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Florida Department of Transportation

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ROADWAY DESIGN BULLETIN 14-15
STRUCTURES DESIGN BULLETIN 14-09
(FHWA Approved: September 24, 2014)

DATE: September 26, 2014

TO: District Directors of Transportation Operations, District Directors of Transportation Development, District Design Engineers, District Consultant Project Management Engineers, District Construction Engineers, District Geotechnical Engineers, District Structures Design Engineers, District Roadway Design Engineers, Program Management Engineers

FROM: Michael Shepard, P E, State Roadway Design Engineer
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SUBJECT: **Geosynthetic Materials**

This bulletin implements revised requirements for specifying geosynthetic materials in the Plans.

REQUIREMENTS

1. ***Instructions for Design Standards, Index 501(IDS-501)*** has been revised and placed on the ***Design Standards Revision (DSR)*** webpage.

2. Delete the last paragraph in ***Plans Preparation Manual, Volume 1, Section 31.1*** and replace it with the following:

   Approved products for these designs are included in the APL (prior to 2015, these products were listed on ***Design Standards Index 501***, however, after January 2015 these products are only included in the APL).

3. Delete ***Plans Preparation Manual, Volume 1, Section 31.2*** and replace with the following:

   Provide the geosynthetic application type and any specific requirements to ensure the geosynthetic selected from the APL will be suitable. (Refer to ***Specification 985*** to determine which test values will be available for selecting the products for each application from the APL.)

   Control drawings are required which depict the geometrics (plan and elevation view) of the area being reinforced. These designs are generic and are not based upon any one specific product or supplier; the product brand names are not shown on the plans. For reinforced slopes the designer shall design the slopes using the maximum reinforcement spacings allowed. For soft soils the designer shall design the reinforcement and provide the minimum total strength required.

   The plans shall depict the required reinforcement strength based on the maximum allowed vertical spacing of these materials, the extent and the number of layers of geosynthetic reinforcement, vertical spacing of geosynthetic reinforcement, orientation of geosynthetic, facing details, details at special structures or obstructions, typical construction sequence, and top and bottom elevations of the geosynthetic reinforcement layers. Surface treatments and any other required design parameters or limitations shall also be shown in the plans.

4. In the ***Plans Preparation Manual, Volume 1, Section 31.3, Section 31.4.1*** and ***Section 31.4.2***, delete references to ***Design Standards Index 501*** and replace them with references to the APL.

5. Delete ***Structures Design Guidelines 3.13.2. J.5***, and replace it with the following:

   5. For geosynthetic reinforcements use R-3 geosynthetics meeting the requirements of ***Specifications Section 985***. Limit T_{max} and T_o ***(LRFD [11.10.6.4.1])*** to $T_{2\%}$ for permanent walls and $T_{5\%}$ for temporary walls.

6. Delete ***Structures Design Guidelines 3.13.4. N and 3.13.4.O*** and replace them with the following:

   N. For the RSF, use a woven geotextile listed in ***Section 985*** of the ***Specifications*** and approved for use in GRS (Type R-1) with a minimum ultimate tensile strength of 4800 lb/ft in both the machine and cross directions and a maximum Apparent Opening Size (AOS) of 0.035 in.

   O. For GRS backfill reinforcement, use a biaxial geogrid or woven geotextile reinforcement consisting of structural geosynthetic listed in ***Section 985*** of the ***Specifications*** and approved for use in GRS (Type R-1) with a minimum ultimate tensile strength of 4800 lb/ft in both the machine and cross directions.

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COMMENTARY

All geosynthetic materials have been removed from ***Indexes 501 and 199*** (***Index 199*** was deleted with the release of the ***2015 Design Standards***), and will be listed on the Approved Products List (APL) in January 2015. The requirements for APL inclusion are presented in ***Supplemental Specification 985*** that was recently published by the State Specifications Office.

The Class and Application Usage categories of all geotextiles and geogrids have been revised and merged into ***Supplemental Specification 985*** which required clarification in the ***Plans Preparation Manual*** and ***Structures Design Guidelines*** regarding specifying them in the Plans. The ***Soils and Foundations Handbook*** will also be revised for clarification in the coming months.

IMPLEMENTATION

These revisions are effective for all projects beginning with the January 2015 letting.

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