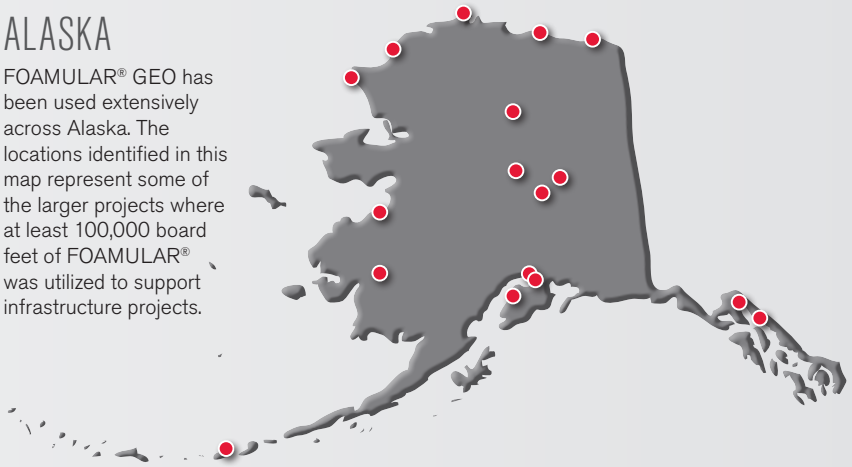
# FOAMULAR® GEO
## ALASKA HISTORY

**Since the 1970's, FOAMULAR® GEO** has been used in the U.S., Canada, and Asia for high load geotechnical applications. Rigid foam insulation in gravel embankments has a long history as a proven method to support civil infrastructure in cold regions. The Alaska State Department of Transportation and Public Facilities alone has used more than 100 million board feet of rigid polystyrene insulation within gravel embankments to protect roadways, airfields, and other infrastructure. For perspective, 100 million board feet is equivalent to about 100 miles of 2-lane highway with 4-inch thick foam.

### ALASKA

FOAMULAR® GEO has been used extensively across Alaska. The locations identified in this map represent some of the larger projects where at least 100,000 board feet of FOAMULAR® was utilized to support infrastructure projects.



The use of gravel provides a reliable, stable, and thermally beneficial embankment to structurally support operations and equipment. FOAMULAR® GEO extruded polystyrene is a resilient material that can reduce gravel requirements and be advantageous compared to the gravel it replaces for a variety of reasons:

### Less expensive.

In many scenarios, the use of insulation will reduce construction costs. For example, many project sites are challenged with proximity to suitable sources of gravel. The greater the distance the project is from a gravel source, the more expensive it is to transport heavy gravel.

### Smaller footprint.

To achieve the same thermal resistance, an insulated embankment will require less gravel compared to a non-insulated embankment. One inch of foam has about the same thermal resistance as one foot of gravel. This rule of thumb is conservative for many engineered fills. Through more detailed calculation, actual gravel quantity savings can be evaluated.

### More protection.

Embankments designed with combined FOAMULAR® GEO and gravel serve as an ideal way to protect assets from damage caused by permafrost thaw and frost action. Added protection leads to extended embankment life and reduced maintenance activity.

### Indirect benefits and cost savings:

- **Less environmental impact** – Smaller footprint means less impact on the arctic tundra.
- **Less mining** – More foam means less gravel that needs to be mined.
- **Less blasting** – Less mining means less blasting. Loud noises can be a sensitive issue for neighboring communities.
- **Faster construction** – This is possible when projects are slowed by and dependent on gravel availability.
- **Faster permitting** – Less gravel requirements and a smaller footprint can lead to a quicker and less arduous permitting process.
- **Improved safety** – In roadway applications, FOAMULAR® GEO can reduce the height requirement of the embankment. A shorter roadway shoulder means less danger in the event a vehicle slides off the road.
- **Fast and easy transport** – Especially considering remote locations, lightweight extruded polystyrene can be quickly packaged and delivered to the construction site.

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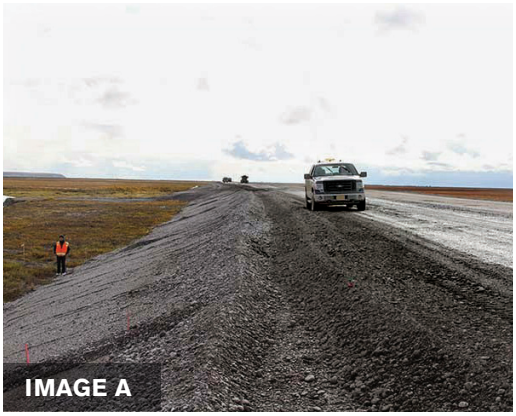


IMAGE A

IMAGE B

With FOAMULAR® GEO, pavement structures are less susceptible to:

**Safety Challenges:** Tall embankment heights can cause safety concerns for vehicles. *See Image A.*

**Deterioration:** Cracking can occur due to thaw penetration into permafrost. *See Image B.*

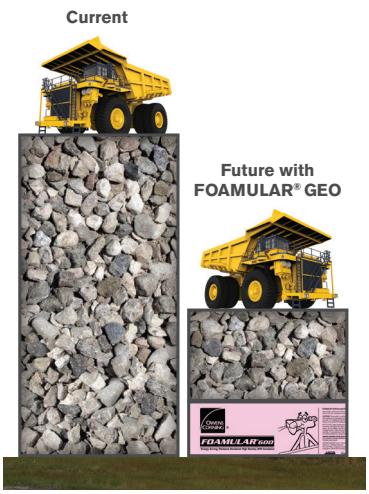
## Product Highlights

- Best R-value warranty in the market
- High compressive strengths engineered to support specialty equipment associated with military, mining and oil/gas activity
- Long history of successful and continued use by engineers worldwide
- Does NOT contain CFCs, HCFCs, or HBCD Flame Retardant
- Will not corrode, rot or support mold growth
- Durable rigid foam panels are easy to handle and install

## FOAMULAR® GEO has been widely used by organizations and public entities in Alaska, including the following:

- Alaska State Department of Transportation and Public Facillties (AKDOT&PF)
- Alyeska Pipeline Service Company (APSC)
- Anchorage Water and Wastewater Utility (AWWU)
- Arctic Slope Regional Corporation (ASRC)
- Cold Regions Research and Engineering Laboratory (CRREL)
- ConocoPhillips
- Fairbanks North Star Borough (FNSB)
- Matanuska Susitna Borough (MSB)
- Municipality of Anchorage (MOA)
- US Army Corps of Engineers (USACE)
- US Department of Defense (DOD)

**Gravel Embankment v. Gravel Embankment with FOAMULAR® GEO**




Less material needed equals

**$$$ savings**

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