

ARTICLE XII –REVETMENT REPAIRS

12.1 GENERAL - The work to be done under this Article consists of furnishing all labor, materials, equipment and other expenses necessary to repair existing damaged sections of rock revetment and rock wall along the causeway, Kaunakakai Harbor, Molokai.

12.2 MATERIALS

- A. Rocks – Rocks to be used shall be dense (minimum specific gravity of 2.70) rock of basaltic origin. All rocks shall be durable, hard, clean, resistant to abrasion and of a suitable quality to insure permanence in the existing structure. Rocks shall be free from cracks, seams and other defects and not subject to disintegration when expose to air or seawater. All rocks shall be similar in size, texture and subject to the approval of the Construction Engineer
- B. Mortar – Mortar shall consist of one (1) part Portland cement to two (2) parts of fine aggregate by volume. The Contractor shall add sufficient water to make the mortar easy to handle and spread with a trowel. In preparing the mortar, the Contractor shall mix the fine aggregate and cement first dry in a tight container or mixing machine until the mixture assumes a uniform color. As the mixing continues, the Contractor shall add the water until the mixture attains the proper consistency to suit field conditions, approximately 4-inch slump. The Contractor shall not use mortar that has not been placed within thirty (30) minutes after adding water. Retempering of the mortar will not be permitted.
- C. Fine Aggregate – Fine aggregate for mortar shall be in accordance with Section 703.01 of the Standard Specifications.
- D. PVC Pipe – PVC pipe shall be Schedule 40 and conform to ASTM D 1785.
- E. Concrete – Concrete for rock wall cap shall be Class D (1500 psi) in accordance with Section 601 of the Standard Specifications.

12.3 CONSTRUCTION

- A. Revetment Repair
 - 1. New rocks shall be placed and adjusted until they are keyed and sit firmly in place to make close joints. The rocks shall be set in the repair areas to match the lines, grades and dimension of the existing rock revetment. The new toe rocks shall be set to provide a stable base for the remainder of the new revetment rocks. New rocks shall be adjusted until they sit firmly in place and provide a stable armor layer. The long axis of each rock shall be set normal to the existing revetment slope such that any tendency of slippage by gravity will be directed to the core. All dislodged rocks shall be removed and disposed of away from the job site.

2. Prior to placing the mortar to set the revetment, the Contractor shall wet the rocks thoroughly with clean fresh water. Mortar shall be placed between the rocks on the finish face of the revetment. The mortar shall be rodded between the rocks to ensure placement of the mortar and to fill voids between the rocks. The Contractor shall point and recess the mortar between the joints to a quarter (1/4) inch below the rock surface. Excess mortar shall be removed from the revetment and shall not be visible on exposed rock surface. The texture of recessed pointing shall match the texture of the rock used.

B. Rock Wall Repair

1. Existing rocks shall be removed from the damaged areas. New rocks shall be set in the repair area to match the lines, grades and dimensions of the existing repaired rock wall. Rocks shall be placed and adjusted until they are keyed and sit firmly in place to make close joints. Contractor shall place new revetment rocks as necessary to provide a stable base for the new rock wall.
2. Prior to placing the mortar to set the new rock wall, the Contractor shall wet the rocks thoroughly with clean fresh water. Mortar shall be placed between the rocks on the finish face of the rock wall. The mortar shall be rodded between the rocks to insure placement of the mortar and to fill voids between the rocks. The Contractor shall point and recess the mortar between the joints to a quarter (1/4) inch below the rock surface. Excess mortar shall be removed from the rock wall and shall not be visible on exposed rock surface. The texture of recessed pointing shall match the texture of the rock used.
3. The top of the rock wall shall be finished with a concrete cap and have a three-inch minimum thickness. The top surface of the new cap shall match the appearance and grade of the adjacent existing rock wall.
4. The Contractor shall install new 4-inch diameter PVC pipe scuppers to replace the existing drainage openings on the east side rock wall as shown on the drawing. Scuppers shall be spaced 10-feet on center with length of pipe extending the full width of the new rock wall and sloped to provide positive drainage.

12.4 PAYMENT - Payment for revetment repairs shall be made as specified in Article X of these Specifications.