

WINFAB Soil Separation/Stabilization Geotextiles

Willacoochee Industrial Fabrics' geotextiles can help support and extend the life of parking lots, paved and unpaved roadways, loading docks, etc. by providing separation and/or stabilization of the different components of the structure. Our fabrics will give the project a permeable separation and/or stabilization layer, keep the aggregate and subsoil's from mixing, allow water drainage, and enhance the structural integrity of the subgrade while helping to minimize costs.

Proper installation requires these four steps:

- Preparation of the subgrade
- Placement of the geotextile
- Placement of the aggregate
- Compaction of the aggregate

Proper planning is essential for each step in the process of geotextile installation in order to ensure timely installation and attainment of all of the geotextile's advantages. These guidelines are to assist in the installation of geotextiles for separation/stabilization.

These guidelines are basic suggestions intended for the purpose of assisting the installer in the proper preparation and installation of the specified geotextile. Specific site conditions and variables may require alterations and changes to these guidelines. Please check with the project engineer for any specific installation preparations/requirements.

Site Preparation

The site should be cleared of any debris (large stones, tree stumps, and vegetation) to prevent puncture or damage of the fabric. This step is mandatory, regardless of the subgrade.

Typical Roadway preparation requires the removal of all vegetation and topsoil. Unsuitable subgrade areas will have to be excavated and backfilled with suitable material before proper installation can take place.

Geotextile Placement

The geotextile should be rolled out on the prepared subgrade site where it will be easily accessible to construction equipment while still complying with the layout plan. On soft subgrades (CBR<1) the aggregate placement and fabric layout should begin on firm soil at the site perimeter to create a solid “anchor point” from this point the fabric can be rolled onto softer sections. Placement of the fabric is achieved by rolling the geotextile on the subgrade. The geotextile is most commonly laid with the direction of construction traffic. Some project designs or dimensions can alter the layout of the geotextile. For proper installation, the panels should be overlapped end to end and side to side in the same direction of the aggregate placement. Recommended overlap ranges from 1.5 ft. to 3.0 feet, according to subgrade strength. Recommendations for proper overlap of the geotextiles can be found in Table 1.

Table 1.

Subgrade CBR Value	Recommended Minimum Overlap
< 0.5	Sewn Seam Required
> 0.5 to 1	3 ft.
> 1 to 2	2.5 ft.
> 2	1.5 ft.

Adjacent edges can also be sewn together. Sewn seams are required if the geotextile is providing significant tensile strength reinforcement. This is usually this case for example, when it is being applied to a very soft subgrade (CBR<0.5). Fabric orientation and sewn seam strength are important design parameters in these applications. The project engineer should be consulted for specific instruction on how to properly sew the panels for the specific project. Sewing the panels together onsite requires the use of a portable sewing machine. Pre-sewn panels can be obtained from Willacoochee Industrial Fabrics.

To hold the fabric in place until the aggregate is installed it is acceptable to use either pins, weights, and/or soil. The fabric may be folded, overlapped, or cut to conform to curves in the design. The direction of the fold or overlap should be in the direction of the construction and can be held in place using any of the above mentioned items.

Aggregate Placement

The aggregate is placed and spread on top of the geotextile using normal acceptable construction methods. The geotextile should be held in place with pins, rocks, and/or soil on the leading edge to prevent it from lifting during the initial placement of the first aggregate. The aggregate should be back dumped. Trucks or other construction vehicles should not be driven directly on the geotextile. Tracked bulldozers are recommended to spread the aggregate. A low ground pressure model is best suited for working on soft subgrades.

There should be no less than 6 inches of lift. To limit rutting to less than 4 inches, the first lift can be as thick as necessary. The bulldozer operator should position the blade at a slight upward angle to prevent stressing of the fabric during spreading. Follow the same procedure for additional loads until the fabric is completely covered. Additional aggregate may be needed in certain areas to obtain suitable stability. This is determined by the amount of rutting observed during the spreading process. On soft subgrades, care should be taken to avoid inadvertent movement of the geotextile during aggregate placement.

Vehicles should not be allowed to drive directly on the geotextile. Equipment working directly on top of the aggregate should not make any sudden stops or turns as this can damage the geotextile. If damage is observed to the geotextile during installation, a patch should be placed over the damage area that is large enough to cover the damaged area as well as extending over the surrounding undamaged area as recommended in Table 1. After the patching is complete, the aggregate can then be replaced and the project can continue.

Aggregate Compaction

Compaction guidelines should be specified in the project specifications. Standard compaction methods can be used unless very soft soils are present. A vibratory compactor should be used to perform the final compaction. The first phase with the vibratory compactor should be done with the vibration off for several passes. This process should be repeated for several passes with the vibration on. If weak areas are observed during the final compaction, this is a sign of inadequate thickness of the aggregate and the areas should be filled with additional aggregate and compacted.

Construction Monitoring

Throughout the construction process all conditions of the construction should be monitored for any deviations from what was anticipated by the project engineer. Changes or differences in the subgrade strength, rutting, or any other negative observations should be immediately addressed with the project engineer to determine if corrective action such as additional aggregate is needed.

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