

# GEOFOAM

EXPANDED POLYSTYRENE LIGHTWEIGHT FILL AND COMPRESSIBLE INCLUSION

## PRODUCT DESCRIPTION

GEOFOAM from Beaver Plastics is manufactured from inert closed cell expanded polystyrene (EPS). GEOFOAM is generally defined as a foam material used as lightweight fill in geotechnical applications to reduce settlement and/or enhance soil stability. Using GEOFOAM as a soil replacement can permit the construction of large volume earth structures like highway and railroad embankments over soils of low bearing capacity. GEOFOAM can also be used as a compressible inclusion under concrete and earth structures. Under concrete structures, it can absorb upward strain resulting from freezing or clay expansive forces. In large earth structures, GEOFOAM can protect underlying culverts, ducts, pipelines and other buried materials against unacceptable levels of stress, while maintaining a predictable amount of resistance against the overlying structure, preventing movement or subsidence. GEOFOAM has excellent vibration damping and thermal insulation properties. It is resistant to freeze/thaw and has low moisture absorption properties. It is not biodegradable and has no pest or mould nutrient value.

## APPLICATIONS

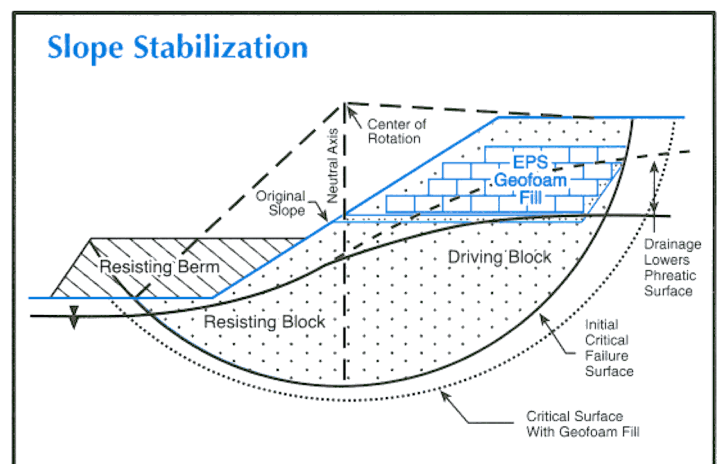
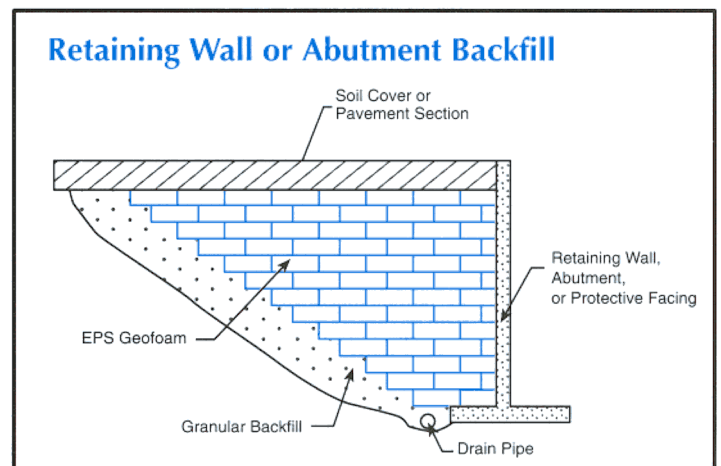
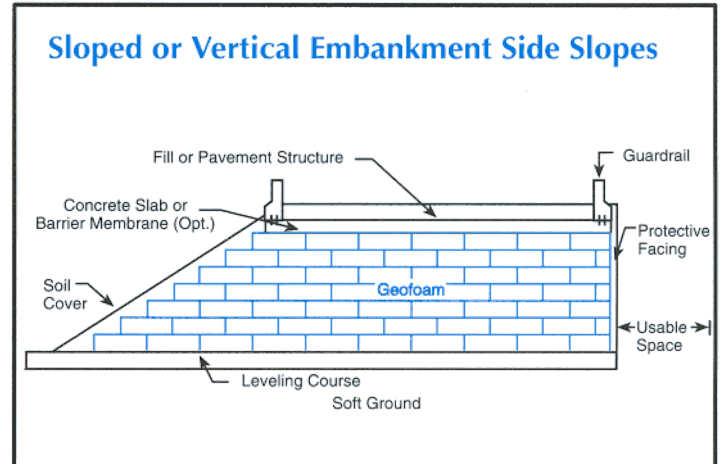
### • Lightweight Fill

GEOFOAM can be used as a lightweight substitution for soil fill in road or railway embankments, retaining wall and abutment backfill, slope stabilization and other areas where the subgrade is weak and cannot support anticipated loads using standard fill materials. Since GEOFOAM is 50 to 100 times lighter than soils, its use can decrease overburden stress and excessive settlement, and prevent large earth structures such as built-up bridge ramps and highways built on side slopes from shifting, sliding or compressing underlying ground.

In the rehabilitation of failed slopes and side hills, replacing some of the original soil with GEOFOAM can significantly reduce vertical stresses and lateral forces on structures and retaining walls, eliminating additional settlement. GEOFOAM can be also used to build vertically faced self-supporting walls in conjunction with weight reduction and relief of lateral earth pressures.

GEOFOAM can be used to reduce the weight on underground structures like pedestrian, road and rail underpasses, and tunnel systems for subway transportation and utility corridors.

GEOFOAM has been used in many countries as pavement insulation, to protect against frost heave as well as subgrade stress/deformation.



Illustrations courtesy of Geof foam Research Center, Syracuse University, NY

- **Protection of Structures from Expansive Subgrades**

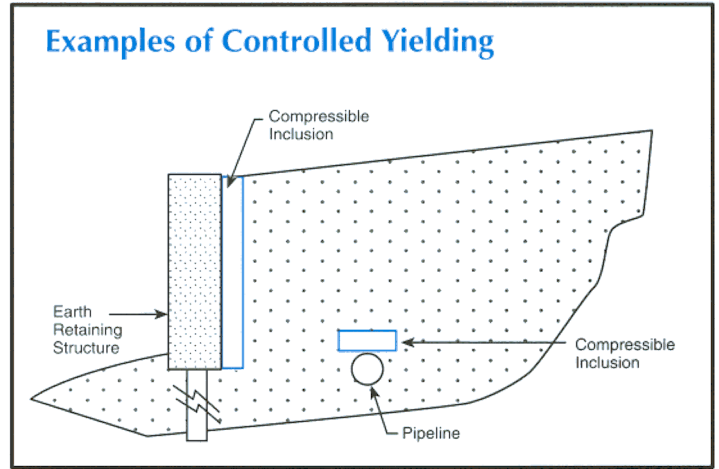
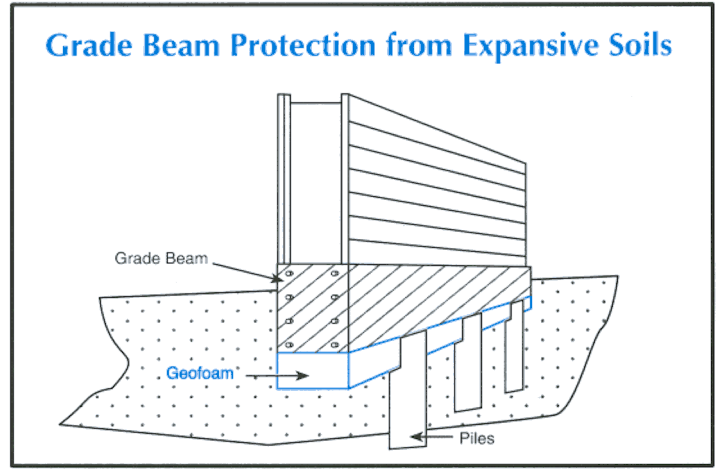
Some clay-based soils and freeze-thaw activity can exert high levels of upward strain against on-grade structures. GEOFOAM can be used to form voids under grade beams and pile caps to prevent lifting or fracturing of the structure. Proper void product selection should consider the amount of anticipated subgrade expansion and the sum of total structure weight plus anchorage capacity of pilings or other foundations in order to overcome the compressive strength of the void material. Beaver supplies GEOFOAM at the lowest density for under grade beams, with a compressive strength of approximately 4-psi (27.5 kPa) at 5% deformation. However, GEOFOAM exhibits creep deformation at sustained stress levels well below its compressive strength, such as when soils slowly freeze or expansion occurs due to moisture changes. Consult Beaver Plastics for grade beam span and depth design information.

*GEOFOAM, like all solid foam products, does not collapse, and therefore exerts an ever-increasing level of force against concrete structures as soil expansion occurs. For grade beams not designed to absorb the stress transmitted by solid void materials, FROST CUSHION™ will provide better protection. To protect typical structural slabs against subgrade expansion, DYNAVOID™ is a dynamic void product that mechanically collapses at lower stress levels.*

- **Utility Protection**

Buried pipe, culverts, ducts, retaining walls and other below-grade concrete structures can be protected from high levels of earth pressure through the use of the controlled yielding properties of GEOFOAM. At-rest soil pressure can be reduced to the active state by installing a compressible inclusion between the structure and the earth fill. The controlled yielding ability of GEOFOAM allows the retained soil to mobilize its shear strength sufficiently to achieve the active state. Excessive soil compaction induced stresses can also be reduced through the use of GEOFOAM.

GEOFOAM is an excellent thermal insulation. Using GEOFOAM as insulation may reduce depth requirements for protecting pipelines from frost.



## SPECIFICATIONS AND COMPLIANCE'S

GEOFOAM from Beaver Plastics can be manufactured to meet the range of performance criteria in ASTM Standard Specification for Rigid Cellular Polystyrene Geofoam D-6817-02. The density of GEOFOAM should be carefully considered in an order to assure appropriateness for the use intended. Beaver Plastics is registered by the International Standards Organization under the ISO 9001-2000 Quality Assurance Program.

## HEALTH AND THE ENVIRONMENT

EPS contains no CFCs, HCFCs, or other gases harmful to the atmosphere ozone level. It is non-fibrous, non-toxic, hypoallergenic, and will not irritate sensitive skin on exposure. It is a superior replacement for cardboard void materials, as it is not a nutrient source for toxic mould.

## SIZES AND DENSITIES AVAILABLE

GEOFOAM is available in minimum densities of: 11.2, 14.4, 18.4, 21.5, 28.8 kg/m<sup>3</sup> (0.70, 0.90, 1.15, 1.35, AND 1.8 lb/ft<sup>3</sup>). It is produced in block form, with a standard size of 24" x 48" x 96". Sheet sizes are up to 24" in thickness, in any width up to 48", and lengths up to 96".

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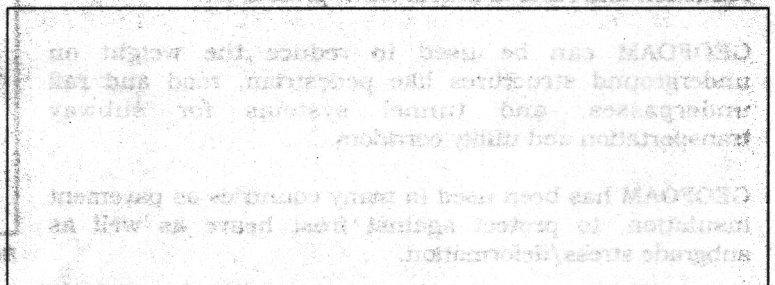
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