

Tensor H-Series™ Installation Guide

Tensor H-Series™ geogrids are used to minimize aggregate fill requirements, reduce or eliminate undercut, improve compaction, build construction platforms, and extend service life. These features depend on proper installation.

1. STORAGE

Store Tensor H-Series geogrid rolls in a manner that prevents excessive mud, wet concrete, epoxy, or other deleterious materials from coming into contact with the geogrid. Tensor geogrids may be stored uncovered for up to eighteen months in direct exposure to sunlight without any loss in certifiable structural properties (contact Tensor if longer exposure is anticipated).

2. PREPARING THE SITE

- Clear, grub and excavate (if necessary) to the design subgrade elevation, stripping topsoil, deleterious debris and unsuitable material from the site.
- Smooth grade and compact the soils using appropriate compaction equipment. Grade or crown the surface for positive drainage away from the construction zone.
- Place the rolls of Tensor H-Series geogrid in position, cut the roll bands and manually unroll the material over the prepared surface. The prepared surface may be the subgrade, subbase, or base elevation depending on the application. H-Series geogrid can be installed directly on the subgrade and no granular fill needs to be placed first.



SAFETY - Appropriate personal protective equipment should always be worn when handling, installing, and cutting Tensor geogrid. This may include hearing and eye protection, protective gloves, and long shirt sleeves and pants.

3. PLACING AND OVERLAPPING

- Unroll the geogrid in the direction of travel so that the roll is parallel with traffic patterns. Adjacent geogrid rolls should be shingled in the intended direction of aggregate spread.
- Cut and overlap the geogrid to accommodate curves. Cutting may be done with sharp shears, a knife-like implement or handheld power (e.g., “cutoff”) saws. Cut grid to conform to manhole covers and other immovable protrusions.
- If a geotextile is required, it should be placed first with the geogrid immediately on top. Alternatively, Tensor FilterGrid™ (geogrid/geotextile composite) should be considered to speed installation.
- Overlap amount as required by the project documents, or as recommended in the table below. Geogrid overlapping recommendations are based on the subgrade conditions at the time of placement of the geogrid. For unyielding, compacted subgrades, a minimum of 1 ft. of overlap should be maintained to ensure optimal performance and integrity of the Mechanically Stabilized Layer (MSL).

Summary of Tensor® Geogrid Installation Parameters

Subgrade Strength	Clear All Vegetation?	Geogrid Overlap ¹	Direct Traffic ²
CBR ≤ 1	If Possible	3 ft	NO
1 < CBR < 4	Yes	2 ft	NO
4 ≤ CBR	Yes	1 ft	YES

NOTES:

1. Nylon zip ties may be helpful to maintain overlap when CBR ≤ 0.5%
2. Rubber tire equipment only
3. A separation geotextile should be considered when separation criteria are not met, or subgrade and aggregate gradations are unknown, but of concern
4. FilterGrid should be considered to accelerate geotextile installation or when subgrade is so soft that placing the geotextile is difficult

4. TENSIONING AND PINNING

- Tensar H-Series geogrids may be anchored in place to maintain overlaps and alignment over the coverage area.
- Before fully unrolling the geogrid, anchor the beginning of the roll to the underlying surface in the center and at the corners of the roll's edge. This can be done with small piles of aggregate fill or a washer and pin. Large, heavy-gauge staples may also be used by driving them into the subsoil through the apertures of the grid.
- Unroll the geogrid. Align it and pull it taut to remove wrinkles and lay down slack with hand tension, then secure in place. If necessary, geogrid can be repositioned after it has been unrolled. Lift adjacent unrolled sheets at their edges to avoid snagging.

5. DUMPING AND SPREADING AGGREGATE FILL

- Generally, at least 4 to 6 inches is required for the initial lift thickness of aggregate fill over Tensar H-Series geogrids. However, for very soft conditions, a thicker fill layer may be required to prevent excessive rutting and/or bearing capacity failure of the underlying subgrade soils.
- Over competent subgrades (CBR > 4), aggregate fill may be dumped directly onto the geogrid. Standard, highway-legal, rubber-tired trucks (end dumps and belly dumps) may drive over the geogrid at very slow speeds (less than 5 mph) and dump aggregate fill as they advance, provided this construction traffic will not cause significant rutting upon bare subgrade. Turns and sudden stops should be avoided.
- Only operate rubber-tired equipment directly on the geogrid if the underlying subsoil is not prone to rutting under construction traffic.
- In situations where the ambient temperature is below 14 degrees F (-10 degree C), avoid placing and compacting soils that contain ice and frozen clumps of soil over the geogrid. Also, restrict direct trafficking by rubber-tired equipment over the geogrid.

6. COMPACTING

- Standard compaction methods may be used unless the soils are very soft. In these cases, static instead of vibratory compaction is prudent, particularly over fine-grained, non-cohesive soils such as silt.
- Compact aggregate fill to project specifications after it has been graded smooth and before it is subject to accumulated traffic. Inadequate compaction will result in surface rutting under wheel loads. This rutting reduces the total effective thickness of the fill and increases stress on the subgrade.

7. SPECIAL CONSIDERATIONS

TRENCHING:

Tensar geogrids are routinely excavated and punched through in order to place guardrail posts, bridge piers, and underground utilities. When backfilling a trench, the geogrid can be replaced by cutting a new piece to size and placing it in its proper position according to the design.

SURFACE RUTTING

If deep rutting occurs beneath truck wheels, do not grade out the ruts. Rutting is normally indicative of fill that is too thin, too wet or inadequately compacted. Grading out the rut will reduce aggregate fill thickness between the wheel paths and may lead to geogrid exposure.

Fill in the ruts with additional specified aggregate fill and compact. This places extra fill where it's needed and may prevent further rutting under channelized traffic.

Crown the fill during the grading process to ensure positive drainage and to prevent fill saturation.

SATURATED SUBGRADE:

Static compaction is recommended in saturated subgrade conditions. Open-graded stone with a geotextile below the geogrid or well-graded sand may be beneficial for the initial bridging lift. These fill types may need to be capped with dense graded aggregate to pave or pass a proof roll.

MAKE REPAIRS

If Tensar H-Series geogrid becomes damaged during or after installation, repair it by patching the area with the following measures:

1. Remove fill from the surface of the damaged geogrid and clear a three foot area around the damage.
2. The geogrid patch should cover the damaged area and extend three feet beyond it in all directions.

COLD WEATHER:

Store geogrid above -20° F (-29° C) and avoid handling below 14° F (-10° C). At sub-freezing temperatures, Tensar H-Series geogrid is less impact resistant and can be fractured with dynamic force (e.g. striking with a hammer). Other aspects of dynamic loading associated with very cold temperatures should be avoided.

This guide covers a broad range of typical construction scenarios, but can not account for every possible situation.

If you have questions regarding a specific project, call 800-TENSAR-1 or visit www.TensarCorp.com.

