St. Petersburg, Florida Seawall Case Study Review

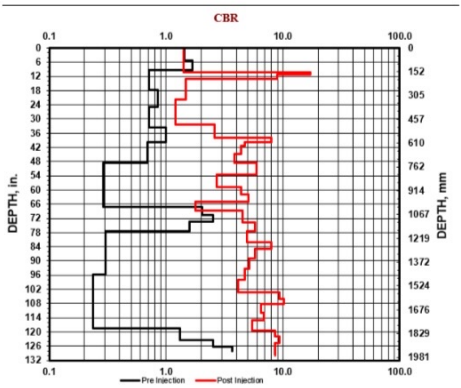
A residential coastal seawall in St. Petersburg, Florida was exhibiting signs of soil loss (soil piping) from underneath the seawall and through gaps or cracks that slowly developed over time. This soil loss resulted in settlement of the retained soil, compromising stability of the seawall. DCP testing and push-probing confirmed these findings with very loose soil and small voids encountered at depths from 3 to 6 feet and 7 to 10 feet below the top of grade.

The primary backfill material used to build the seawall was seashell in the upper 3 feet and imported sand.

St. Petersburg, Florida Seawall Case Study Review

In June of 2024 permeation grouting of a single component polyurethane foam, HS010, was conducted between the depths of 3 to 10 feet below grade. Spacings of the injections were approximately 2 feet on-center. A pre-determined amount of HS010 (between 9 and 14 lbs) was injected every foot.

St. Petersburg, Florida Seawall Case Study Review



Comparisons of the DCP test results before and after injection showed a 699% improvement in the California Bearing Ratio (CBR) between the treated depths of 3 to 10 feet at the first location and a 277% improvement at the second location.

St. Petersburg, Florida Seawall Case Study Review

In late September and early October of 2024 back-to-back Hurricanes, Helene and Milton, made landfall in St. Petersburg within two weeks of each other, devastating St. Petersburg with catastrophic storm surges.

The hurricanes damaged neighboring seawalls that were undermined with voids and loose soils, as shown above. However, the injected seawall suffered no damage.

St. Petersburg, FL Neighboring Seawall

St. Petersburg, FL Neighboring Seawall

St. Petersburg, FL Seawall Repair Summary

- Alternative bid for new sea wall, $300,000, scheduled out 1 year

- Project completed in 3 days
- Charged $30,000
- Hurricane Proven Method