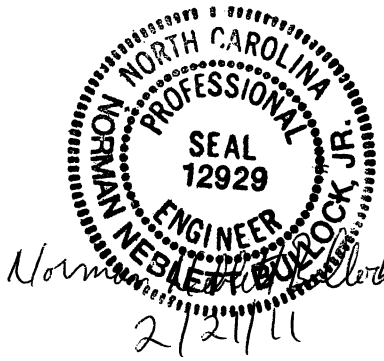
Project Special Provisions
Structures

Table of Contents



Norman Neblett Bullock, Jr.
2/21/11

PROJECT SPECIAL PROVISIONS
STRUCTURES

PROJECT B-5014B **DARE COUNTY**

SECURING OF VESSELS (10-12-01)

Secure vessels in accordance with Section 107 of the Standard Specifications and the following provision.

When utilizing barges, tugboats or other vessels, take all necessary precautions to ensure that such vessels are securely anchored or moored when not in active operation. Take all necessary measures to ensure that the vessels are operated in a manner that avoids damage to or unnecessary contact with bridges and other highway structures and attachments. If severe weather conditions are anticipated, or should be anticipated through reasonable monitoring of weather forecasts, take additional measures to protect bridges and other highway structures and attachments from extreme conditions. The Contractor is strictly liable for damages to any bridge or other highway structure or attachment caused by a vessel owned or controlled by the Contractor. The Contractor is also liable to third parties for property damages and loss of revenue caused by vessels under the Contractor's control.

CRANE SAFETY (8-15-05)

Comply with the manufacturer specifications and limitations applicable to the operation of any and all cranes and derricks. Prime contractors, sub-contractors, and fully operated rental companies shall comply with the current Occupational Safety and Health Administration regulations (OSHA).

Submit all items listed below to the Engineer prior to beginning crane operations involving critical lifts. A critical lift is defined as any lift that exceeds 75 percent of the manufacturer's crane chart capacity for the radius at which the load will be lifted or requires the use of more than one crane. Changes in personnel or equipment must be reported to the Engineer and all applicable items listed below must be updated and submitted prior to continuing with crane operations.

CRANE SAFETY SUBMITTAL LIST

A. **Competent Person:** Provide the name and qualifications of the "Competent Person" responsible for crane safety and lifting operations. The named competent person will have the responsibility and authority to stop any work activity due to safety concerns.

B. **Riggers:** Provide the qualifications and experience of the persons responsible for rigging operations. Qualifications and experience should include, but not be limited to, weight calculations, center of gravity determinations, selection and inspection of sling and rigging equipment, and safe rigging practices.

C. **Crane Inspections:** Inspection records for all cranes shall be current and readily accessible for review upon request.

D. **Certifications:** **By July 1, 2006**, crane operators performing critical lifts shall be certified by NC CCO (National Commission for the Certification of Crane Operators), or satisfactorily complete the Carolinas AGC's Professional Crane Operator's Proficiency Program. Other approved nationally accredited programs will be considered upon request. All crane operators shall also have a current CDL medical card. Submit a list of anticipated critical lifts and corresponding crane operator(s). Include current certification for the type of crane operated (small hydraulic, large hydraulic, small lattice, large lattice) and medical evaluations for each operator.

SCOUR REPAIR AT OREGON INLET FOR BENTS #157 THRU #166 (SPECIAL)

1.0 GENERAL:

The work consists of furnishing all labor, materials, equipment, and incidentals required to perform all operations in connection with the installation of concrete armor in accordance within the limits shown in the plans and in this special provision or an equally performing system for scour abatement.

2.0 CONCRETE ARMOR UNITS:

The geometry of the concrete armor unit consists of six arms extending from a central hub, each arm extending 2-ft. radially from the center. A complete unit is made up of two identical halves, with each half consisting of a central core with three legs radiating outward at equal spacing. On each half, two fillets are located between adjacent arms. These fillets provide additional structural strength and aid in the proper placement of the armor units.

When the symmetrical halves are interlocked, the resultant unit will have a geometry which exhibits six equally spaced arms, with each arm spaced at 90 degrees from the four adjacent arms. When placed in the most stable configuration, each unit will rest on three of the six arms.

2.2 Materials

The 4-ft. concrete armor units will be produced on an acceptable concrete block machine.

2.2.1 Cementitious Materials - Materials shall conform to the following applicable ASTM specifications:

- Portland Cements - Specification C 150, for Portland Cement.
- Blended Cements - Specification C 595, for Blended Hydraulic Cements.
- Hydrated Lime Types - Specification C 207, for Hydrated Lime Types.
- Pozzolans - Specification C 618, for Fly Ash and Raw or Calcined Natural Pozzolans for use in Portland Cement Concrete.

2.2.2 Aggregates shall conform to the following ASTM specifications, except that grading requirements shall not necessarily apply:

- Normal Weight - Specification C 33, for Concrete Aggregates.

2.2.3 The manufacturer will supply adhesive used to join the two halves. This adhesive must be applied to all three sides of the connecting joint. The throat of the unit must be completely filled with adhesive in order to be considered a single unit.

2.3 Physical Requirements

2.3.1 At the time of delivery to the work site, the units shall conform to the physical requirements prescribed in Table 1 below.

TABLE 1. PHYSICAL REQUIREMENTS

Compressive Strength Net Area Min. psi (mPa)		Water Absorption Max., lb/ft^3 (kg/m^3)	
Avg. of 3 units	Individual Unit (min. required)	Avg. of 3 units	Individual Unit
5000 (34.5)	4,500 (31.0)	10 (160)	12 (192)

2.3.2 Durability. The manufacturer shall satisfy the Engineer by proven field performance that the concrete units have adequate durability even if they are to be subjected to a freeze-thaw environment. If a freeze-thaw test is required, it shall be tested as stated in ASTM C1262-97.

2.3.3 Sample and test units in accordance with ASTM Methods C 140, Sampling and Testing Concrete Masonry Units. Compressive Strength Tests and Water Absorption Tests are required and to be submitted to the Engineer.

2.3 4 The manufacturer shall stamp the date of manufacture on each half of the concrete armor unit.

2.4 Visual Inspection

2.4.1 All units shall be sound and free of defects that would interfere with the proper placing of the unit or impair the strength or permanence of the construction. Minor surface cracks incidental to the usual methods of manufacture, or surface chipping resulting from customary methods of handling in shipment and delivery, shall not be deemed grounds for rejection.

2.4.2 Broken units shall not be repaired or used in the matrix assembly.

2.5 Sampling and Testing. The Engineer or his authorized representative shall be accorded proper access to facilities to inspect and sample the units at the place of manufacture from lots ready for delivery.

3.0 ASSEMBLY AND INSTALLATION:

The Contractor shall use reasonable care in the handling, assembly and installation of the concrete armor units to prevent damage. Any material damaged shall be repaired in a manner satisfactory to the Engineer or replaced at no cost to the Department.

The Contractor shall install the concrete units as shown in the plans. Each cluster shall consist of 3 concrete armor units, stable, interlocked and bound together. The units shall be installed so each row of clusters is stable and interlocks with the adjacent cluster. Each cluster shall be bound with 1 wrap of 1/2" diameter galvanized cable with 2 galvanized cable clamps. As clusters are interlocked together to form a single layer, the grouping of clusters shall be bound with 2 horizontal wraps of 1/2" diameter galvanized cable with 3 galvanized cable clamps. A minimum of 2 clusters shall be interlocked and bound together for placement.

Each layer of units shall be installed so the layers are stable and interlock with the adjacent layers and are bound together with 1/2" diameter galvanized cable and 2 galvanized cable clamps. The minimum spacing for binding the layers together shall be the lesser of the following: 20 ft or half the length of the grouping to be placed. The layers shall be bound together on each longitudinal side. The 2 horizontal wraps binding each layer may be bound together with 1/2" diameter galvanized cable with 3 cable clamps or other method as approved by the Engineer.

For Bents 156 through 161, if the natural ground is below elevation –40, an additional layer of concrete units shall be placed (3 units wide) and the 2 layers of concrete units shall then be installed as shown in the plans. For Bents 162 through 166 if the natural ground is below elevation –35, an additional layer of concrete units shall be placed (3 units wide) and the 2 layers of concrete units shall then be installed as shown in the plans. The Contractor shall take care not to damage the existing concrete piles. The alignment of the rows shall maintain a 5' minimum clearance from the piles as shown in the plans or as directed by the Engineer.

4.0 SUBMITTALS:

The Contractor shall be required to submit to the Engineer the following items for review prior to placement of the armor units.

1 The Contractor shall submit the Compression Strength Test and the Absorption Test according to ASTM C-140
2. Prior to placement of the concrete armor units the Contractor shall provide a submittal to the Engineer detailing the schedule, method, equipment, personnel, safety, and any other pertinent information for lifting, placing, and bounding the clusters for placement at the bridge site.

The Contractor may submit an equally performing design and/or method for scour abatement for approval.

5.0 BASIS OF PAYMENT·

Concrete Armor Units

The quantity of concrete armor units to be paid for shall be the number of concrete armor units in place and accepted. The payment shall be full compensation for all materials including adhesive, 1/2" diameter galvanized cable, galvanized clamps, tools, equipment, labor, and any incidentals necessary to complete this work.

Payment will be made under·

Concrete Armor Units..... ....Each