

GLAVEL
FOAMED GLASS AGGREGATE

Herb Chambers Toyota

Location: Medford, Massachusetts

Application: Lightweight fill

Market: Commercial

Volume: 5,700 cubic yards

Scope Completion: February 2025



Overview:

The Herb Chambers Toyota site in Medford, Massachusetts was directly atop poor quality subgrade conditions consisting of marshy soil and debris from previous foundations. Building a multi-story structure on top of these conditions would have risked serious settlement concerns that could threaten the safety and longevity of the building.

Design Challenges

The project team needed to build a foundation that could support a 3 story inventory garage atop soils prone to settlement and consolidation. The site presented two key geotechnical challenges:

- Directly underneath the ground was masonry and timber from previous foundations that had been built in previous centuries.
- The soil was compressible and had an unstable subsurface, as well as issues with a high water table that complicated drainage.



Pre-site conditions



Drilling geoconcrete columns



Sitework and placement

Glavel as a Solution

The project team created a hybrid foundation system that combined foamed glass aggregate and geoconcrete columns to address both settlement and load-bearing challenges. Foamed glass aggregate replaced excavated material, providing a lightweight fill that dramatically reduced the load on underlying soils while resisting settlement. Some of the benefits of using Glavel included:

- Deep overexcavation: The team removed 8 feet of native soil, eliminating the compressible layer and foundation debris below.
- Load-transfer system: Geoconcrete columns were driven through the foamed glass aggregate layer into the higher compressive strength soils below, transferring the structural loads from the building to load-bearing strata.
- Groundwater management: foamed glass aggregate's free-draining structure facilitates water movement through the fill zone, reducing hydrostatic pressures and improving site drainage.