinforcing bar lap splices shall be staggered so that adjacent splices will be apart, with care taken to maintain proper clearance between parallel bars and between bars and forms. Lap splices shall be securely tied with the wire at frequent intervals. Work shall be performed in accordance with CRSI Recommendations.

7-8 DEPOSITING CONCRETE IN VARIOUS WEATHER CONDITIONS

A. Hot weather concreting shall be in accordance with the requirements of ACI 305.

B. Cold weather concreting shall be in accordance with the requirements of ACI 306.

7-9 FORMS

Forms shall be constructed to produce a concrete, straight-line alignment as specified on the Plans. The forms shall be sufficiently strong to carry the dead weight of the concrete without deflection and tight enough to prevent leakage of mortar. The bearing side of the anchor shall use undisturbed earth as a form unless excavation will not provide a compacted vertical surface in which case forming of the bearing face will be required.

7-10 DEWATERING

The Contractor shall completely dewater forms before concrete is poured. The Contractor shall provide adequate pumping prior to, during, and after pouring of concrete to maintain a dry environment. This pumping shall be maintained after the final pour to allow for proper concrete curing. Pumping shall be continuous and the Contractor shall provide sufficient manpower 24-hours a day to assure no infiltration of water occurs and that concrete is maintained at specified temperatures. This pumping period may be reduced if the Contractor verifies that the saline content of Patuxent River is less than ten (10) parts per thousand. The concrete shall be wet cured for at least seven (7) days while being maintained at a temperature of 50°F or above.

7-11 CONCRETE FINISH

A. Concrete finish for the boat ramp shall be grooved in the direction and angle indicated on the Plans. The grooves shall be formed with tile trowel or similar tool. The grooved finish sample panel shall be approved by the M-NCPPC or its agent, prior to construction.

B. Concrete finish for under the floating pier and abutment shall be broom finished as indicated on the Plans.

C. Boat ramp slabs shall be finished with floor hardener which shall be applied in strict compliance with the Manufacturer's instructions and under the supervision of the Manufacturer's representative.

7-12 CURING

All concrete slabs shall be continuously cured by wetting by mechanical sprinklers or other approved method for a period of not less than seven (7) days.

7-13 MEASUREMENT AND PAYMENT

The Reinforced Concrete Boat Ramp & Abutment will have no measurement for payment since the cost shall be included in the lump sum (LS) bid price for Bid Item No. 13 'Concrete Boat Ramp & Abutment'. The payment shall be full compensation for furnishing, hauling, and placing of all materials and all labor, equipment, tools, activities and incidentals necessary to complete the work.

END OF DIVISION

DIVISION 8

BITUMINOUS PAVEMENT

8-1 SCOPE

The Contractor shall provide all necessary equipment, labor and fill material required to perform the undercut and backfill, to the lines and grades shown on the Plans for the construction of the bituminous pavement areas. Unsuitable or excess material must be disposed of off-site at an approved upland disposal site.

8-2 GENERAL

A. The Contractor shall furnish all labor, materials, and equipment necessary to achieve the proposed grades, accounting for material fill and undercut, as shown on the Contract Drawings or as directed by the M-NCPPC. The stripping of all surface cover in areas anticipated to be disturbed by construction activities to a depth of six (6) inches, stockpiling of all suitable materials discovered during excavation or stripping of surface cover, removal of any excess material and proper disposal of all non-hazardous material shall be included in the price bid. In addition to the requirements contained herein, all grading operations shall be conducted in compliance with Category 200 of the Maryland State Highway *Standard Specifications for Construction and Materials*, "Grading".

B. When fill is proposed, all surface cover in fill areas shall be stripped to a depth of six (6) inches and stockpiled according to these special provisions. Topsoil and suitable embankment fill shall be stockpiled separately when pay items for placing and amending salvaged media are part of the contract.

C. The Contractor is responsible for reviewing the salvaged media requirements and ensuring that the salvaged stockpiles are kept separated and are not contaminated with unsuitable materials during stripping or excavation activities.

D. Unsuitable and excess materials removed in any excavation shall be removed from the project site and deposited in approved disposal sites or deposited in locations on the project site designated on the Contract Drawings or by the M-NCPPC. The unsuitable or excess material shall be placed, trimmed, shaped, sloped, and seeded and mulched in accordance with the Contract Drawings, or as directed by the M-NCPPC. This work shall be performed at the expense of the Contractor.

E. Saturated material shall be, at a minimum, partially dewatered on site. When exported, dewatered spoil material shall be transported in lined water-tight trucks and adequately covered or tarped. Sufficient freeboard shall be maintained. No additional payment shall be made for the transport of dewatered material in lined trucks. No payment shall be made for the portion of the weight that is in excess of

the dry material weight, nor shall payment be made for any additional trucks or equipment required as a result of the Contractors election to export partially dewatered material.

F. This pay item does not include the proper disposal of hazardous waste, if encountered.

G. No additional payment will be made for the double handling of materials. It is the Contractor's responsibility to sequence site operations such that the handling of materials is minimized and economical.

H. Undercut and backfill for material installation including but not limited to topsoil, cobble, gravel, filter media, bituminous pavement, permeable pavement, or the installation of stormdrain structures shall be incidental to the various material items and shall not be include in the price bid.

I. No payment shall be made for temporary grading required for the installation of sediment controls or site access. This work shall be incidental to the price bid for the various erosion and sediment control pay items or to mobilization.

J. Cut and Fill Quantities - Cut and fill quantities may be shown on the Plans in the Summary of Quantities, together with information which will assist in the economical handling of the earthwork. It shall be understood, however, that while cut and fill quantities are computed from information obtained by preliminary surveys, inspections, and earthwork studies, the quantities are subject to change as a result of shrinkage or swell, type of equipment used on the Project, and the method of handling. It shall be the obligation of the Contractor to utilize all suitable materials from excavation in the construction of fills throughout the entire area of the Contract. No payment shall be made for the purchase or import of suitable materials which are required due to the premature removal of suitable fill from the project site.

K. The Contractor shall be provided and will review the M-NCPPC -approved existing conditions survey prior to the start of construction. Any discrepancies between the field conditions and existing conditions survey shall be reported to the Engineer and the M-NCPPC Project Manager prior to the start of construction. At the Contractor's option and expense, the Contractor may provide his own existing conditions survey. The existing conditions survey will be reviewed and approved by the M-NCPPC. The additional earthwork required to achieve the proposed grades shown on the Contract Drawings will be measured and paid for as Contingent Unclassified Excavation.

L. When slides or washouts occur in either cut or fill, the damage shall be repaired by the Contractor at no expense to the M-NCPPC and immediately reported to the M-NCPPC.

M. All suitable materials removed in excavation shall be used in embankments in accordance with the provisions of Section 204 *Embankment and Subgrade* of

Standard Specifications for Construction and materials, except that topsoil shall be stripped to a depth of six (6) inches within the limits of excavation. Salvaged materials shall be stored in stockpiles as specified in Section 920.01 of *Standard Specifications for Construction and materials*. Invasive species and the media that supported their growth will be disposed of. Topsoil shall only be stockpiled separately when non-contingent pay items for the placement and amendment of these medias are listed as bid items.

N. Related Work Included Elsewhere

1. Erosion and Sediment Control (Section 318 of *Standard Specifications for Construction and materials*)
2. Removal of Existing Structures (Section 405 of *Standard Specifications for Construction and materials*)
3. Salvaged Topsoil (Section 920.01 of *Standard Specifications for Construction and materials*)

O. Quality Assurance

All materials within the limits of construction that are to be incorporated in the work will be subject to test by the Contractor, and approved by the M-NCPPC, to determine their suitability for portions of the work in which the materials are to be placed. The tests may determine organic content, mechanical properties, bearing capacity, density, stability or any other properties pertinent to satisfactory performance of the work proposed.

If required by the M-NCPPC, compaction tests shall be conducted in accordance with the provisions in Section 111 *Sampling Devices, Testing, and Safety Equipment* of *Standard Specifications for Construction and materials*.

P. Submittals

Material test results shall be submitted for Suitable Fill, Select Borrow, Selected Backfill, and for all other materials furnished from a source other than a licensed commercial operating supplier. The tests shall demonstrate that the material meets all requirements specified herein. The Contractor shall submit results of all required materials testing, subsurface investigations and compaction tests to the M-NCPPC.

Certificates of compliance shall be submitted in accordance with the "General Provisions" for materials furnished from a licensed commercial operating supplier. The certificate shall state that the material meets the requirements specified herein.

8-3 MATERIALS

A. Graded Aggregate Base Course:
Graded Aggregate Base (GAB) course shall be as specified on the plans and in

accordance with Section 901.01 *Aggregates* of MD SHA *Standard Specifications for Construction and Materials.*

B. Surface course:
Surface course shall be as specified on the plans and in accordance with Section 901.01 *Aggregates* of MD SHA *Standard Specifications for Construction and Materials.*

C. Base course:
Base course shall be as specified on the plans and in accordance with Section 901.01 *Aggregates* of MD SHA *Standard Specifications for Construction and Materials.*

D. Tack Coat:
The tack coat shall be in accordance with Section 904.03 *Emulsified Asphalts* of MD SHA *Standard Specifications for Construction and Materials.*

E. Unclassified Excavation:

1. The County will not furnish any materials for general excavation other than those materials, which are available within the excavation limits of the project site as designated on the Contract Drawings by sections, grade lines and/or contour lines.

2. Material for fills or backfills may be from on-site excavations (if of proper quality) or from borrow sources. The material shall be free from vegetative matter, organic material, sludge, grit, trash, muck, roots, logs, stumps or frozen material and other deleterious substances. Except as otherwise specified or approved, the material shall not contain rocks or lumps larger than six inches in greatest dimension. The material shall not contain mica in quantities, which, in the judgment of the County are sufficient to affect compaction characteristics. Materials having a maximum dry density of less than 85 pounds per cubic foot (AASHT0 T 180) shall not be used unless specifically approved in writing by the Engineer. Cinders, ashes, rubble and construction debris shall not be used in the work.

3. Suitable material is any material meeting the quality requirements specified above and which is not frozen, and which has a suitable moisture content.

4. Unsuitable material is any material not meeting all the requirements for suitable material.

5. Selected backfill for pipe foundation and bedding shall be as specified in Section 302 of *Standard Specifications for Construction and materials*, latest edition.

6. Salvaged topsoil shall be as specified in Section 920.01 of *Standard*

Specifications for Construction and materials, latest edition.

7. Contingent unclassified excavation is any additional unclassified excavation required and import and placement of suitable and/or selected backfills, not shown on the approved design/incidentals at the direction of the Engineer with approval by the M-NCPPC. Contingent unclassified excavation which results from discrepancies between the existing conditions as shown on the Contract Drawings and the Contractor's existing condition survey shall be quantified using a 3rd party program such as AutoCAD Civil 3D.

8-4 CONSTRUCTION

A. Site preparation shall be as shown on the Plans and performed in accordance with Section 208 *Subgrade Preparation* of MD SHA *Standard Specifications for Construction and Materials*.

B. Bituminous pavement installation shall be as shown on the Plans and performed in accordance with Sections 501 *Aggregate Base Courses* and 504 *Asphalt Pavement* and 208 *Subgrade Preparation* of MD SHA *Standard Specifications for Construction and Materials*, except as noted below.

C. No traffic will be permitted on the bituminous concrete pavement until it has set sufficiently to prevent marking. The Contractor may erect barricades, etc., to prohibit traffic around the placement activities.

D. Hot-mix asphalt plant mix shall not be placed on any wet surface or when the average temperatures are less than 55 degrees F or when weather conditions otherwise prevent the proper handling, finishing, or compacting of the mixtures. In case of high wind velocities that result in excessive cooling of the mixture resulting in low density, operations shall be discontinued.

E. The site shall be cut and filled to achieve the grades as shown on the Contract Drawings.

F. Use of Excavated Material

1. Do not waste excavated material without prior approval of the M-NCPPC. All backfill material is anticipated to be from the site.

2. With the approval of the M-NCPPC, use any excavated native stone, gravel, sand or other material conforming to the requirements of the Contract Documents.

3. Use suitable materials from excavation in the construction of embankments and/or infill of the old basin area throughout the limits of

the work as directed by the Engineer or the M-NCPPC.

4. Stockpiling of material is permitted in the areas designated on the Plans. Stockpiles shall be sloped and shaped according to the requirements of the *2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control*, latest edition, and the Contract Drawings.

5. Do not excavate or remove any material that is not within the limits of excavation, as indicated by the slope and grade lines on the Plans, without written authorization from the M-NCPPC.

6. Do not stockpile excavated or borrowed material within the roadway limits, adjacent to water bodies, adjacent to open excavations or pits or within the 100-year floodplain as delineated by Federal Emergency Management Action (FEMA). Drainage shall be directed to an approved erosion and sediment control device.

G. Drainage

1. During construction, the grading operations shall be performed in a manner such that the excavation will be well drained at all times. When necessary, excavations shall be drained to sumps, which shall be pumped continuously, if required, to an approved sediment control device. The Contractor shall maintain and keep all ditches open and free from soil and debris while in service or until final acceptance of the work, and all grading shall be done on neat, regular lines conforming to the sections and contours shown on the Contract Drawings. All work shall be done in proper sequence with all other associated operations. Before any slab or surfacing is placed, all drainage facilities shall be installed which are required to permit free and uninterrupted flow of the surface and underground water from the site or to pumping sumps, etc.

2. During construction, the site shall be maintained in a well-drained condition at all times. Side and berm ditches or gutters shall be so constructed as to avoid damage of recently graded areas by erosion. All drainage necessary to provide free and uninterrupted flow of the surface and underground water shall be installed before surfacing is placed. When stabilized, side and outlet ditches provide the principal means for drainage, the cutting and stabilization of such ditches for the disposition of surface water shall be the first step in the grading operation.

H. Slopes

1. All earth slopes shall be finished in accordance with the contours, elevation, or to the lines on the Contract Drawings. The work shall be done in proper sequence with other operations involved.

2. Slopes excavated or constructed for the convenience of the Contractor,

such as for haul roads or temporary drains, shall meet the design slope on the Contract Drawings for that area. Exceptions will require approval of the Engineer prior to construction of the slope. No payment shall be made for temporary slope construction.

3. Berm ditches, when required, shall be constructed before or at the time cuts are started.

I. Excavation Beyond Specified Limits

1. The widening of cut or excavation sections beyond the limits shown on the Contract Drawings is prohibited in all instances except when required to remove unsuitable material by written order of the M-NCPPC. When so ordered by the M-NCPPC, the procurement of additional suitable materials shall be done in accordance with the following provisions. None of the provisions shall be considered as relaxing the restrictions of Section GP- 4 of *Standard Specifications for Construction and materials*, latest edition.

2. The widening of cuts or excavation sections shall be finished so that completed flat and slope areas shall be uniform in appearance; the slopes shall be no steeper than the cut slopes indicated on the Contract Drawings and shall be in accordance with the line and slope directed by the M-NCPPC.

3. If the M-NCPPC directs the Contractor to excavate beyond the limits originally proposed and within the limits of the site, right-of-way, or easement prior to the starting of earthwork in an excavation section, then all material within the above limits shall be classified as Contingent Unclassified Excavation and will be paid for under its appropriate class.

J. Unsuitable Material

1. All spaces created by the removal of unsuitable material shall be backfilled to the lines and grades indicated. Backfill material shall be as specified in this Section as suitable material.

K. Fill

1. In all areas where filling is proposed, the top 6” of media shall be removed and stockpiled as is described within these special provisions.

2. Exercise care during earthwork to avoid over-compacting areas where vegetation is to be established. Compaction will be accomplished by firmly tamping filled areas with an excavator bucket and by making no more than four (4) passes over filled areas with the excavator tracks or similar weight vehicle track or tire path. Compact fill in 8” lifts to the satisfaction of the Engineer, unless otherwise specified on

the Contract Drawings.

3. With the approval of the M-NCPPC, use any excavated native stone, gravel, sand or other material conforming to the requirements of the Contract Documents.

4. Remove, to the extent directed by the M-NCPPC, unsuitable materials encountered at or below the limits of grading as specified in the Contract Documents and classify as Contingent Unclassified Excavation. Backfill the voids created by the removal of unsuitable material except when rock is encountered at subgrade to the lines and grades with the material specified in the Contract Documents.

5. Remove unsuitable material encountered at the limits of grading or within 6" of the finished grade. Remove unsuitable materials to 1' below finished grade and replace with suitable materials harvested within the limits of disturbance, borrow excavation and/or selected backfill.

8-5 MEASUREMENT AND PAYMENT

A. Bituminous Pavement will be measure and paid for at the unit bid price per square yard (SY) for Bid Item No.27 'Bituminous Pavement'. The payment shall be full compensation for furnishing, hauling, placing all materials including excavation, subgrade preparation, setting of lines and grades where specified, backfill and grading for the installation of GAB, tack coat, bituminous pavement courses, proper disposal of excess excavated materials, and all materials, labor, equipment, tools and incidentals necessary to complete the work.

B. Contingent Unclassified Excavation will be measured by any additional unclassified excavation required, by volume, not on the approved design/incidentals at the direction of the Engineer with approval by the County and paid for at the contract unit price per cubic yard (CY) under Bid Item No. 33 'Contingent Unclassified Excavation'. The price bid shall include furnishing all labor, tools, equipment, and materials necessary to complete the work as shown and specified in strict accordance with the Contract Documents and accepted by the Engineer. Also included in the price bid shall be all excavation, temporary stockpiling of material, preparation of the subgrade for stabilization, import of suitable backfill, fill placement, compaction, geotechnical testing, hauling, disposing of excess and unsuitable materials; and for rounding and transitioning slopes. Payment will not be made for the excavation of any material which is used for purposes other than those designated.

C. Repairs to access paving and/or stone shall be measured and paid at the contingent unit price per square yard (SY) for Bid Item No. 37 'Repair of Access Paving and/or Stone, complete and in-place'.

END OF DIVISION

SPECIAL PROVISIONS

DIVISION 9
PERMEABLE PAVEMENT

9-1. SCOPE

The Contractor shall provide all necessary equipment, labor, and fill material required to perform the excavation, backfill, and grading to the lines and grades shown on the Contract Drawings for the construction of the parking areas and loading area. Unsuitable or excess material must be disposed of off-site at an approved upland disposal site. All work shall be performed in accordance with Category 200 of the Maryland State Highway *Standard Specifications for Construction and Materials*, "Grading", except as noted below.

9-2. MATERIALS

A. Gravel Base Course:
Gravel Base course shall be as specified by the manufacturer and in accordance with Section 901.01 Aggregates of MD SHA Standard Specifications for Construction and Materials.

B. Sand Bedding:
The gradation of the bedding sand shall conform to ASTM C33. Limestone screening, stone dust, or masonry sand shall not be used.

C. TurfStone:
The TurfStone shall be manufactured to ASTM C1319-97.
Unit Size – 3 1/2" x 23 5/8" x 15 3/4"

D. Underdrain:
The underdrain shall conform to ASTM-D-1785.
Schedule 40 4" PVC pipe with perforations – 3/8" Dia., 4 in a row, at 6" center to center wrapped in ACF N080 Non-woven Geotextile or approved equivalent.

E. Cobble Outfall Protection:
Cobble outfall protection shall be as specified by the Plans and in accordance with Section 901.01 Aggregates of MD SHA Standard Specifications for Construction and Materials.

9-3. SUBMITTALS

A. The Contractor must submit all shop drawings to the DPW Project Manager 10 days prior to the start of work.

B. The Contractor must submit the name and/or location of the upland disposal site

to the M-NCPPC Project Manager, or engineer, for approval.

9-4. CONSTRUCTION

A. All work shall be performed in accordance with Category 200 of the Maryland State Highway *Standard Specifications for Construction and Materials*, "Grading", except as noted below.

B. The Contractor shall dispose of all construction debris off-site prior to grading and all waste larger than 1.0 inch in its largest dimension prior to final grading.

C. The gravel base shall be laid in 3" layers, compacting after each layer. The rockbase shall extend horizontally beyond the permeable pavers a minimum of 12 inches when there is no building or curb to restrain them.

D. Underdrains shall be installed in the locations and as specified on Plans.

E. No vehicular traffic shall be allowed on the TurfStone installation until the grid opening have been filled.

F. TurfStone shall be installed according to the manufacturer's specifications. TurfStone shall be placed in a running bond pattern with a joint spacing of 1/16" to 3/16". After the grids are placed, a plate contractor with a centrifugal compaction force of at least 5,000 lbs shall be used to compact the grids. A rubber or neoprene mat shall be used with the compactor to prevent damage to grids.

G. Upon installation, topsoil and grass seed shall be spread across the grids and swept into the openings. After topsoil has been added, the Turfstone shall be compacted until the final level of the topsoil is 1/2" to 3/4" below the surface of the pavement. A drought tolerant grass should be used.

H. The Contractor shall grade and/or fill all areas shown on the Contract Drawings and all areas disturbed by construction activities. Uniformly smooth grading and/or filling of areas shall be accomplished where indicated to the lines and grades as shown on the Contract Drawings.

I. Contractor may place suitable excess material on-site within the approved "Limit-of-Disturbance" (LOD) pending approval by the County and the SEC Inspector. Any remaining excess material that cannot be uniformly spread within the LOD shall be disposed of off-site at no additional cost to the County, or it's agent.

9-5. DISPOSAL

All excess material not suitable for on-site disposal including soil, stone, debris, rubble and trash shall be disposed of off-site at an approved upland disposal site.

9-6. MEASUREMENT AND PAYMENT

A. Permeable Pavement will be measured and paid for at the unit bid price per square yard (SY) for Bid Item No. 28 'Permeable Pavement'. The payment shall be full compensation for furnishing, hauling, placing all materials including excavation, subgrade preparation, setting of lines and grades where specified, backfill and grading for the installation of gravel base, sand, cobble, TurfStone, Underdrain, Topsoil, Seed, proper disposal of excess excavated materials, and all materials, labor, equipment, tools and incidentals necessary to complete the work.

END OF DIVISION

DIVISION 10

SIGNAGE, STRIPING, BOLLARDS, CURB STOPS, LADDERS, AND FIRE PROTECTION SYSTEM

10-1. SCOPE

The Contractor shall furnish all labor, materials and equipment necessary to install the signage, bollards, pavement markings, curb stops, ladders, fire extinguisher cabinets, life rings, and fire protection system as shown on the Contract Drawings or as directed by the M-NCPPC.

10-2. MATERIALS

A. Signage:
All signage shall meet MD SHA Standard Specifications for Construction and Materials, Category 813 – Signs, latest edition and addenda thereto, and as specified on the Contract Drawings.

B. Concrete Curb Stops (a.k.a. Concrete Wheel Stops):
All concrete curb stops shall be in accordance with the Concrete Wheel Stop Detail as shown on the Plans, except as noted. Rebar anchors shall be a minimum of 24 inches long No. 7 rebar. Anchor shall be spaced two (2) feet from center of curb stop. Anchors shall be cast in place or drilled and grouted.

C. Concrete Grout (if used):
Concrete grout shall be Quikrete Commercial Grade Non-Shrink Grout or equivalent.

D. Concrete Mix:
See Materials Section 902.10, Mix No. 3 of *Standard Specifications for Construction and material.*

E. Bollards:
Four (4)-inch diameter steel bollard filled with concrete and covered with a yellow cover manufactured by Ideal Shield or an approved equivalent.

F. Pavement Markings:
All pavement markings shall meet MD SHA Standard Specifications for Construction and Materials, Category 549 – Pavement Markings, latest edition and addenda thereto, and as specified on the Contract Drawings.

G. Ladders:
The ladders shall be Sea Port Marine or approved equivalent and shall be constructed from marine grade 6063 aluminum pipe with a minimum I.D. of 1-1/4". The number of steps shall be determined in the field prior to Contractor ordering the ladders.

H. Fire Extinguisher Cabinets:
Fire extinguishers shall consist of a material and size approved by the US Coast Guard, and meeting NFPA 10 requirements. Fire extinguishers shall contain a regular dry chemical fire suppression agent and shall be furnished fully charged and enclosed in an enclosure or cabinet, as specified below.

Cabinets shall be of a metal and/or plastic (or other synthetic material) UV-protected, weather-proof construction. No wooden or glass cabinet components are permitted. Cabinet type may be deck-mounted or post-mounted. All hardware shall be corrosion resistant and compatible with the items being installed.

I. Life Rings:
Life rings shall consist of a material and size approved by the US Coast Guard. Life rings shall be enclosed in an enclosure or cabinet, as specified below. If possible, the existing life rings and cabinets shall be salvaged and reused.

Cabinets shall be of a metal and/or plastic (or other synthetic material) UV-protected, weather-proof construction. No wooden or glass cabinet components are permitted. Cabinet type may be deck-mounted or post-mounted. All hardware shall be corrosion resistant and compatible with the items being installed.

J. Fire Protection System:
The Fire protection system, including fire department connection and fire drafting hydrants, shall consist of materials as specified on the Plans.

10-3. CONSTRUCTION

A. Signage:
Contractor shall install signage as specified on the Plans and shall meet MD SHA *Standard Specifications for Construction and Materials*.

B. Bollards:
Contractor shall install bollards as specified on the plans. Bollards shall be painted with yellow reflective paint and in accordance with the latest *Manual of uniform Traffic Control Devices*.

C. Curb Stops:

1. The Contractor shall provide and install new pre-cast concrete curb stops at locations shown on the drawings upon completion of the new parking lot area.

2. Curb stops shall be constructed in accordance with SHA Standard No. 634.04. Curb stops shall be anchored 18 inches into the subbase as specified on the Plans.

D. Pavement Markings:
Site preparation shall be as shown on the Plans and performed in accordance with Section 549 *Pavement Markings* of MD SHA *Standard Specifications for Construction and Materials*.

E. Ladders:
The ladders shall be installed in the locations shown on the Plans and in accordance with the manufacturer's recommendations.

F. Fire Extinguisher Cabinets:
The fire extinguisher cabinets shall be installed in the locations shown on the Plans and in accordance with the manufacturer's recommendations.

G. Life Ring Cabinets:
The life ring cabinets shall be installed in the locations shown on the Plans and in accordance with the manufacturer's recommendations.

H. Fire Protection System:
The Fire protection system, including fire department connection and fire drafting hydrants, shall be installed in the locations shown on the Plans and in accordance with the manufacturer's recommendations.

10-4. MEASUREMENT AND PAYMENT

A. Signage will be measured and paid for at the contract unit price as lump sum (LS) under Bid Item No. 30 'Handicap & Traffic Signs'. The payment will be full compensation for the installation of all signage as shown on the plans, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

B. Bollards shall be measured and paid for as a unit bid price per each (EA) under Bid Item No. 29 'Bollards'. The payment will be full compensation for the construction and installation of bollards as shown on the plans, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

C. Curb Stops will not be measured and shall be incidental to Bid Item No. 30 'Handicap & Traffic Signs'. The payment will be full compensation for the installation of each concrete curb stop as shown on the plans, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

D. The Pavement Markings will not be measured and shall be incidental to Bid Item No. 27 'Bituminous Pavement'. The payment shall be full compensation for furnishing and applying pavement marking (lines, letters, numbers, arrows and symbols), and all materials, labor, equipment, tools and incidentals necessary to complete the work. Quality control will not be measured but the cost will be incidental to the other pertinent items specified. Provide corrective actions for markings unsatisfactorily installed or that fail during the observation period as determined and at no additional cost, including Maintenance of Traffic.

E. Ladders shall be measured and paid for as a unit bid price per each (EA) under Bid Item No. 22 'Ladders'. The payment will be full compensation for the installation of each ladder as shown on the plans, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

F. Fire Extinguisher Cabinets shall be measured and paid for as a unit bid price per each (EA) under Bid Item No. 23 'Fire Extinguisher with cabinet'. The payment will be full compensation for the installation of each fire extinguisher as shown on the plans, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

G. Life Ring cabinets will not be measured and shall be incidental to Bid Item No. 23 'Fire Extinguisher with cabinet'. The payment will be full compensation for the installation of each life ring as shown on the plans, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

H. The Fire Protection System will be measured and paid for at the contract unit price as lump sum (LS) under Bid Item No. 20 'Fire Protection System'. The payment will be full compensation for the installation the fire protection system as shown on the plans, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

END OF DIVISION

DIVISION 11

RESTORATION OF GRADED OR DISTURBED AREAS AND SITE PLANTINGS

11-1. SCOPE

The Contractor shall furnish all plants, materials, tools, equipment, transportation, management and labor required to complete the work described herein and as shown on Plans in strict accordance with the Specifications for restoration of graded and disturbed areas.

All work shall conform to *2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control*. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within seven (7) calendar days as to the surface of all perimeter controls, ditches, perimeter slopes and all slopes greater than three horizontal to one vertical (3:1), and 14 calendar days as to all other disturbed or graded areas on the project site. The responsibility of the Contractor is to accomplish the complete permanent seeding operation within 14 days after completion of the finished fill and grading work. The Contractor shall submit to the M-NCPPC evidence of the type of seed used. All work shall be performed in accordance with Section 705 *Turfgrass Establishment* of *Standard Specifications for Construction and materials* except as described below.

The Contractor shall furnish all labor, materials and equipment required to complete the marsh and landscape mitigation planting areas, including planting all trees, shrubs, and marsh vegetation as shown on the Buffer Management Plans or as directed by the M-NCPPC or its agent.

Mitigation planting shall meet the provisions of the Code of Maryland Regulations (COMAR), Title 27. Contractor should refer to the Sections 710 and 711 of *Standard Specifications for Construction and materials*, when the first does not govern.

11-2. MULCH ANCHORING

Plastic netting shall not be used as a method of securing mulch. All netting shall be biodegradable.

10-3 PLANT MATERIAL

A. Marsh Plantings:
All plant material shall be nursery grown in peat pots and shall have roots well developed through the sides and bottoms of the pots.

1. *Spartina patens* shall be three (3) to six (6) months old and

approximately 12 inches high. Individual pots will contain four (4) or more stems.

2. *Spartina alterniflora* shall be three (3) to six (6) months old and approximately 12 inches high. Individual pots will contain four (4) or more stems.

3. Fertilizer shall be "Osmocote 3-4 Month 19-6-12" or equivalent slow release fertilizer.

B. Trees and Shrubs:
Contractor shall refer to the to the Plant and Composition Schedules on the Plans for specific species and sizes.

C. All plant material shall conform to the current issue of the *American Standard for Nursery Stock* published by the American Association of Nurserymen.

D. Plant materials must be selected from certified nurseries that have been inspected by state and/or federal agencies. Nursery inspection certificates shall be furnished to the M-NCPPC or its agent, upon request.

E. Plant material collected from the "wild" is prohibited.

F. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil. Roots shall visibly extend to the inside face of the growing container. All container plants shall be grouped and watered daily until they are planted.

G. The M-NCPPC or its agent, may reject plants damaged in handling or transport.

H. If a substitute is selected, it must be native to the Maryland Atlantic Coastal Region and of the same size, value and quality as the original plant.

10-4 CERTIFICATION

A. The Contractor will provide proof of a valid Maryland Nursery Inspection Certificate or Plant Dealers License (or comparable certification for out-of-state installers).

B. All shipments of nursery stock into Maryland will be accompanied by a valid certificate on inspection issues at the state of origin and acceptable to the Maryland Department of Agriculture Office of Plant Industries and Resource Conservation.

10-5 PLANTING SCHEDULE

A. Marsh Plantings:
Sprigging will be accomplished between April 1 and June 30 or August 15 and October 15, during periods of low tide.

B. Forest and Landscape Mitigation Plantings:
Trees and shrubs shall be planted from March 1 to June 15 and from September 15 to December 15.

10-6 PREPARATION

A. Forest and Landscape Mitigation Areas:

1. The live plant material shall be transported to the construction site within three (3) calendar days of delivery from the nursery.

2. Live plant materials must be protected against drying out and overheating before/during transport (e.g. they shall be covered transported in unheated vehicles, moistened, kept in soak pits) and on-site prior to installation (e.g. by storing in controlled conditions, storing in shade, covering with evergreen branches or plastic, placing in moist soil or spraying with anti- transpirant chemicals). Live materials shall receive continuous shade, shall be sheltered from the wind, and shall be continuously protected from drying by being heeled into moist soils. Where water is available, live stakes shall be sprayed or immersed.

10-7 CONSTRUCTION METHODS

A. Forest and Landscape Mitigation Areas:
The Contractor shall refer to the Contract Documents for specific spacing requirements.

B. Protection of Installed Areas:
Immediately upon completion of the planting operation in an area, the area shall be protected against wildlife, traffic or other use as follows.

1. Deer Protection Fencing shall be installed around all one (1) inch (or smaller)-Caliber trees and all shrubs as identified on the Plans. For trees the Contractor shall use Black High Density polyethylene to form a circle around the tree. For shrubs the Contractor shall secure 48-inch high Chicken Wire to two (2) 1”x1”x5’ hardwood stakes driven a minimum 12 feet into the ground.

C. Clean Up:
During planting, all areas shall be kept neat, clean and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to

existing plants, turf, structures and private property. Remove all tags, labels, strings, and wire from the plant materials, unless otherwise directed by the M-NCPPC or its agent.

Final cleanup shall be the responsibility of the Contractor and consist of removing all trash and materials incidental to the project and disposing of them off-site.

10-8 PLANT ESTABLISHMENT AND MONITORING PERIOD

A. Forest and Landscape Plantings (Mitigation Plantings):
Per COMAR 27.01.09.01-2J, the Contractor is responsible for maintaining a 100% plant establishment success rate at the end of the two-year monitoring period for all planted landscape stock. The Contractor is responsible for replanting all areas not meeting 100 percent survival.

B. Maintenance of the planted areas shall include eradicating phragmites, weeds, insects and diseases; protecting embankments and ditches from surface erosion; maintaining erosion control materials; protecting installed areas from traffic and wildlife predators; watering; and post fertilization. A record of each site visit shall be furnished describing the maintenance work performed; areas repaired or reinstalled; and diagnosis for unsatisfactory stand of plants.

10-9 MEASUREMENT AND PAYMENT

A. The Restoration of Graded & Disturbed Areas will be measured and paid for at the contingent unit bid price per square yard (SY) under Bid Item No. 32 'Permanent Stabilization'. The payment will be full compensation for the fine grading, lime, disking, seed, mulch, fertilizer, installation, and maintenance for the vegetative stabilized areas as shown on the Plans, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

B. Additional seed, mulch, fertilizer and lime for permanent stabilization will be measured and paid for at the contingent unit bid price per square yard (SY) under Bid Item No. 36 'Seed, Mulch, Fertilizer, and Lime for Permanent Stabilization, Stone Parking, and Access'.

C. Forest and landscape plantings will have no measurement for payment since the cost shall be included in the lump sum (LS) bid price for Bid Item No. 31 'Mitigation Landscape Plantings'. The payment will be full compensation for the tree and shrub planting, and deer protection fencing and monitoring as shown on the Plans, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

END OF DIVISION

DIVISION 12

SEDIMENT AND EROSION CONTROL

12-1. SCOPE

The work to be done under this Division includes, but is not limited to, furnishing all materials, tools, equipment, transportation, management, and labor necessary to perform all work in strict accordance with these Specifications and Plans for sediment and erosion control and the clearing of trees, overhanging limbs, brush, shrubs, stumps, roots, stubs, organic materials and other debris from within the limits of disturbance as shown on the Plans. The Contractor shall regularly inspect all sediment and erosion control measures, including the super silt fence, and turbidity curtain, and perform any maintenance required during the contract period.

12-2. INSTALLATION AND MAINTENANCE

A. The limits of disturbance for the boat ramp, access road, parking area, loading and unloading area, soft launch, and associated improvements will be marked by the Contractor and approved by the M-NCPPC prior to construction.

B. All perimeter sediment control devices and staging/laydown areas, including but not limited to construction access roads and staging/stockpile areas shall be constructed and repaired if needed according to the Plans and be approved by the M-NCPPC prior to any mass clearing and grubbing.

C. The Contractor shall remove and dispose of all waste materials, fencing, brush, shrubs, roots, stubs, trees and debris off-site, in a land area furnished by the Contractor and approved by the M-NCPPC. Burning is not allowed at the site.

D. The Contractor is responsible for the removal of all trash, debris, or structures left within the Limit of Disturbance at the time of bidding.

E. Contractor may clear trees and overhanging limbs as necessary to provide access within the limits of disturbance as specified on the Plans pending approval by the M-NCPPC.

F. Topsoil shall be stripped within the limits of disturbance as shown on the plans and approved by the M-NCPPC and placed in the designated stockpile area delineated on the Plans. The topsoil shall be cleaned of all roots, brush and other extraneous materials and placed on bare soil (cleared and grubbed) in the stockpile area. All clearing and grubbing shall be performed in the areas that are delineated on the Plans. The stockpile site shall be temporarily seeded as specified in Division 10 - Specifications for *Restoration of Graded and Disturbed Areas and Site Plantings*.

12-3. INSTALLATION AND MAINTENANCE

A. The Contractor shall complete all work in accordance with the *2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control* and the approved Plans.

B. Sediment control will be provided by the measures shown on the Contract Drawings. The Contractor shall regularly inspect and perform any maintenance required during the contract period.

C. Once the sediment and erosion control measures are installed, Contractor shall obtain approval by the Prince George's County Inspector prior to initiation of work.

D. The approval by the Prince George's County for the construction of this project does not extend to offsite borrow pits or waste areas. Prior to commencing any grading operations, the Contractor shall make application for and secure all necessary permits for the operation and grading on any and all borrow pits or waste areas that will be used in conjunction with this project. the Contractor shall be held solely responsible for complying with the applicable laws and regulations of such other County or political jurisdiction.

E. In case of repeated violations for the Sediment and Erosion Control Plan on the part of the Contractor, Prince George's County reserves the right to employ outside assistance or to use its own forces to provide the necessary corrective measures. Such incurred direct costs, plus project engineering cost, will be charged to the Contractor and appropriate deductions made from the Contractor's monthly invoice.

12-4. MEASUREMENT AND PAYMENT

A. The Super Silt Fence will be measured and paid for at the contract unit price per linear foot (LF) under Bid Item No. 25 'Super Silt Fence'. The payment will be full compensation for the installation and maintenance of the high visibility fence as shown on the Contract Drawings and specified herein, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

B. The Turbidity Curtain will be measured and paid for at the contract unit price per linear foot (LF) under Bid Item No. 12 'Turbidity Curtain'. The payment will be full compensation for the installation and maintenance of the turbidity curtain as shown on the Contract Drawings and specified herein, including all materials, labor, equipment, tools and incidentals necessary to complete the work.

END OF DIVISION