

Terrafix THP - THP Installation Guidelines

The successful use of geotextiles requires proper installation. The four basis steps of proper installation include:

- Subgrade preparation
- Geotextile placement
- Aggregate placement
- Aggregate compaction

Geotextiles can be used in most weather and temperature conditions. Adequate planning and preparation for each installation step will speed up construction and ensure good performance.

The following guidelines are intended to assist the contractor responsible for installation and are considered guidelines for common construction conditions. Specific site conditions, design requirements, or other variables may require modification to these guidelines.

Subgrade Preparation

The site should be cleared of tree stumps, large stones, and other sharp objects that could puncture the fabric. This step should be performed regardless of subgrade strength.

Roadway subgrade preparation typically involves removal of all vegetation, roots, and topsoil. Localized soft or otherwise unsuitable subgrade areas may be required to be excavated and backfilled with select material. In some very soft soil applications, it is beneficial to leave vegetation, roots, and topsoil in place to limit subgrade soil disturbance and loss of strength.

Geotextile Placement

The geotextile should be rolled out onto the subgrade beginning at a point that allows easy access to construction equipment yet is consistent with the layout plan. On very soft subgrades (CBR<1) the fabric layout and aggregate placement should begin on firm soil on the site perimeter, to establish an "anchor point". From there the fabric can be rolled into softer sections. The geotextile should not be dragged across the subgrade.

The geotextile is usually laid in the direction of construction traffic; however, specific project dimension may alter this layout. Geotextile panels should be overlapped both side-to-side and end-to-end, in the direction of aggregate placement. The recommended overlap ranges from 1 to 3 feet, depending on subgrade strength. Overlap recommendation over a well-prepared smooth subgrade is one foot if subgrade is compacted to 90 per cent of Modified Proctor maximum dry density (ASTM D1557) with THP/THM woven product being used.

SUMMARY OF TERRAFIX GEOGRID INSTALLATION PARAMETERS

Subgrade Strength	Clear All Vegetation?	Geogrid Overlap	Zip Ties or Staples?	Direct Traffic?	Separation: Non-woven Geotextile?
CBR ≤ 0.5	N	3 ft	Y	N	Review Req'd
0.5 ≤ CBR ≤ 2	Usually	2-3 ft	N	N	Review Req'd
2 ≤ CBR ≤ 4	Y	1-2 ft	N	Limited	Review Req'd
4 ≤ CBR	Y	1 ft	N	Y	N

Y - Yes

N - No

CBR (California Bearing Ratio) correlation - please check the pocket card

Alternatively, adjacent fabric edges can be sewn together rather than overlapped. Sewn seams must be used when the geotextile provides significant tensile reinforcement. This is the case, for example, when the subgrade is very soft (CBR<0.5). Sewn seam strength and fabric orientation are important design parameters. In these critical applications, adjacent panels must be placed and sewn in accordance with the specifications provided by the design engineer.

Field sewing is performed using a portable sewing machine, powered by a generator, and typically requires three or four laborers. Pre-sewn panels can be supplied from Terrafix if required.

Soil, rocks, or pins can be used to hold fabric edges and overlaps down until aggregate is placed. On curves, the geotextile may be folded or cut to confirm the curve. The fold or overlap should be in the direction of construction and can be held in place as described above.

Aggregate Placement

Aggregate is placed and spread on the fabric using conventional construction practices and equipment. Soil, rocks, or pins should be used to anchor the leading edge of the fabric to prevent it from lifting during placement of the first aggregate lift. The aggregate is then spread over the geotextile.

A tracked bulldozer is best used for this operation. Low ground pressure models are recommended for work on soft subgrades.

Lift thickness should not be less than 6 inches. The first lift should be as thick as necessary to limit rutting to less than 4" inches. While spreading, the bulldozer should blade into the load and slightly upward to prevent stressing the fabric. This procedure should be followed for each load until the fabric is completely covered. The dozer operator can determine which areas may need additional aggregate for good stability by observing aggregate layer rutting.

Over soft subgrades, care should be taken during aggregate placement to ensure that the fabric is not moved out of position nor the subgrade overstressed. Over some very soft soil conditions, "mud waves" may appear during or after aggregate placement. Mud waves result from overstressing the subgrade during fill placement, causing the subsurface soil to move away and up from the loaded area. They are normally not a problem if they do not heave above the surface of the aggregate base.

Sudden stops or turns by equipment operating over the geotextile should be avoided. Under typical conditions, vehicles should not be allowed to drive directly on the geotextile. If space constraints make this impractical, the possible damage from direct vehicle contact should be evaluated on a test section of the geotextile. If the fabric is damaged such that it cannot fulfill project requirements a more damaged-resistant geotextile should be specified.

If the fabric is damaged during installation, the damaged section should be exposed and a patch of fabric placed over it. The patch should be large enough to overlap into undamaged areas as recommended in Table 1. The aggregate is then replaced and compacted.

Aggregate Compaction

The aggregate must be compacted as required by project specifications. The aggregate should be initially compacted by "walking" the tracked bulldozer back and forth over the aggregate while waiting for the next aggregate load. Construction traffic will then compact the aggregate until reasonable stability is obtained.

Final compaction is achieved by rolling the area with a vibratory compactor, first without vibration for several passes and then with full vibration. Any weak areas found during final compaction usually indicated inadequate aggregate thickness in those locations.

Do not grade ruts down; simply fill with additional aggregate and compact to the specified density. This also applies to any future rut maintenance that might be required.

Construction Monitoring

It is important that the construction conditions and process be monitored. If the actual subgrade has lower strength than that assumed for design, the structural section design thicknesses must be re-evaluated.

Observation of rutting of the aggregate layer, for example, can pinpoint weak subgrade areas, allowing design adjustments to be made on site if necessary.

Steps to Repair THP-THM Geotextile Damage During Installation:

1. Expose the Damage: Identify and expose the damaged section of the fabric.
2. Apply a Patch: Place a fabric patch over the damaged area.
3. Ensure Proper Overlap: The patch must be large enough to overlap onto undamaged fabric, with the specific overlap recommended in Table 1.
4. Replace Aggregate: Once the patch is secured, replace the aggregate material.
5. Compact the Aggregate: After replacing the aggregate, compact it to complete the repair.