

TECHNICAL SPECIFICATIONS

EDISTO BEACH GROIN LENGTHENING COLLETON COUNTY, SOUTH CAROLINA

TABLE OF CONTENTS

SECTION 1060 — REGULATORY REQUIREMENTS.....	1
PART 1 – GENERAL.....	1
1.1 SUMMARY	1
1.2 REFERENCES.....	1
1.3 SUBMITTALS	1
1.4 QUALITY ASSURANCE.....	1
1.5 SITE CONDITIONS.....	1
1.6 SEQUENCING AND SCHEDULING	2
1.7 SPECIAL CONDITIONS DURING CONSTRUCTION.....	2
1.8 COMPLIANCE WITH APPLICABLE PERMITS	4
SECTION 01100 — SUMMARY OF WORK.....	1
PART 1 - GENERAL	1
1.1 WORK COVERED BY CONTRACT DOCUMENTS.....	1
1.2 CONSTRUCTION CONTRACT	1
1.3 TYPE OF WORK	1
1.4 OWNER'S SITE REPRESENTATIVE	1
SECTION 02216 — RIPRAP FOR EROSION CONTROL	1
PART 1 – GENERAL.....	1
1.1 SECTION INCLUDES	1
1.2 REFERENCES.....	1
1.3 QUALITY ASSURANCE.....	1
PART 2 – PRODUCTS.....	1
2.1 STONE MATERIAL.....	1
2.2 STONE TYPES	1
2.3 STONE GRADATIONS.....	2
2.4 IDENTIFICATION OF STONE SOURCES.....	2
2.6 SAMPLING OF QUARRY STONE	2
PART 3 – EXECUTION.....	2
3.1 GROUTING TO SEAL VOIDS	2
3.2 STONE PLACEMENT	3

SECTION 1060 — REGULATORY REQUIREMENTS

PART 1 – GENERAL

- 1.1 SUMMARY: This section contains the provisions for compliance with local, state and federal jurisdictional regulations and permit conditions affecting the work. Contractor is not relieved from requirements to comply with regulations, applicable permits, laws, codes, ordinances and regulations not identified in this section. It is the responsibility of the Contractor to comply with all applicable state, federal and local regulations affecting the work.

Note that state and federal permits were written for both beach renourishment and groin contractors. Certain conditions specified in the permits may not be applicable to the groin contractor.

1.2 REFERENCES:

A. Owner Procured (attached to this specification):

- 1) South Carolina Department of Health and Environmental Control office of Ocean and Coastal Resource Management (SCDHEC-OCRM) permit #2015-00528 dated 26 May 2016.
- 2) US Army Corps of Engineers, Department of the Army Permit Action ID #2015-0528-1C dated 19 August 2016.

B. Contractor Procured (at his expense):

- 1) Current business license.
- 2) Building permits, Colleton County, South Carolina.
- 3) Current contractor's license for marine class construction operations in the State of South Carolina.
- 4) Permit for hauling and disposal of debris and waste.
- 5) Permit to exceed load limits on certain bridges if they are on haul routes and have low load limits.

- 1.3 SUBMITTALS: Contractor shall provide reports, documents, plans and fees as required for obtaining all contractor procured permits at no additional cost to the Owner.

- 1.4 QUALITY ASSURANCE: Contractor shall conduct inspections of construction operations to insure compliance and report all violations to the Engineer.

1.5 SITE CONDITIONS:

- A. Contractor shall practice and be fully responsible for good housekeeping activities and procedures to prevent oil spills, hazardous waste contamination and spills, unauthorized environmental pollution and safety violations.
- B. It is not anticipated that any archaeological interface sites located within the project area on the beach. However, Contractor shall be aware that the possibility exists that the work may unearth an unknown historic, cultural resources, and/or archaeological materials during the course of work. In the event that such occurs, Contractor must immediately notify Owner, Engineer, State Historic Preservation Office, and the South Carolina Institute of Archaeology and Anthropology. Archaeological materials consist of any items, 50 years old or older, which were made or used by man. These items include, but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal and glass objects, and human skeletal materials.
- C. There are no restroom facilities available to the Contractor on the site. Contractor shall make arrangements for restroom facilities for employees at no additional costs to the Owner, and the facilities shall be placed off the beach to the extent possible. Disposal of waste from portable restroom facilities shall be in accordance with applicable local, state and federal regulations.
- D. Contractor shall assure reasonable access to the site for Owner's Site Representative, Engineer, and regulatory agency personnel.

1.6 SEQUENCING AND SCHEDULING:

- A. Contractor shall provide ample notification to regulatory agencies for scheduled construction activities and inspections, if a regulatory inspector is required for observation.
- B. Contractor shall conduct operations in accordance with the sequence of operations indicated in the Contract Documents and as required by the permit conditions. Deviations from the sequence of construction shall be reported to the Engineer.

1.7 SPECIAL CONDITIONS DURING CONSTRUCTION:

No work may be done during turtle nesting season from May 1 through October 31. If Contractor is granted time extension resulting construction occurs in turtle nesting season, federal and state permits for the project specify detailed measures for protection of sea turtles during project operations. The measures are given in Special Conditions in the permits which are incorporated into the Project Manual and made a part of the project specifications herein. Following is an abbreviated list of protection measures and special conditions along with its specific reference paragraph or item number found in the permits (USACE Special Condition # or SCDHEC-OCRM Measures Paragraph #).

1.7a. Reasonable and Prudent Measures to Protect Sea Turtles

- a) Equipment Storage (SCDHEC-OCRM Measures Paragraph #7) – Construction equipment and materials for groin repair must be stored in a manner that will minimize impacts to nesting and hatchling sea turtles to the maximum extent practicable. All construction equipment and materials placed on the beach must be located as far landward as possible without compromising the integrity of the dune system. Temporary storage of equipment and materials must be off the beach to the maximum extent possible. If the equipment and materials are stored on the beach, they must be placed in a manner that will minimize the impact to nesting habitat and must not compromise the integrity of the dune systems. During the portion of the nesting season that overlaps with the construction window, all excavations and temporary alteration of beach topography will be filled or leveled to the natural beach profile prior to 9 p.m. each day. During any periods when excavated trenches must remain on the beach at night, nighttime sea turtle monitoring by the sea turtle permit holder will be scheduled by the Owner in the project area in order to further reduce possible impacts to nesting sea turtles. Nighttime monitors will record data on false crawls, successful nesting, and any additional activities of nesting or hatchling sea turtles in the project area.
- b) Lighting (SCDHEC-OCRM Measures Paragraph #8) – Lighting associated with groin repair operations must be reduced to the minimum standard required by Occupational Safety and Health Administration for General Construction areas to minimize the possibility of disrupting and disorienting nesting sea turtles. No permanent exterior lighting will be installed in association with this construction project. Temporary lighting will be allowed if safety lighting is required at any excavated trenches that must remain on the beach at night. In addition, lighting on all equipment must be minimized through reduction, shielding, lowering, and appropriate placement to avoid excessive illumination of the water's surface and nesting beach while meeting all Coast Guard, Corps EM 385-1-1, and OSHA requirements. Light intensity of lighting equipment must be reduced to the minimum standard required by OSHA for General Construction areas, in order not to misdirect sea turtles. Shields must be affixed to the light housing and be large enough to block light from all lamps from being transmitted outside the construction area.
- c) Turtles on the Beach (SCDHEC-OCRM Measures Paragraph #10) – If any nesting turtles are sighted on the beach, construction activities within 500 feet must cease immediately until the turtle has returned to the water, and the sea turtle permit holder responsible for nest monitoring has marked any nest that may have been laid for avoidance.
- d) On-beach Access (SCDHEC-OCRM Measures Paragraph #11) – During the portion of the nesting season that overlaps with the construction window, on-beach access to the construction site will be restricted to the wet sand below mean high water (MHW).

- e) Trash Receptacles (SCDHEC-OCRM Measures Paragraph #13) – Predator-proof trash receptacles must be installed and maintained at all beach access points used for the project construction to minimize the potential for attracting predators of sea turtles.
 - f) Harmed or Destroyed Turtle (SCDHEC-OCRM Measures Paragraph #14) – The Owner, the Engineer, the SCFO and SCDNR must be notified if a sea turtle adult, hatchling, or egg is harmed or destroyed as a direct or indirect result of the project. The SCDNR hotline is 1-800-922-5431 and SCFO is 843-727-4707.
 - g) Artificial Construction Lighting (SCDHEC-OCRM Measures Paragraph #15) – The Contractor must take action to minimize sea turtle misorientations or disorientations on the beach due to artificial construction lighting during the nesting season.
 - h) Nighttime Turtle Monitoring (SCDHEC-OCRM Measures Paragraph #19) – The Owner will hire monitors with sea turtle experience to patrol the beach at night in the project area if nighttime construction activities and equipment occur during the nesting season. The Contractor shall coordinate with the monitor.
- 1.7b. Pre-construction meeting (SCDHEC-OCRM Measures Paragraph #17) – A meeting between representatives of the Owner, the Engineer, the Contractor, the SCFO, SCDNR, and the permitted sea turtle and shorebird surveyor(s) must be held prior to the commencement of work on this project. The meeting will provide an opportunity for explanation and/or clarification of the sea turtle protection measures as well as additional guidelines when construction occurs during the sea turtle nesting season, such as storing equipment, minimizing driving, as well as follow up meetings during construction.
- 1.7c. Reporting (SCDHEC-OCRM Measures Paragraph #18) – The Contractor must submit a report to the Owner and the Engineer describing the actions taken to implement the terms and conditions of this incidental take statement.
- 1.7d. Vegetated Habitat (SCDHEC-OCRM Measures Paragraph #21) – The Contractor must protect existing vegetated habitat at each of the beach access points to the maximum extent practicable and must delineate it by post and rope or other suitable material to ensure vehicles and equipment transport stay within the access corridor. Any vegetated areas impacted must be restored to pre-construction conditions. New beach access locations created for the project work must be approved by the SCFO and SCDNR.
- 1.7e. Restoring Dune Habitat (SCDHEC-OCRM Measures Paragraph #22) – The Contractor must restore expended or newly created beach access points to dune habitat following project completion. The habitat restoration must consist of restoring the dune topography and planting with appropriate native dune vegetation (ie – native to coastal dunes in South Carolina).
- 1.7f. Daily Turtle Survey (SCDHEC-OCRM Terms and Conditions Paragraph #4) – If construction coincides with the beginning of the sea turtle nesting season (May 1 – June 30), the Owner will schedule daily early morning surveys for sea turtle nests. No construction activity can begin until completion of the sea turtle nesting each day. Nesting surveys must continue through the end of the project or through October 31, whichever is earlier. If nests are constructed in areas when they may be affected by construction activities, the nests must be relocated per the following requirements.
- a) Nesting surveys and nest relocation will only be conducted by personnel with prior experience and training in nesting survey and nest marking procedure. Surveyors must have a valid SCDNR permit. Nesting surveys must be conducted daily between sunrise and 9 a.m.
 - b) Only those nests that may be affected by construction activities will be relocated. Nests requiring relocation will be moved no later than 9 a.m. the morning following deposition to a nearby self-release beach site in a secure setting where artificial lighting will not interfere with hatchling orientation. Relocated nests will not be placed in organized groupings. Relocated nests will be randomly staggered along the length and width of the beach in settings that are not expected to experience daily inundation by high tides or known to routinely experience severe erosion and egg loss, or subject to artificial lighting. Nest relocations in association with construction activities must cease when construction activities no longer threaten nests.

- c) Nests deposited within areas where construction activities have ceased or will no occur for 70 days or nests laid in the nourished berm prior to filling must be marked and left in situ unless other factors threaten the success of the nest. The turtle permit holder will install an on-beach marker at the nest site or a secondary marker at a point as far landward as possible to assure that future location of the nest will be possible should the on-beach marker be lost. No activity will occur within this area nor will any activities occur which could result in impacts to the nest. Nest sites will be inspected daily to assure nest markers remain in place and the nest has not been disturbed by the project activity.
- 1.8 **COMPLIANCE WITH APPLICABLE PERMITS:** Terms and conditions of the applicable permits and regulations listed in 1.2 A of the section are incorporated into these Contract Documents by reference. Contractor is responsible for adherence to terms and conditions of all permits. A copy of the permits, included in the Construction Documents, shall be present and available at the project site during construction of this project.
- 1.9. **CONSTRUCTION LOGS (OCRM Paragraph #5):** Contractor shall maintain daily construction logs which document all work. These logs must be submitted to the Owner and the Engineer on a daily basis in the course of work.
- 1.10. **COMPLIANCE WITH U.S. FISH AND WILDLIFE SERVICE BIOLOGICAL OPINION (BO) dated 21 January 2016 (OCRM Paragraph #7):** The Contractor shall comply with the U.S. Fish and Wildlife Service Biological Opinion (BO) issued on January 21, 2016, which contains the Reasonable and Prudent Measures and Terms and Conditions.
- 1.11. **HISTORIC OR CULTURAL RESOURCES:** In the event that any historic or cultural resources and/or archaeological materials are found during the course of work, the Contractor must notify the Owner, the Engineer, and the State Historic Preservation Office and the South Carolina Institute of Archaeology and Anthropology. Historic or cultural resources consist of those sites listed in the National Register of Historic Places and those sites that are eligible for the National Register. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include, but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal and glass objects, and human skeletal materials.

END OF SECTION

State and Federal Permits Enclosed

1. South Carolina Department of Health and Environmental Control office of Ocean and Coastal Resource Management (SCDHEC-OCRM) permit #2015-00528 dated 26 May 2016.
2. US Army Corps of Engineers, Department of the Army Permit Action ID #2015-0528-1C dated 19 August 2016.

SECTION 01100 — SUMMARY OF WORK

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

Work described in this Project Manual includes the provision of labor, materials, equipment, and services required to complete construction of groin repairs at Edisto Beach, Colleton County, South Carolina.

1.2 CONSTRUCTION CONTRACT

The project construction will be under a single Contract with the Owner, the Town of Edisto Beach, South Carolina. The Owner expects all awarded portions of this Project to proceed with deliberate speed. Suspension of work on this project, in order to perform work on other projects, will not be allowed, unless otherwise provided for in these specifications due to safety considerations.

1.3 TYPE OF WORK

Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows.

- A. Project includes mobilization and demobilization and repair of thirteen(13) groins at Edisto Beach, South Carolina.
- B. Nine (9) groins require addition of between 35 and 130 tons of SCDOT Class F granite armor stone for a net total of 500 tons.
- C. Restacking of existing stone that has been displaced from the original grade. Only stones visible and accessible at low tide that are more than 15 ft from the centerline of each structure will be restacked.
- D. Project also includes grouting the loose armor stone along each of the groins. Approximately 40 cubic yards of grout are needed at each groin, and a total of 510 cy of grout may be needed to complete the project.
- E. Groin repair shall be subject to certain requirements as detailed in federal and state permits (copies of which are included in Technical Specifications 01060 Regulatory Requirements of this Project Manual).
- F. Restoration of the beach, access and infrastructure to conditions existing before construction.
- G. Notice to Proceed will be issued on or after 30 November 2018. No Work may be conducted on the beach prior to 1 November.
- H. Substantial Completion of Work will be by 1 April 2019. Final Completion (including removal of equipment from the beach) will be 15 April 2019.

1.4 OWNER'S SITE REPRESENTATIVE

- A. Contractors shall cooperate with Owner's Site Representative to minimize conflict, and to facilitate Owner's operations.

- B. Contractor will provide all safety fencing, signage, barricades and other measures required to ensure protection to public.

END OF SECTION

SECTION 02216 — RIPRAP FOR EROSION CONTROL

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. The work under this Section shall include all plans, labor, materials, working surface, and equipment required for furnishing transportation, storage, and placement of the armor stone for the groin repair project shown on the Drawings.

1.2 REFERENCES

- A. SCDOT Standard Specifications for Highway Construction, Section 804 “Rip-Rap and Slope Protection”

1.3 QUALITY ASSURANCE

- A. Obtain materials from the same source throughout the Project.

PART 2 – PRODUCTS

2.1 STONE MATERIAL

- A. **All Stone:** All stone used in this project shall be granitic/metamorphic stone free from open or incipient cracks, seams, lesions, and structural planes of weakness from porous structures and solution cavities, and from component minerals or cementing and bonding materials, which might contribute to splitting or breakdown from handling, placement, wave action, or chemical action from ambient water or air. The stone shall be furnished in blocky and angular shapes. Flat stones, slabs, boulders, and parts of boulders will be rejected. No stone will be permitted which has a longest dimension that is two and one-half times (2.5) or more, than its least dimension. Not more than five percent (5%) by weight of clear spills, resulting from loading and shipment, will be allowed to be offloaded at the project site, from any barge, carload, or truckload. The stone shall be furnished in a size range meeting SCDOT Class F riprap specifications, including 100% smaller than 3.6 ft (4,000 lbs), 50% smaller than 2.85 ft (2000 lbs), and 5% smaller than 2.25 ft (1000 lbs).
- B. **Armor Stone:** Armor stone shall consist of fresh, sound, hard, durable crystalline igneous or metamorphic rock, which shall be separated from bedrock by quarry. The stone shall be of sound quality, such that individual integrity and permanence within the structure is assured under all conditions to which it is subjected. The saturated surface dry (SSD) unit weight shall not be less than 165 pounds per cubic foot, and the specific gravity not less than 2.65.

2.2 STONE TYPES

- A. **Granitic/Metamorphic Stone:** If the Contractor elects to use a crystalline granite or metamorphic stone (e.g., granite or gneiss) as underlayer material, the following criteria apply to the stone in addition to those in subparagraph “All Stone” above. The stone shall be dense and free from porous structure. The saturated surface dry (SSD) unit weight shall not be less than 165

pounds per cubic foot (specific gravity not less than 2.65). The stone shall be furnished in random sizes, ranging in weight as indicated on the Plans.

- B. **Armor Stone:** Armor Stone shall be granite/metamorphic stone meeting the requirements of SCDOT Standard Specification for Highway Construction, Section 804 (for Class F Riprap). Maximum size of armor stone shall be **43.2 inches**.

2.3 STONE GRADATIONS

- A. Gradations for each stone type are as specified for each grade's SCDOT Class and Type. See SCDOT Standard Specification for Highway Construction, Section 804.

2.4 IDENTIFICATION OF STONE SOURCES

- A. The sources from which the Contractor proposes to obtain armor stone required for this Project shall be selected and identified to the Engineer within five (5) days of Notice of Award. The Contractor shall have the responsibility to arrange for his selected sources to provide the required sizes and quantities for this contract. Suitable samples of the proposed stone shall be submitted for testing and approval of the quality of the rock. The Contractor shall furnish the Engineer at least five (5) days advance notice of the time and place at which samples will be selected, in order that the Engineer may have his representative present during the sampling. All test samples shall be obtained by the Contractor and delivered at his expense to the laboratory location or to other points designated by the Engineer, fifteen (15) days in advance of the time when delivery of the stone to the Project is first expected to begin.

2.6 SAMPLING OF QUARRY STONE

- A. The Contractor shall submit one or more samples of material from each stratum, bed, or change of material type in the quarry. Armor stone proposed shall be inspected at the quarry by the Engineer. Contractor shall notify the Engineer to schedule quarry visit. A sufficient number of samples shall be furnished to adequately represent the whole quarry or that part of the quarry from which the sample material will be obtained.

PART 3 – EXECUTION

3.1 GROUTING TO SEAL VOIDS

The Contractor shall be responsible for sealing the interior voids of the armor-stone-groin extension sections with a cement-based grout. The grout shall follow ASTM C478 (Standard Specification for Circular Precast Reinforced Concrete Manhole Sections), and the material requirements of the grout mixture are provided in Table 1 on a per cubic yard (cy) basis. The minimum compressive strength shall be 2000 psi, and the slump height shall be 8 to 11 inches. The cement shall be Type II, ASTM C150 Modified. The coarse aggregate shall have a maximum nominal diameter of 0.5-1.0 inches, be well graded and well rounded. The sand shall be a coarse, well-graded sand. An air-entraining agent shall be used according to the manufacturer's recommendations to provide approximately 5 percent (5%) air by volume. Calcium chloride shall be added to the mix to accelerate normal setup times in flake or granular form in amounts up to 15 pounds per cubic yard (lbs/cy) of concrete grout. Only the minimum required to provide the necessary setup acceleration shall be used. The mix specified in Table 1 will be adjusted in the field by the Engineer according to availability of materials, field conditions, workability, and pumpability requirements.

The grout shall be injected or poured into the void cavities. Sand that occupies the voids within the design section shall be removed by pressure flushing or similar means before grouting. Grouting may take place in stages as the

cross-sections are constructed to ensure placement of the grout throughout the groin sections as specified on the Drawings. A small, high-frequency vibrator shall be used to remove air pockets as the grout is placed.

Table 1. Grout trial mix specifications per cubic yard of grout.

Cement	= 775 lbs
Water	= 36 gals seawater
Coarse aggregate	= 1,357 lbs
Sand	= 1,427 lbs
Calcium chloride	<15 lbs as required
Air-entraining agent	= as required to produce 5 percent air by volume

3.2 STONE PLACEMENT

- A. Placement of armor stone shall be done to establish the minimum layer thicknesses indicated and to minimize breakage and scattering of stone. Stone shall not be dropped a vertical distance of more than 4 feet during placement.
- B. Armor stone shall not exceed 43.2 inches on any dimension.

END OF SECTION