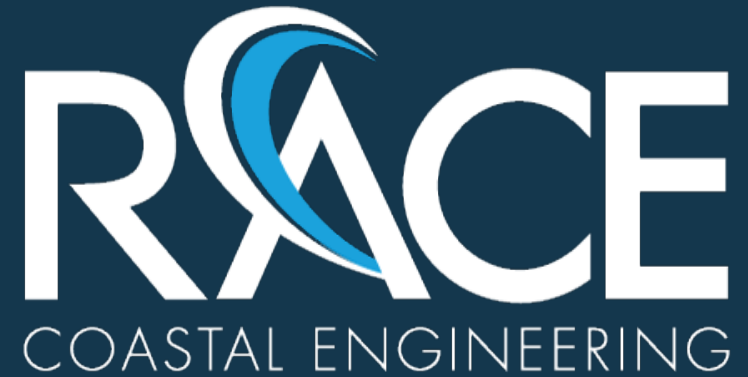


Beach Street Coastal Resiliency



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Prepared for:
City of West Haven, CT



Introduction – Project Site

The shoreline adjacent to Beach Street extending east of Morse Avenue has experienced significant erosion

- March 2026 site observations found a roughly 4-foot escarpment immediately east of the Morse Avenue groin
- Some sections of escarpment were as close as 6–8 feet from the newly installed pedestrian and bicycle paths
- The existing revetment further east has seen localized failures; the sand placed overtop the revetment has largely eroded



Site History – Shoreline Instability

The project shoreline and adjacent shorelines have historically seen significant longshore sediment transport. Beach nourishment and installation of groins have historically been solutions.

Historic aerial imagery shows the past conditions of the site:

1970 – Minimal shoreline structures and extensive beach nourishment



1995 – Morse Ave groin / downdrift erosion



2022 – Most recent installment of beach nourishment (now eroded)



1 Revetment

-
- 7'± CREST
- 16.5'±
- PLANTED VEGETATION
- CONCRETE CURB WALL
- (2) LAYERS ARMOR STONE (7'± MIN)
- 1.8
- 1
- T.O. REVETMENT/CURB WALL EL. +10.0'
- SAFE EXCAVATION SLOPE TO BE DETERMINED BY CONTRACTOR (TYP.)
- HTL EL. +5.6'
- CJL EL. +4.6'
- MHW EL. +2.8'
- GEOTEXTILE FILTER FABRIC
- 2'± FILTER STONE LAYER
- B.O. REVETMENT EL. -3.0'
- MIN. 5.5 TON TOE STONE
- APPROX. GRADE AS OF MARCH 10, 2026; CURRENT GRADE MAY VARY



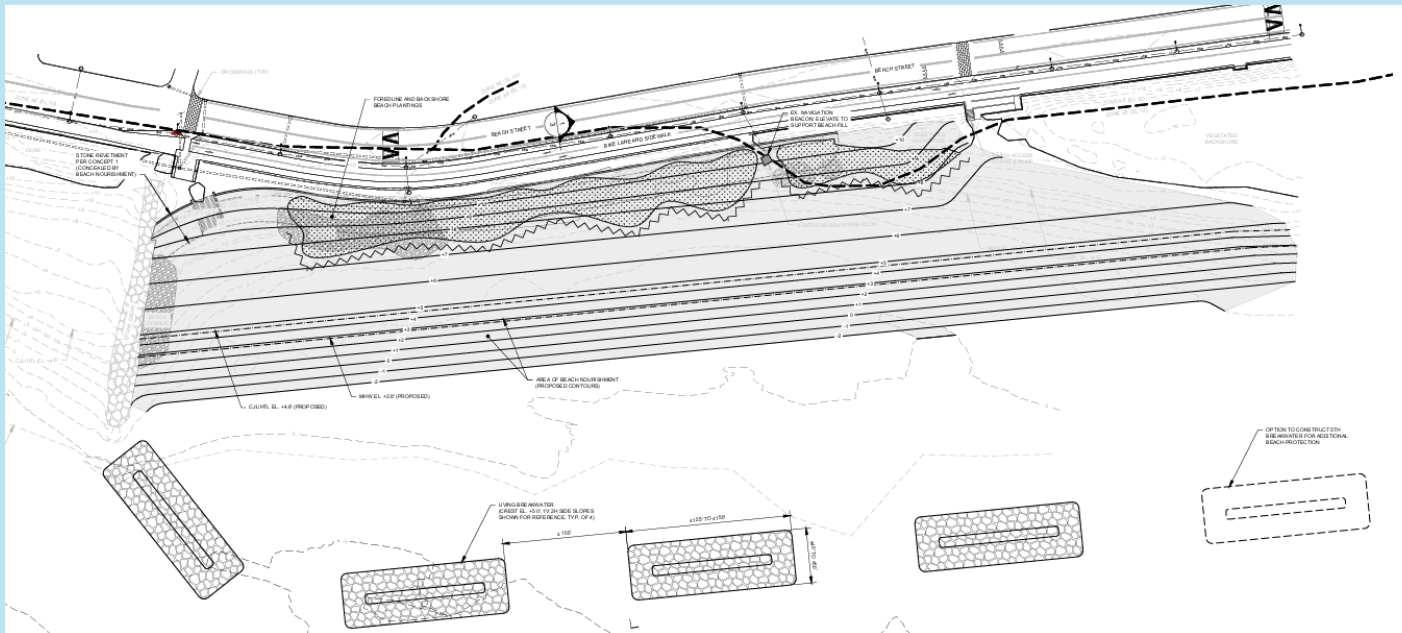
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Concept Improvements (Cont.)

Two additional options were considered, both of which include and build on the revetment concept:

2 Offshore detached breakwaters and beach nourishment

- Encourages shoaling and sediment buildup behind structures
- Reduces wave climate reaching shoreline for smaller storms
- Increases recreational beach area with additional sand from combined shoaling and beach nourishment



*Beach Street concept plan w/
offshore detached breakwaters*



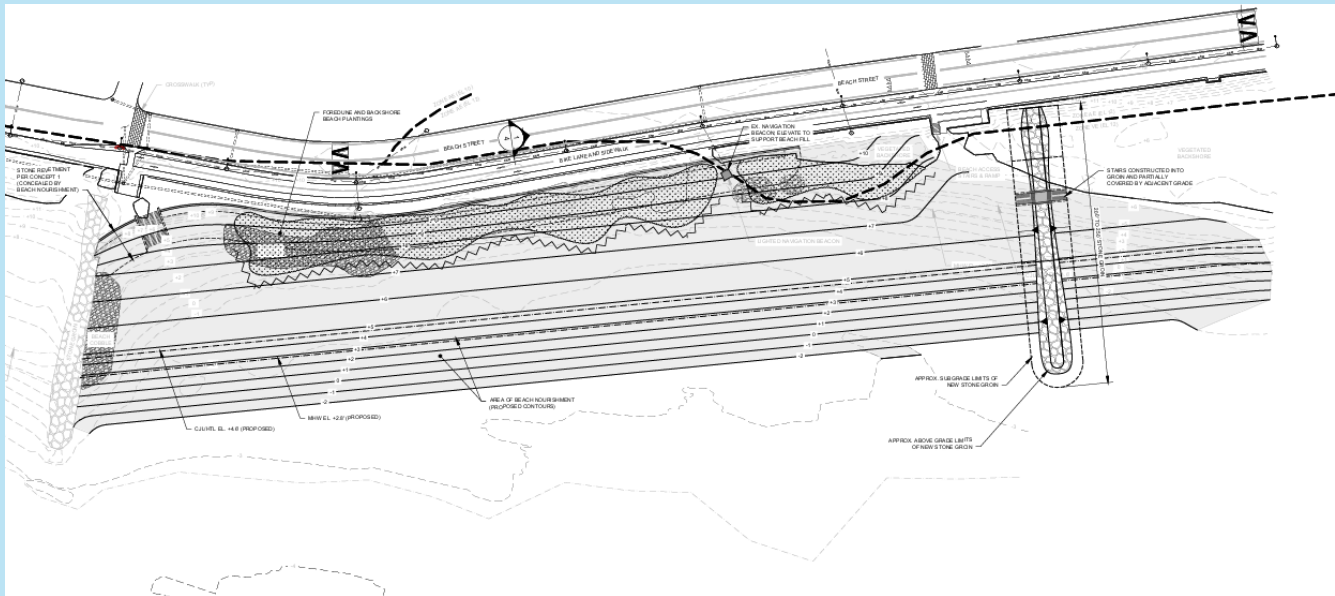
*Example offshore breakwaters,
Winthrop, MA*

Concept Improvements (Cont.)

Two additional options were considered, both of which include and build on the revetment concept:

3 Additional shore perpendicular groin and beach nourishment

- Minimizes further longshore sand transport away from site
- Increases recreational beach area with beach nourishment and sand transport



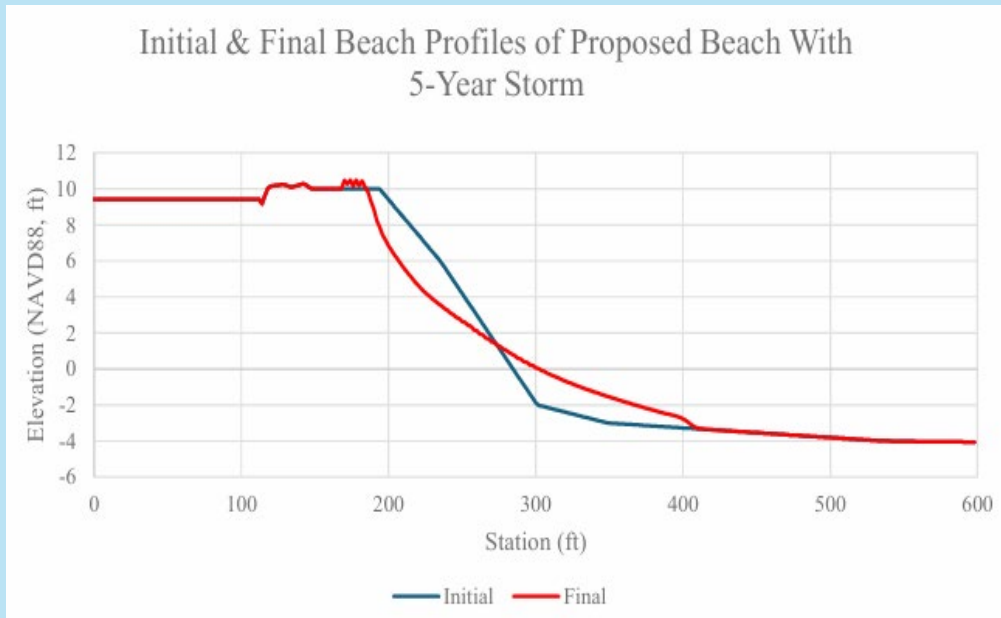
*Beach Street concept plan w/ additional terminal groin
and beach nourishment*

Coastal Modeling

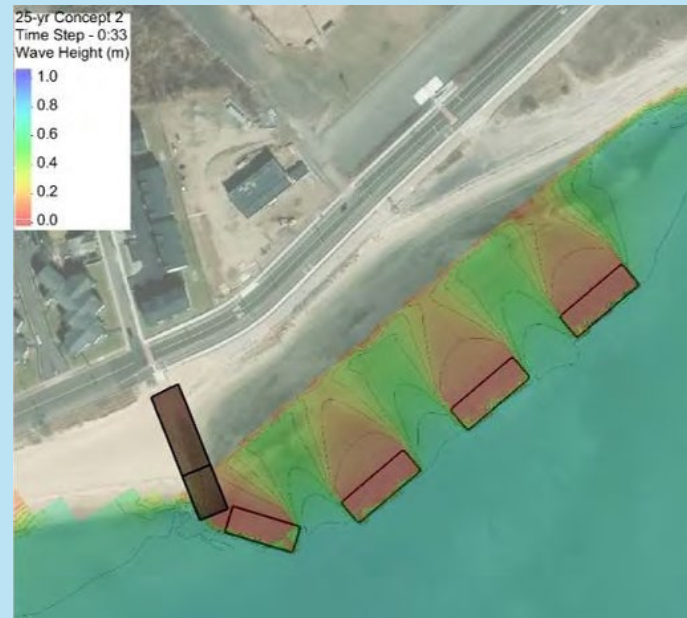
Various coastal models were performed on the offshore breakwater concept:

- Storm-induced Beach Change Model (SBEACH) - cross-shore beach erosion model.
- CMS Wave - 2D wave spectral transformation model
- CMS Flow - 2D hydrodynamic circulation model

Sbeach modeling



CMS Wave modeling

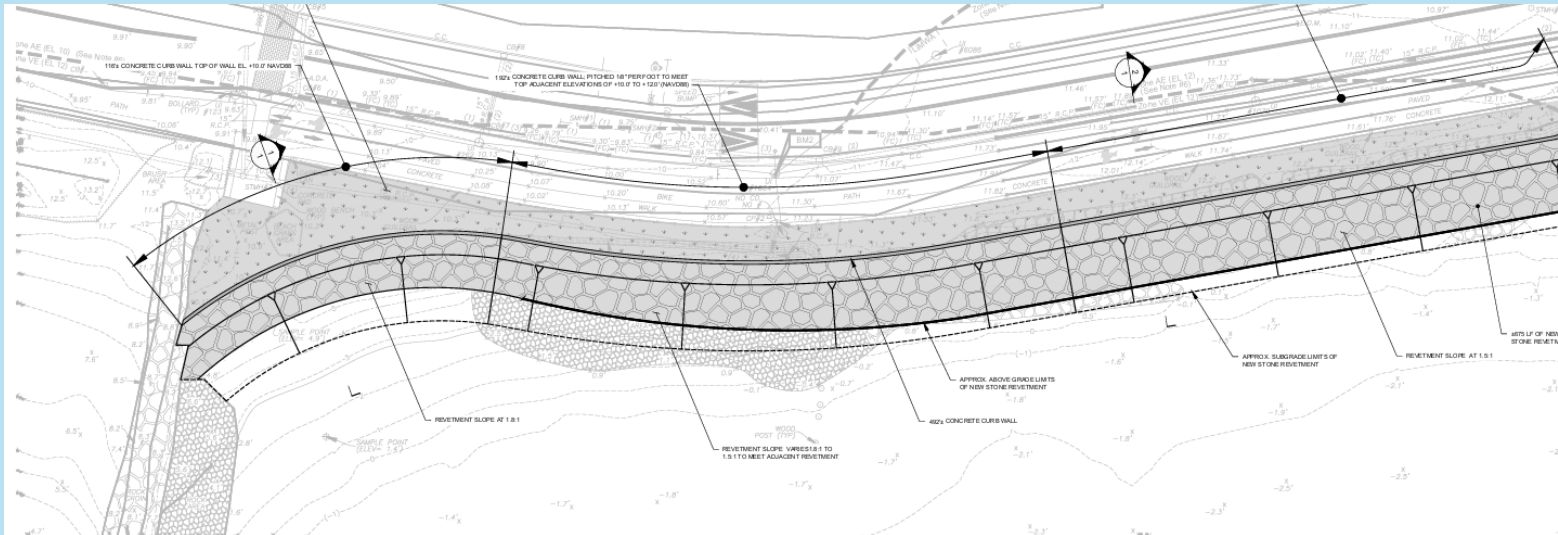


CMS Flow modeling



Next Steps – EA for Stone Revetment

- Considering the rapid erosion and infrastructure at risk, a stone revetment is being constructed to stabilize the shoreline
 - Larger stone
 - Thicker armor layer
- The revetment will serve as a foundation for future concepts; historic longshore sediment transport and wave conditions necessitate a hardened structure along the shoreline
- Additional concepts (beach nourishment, offshore breakwaters, terminal groin) can be added as desired after revetment is complete



Beach Street concept plan w/ offshore detached breakwaters



Thank you!

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