



## Geogrids Over Soft Ground Installation Guide

### **Introduction**

Stratagrid can improve the effective bearing capacity of a subgrade by distributing loads over a wider area, similar to the way a snowshoe works to distribute a man's weight over soft snow.

Remarkable results can be achieved by using geogrids over soft ground. Undercutting can often be eliminated, and site access is improved in all types of weather. Firm construction platforms can even be built over ground too soft to support a man's weight.

However, proper performance is dependent upon proper installation. This guide is provided to assist the contractor in correctly installing Stratagrid geogrids over subgrades with CBR of approximately 3 or less.

In some cases it may be appropriate to place a nonwoven filter fabric *beneath* the geogrid to aid in synthetic filtration. This may be the case where one or more of the following conditions exist: uniformly course-graded fills, high or fluctuating ground water, or under-designed subbase thickness. However, installing fabric over very soft soil is difficult, and there is potential for significant subgrade disturbance and strength loss without due care.

### **1. Site Preparation**

Debris, trees, stumps, and other large plant growth should be removed from the site. The surface should be graded smoothly. Backdrag, if possible, to smooth out ruts. Sometimes smooth grading is not practical, as may be the case in swampland, peat, muskeg, or marshes. The geogrid may then be placed directly on the unprepared subgrade after cutting vegetation to geogrid level.

Care should be taken to avoid disturbing any surface crust overlying softer soil. In these cases, the geogrid should be placed directly on the unprepared subgrade.

The preferred gradation listed in Table 1 provides good stability and low moisture susceptibility. For other fill, a graded filter analysis would be prudent to check against potential contamination of underlying subgrade.

Table 1: Preferred Fill Gradation

<u>Size</u>	<u>% Finer</u>
1 – 1/2”	100
3/4”	50 - 100
#4	25 - 50
#40	10 - 20
#100	5 - 15
#200	Less than 10

## 2. Geogrid placement

Where synthetic filtration is appropriate, a six-ounce per square yard, non-woven fabric is recommended. It may be laminated to the geogrid or placed as a separate layer *under* the geogrid.

Place the geogrid in position and manually roll it out over the subgrade. Adjacent rolls of geogrid should be overlapped in accordance with Table 2. Overlap (shingle) geogrids in the direction that the fill will be spread. Adjacent rolls of geogrid should be tied together with hog rings or cable ties every five to ten feet if the soil is extremely weak and the overlap tends to separate. The geogrid corners may be held down with shovelfuls of fill.

Table 2: Recommended Overlaps

<u>Soil Type</u>	<u>CBR</u>	<u>Overlap</u>	<u>Tie Spacing</u>
Firm	>3	1 ft.	N/A
Soft Ground	1 – 3	2 ft.	20 ft.
Very Soft Ground	<1	3 ft.	5 ft.

## 3. Dumping and Spreading Fill

***Do not operate equipment directly on the geogrid over soft ground.***

Thin fill lifts over soft subgrades may not be sufficient to support equipment. In general, an initial fill lift of no less than twelve inches is required. For very soft conditions, the required fill thickness is a function of subgrade strength and construction procedure; usually it will be significantly greater than twelve inches. Please contact Strata Systems for assistance @ 800-680-7750.

Over relatively competent subgrades (CBR>2), fill may be dumped onto the geogrid. In softer conditions, fill should be dumped over ground that will bear its weight and then pushed out over the geogrid. Work from stronger to weaker subgrade areas. In very soft conditions, fill should be placed by a lightweight, low ground pressure (LGP) dozer.

The dozer blade should be feathered as each lift is pushed out. In other words, the blade should be gradually raised as the fill is pushed out over the geogrid. This will cause much of the fill to roll out onto the geogrid and will reduce stress on the subgrade. Back dump subsequent loads onto the leveled fill and advance forward by spreading with a dozer. Be aware of the direction of the overlaps of the geogrid, and don't work against

the shingle pattern. If wrinkles or waves develop in the geogrid, they will usually roll forward with the fill and out at the end of the geogrid roll. Care should be taken not to catch the dozer blade or other equipment on the geogrid.

Standard compaction methods can be used unless the soils are very soft. In these cases, static rather than vibratory compaction should be used. Compaction is normally accomplished with a light roller and moisture. (Water spray is especially efficient with sand fill.) If rutting or severe pumping occurs under truck or dozer traffic, fill should be added immediately to strengthen the section.