GLAVEL
FOAMED GLASS AGGREGATE®

Exit 17 Bridge Replacement

Location: Colchester, Vermont
Application: Lightweight fill
Market: Infrastructure
Volume: 12,500 cubic yards
Scope Completion: August 2025

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Overview
The Exit 17 Bridge over Vermont's I-89 in Colchester, Vermont is an integral part of the Route 2 corridor, connecting Grand Isle County and parts of Colchester to Vermont's interstate system. Deteriorating bridge conditions from a 1960's-era design prompted a complete replacement and interchange traffic pattern reorganization. Foamed glass aggregate delivered the lightweight fill needed to build the bridge approach and mechanically stabilized earth walls without costly excavation or long-term settlement risks.

Design Challenges
Many of I-89's Vermont bridges from the 1960s were designed with 60 foot spans and center piers. While effective at the time, this design exposed expansion joints to decades of road salt and harsh winter conditions. The Exit 17 bridge was strained by structural deterioration and increasing Route 2 traffic, which made a complete bridge replacement urgent.

Adding to the complexity, much of Chittenden County sits on glacial till soils underlain by deep, soft clay layers left over from the prehistoric Champlain Sea. Traditional repair methods presented serious challenges:

- Conventional soil with piles risked long-term settlement and lateral bulging, undermining stability.
- Sheet-pile excavations could have removed the clay, but the close proximity to an interstate corridor would have been costly, disruptive, and created worker safety concerns.

Glavel as a Solution
Faced with challenging clay soils at the bridge site, Vermont Agency of Transportation engineers turned to foamed glass aggregate as an alternative to traditional fill or sheet-pile excavation. Foamed glass aggregate minimized settlement risks without the need for extensive excavation or costly reinforcement.

Construction & Installation
The bridge design combined mechanically stabilized earth walls to support the roadway with H-piles carrying the bridge itself. On site, foamed glass aggregate proved both practical and efficient:

- Simplified installation: Equipment could operate safely at the edge of placement zones with minimal risk.
- Controlled lifts: Each lift was contained with geogrid with careful oversight on compaction and lift height.
- Equipment flexibility: Excavators with low-pressure tracks easily handled the material, with only minor adjustments between edge and center compaction.

Results & Benefits
The Exit 17 project was completed on schedule, with a structure designed for a 125 year service life. By using foamed glass aggregate, Vermont Agency of Transportation:

- Eliminated the time and expense of sheet-pile excavation.
- Reduced construction risk in difficult soil conditions.
- Delivered a durable, long-term solution for Vermont's transportation infrastructure.


April 2025


May 2025


June 2025