

APPLIED COASTAL

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Project: Engineering Feasibility Study for
Shore Protection in Warren Cove,
Plymouth, MA

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Applied Coastal reviewed the existing condition of the seawall/beach system, evaluated engineering alternatives, and developed a cost estimate for the suggested alternative. After inspecting the shore protection in this region, it was clear that several problems likely caused the failure of the existing revetment, including (1) lack of filter fabric and a bedding stone layer, (2) insufficient size of some armor stones, and (3) improper "chinking" of armor stones with small angular rock. In addition to the structural condition of the revetment, the elevation of the concrete seawall backing the revetment (1979 plans for revetment reconstruction indicate an elevation of between 19 ft and 20 ft MLW or 14 ft to 15 ft NGVD) has allowed overtopping of the seawall during moderate northeast storms. Improvements to the revetment and seawall would be required to reduce flood damage to landward properties.

The alternatives analysis indicated three (3) potential solutions to shore protection along the Warren Cove shoreline: revetment/seawall, beach nourishment, and groins. Only the revetment/seawall solution can work as a stand-alone option; however, maintenance can be reduced and design life may be extended by implementing beach nourishment and a groin as part of the shore protection options. Based on the significant cost (both construction and maintenance), as well as permitting requirements, for the groin/beach nourishment option, Applied Coastal suggested implementation of seawall/revetment repairs at this time. The proposed shore protection work includes approximately 900 ft of revetment/seawall reconstruction including a re-curved concrete cap.

Based on the significant cost of historical flood damage to properties in this region, the Federal Emergency Management Agency (FEMA) provided a grant for revetment repairs.

