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DIVISION 02 - SITE WORK

SECTION 02461N

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SECTION 02461N

WOOD MARINE PILES

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 25 (1991) Round Timber Piles

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C1 (1996) All Timber Products - Preservative Treatment by Pressure Processes

AWPA C3 (1995) Piles, Pressure Treatment

AWPA M4 (1996) Care of Preservative-Treated Wood Products

AWPA M6 (1996) Brands Used on Forest Products

1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-03 Product Data

Piles

Hammer

Driving equipment

Driving helmet

File caps

File shoes

Jetting equipment

Cushion block

SD-07 Certificates

MSDS and CIS

1.3 QUALITY ASSURANCE

1.3.1 Timber Piles Preservative Treatment

The Contractor shall be responsible for the quality of treated wood products. The Contractor shall provide the Contracting Officer's Representative (COR) with the inspection report of an independent inspection agency, approved by the Contracting Officer, that offered products comply with applicable AWPAs standards. Identify treatment on each piece by the quality mark of an agency accredited by the Board of Review of the American Lumber Standard Committee. Inspect all preservative-treated wood visually to ensure there are no excessive residual materials or preservative deposits. Materials shall be clean and dry or it will be rejected because of environmental concerns.

1.3.2 MSDS and CIS

Provide Materials and Safety Data Sheets (MSDS) and Consumer Information Sheets (CIS) associated with timber pile preservative treatment. Contractor shall comply with all safety precautions indicated on MSDS and CIS.

1.4 DELIVERY, STORAGE, AND HANDLING

Store piles in accordance with AWPAs M4. Comply with paragraph entitled "MSDS and CIS."

1.5 ORDER OF WORK

1.5.1 PRE-CONDITION SURVEY

The Contractor shall not begin any construction work along the shore until the pre-condition survey noted in Section 02391, Beach Fill, is complete and accepted by the Contracting Officer.

1.5.2 GROIN CONSTRUCTION

The Contractor shall install turbidity curtains around the operation areas prior to the construction of the groins.

1.5.3 COORDINATION WITH OTHER CONTRACTORS

Construction of the groin field shall begin at the western portion of the project at Groin 25 and proceed eastward. Another contractor maybe working in the project area for seagrass mitigation purposes. If the Contractor of the seagrass mitigation is present, the contractor shall coordinate his activities with the other to minimize impact to the project schedule.

PART 2 PRODUCTS

2.1 PILES

Provide Douglas fir or Southern pine clean-peeled piles conforming to ASTM D 25. Piles shall be in one piece. Splices will not be permitted. Each treated pile shall be branded by the producer, in accordance with AWWA M6. Pile circumferences shall be as follows:

- a. Minimum butt circumference measured at 3 feet from the butt end shall be 38 inches.

2.2 PRESERVATIVE TREATMENT

Treat piles by the full-cell pressure process in accordance with AWWA C1 and AWWA C3 for marine piling, as follows:

Dual treatment of creosote plus waterborne preservative for marine piles.

To minimize the amount of creosote material available to migrate into the environment, the following guidelines (based on Western Wood Preservers Institute Best Management Practices for the Use of Treated Wood in Aquatic Environments) shall be used when treating material for use in marine applications:

a. Treatment Procedures

- i. Treat using preservative specified in AWWA P1/P13, using low xylene new creosote. New material creosote shall have a xylene insoluble (XI) of 0.10% maximum.
- ii. Follow good housekeeping practices to minimize sawdust and other surface residues on the wood products prior to treatment.
- iii. The "in use" creosote inventory maintained by the treating firm at the plant for aquatic applications shall be purchased, managed and/or processed such as to maintain a XI of 1.5% maximum.
- iv. Techniques shall be incorporated into the treating process to minimize the amount of residual creosote that may occur on the surface of the treated product.
- v. The wood shall be conditioned using one of the techniques recommended in AWWA C2.

b. Post Treatment Procedures. Prior to shipment, material shall be processed under one of the following procedures as determined by the producer.

- i. Expansion Bath. Following the pressure period, the creosote should be heated 10 to 20 degrees F above press temperatures for a minimum of one hour. Pump creosote back to storage and apply a minimum vacuum of 24" for a minimum of 2 hours.
- ii. Steaming. Following the pressure period and once the creosote has been pumped back to the storage tank, a vacuum shall be applied for a minimum of two hours at no less than 22" of vacuum to recover excess preservative. Release vacuum back to atmospheric pressure and steam for 2 hours. Maximum temperature during this process shall not exceed 240 degrees F. Apply a

second vacuum for a minimum of 4 hours at 22" vacuum.

c. Maximum Chemical Loading. Treating shall be conducted to seek to minimize the amount of chemical placed into the wood while assuring conformance with AWPA retention and penetration requirements.

d. Visual Inspection. The creosote product shall be inspected visually to insure that there are no excessive residual materials or preservative deposits. If the material does not appear clean and dry it shall be rejected. Once on site and prior to installation the materials should be visually inspected in accordance with the above directions. Materials that have developed areas of "bleeding" or do not meet the criteria of a clean and dry appearance shall be rejected. Good housekeeping is essential to avoid surface deposits and keep the product clean until shipment and installation.

2.3 SOURCE QUALITY CONTROL

2.3.1 Plant Inspection

The Contracting Officer reserves the right to perform plant inspection of the treating process. Provide the Contracting Officer with a minimum 3-week advance notice, indicating location of the initial preservative treatment. Allow the Contracting Officer unlimited access to the plant and inspection privileges for each facet of the treating process.

PART 3 EXECUTION

3.1 GENERAL - INSTALLATION

3.1.1 Piles

Inspect piles when delivered and when in the leads immediately before driving. Secure piles in their proper alignment and cut piles at cutoff grade with pneumatic tools by sawing or other approved method. Pile heads at cutoff shall be sound. Counterbore holes for bolts where indicated for countersinking bolt heads and washers. After installation of bolts, fill counterbored holes with an approved bituminous material. Drill holes for through bolts 1/16 inch larger than diameter of bolt shank.

3.1.1.1 Driving

Pile hammers shall be air, steam, or diesel powered, and of an approved type with a capacity at least equal to the hammer manufacturer's recommendation for the total weight of pile and character of subsurface material to be encountered. Minimum driving energy shall be 8,000 foot-pounds with maximum driving energy of 15,000 foot-pounds. Weight of the hammer for drop hammers shall not be less than 2,000 pounds. Since hard driving is expected above the rock surface pile shoes are required.

3.1.1.2 Fastening

Use washers of the size and type specified under bolt heads and nuts which would otherwise come in contact with wood.

3.1.1.3 Tolerances in Driving

Piles shall be driven in the locations indicated. Remove and replace with new piles those damaged, mislocated, driven below the design cutoff, or driven out of alignment.

3.2 JETTING OF PILES

Water jetting of piles shall not be permitted.

3.3 SPUDDING OF PILES

Spudding shall not be permitted.

3.4 PREDRILLING

Predrilling shall not be permitted.

3.5 PROTECTION OF PILES

Square the heads and tips of piles to the driving axis. Laterally support piles during driving, but do not unduly restrain piles from rotation in the leads. Swinging leads will not be permitted. Where pile orientation is essential, take precautionary measures to maintain the orientation during driving. Handle, protect, and field treat piles in accordance with ANPA M4.

3.6 FIELD QUALITY CONTROL

3.6.1 Inspections

When Government inspections result in product rejection, the Contractor shall promptly segregate and remove rejected material from the premises. The Government may also charge the Contractor an additional cost of inspection or test when prior rejection makes reinspection or retest necessary.

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