

INSTALLATION GUIDE FOR TENAX BI-AXIAL GEOGRIDS

Site Preparation

- The engineer shall verify the subgrade is ready for geogrid deployment, and that elevations are as indicated on the contract drawings.
- The surface shall be fairly smooth and free of stumps, sharp objects and debris that may damage the geogrid. Tree stumps should be cut at ground level.
- Care should be taken not to disturb any surface hard crust overlying weaker soils. In these cases, the geogrid should be installed directly on the unprepared subgrade.
- Recommended structural fill material should be well graded crushed aggregate fill to provide good stability and low moisture susceptibility.

Recommended structural fill gradation

Size	% Finer
1.5"	100
0.75"	50-100
#4	25-30
#40	10-20
#100	5-15
#200	<10

Geogrid Installation

- Tenax geogrids may be anchored in place to maintain the overlaps and alignments. Before fully unrolling the geogrid, anchor the beginning of the roll at the center and corners. Anchoring can be achieved by small piles of fill aggregate, washer pins, and U-staples driven in the subgrade capturing the apertures of the grid. Note: If aggregate material is spread using heavy equipment, the shoving action may create "waves" in the geogrids ahead of the fill. If significant waves occur, the anchoring washer and pin, or U-staples should be removed to dissipate the wave at the end or sides of the geogrid roll.
- Unroll geogrids on the subgrade and apply tension to minimize wrinkles.
- Geogrid panel overlap requirements, either side-by-side, or end-to-end, shall depend on the strength of the subgrade.

Recommended geogrid overlaps

Subgrade CBR	Overlap
>3	1 ft
1-3	2 ft
<1	3 ft

* Adjacent geogrid rolls should be overlapped (shingled) in the direction of anticipated fill spreading. This is to avoid the "peeling" of the geogrid at overlaps.

* To minimize geogrid wrinkles caused by the shoving action, fill material shall be pushed forward and spread while gradually lifting the blade or bucket, as shown in figure 1.

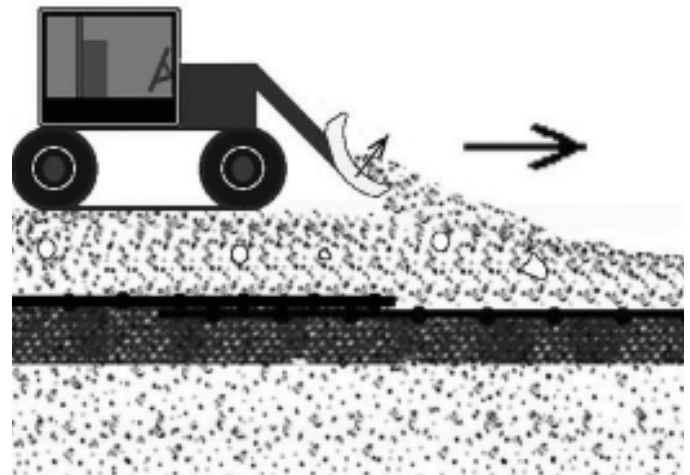


Figure 1: Geogrid overlapping and fill spread direction

- Geogrids can be easily cut with sharp shears to accommodate manhole covers, curves, etc....

Base material placement over geogrid

Over firm subgrade:

- When applying the fill material over relative competent subgrades (CBR > 3), rubber tire trucks (end or belly dumps) can drive directly on the geogrid at very slow speeds and dump the fill material as they go. Operators must not turn or make any sudden stops when driving across the geogrid.

- Tracked vehicles shall not be driven directly on the geogrid. A minimum of four inches of fill material shall be placed between the geogrid and tracks.
- Base course material shall be placed in lift thickness and compacted in accordance with the design requirements.
- Any ruts developed during spreading or compacting must be filled with additional fill material to reach the design thickness. Do not grade out the ruts.

Over soft subgrade:

- For weak sub grade (CBR between 1 – 3) or very weak sub grade (CBR <1), Back dump specified fill materials onto the geogrid where the subgrade is most stable, and then spread the fill over the geogrid out toward the weaker subgrade. Low ground pressure equipment is recommended for spreading fill over soft subgrade. Tight turns, sudden stops, or spinning should be prohibited.

* Loaded haul trucks or any heavy equipment should be avoided riding over initial fill material until the total compacted fill thickness has been achieved and capable of supporting the load.

* Compaction of the fill material shall be conducted without overstressing the subgrade. Static compaction should be used to compact fill materials over soft subgrade. Smooth-wheel

rollers have typical ground pressure 45 – 55 psi, provide 100% coverage. Pneumatic rubber-tired rollers have ground pressure range from 85 – 100 psi, with 70 –80 % coverage.

- Any ruts developed during spreading or compacting must be filled with additional fill material to reach the design thickness. Do not grade out the ruts. Rutting is normally indicative of aggregate fill that is too thin, too wet, or not enough compacted. Grading out will further reduce the fill place between the wheel tracks and potentially exposing the geogrid.

Repair

- Geogrid sections damaged during installation must be repaired by patching. Remove fill from the surface of the geogrid extending 3 ft surrounding the damage area and then place a geogrid patch to cover damaged geogrid area, assuring it extends 3 feet in all directions.

Protection

- The geogrid shall be protected from long-term exposure to direct sunlight during transport and storage. Storage of the geogrids shall be in such a manner to avoid contact with excessive mud, epoxies, wet concretes and any other deleterious materials.
- After placement, the geogrid shall be covered as soon as possible.



Photo 1: Back dump spread over geogrids



Photo 2: Belly dump spread over geogrids