TETRA TECH

C-NAVY-08-09-3266W

August 10, 2009

Project Number G00632

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Mr. Paul Kulpa, Project Manager
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Rhode Island Department of Environmental Management
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Reference: CLEAN Contract No. N62472-03-D-0057
Contract Task Order (CTO) No. 065

Subject: Submittal for Revised 100% Design
Stone Revetment Replacement, Old Fire Fighting Training Area (Site 09)
Naval Station Newport, Newport, Rhode Island

Dear Mr. Lim, Mr. Kulpa:

Enclosed for your records are two (2) copies of the revisions to the 100% Design for the Replacement Stone Revetment at the Old Fire Fighting Training Area (OFFTA) at Naval Station Newport, Rhode Island. Please refer to the attached list of change pages for instructions to update your copy of the 100% Design document.

Also enclosed for your records are the revised Navy responses for RIDEM comments on the 90% Design Submission and for RIDEM and Coastal Resources Management Council comments on 100% Design Submission dated December 22, 2009.

Should you have any questions or comments please feel free to contact me at 978-474-8412.

Very truly yours,

James R. Forrelli, PE
Senior Project Manager

Enclosures

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File G00632-3.2 (w/o encl.)/G00632-8.0 (w/encl. - 1)

Revised Navy Response to Comments by
Rhode Island Department of Environmental Management on
100% Design Submission dated 12-22-2008
Replacement Stone Revetment at Old Fire Fighter Training Area (Site 09)
Naval Station Newport, Rhode Island

Navy responses to the following Rhode Island Department of Environmental Management comments are revised based on the submittal of the revised 100% Design Submittal on August 10, 2009.

2. **Comment:** Section 4.2.3, Confirmatory Sampling Stormwater Management Consideration, Page 4-7: The document has listed a clean up standard of 30,000 ppm for TPH. As noted in past correspondence the 30,000 ppm proposal is not acceptable. Please be advised that once the revetment is installed that it will be difficult to remove contaminated soils. Therefore, the document must be modified to stipulate a remedial objective equivalent to either the residential or industrial commercial criteria. Further, the TPH standard requires compliance with regulatory limits for applicable parameters such as SVOCs and metals. Please modify the report accordingly.

   Response: On May 15, 2009 the Navy sent via email an alternate plan to address the TPH contaminated soils beneath the footprint of the proposed revetment. The Navy proposed to remove petroleum contaminated soils exceeding a total petroleum hydrocarbons (TPH) level of 2,500 mg/kg encountered within the footprint of the new OFFTA stone revetment during construction. Section 4.2.3 Confirmation Sampling has been revised consistent with the Navy's proposal.

3. **Comment:** Figures, 4-2,4-3,4-4, 4-5, Sheet 7: Figures 4-2, 4-3, 4-4, 4-5 in the main body of the 100 % Design show the reuse rip rap extending from the western end of the site to almost the central portion. Sheet C-7 seems to limit the rip rap to cross section A-A and B-B?, which is only a portion of the western end of the site. If this is the case the sheets do not correspond to the Figures in the main text.

   Response: The figures and sheet referenced have been changed in the revised 100% design based on the revised shoreline stabilization toe configuration. Sheet 7 shows cross sections at specific lines as shown on Sheet C-6. Figure 4-5 shows the extent to where the reused rocky shore material is planned for use.

Revised Navy Response to Outstanding Comments by
Rhode Island Department of Environmental Management on
90% Design Submission
Replacement Stone Revetment at Old Fire Fighter Training Area (Site 09)
Naval Station Newport, Rhode Island

Navy responses to the following Rhode Island Department of Environmental Management comments are revised based on the submittal of the revised 100% Design Submittal on August 10, 2009.

5. **General Comment:** One function of the revetment is to eliminate the migration of contaminated soils into the adjacent sediments. Considering the cost of the revetment it is strongly recommended that the Navy consider removing the contaminated soils at the site and install a simple, less costly, revetment.

   Response 11/13/08: Comment noted.

   RIDEM Evaluation of Response: The Navy has indicated that the comment has been noted. Considering the size of the revetment with respect to other revetments located on the base and/or else where in the State the Office of Waste Management recommends that the Navy evaluate it's design to ascertain whether a smaller revetment can be installed in conjunction with soil removal.

   Response: Based on the March 5, 2009 teleconference discussion with EPA, RIDEM, CRMC and the Navy, design changes were made to the shoreline stabilization toe configuration, resulting in a reduction of the toe protection element of the revetment structure as proposed in the 100 percent design. This configuration achieves the project goal of adequately protecting the shoreline.

6 **Comment:** Section 3.2, 2008 Geotechinical Investigation, Visual Survey Rocky Shore, Page 3-4: The report notes that a visual survey was conducted of the rocky shore to ascertain the characteristics of the beach, (rock size, etc). A review of historical aerial photographs indicates that in the past this beach did not reflect the current composition. In addition, similarly located beaches elsewhere on the island and the base also do not reflect the aforementioned composition. The current beach conditions may be due to erosion of the mounds which were created when the fire fighter was dismantled and/or erosion of materials placed along the embankment. As the revetment will solve the erosion problem, the beach to be installed should reflect preerosion conditions, i.e. be similar in nature to other beaches located in the same environment. Please modify the document to state that the beach to be installed in this area will reflect preerosion conditions.

   Response 11/13/08: The revetment design will replace the shoreline at OFFTA to match the current conditions. The current shoreline consists of a rocky shoreline on the western portion of the site and a coastal beach on the eastern site of the site. The coastal beach will be replaced (see response to RIDEM Comment 5). Given the higher wave energy expected on the western portion of the site, it is likely that sands and gravels placed in front of the revetment on this portion to establish a coastal beach would be subject frequent erosion, causing sedimentation problems elsewhere (burial of the eelgrass beds, or shellfish beds in the inner harbor). Therefore replacement of the existing rocky shore material is appropriate to maintaining the current conditions.

RIDEM Evaluation of Response: Recently representatives from RIDEM, RICRMC and the Navy inspected the beach adjacent to the Old Fire Fighter Training Area. In regards to beach along the western end of the site it appears that the original beach contained stones 3-4 inches and smaller in size. There were also concrete, bricks, larger rocks and other material which appear to make up the original revetment (the revetment was in disrepair). The 90 % design document called for the removal of the concrete, brick, etc. and the reuse of existing stone on the beach provided that it was not contaminated. The agencies agreed that the concrete, brick and other debris, must be removed from the shoreline In regards to the existing stone on the beach it could be reused, however, any new material brought onto the beach would have to be 3-4 inches in diameter or less. Further, the stone in the existing revetment could not be used on the beach.

In regards to the revetment, there was a proposal to incorporate existing revetment stone into the new revetment. It is not clear which existing revetment stone is proposed for reuse. That is, whether it is "newer" revetment stone south of the Jersey barriers which were recently brought to the site when the mounds were removed and is composed of granite, or the "older" revetment stone, a mixture of shale, granite and other rock types, which was installed when the Fire Fighter Training Area was created, or both. This needs to be specified in the document. Be advised that all stones must meet specification and regulatory approval is required.

Response: Based on the March 5, 2009 teleconference discussion design changes were made to the revetment toe protection, revetment geometry, and revetment location, resulting in a reduction in the amount of rock shore material excavation. However, the amount of required rocky shore material backfilling has not been reduced. This has increased the amount of rocky shore material that will have to be purchased from off-site sources. Because of this, the gradation for rocky shore material has been revised to more closely match the beach material sands and gravels.

8. **Comment:** Section 4.2.1, Structural Protection Requirements, Page 4-6, General: The stabilization for the toe trench of the revetment extends into the beach area. At McAllister Point Landfill a gravity wall was installed which did not extend into the beach area. A gravity wall at this location was found sufficient even though the revetment height and size was considerably larger then that at the OFFTA. Further, the McAllister Point site is exposed to a greater wave fetch, and storm conditions. Considering the location of eel grass at the western end of the site, at a minimum the Design should considered a gravity wall at this location (it is also recommended that a gravity wall be consider at the eastern end of the site). Finally, please be advised that the Navy will have to maintain the beach environment above the proposed toe stabilization structure.

Response 11/13/08: As stated in the response to this comment on the 30% design submittal, the gravity wall installed at McAllister was installed into the intertidal area on the west-facing side of the site. This is the same approach as is to be used at the OFFTA site.

RIDEM Evaluation of Response: The Navy has noted that the gravity wall at the McAllister Point Landfill extended into the intertidal area. It is acknowledge that at certain locations the gravity wall at McAllister Point Landfill extended into the beach because at high tide along a significant portion of the landfill there was no exposed beach and the water was a couple of feet deep at the toe (at these locations during low tide the exposed beach was only a few feet wide). The intent of the comment was to note that the McAllister Point Landfill revetment was significantly larger then that proposed at OFFTA, yet the gravity wall was smaller and did not extended out as far. Accordingly, the Navy should evaluate the design to ascertain if cost savings can be realize with a small toe, which would also avoid the long term problems of maintain a beach over the toe.

Response: The revetment has been designed within parameters necessary for shoreline protection given its orientation, its location, the fetch and other physical features. In addition, a significant constraint is provided by the protection of the eelgrass near the west portion of the revetment. The following table summarizes the some of the factors that result in the size of the revetment structure

OFFTA Area	100 year Wave height (ft)	Revetment Slope (1)	Revetment Thickness (ft)	Scour Potential
West Portion	4.33	2 Horizontal to 1 Vertical	3.5	low potentail (2,)
East Portion	2.1	2 Horizontal to 1 Vertical	2.0	low potential (2)

1) The revetment slope was steepened in order to minimize the area of disturbance based on regulatory comments.
2) During the March 5, 2009 teleconference, it was agreed that there is a low potential for scour along the northern end of Coasters Harbor Island.

13. **Comment:** Section 4.2.2, Excavation Requirements, Page 4-6; There are two-discharge pipes, which contain oil sludge on the beach and in the embankment where the revetment is to be installed. The Design must stipulate that the entire length of these pipes, and any other similar pipes, and any associated contaminated soils/sediments in the vicinity of the pipe will be removed.

Response 11/13/08: These pipes have been removed during the 2007-2008 removal action. Any pipes encountered during the construction of the shoreline stabilization revetment will be removed, appropriately capped, or extended.

Evaluation of Response: The Navy noted that the pipes in question were removed during the 2008 removal action. Please be advised that these pipes were left in place. The Office of Waste Management concurs that all pipes in the sediment and revetment area must be removed along with any contamination. The only pipes to be left in place are active stormwater discharge pipes. In order to avoid confusion in the field please modify the 100% Design to include a requirement to remove all non storm water pipes.

Response: All pipes encountered in the excavation that are no longer in use will be removed from the construction area, and / or plugged as needed. This will include fragments of piping that were left from the soil removal action.

During the 2008 removal action segments of pipe were left in place at two locations (Area B1 and Area B2 excavations) within the revetment excavation limits. The approximate locations of the remnant pipe segments have been indicated on the existing conditions drawing with a notation that the pipe segment are to be removed and disposed of off-site.

Revised Navy Response to Comments by
Coastal Resources Management Council on
100% Design Submission dated December 22, 2008
Replacement Stone Revetment at Old Fire Fighter Training Area (Site 09)
Naval Station Newport, Rhode Island

Navy responses to the following Coastal Resources Management Council comments are revised based on the submittal of the revised 100% Design Submittal on August 10, 2009.

Comments

1. **Comment:** In general, the revetment "toe" design is considered excessive and is not considered "as close as practicable" to the shoreline feature. The "Stone Revetment West" (Typical Section/Detail "2", sheet C-8) is not consistent with cover stone layer thickness calculated in "Shoreline Stabilization Calculation" (sheet 4 of 17, dated 4/29/08), but rather "includes only the toe portion of the revetment" (page 4-3 narrative, "Shoreline Stabilization Toe Configuration), which is sized from "Figure VI-5-50 Typical Seawall Toe designs where scour is foreseen" (Calculations, sheet 17 of 17).

   The intent of the toe protection is to prevent scour from wave induced turbulence (at the base of a slope) eroding the bottom sediments which support the armor layer permitting displacement or slope failure. The selection of the largest toe design geometry, and substitution of this geometry for a conventional revetment slope results in excessive disturbance and elimination of coastal beach area.

   Similarly, the "Stone Revetment East" (Detail "1", sheet C-8) includes an excessive toe design, considering the calculated design wave height of 2.1 feet (Calculations, sheet 2 of 17). The selected geometry (from sheet 17 of 17) appears applicable to above-beach-grade toe design, whereas a smaller geometry is appropriate for subgrade toe construction (sheet 17 of 17, column 1, row 2). This would also reduce overall coastal beach impacts.

   Response: Based on the March 5, 2009 teleconference discussion with EPA, RIDEM, CRMC and the Navy, design changes were made to the shoreline stabilization toe configuration. The toe configuration presented in this revised design is based on low scour potential for the OFFTA site, resulting in a reduction of the toe protection element of the revetment structure as proposed in the 100 percent design. Both the east and the west revetment structures will be buried to roughly mean low water inline with the CRMC guidance and USACE details for a low scour potential site. This configuration achieves the project goal of adequately protecting the shoreline.

2. **Comment:** Regarding Specification Section 2.2.1 ("Reused Rocky Shore Material") notation "when required, additional material shall be by weight gradation, 100 percent less than 36 inches, 0 to 50 percent less than 24 inches, and 0 to 15 percent less than 12 inches", this gradation of additional material appears inconsistent with the observed beach composition noted during the site inspection, and as characterized in "Attachment A (A.1.1 Soil Pre-Design Investigation, Figures 4-2 through 4-5), which denotes the beach as "fill – fine to medium sand, silt, gravel, and rock fragments, mixed with varying amounts of construction-type debris including" asphalt, concrete, metal, brick, wood, and glass." This specified gradation should be revised to reflect the overall smaller gradation of the beach substrate.

   Response: Based on the March 5, 2009 teleconference discussion design changes were made to the revetment toe protection, revetment geometry, and revetment location, resulting in a reduction in the amount of rock shore material excavation. However, the amount of required rocky shore material backfilling has not been reduced. This has increased the amount of rocky shore material that will have to be purchased from off-site sources. Because of this, the gradation for rocky shore material has been revised to more closely match the beach material sands and gravels.

3. **Comment:** Regarding Specification 2.2.2. ("Reused Riprap"), does a sufficient volume of existing riprap exist (per sheet C-5, C-6) to satisfy the requirements per "Stone Revetment West" (sheet C-8) cross section? The design implies that no additional riprap will be imported for the proposed narrow band of riprap landward of the revetment. Please confirm.

   Response: Based on the revised revetment configuration, the required volume of riprap material needed to achieve the final grades identified on the design drawings is approximately 450 CY. The area of existing riprap is 11,000 square feet. If the depth of riprap averages 1.25 feet thick there would be approximately 510 CY of available riprap. Field measurements indicate that the riprap has a depth of 1 foot which increases in depth as the riprap approaches the Jersey barrier. Therefore, it is anticipated that a sufficient amount of riprap is available on site.

4. **Comment:** With regard to sheet T2, Note 8 – please include notation to require offset benchmark/stakes beyond the limit of disturbance that can be used (by regulatory staff, etc.) to verify new toe location.

   Response: The following note will be added to the general notes on Design Drawing T-2

   > "Offset benchmarks/stakes beyond the limits of disturbance are required so that the location of the revetment toe can be verified prior to backfilling with bankrun sands and gravels and rocky shore material."