



South Carolina
Department of Transportation

DM0105

April 13, 2005

MEMORANDUM TO TEAM LEADERS AND CONSULTANTS

SUBJECT: Attachment of Soil Reinforcements to Bridge Components

Soil reinforcements such as steel strips, bar mats, and geosynthetics are commonly used in mechanically stabilized earth (MSE) wall construction to provide a tensile resistance within the reinforced soil mass. In some cases, these types of soil reinforcements have been attached to bridge end bent caps and end walls to resist the lateral loads placed on these components.

Soil reinforcements do not mobilize their tensile strength capacity until they have displaced relative to the soil. The amount of displacement required to mobilize the soil reinforcement tensile strength capacity varies and is dependent on the type of soil reinforcement and type of backfill used. Relative displacement of $\frac{3}{4}$ " to 1" has been observed when reinforcements are placed in well-compacted "select" backfill. Larger displacements of MSE walls have been observed when soil reinforcements have been placed in loose fill and/or fill not meeting "select" backfill specifications. Predicting the soil-structure interaction between the soil reinforcement and the reinforced backfill is very complex and currently the accuracy of predicting movements is not sufficient for the purposes of designing bridge wall abutments.

Therefore, the practice of attaching soil reinforcements to bridge components shall be discontinued. For previously completed plans that do not conform to the requirements of this memorandum, the Bridge Design Engineer will, on a case-by-case basis, assess the need for revisions.

DEM

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Bridge Design Engineer

DEM/slb

cc: Assistant Bridge Design Engineers
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