



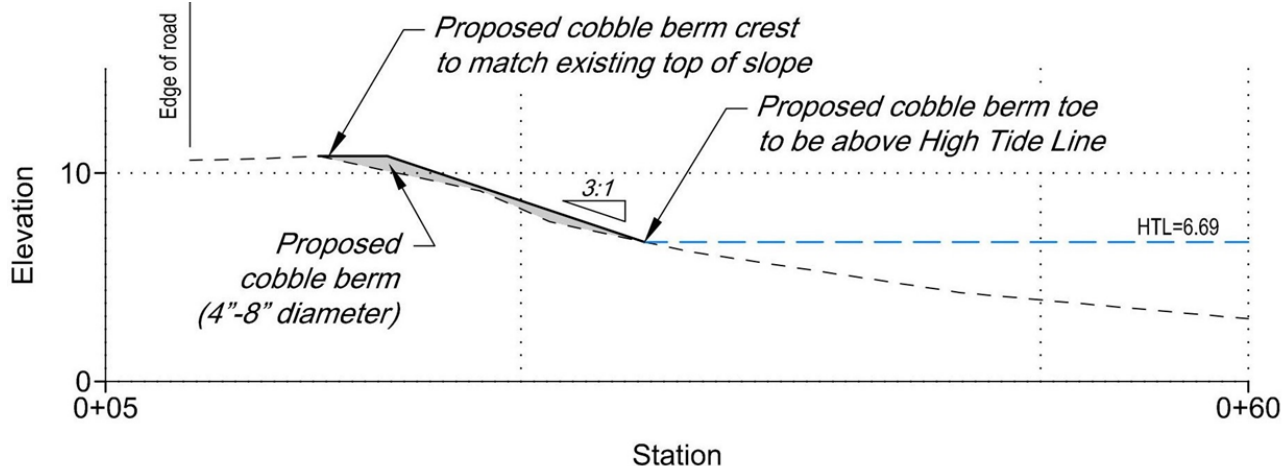
Bayside Cobble Berm Nourishment

Project Overview

Traveling south from the Powder Point Bridge there is a point a half mile north of Crossover 1 where the bayside dune disappears giving way to a narrow, steep strip of cobble beach. During the summer months it is easy to see how close the channel cuts to the shoreline by the location of the channel markers. High water velocities close to the beach during both normal and storm conditions result in significant erosion—threatening both safe access down the roadway and the overall integrity and resilience of the barrier beach. And so, as erosion continues from both oceanside and bayside, the barrier becomes ever narrower, prompting the need to plan for long-term maintenance of the area. In 2002, DBR came up with an innovative and environmentally sensitive approach - constructing a berm made of appropriately sized cobble. While this has proven effective, like all nourishment projects, it requires maintenance overtime to maintain that effectiveness.

Project Benefits

- **Dissipates wave energy**, allowing water to percolate through the large spaces between the stones and reducing erosion
- Focuses on a section of bayside shoreline specifically impacted by the **adjacent high velocity channel**
- **Provides flexibility** for periodic maintenance with smaller nourishment projects
- **Protects** the roadway and access to the southern two-thirds of Duxbury Beach



TRANSECT BSCB 2

One of several berm profiles used to renourish the bayside cobble berm on Duxbury Beach. During the design process, it was important to keep the toe of the berm above the high tide line to expedite permitting and keep material out of the swift moving channel.

Project Specs

3:1

Slope established for cobble berm

55

Tons of 4-8" cobble added to berm in Spring 2022

\$7,126

Funded by DBR to fund Stage I of nourishment efforts

2,000'

Total bayside shoreline of cobble berm to receive nourishment in 2022

647

Tons of cobble remaining to add to the berm in Fall 2022

\$34,365

Projected cost of full cobble berm nourishment project in 2022



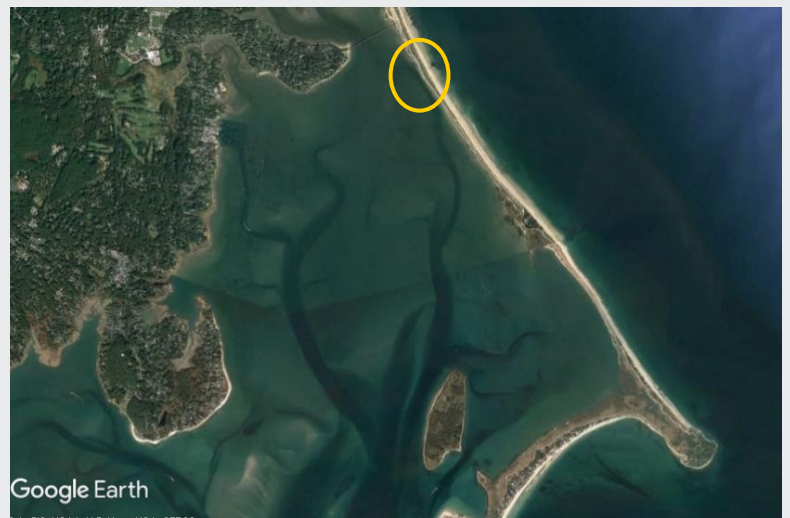
PRIOR TO RESTORATION



POST RESTORATION WORK

Maintenance is Key

- 2002**– Original cobble berm constructed along 1,600ft section
- 2003**– Post-storm assessments show the benefit the berm had in preventing severe erosion
- 2006**– Restoration of the cobble berm, focusing on using cobble with less fine-grained material
- 2011**– Nourishment of the berm to replace cobbles lost during major storms
- 2014**– Receipt of CZM grant to extend and refurbish cobble berm
- 2015**– Cobble berm extended to 2,000 linear feet
- 2022**– Nourishment of the cobble berm under the new comprehensive permitting program



Circled area indicates project location