



# GeoVoid™ Compressible Fill

Plasti-Fab GeoVoid compressible fill material, an expanded polystyrene (EPS) product, is designed to act as a compressible medium reducing potential forces on structural slabs in the event soil expansion occurs after construction is completed. It can be distinguished from other EPS materials not designed for this application, by its brown earth tone colour.

Soil deposits which contain substantial proportions of clay mineral particles can have significant potential for expansion. A soils investigation will identify the extent of soil expansion to be expected.

Soil expansion may affect the performance of structural members, even when pile foundations have been used. The magnitude of soil expansion experienced will depend upon factors such as soil moisture loss during construction and new conditions imposed on the soil as a result of construction (e.g., changes in soil stress/temperature induced by the new structure and additional sources of moisture due to landscaping or other factors).

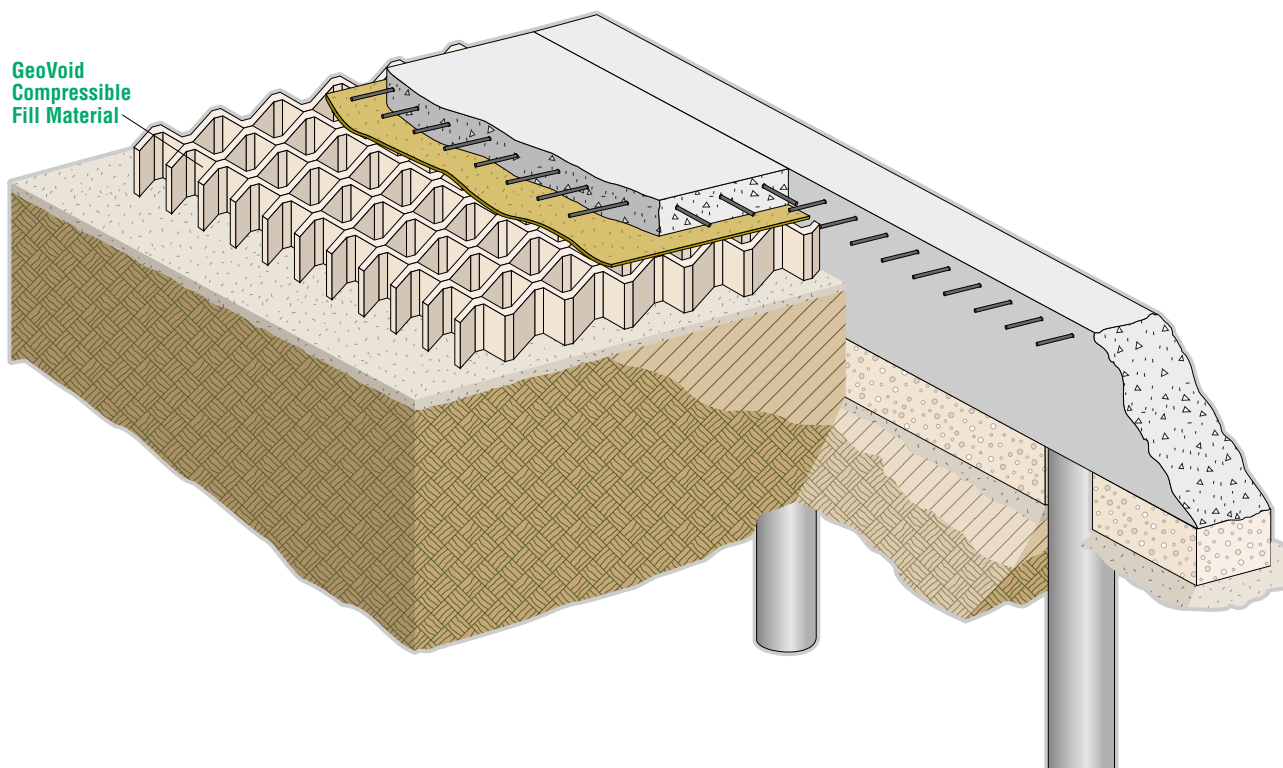
GeoVoid compressible fill material is intended for use as a compressible medium under structural concrete floor slabs. GeoVoid compressible fill material is designed to support expected construction live loads and the weight of the structural slab, until the concrete has cured and gained enough strength to be self-supporting.

GeoVoid compressible fill material acts as a compressible medium between the expansive soil and the structure to reduce long-term stresses transferred to the structure. The structural slab wall must be restrained from movement in the direction of soil expansion and designed to withstand long-term compressive stresses transferred through the compressible medium. On the long term, the compressible medium is designed to collapse in the event of soil swell without exceeding the design uplift capacity of the slab (see the "Design Criteria" section in this brochure).

## Advantages

GeoVoid compressible fill material offers the following advantages:

1. As an engineered product it is designed to meet specific requirements for each application.
2. The engineered properties of the product are not affected by the presence of water.
3. If required, dimensions can be adjusted easily on the job-site using a fine-toothed hand saw to accommodate job-site obstructions.
4. The product does not support the growth of insects or vermin nor does it contain any ozone depleting chemicals (ODC's).



## Application

### Design Criteria

GeoVoid compressible fill material is supplied to the customer pre-cut in sections 2440 mm (96") in length by the required thickness and depth. Sections are fastened together on site to form a support grid. The GeoVoid system incorporates a minimum 3/8" thick OSB cover board, which provides temporary support for structural slab casting. The cover board also serves as a work surface during rebar placing and assists in distributing the design loading uniformly over the GeoVoid system. For complete installation requirements refer to the Plasti-Fab Technical Bulletin entitled, 'GeoVoid Compressible Fill Material Installation Instructions.'

GeoVoid compressive strength at failure is determined based upon the thickness (t) and depth (d) of the GeoVoid compressible fill material (see standard configuration detail below). These dimensions are determined based upon upon the following factors:

- Self-weight the structural slab temporarily supported.
- Construction live load allowance.
- Maximum anticipated soil swell.
- Net uplift resistance capacity of structural concrete slab.

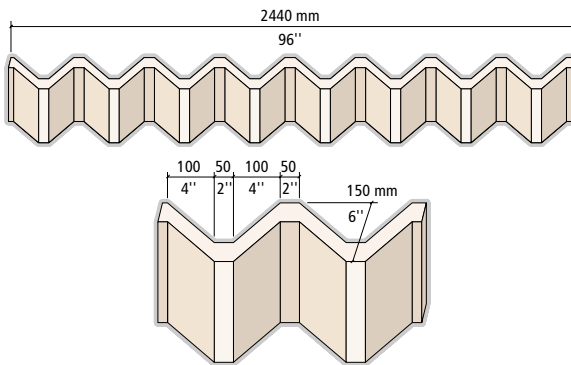
## Specification

Section 3300, Cast-In-Place Concrete.

### PART 2: PRODUCTS

#### Materials

GeoVoid compressible fill material, manufactured by Plasti-Fab, in dimensions specified on drawings to conform to the requirements of the project engineer.



**GeoVoid Typical Configuration**

### Design Example

The table below illustrates the information which would be provided as part of a GeoVoid compressible design for the following application:

- Structural slab = 203 mm thick
- Self weight of structural slab = 4.78 kPa
- Construction live load allowance = 0.96 kPa
- Maximum anticipated soil swell = 102 mm
- Net structural uplift resistance = 1.20 kPa  
capacity of concrete slab

Project Data Provided			GeoVoid Loads		Slab Net Uplift Capacity	GeoVoid Dimn's	
Slab Depth mm	Slab Weight kPa	Soil Swell mm	Safe Load kPa	Failure Load kPa	kPa	Post Size (t)	Depth (d)
203	4.78	102	5.74	5.98	1.20	51	152

### Notes

1. The safe load uniformly distributed on GeoVoid compressible fill material is the total of the self-weight of the structure temporarily supported plus the construction live load allowance.
2. GeoVoid failure load is equal to the maximum compressive stress anticipated on the long term after compression induced by the specified soil swell.
3. The required net uplift resistance capacity of the concrete slab is equal to the failure load capacity of the GeoVoid compressible fill material less the self-weight of the slab.
4. The safe load capacity and maximum anticipated soil swell are accommodated using the GeoVoid compressible fill material design thickness (t) and depth (d) as indicated in the table.

### Quality Control Testing

**Designers are cautioned that GeoVoid compressible fill material utilizes different manufacturing and testing criteria than standard EPS insulation board in order to obtain the engineered properties necessary for this application. The physical properties of GeoVoid compressible fill material are controlled within close tolerances during manufacture.**