



# INSTALLATION GUIDE

Geosynthetics

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## Introduction

This document is prepared to help ensure the geosynthetic soil reinforcement and subsurface drainage, once installed, will perform to their intended design functions. To do so, the geosynthetic must be identified, handled, stored, and installed in such a way that its physical property values are not affected and the design conditions are ultimately met as intended. This document does not account for every possible construction scenario. However, this document contains information consistent with generally accepted practices of identifying, handling, storing, and installing geosynthetic materials for most roadway applications. If you have questions regarding a specific project or encounter conditions other than those described herein, please contact your local ADS representative. Failure to follow these guidelines may result in the unnecessary failure of the geosynthetic in a properly designed application.

## Stabilization and Rock Underlayment

### Site Preparation

Clear, grub, and excavate (as required) to the plan subgrade or undercut elevation, stripping topsoil, deleterious debris, and unsuitable material from the site. Cut stumps and other projecting vegetation as close and even to the ground surface as practical. Specialized equipment with low ground pressure, as directed by the Engineer, may be required for very soft soils ( $CBR \leq 1.5\%$ ) to minimize subgrade disturbance. In addition, it may also be beneficial to leave root mats in place in such instances. The surface of the subgrade should be relatively smooth and level, and depressions or humps greater than 6 inches (15 cm) should be graded out (i.e., back bladed/back dragged).

### Geosynthetic Placement

The geosynthetic reinforcement shall be placed directly on the prepared subgrade. It should be rolled out flat and tight with no folds or wrinkles. Unroll the geosynthetic in the direction of travel so that the machine direction (i.e. long axis) of the roll is parallel with channelized traffic patterns. Adjacent rolls should be overlapped along their sides and ends as a function of subgrade strength as follows:

$CBR \geq 3\%$	12" to 18" (30 - 45 cm) overlap
$1\% \leq CBR < 3\%$	24" to 36" (60 - 90 cm) overlap
$0.5\% < CBR < 1\%$	36" (90 cm) overlap or Sewn*
$CBR < 0.5\%$	Sewn*

\*Please contact your local ADS Representative for recommended sewing practices

If the need for 40 inches (1 M) of overlap is reached, it is strongly suggested that the overlap is sewn or otherwise adhered to limit the potential formation of a slip plane between the overlapped panels. *Note: very heavy loading and very soft subgrades will also warrant sewn seams instead of overlapping panels.* Prior to fill placement, the geosynthetic can be held in place using U-shaped sod staples or simply by strategically placing shovelfuls of the fill to weigh down the geosynthetic. Overlap ("shingle") the geosynthetics in the direction fill will be spread to avoid peeling-back of the geosynthetic at overlaps by the advancing fill, just as shingles on a roof are installed to prevent water flowing beneath the adjacent row of shingles below. Cut and overlap the geosynthetic to accommodate curves. Cutting may be done with sharp shears, razor knives or handheld power (i.e., "cutoff") saws. Cut the geosynthetic to conform to immovable protrusions, such as manhole covers and vertical utilities.



# French and Trench Drains

## Site Preparation

Excavate the drainage trench to the design dimensions, placing excavated material well away from the sides of the trench. If unstable soil conditions exist, it may be necessary to excavate a trench with sloping sides to ensure wall integrity during the rest of the project. Trim any large roots to be flush with the trench sides to prevent puncturing or tearing the geosynthetic. Refill any voids with fill dirt so that the excavation sides are smooth.

## Geosynthetic Placement

Cut geosynthetic to proper width prior to placement. Width should be enough to conform to the trench perimeter with at least a 6 inch (15 cm) top overlap. Place the geosynthetic roll over the trench and unroll enough geosynthetic that the geosynthetic can be placed down into the trench. Anchor the edges of the geosynthetic with heavy objects to prevent the geosynthetic from falling into the trench. Where overlaps are necessary between rolls, allow for 3 feet (1 M) overlap from the upstream to the downstream roll.