



SYNTEC SBx GEOGRID PRODUCTS

INSTALLATION QUALITY ASSURANCE MANUAL

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1.0 INTRODUCTION

This manual provides an overview of the GSE Installation Quality Assurance procedures consistent with industry accepted practices to ensure that the geogrid product installed will best perform for its intended purpose. In addition, all installation work will be performed in strict accordance per the customer's specifications. Please completely read the procedures below before you begin. If you need further clarification, contact the GSE Engineering Support Staff for assistance. Remember safety first, and always use safe practices on every project.

2.0 MATERIAL DELIVERY

- A. Upon arrival on site, the receiver should inventory all materials.
- B. Roll numbers of the geogrid should be logged on the Inventory Check List (Appendix A) and cross-referenced with the Bill of Lading.
- C. Any visible damage to roll materials should be noted on the roll and on the Inventory Check List.
- D. Copies of the Inventory Check List and signed Bill of Lading should be returned to and retained by the GSE distributor while the receiver should retain the original copies for his own records.

3.0 UNLOADING & STORAGE PROCEDURES

- A. SBx geogrid rolls shall be unloaded with equipment that will not damage the geogrid.
- B. SBx geogrid rolls should be stored above the ground on a flat, dry, and well-drained area.
- C. The surface shall be free of sharp rocks or other objects that could damage the materials.
- D. If stored for long periods of time, SBx geogrids should be covered to protect them from long-term exposure to direct sunlight as well as general protection from the elements (mud, debris, epoxies etc.).

4.0 SITE PREPARATION

- A. The engineer shall verify the subgrade is ready for geogrid deployment and that elevations are as indicated on the contract drawings.
- B. 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.
- C. Care should be taken not to disturb any surface hard crust overlying weaker soils. In these cases, the geogrid may be installed directly on the unprepared subgrade.
- D. Recommended structural fill material should be well-graded, crushed aggregate to provide good stability and low moisture susceptibility.

Recommended Structural Fill Gradation	
Size	% Finer
1 1/5"	100
3/4"	50-100
#4	25-50
#40	10-20
#100	5-15
#200	<10

5.0 DEPLOYMENT

Syntec SBx 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 using small piles of fill aggregate, pins with washers, or U-shaped staples driven into the subgrade capturing the apertures of the grid.

- A. Unroll geogrids on the subgrade and apply tension to minimize wrinkles.
- B. Geogrid panel overlap requirements, either side-by-side or end-to-end, shall depend on the strength of the subgrade.

6.0 OVERLAPS & SEAMS

Recommended Geogrid Overlaps	
Subgrade CBR	Overlap
>3	1 ft.
1-3	2 ft.
<1	3 ft.

- A. Adjacent geogrid rolls should be overlapped (shingled) in the direction of fill spreading to avoid “peeling” of the geogrid at overlaps.
- B. Pins with washers, U-shaped staples, or plastic ties can be employed to maintain the desired overlap between adjacent rolls.

7.0 COVER SOIL PLACEMENT

To minimize geogrid wrinkles and resulting “waves,” the blade or bucket of the implement used should be gradually lifted as it pushes the fill material forward for spreading. This lifting action (see figure 1) allows fill materials to “fall” onto the geogrid from the top of the pile. This lowers the forward pushing stress on the geogrid. Simply pushing the pile forward may result in excessive formation of “waves” or bubbles in the geogrid or even damage to the geogrid.



figure 1

Note: Should “shoving” occur during fill placement to the point of creating waves to form in the geogrid ahead of the spread fill, the anchoring pins, U-staples, or plastic ties should be removed to dissipate the wave at the end or sides of the geogrid roll. Once removed and the panels realigned to the correct overlap, the pins or ties can be replaced if necessary.

OVER FIRM SUBGRADE

- A. When applying the fill material over competent subgrades (CBR > 3), rubber tire trucks (end dump or belly dump) 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. If rutting is observed or the geogrid is becoming visibly damaged, the operation should cease and an alternative method of placement should be used.
- B. 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.
- C. Base course material shall be placed in lift thickness and compacted in accordance with the design requirements.
- D. 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

- A. 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.
- B. Loaded haul trucks or any heavy equipment should not be driven over initial fill material until the total compacted fill thickness has been achieved and it is capable of supporting the load.
- C. Compaction of the fill material shall be conducted without overstressing the subgrade. This is generally best achieved using static compaction. Smooth-wheel rollers have a typical ground pressure of 45 - 55 psi, and provide 100% coverage. Pneumatic rubber-tired rollers have a ground pressure ranging from 85 - 100 psi, with 70-80% coverage.
- D. 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 sufficiently compacted. Grading out will further reduce the fill between the wheel tracks and potentially expose the geogrid.

8.0 PROTECTING AND REPAIRING THE GEOGRID

- A. After placement, the geogrid shall be covered as soon as possible.
- B. Geogrid sections damaged during installation must be repaired by patching. Remove fill from the surface of the geogrid extending 3 feet around the damaged area, and place a geogrid patch to cover the damaged geogrid area, assuring it extends 3 feet in all directions.

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