



Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

August 6, 2012

Monica Gourdine
Program Operations Engineer
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: Office of Design, Specifications
Section **145**
Proposed Specification: **1450302 Geosynthetic Reinforcement.**

Dear Ms. Gourdine:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

These changes were proposed by Larry Jones in the State Structures Design Office to resolve multiple issues reported by Districts regarding a potential conflict in 145-4.2.2, and to allow the optional use of T-99 for maximum density determination of A-3 & A-2-4 soils.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to SP965TT or trey.tillander@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at 414-4140.

Sincerely,

V. Y. "Trey" Tillander, III, P.E.
State Specifications Engineer

TT/cah

Attachment

cc: Florida Transportation Builders' Assoc.
State Construction Engineer

GEOSYNTHETIC REINFORCEMENT.**(REV 86-611-12)**

SUBARTICLE 145-3.2 (Page 192) is deleted and the following substituted:

145-3.2 Backfill Materials: Use only free draining backfill material in the reinforced *fill* volume as shown in the plans meeting the following gradation limits as determined in accordance with AASHTO T-27 and FM 1 T-011:

Sieve Size	Percent Passing
3 1/2 inches	100
3/4 inch	70 to 100
No. 4	30 to 100
No. 40	15 to 100
No. 100	5 to 65
No. 200	0 to 15

Do not use backfill material containing more than 2.0% by weight of organic material, as determined by FM 1-T 267 and by averaging the test results for three randomly selected, *representative* samples from each stratum or stockpile of a particular material. Consider the stratum or stockpile unsuitable for construction of the reinforced *fill* volume if an individual test value exceeds 3.0%.

Use backfill with a maximum plasticity index of six as determined by AASHTO T-90, and a maximum liquid limit of 15 as determined by AASHTO T-89. Use backfill materials with a pH between 4.5 and 10.0. When metal pipes or other metal items are embedded in the backfill, use backfill with a pH between 6.0 and 10.0. Do not use soil cement or lime stabilized backfill unless approved by the Engineer.

Submit a copy of certified test results and a certificate of compliance certifying that the fill material meets the above requirements to the Engineer for review and approval prior to delivering the backfill to the site. Use a Department-approved testing laboratory for all testing. Submit an alternate design, prepared in accordance with 145-2, when backfill meeting alternate gradation limits is proposed.

SUBARTICLE 145-4.2.2 (Page 193) is deleted and the following substituted:

145-4.2.2 Geosynthetic Placement: Place the geosynthetics at the proper elevation, location and orientation as shown on the plans. In general, place the geosynthetics used for slope stabilization such that its primary direction of tensile strength is perpendicular to the plan face of the slope. Pull the geosynthetic material tight, and secure it as necessary to lay flat against the soil prior to fill placement.

Place adjacent rolls of geosynthetic to maintain 100% horizontal coverage *at the face of the slope*. ~~Do~~ *When placing geosynthetic for curved embankments, do* not allow less than 50% horizontal coverage or an unreinforced horizontal spacing greater than 3 feet *at the end of the reinforcement farthest from the face of the slope*. Do

not allow vertical spacing of the geosynthetic layers to exceed the spacing shown on the shop drawings.

Do not make any splices or seams in the primary direction of tensile strength in the geosynthetic without approval of the Engineer. When splices in the primary direction are approved, make splices full width of the geosynthetic strip by using a similar material with similar strength. Use a splice mechanism that allows a minimum of 95% load transfer from piece to piece of geosynthetic. Make only one splice per length of geosynthetic. Do not place splices within 6 feet of the slope face, within 6 feet below top of slope, or horizontally adjacent to another splice.

Place only that amount of geosynthetic material, including facing and drainage material, which will be covered in a single days production.

Do not operate equipment directly on the geosynthetics. Operate equipment such that no turning movements occur on the areas where geosynthetic is in place with less than 12 inches of fill cover. Fill and compact ruts of more than 3 inches in depth as they develop.

SUBARTICLE 145-4.2.3 (Page 194) is deleted and the following substituted:

145-4.2.3 Backfill Placement: Maintain uniform moisture content of the backfill material prior to and during compaction throughout each layer of material. Use backfill material having a placement moisture content within 2% on the dry side of optimum. Do not place wet backfill with moisture content greater than optimum in the fill. Spread backfill material over the geosynthetic in the direction of geosynthetic overlaps. Do not stockpile backfill materials on the installed geosynthetics. Avoid construction procedures or equipment which, in the opinion of the Engineer, cause excessive mudwaving.

Compact the backfill using either smooth wheel or rubber tire rollers. Do not use sheepsfoot, grid rollers, or other types of equipment employing a foot. At the end of each day's operation, slope the backfill surface in order to permit runoff of rainwater away from the slope face, or provide some other positive drainage.

Place and compact the backfill material in accordance with Section 120 to obtain a density in each soil layer of at least 95% of the maximum density as determined by AASHTO T-180.

145-4.2.3.1 Optional Acceptance Criteria for A-3 and A-2-4

Materials: Obtain a minimum density of 100% of the maximum dry density as determined by AASHTO T-99. The combined width from both reinforced fill volume and retained fill material may be considered the same LOT in accordance with 120-8.1, if both volumes comprise the same material and both are compacted with the same procedure, lift thickness, equipment and compacting effort.

GEOSYNTHETIC REINFORCEMENT.**(REV 8-6-12)**

SUBARTICLE 145-3.2 (Page 192) is deleted and the following substituted:

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Sieve Size	Percent Passing
3 1/2 inches	100
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Do not use backfill material containing more than 2.0% by weight of organic material, as determined by FM 1-T 267 and by averaging the test results for three randomly selected, representative samples from each stratum or stockpile of a particular material. Consider the stratum or stockpile unsuitable for construction of the reinforced fill volume if an individual test value exceeds 3.0%.

Use backfill with a maximum plasticity index of six as determined by AASHTO T-90, and a maximum liquid limit of 15 as determined by AASHTO T-89. Use backfill materials with a pH between 4.5 and 10.0. When metal pipes or other metal items are embedded in the backfill, use backfill with a pH between 6.0 and 10.0. Do not use soil cement or lime stabilized backfill unless approved by the Engineer.

Submit a copy of certified test results and a certificate of compliance certifying that the fill material meets the above requirements to the Engineer for review and approval prior to delivering the backfill to the site. Use a Department-approved testing laboratory for all testing. Submit an alternate design, prepared in accordance with 145-2, when backfill meeting alternate gradation limits is proposed.

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Materials: Obtain a minimum density of 100% of the maximum dry density as determined by AASHTO T-99. The combined width from both reinforced fill volume and retained fill material may be considered the same LOT in accordance with 120-8.1, if both volumes comprise the same material and both are compacted with the same procedure, lift thickness, equipment and compacting effort.