



Bucknam Bridge Repair

Location: Falmouth, Maine

Application: Lightweight fill

Market: Infrastructure

Volume: 1,900 cubic yards

Scope Completion: August 2024



Overview

Aging infrastructure and compressible marine clay soils beneath I-295 outside of Portland, Maine required a lightweight fill solution that reduced settlement while also maintaining the compressive strength needed to support highway traffic loads.

Design Challenges

Bucknam Bridge faced geotechnical challenges that complicated an otherwise straightforward infrastructure replacement. The aging bridge's structure required a complete reconstruction, but the site's geotechnical conditions created challenges.

- Compressible foundation soils: Soft marine clay soil along coastal Maine are prone to settling under load.
- Loading requirements: The bridge abutments needed to support the bridge's dead load and roadway traffic.
- Settlement risk: Traditional granular fill would add excessive weight to the clay foundation, risking long-term settlement that could compromise the bridge's structural integrity and longevity.



Placement and compaction of foamed glass aggregate

Glavel as a Solution

Foamed glass aggregate offered the combination of structural support and low unit weight needed for the installation. MaineDOT's engineers specified foamed glass aggregate because of its low-bulk density and compressive strength that provided the structural capacity to support the bridge's structure and traffic loads. The team at R.J. Grondin placed and compacted 6 feet of foamed glass aggregate to raise the grade and create stable bridge abutments.