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DESIGN MEMORANDUM NO. 3-97

TO: All Design Engineers  
All Active Consultants  
All Division Directors

FROM: Steve Goodpaster, Director  
Division Of Bridge Design

John Sacksteder, Director  
Division of Highway Design

Jim Stone, Director  
Division of Materials

DATE: January 13, 1997

SUBJECT: Scour Potential for Proposed Bridges

The following changes in plan development are effective immediately:

The current Bridge Design Manual, Drainage Guidance Manual, and the Geotechnical Manual state the bridge soundings shall be performed after the Advance Drainage Folder is approved by the Division of Bridge Design. To expedite the scour review of a proposed bridge, the sounding should commence after the bridge location and span arrangement are reviewed. This review is documented in the Drainage Inspection Report . This report ( or the drainage portion of the Preliminary Line and Grade Inspection Report) shall contain the proposed sounding layout.

The Drainage Inspection Report for projects with P L & G Inspections after 2/1/97 shall include the recommended location, span arrangement, abutment type, and the sounding layout for the piers and abutments.

The steps used to determine the scour potential for a proposed bridge are attached.

Any questions concerning this Memorandum should be addressed to Gary Poole , Division of Highway Design, Jim King , Division of Bridge Design, or Bill Broyles, Division of Materials.

This Memorandum shall become void when superseded or when the contents are placed in the appropriate Guidance Manuals.

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ATTACHMENT

The steps used to determine the scour potential for a proposed bridge are:

- The district or consultant drainage engineer shall determine the location, span arrangement, abutment type, and roadway grade to best fit the stream crossing.

- The drainage engineer shall submit the Preliminary Drainage Folder for a review of these factors by the district and the central office drainage personnel and submit Preliminary Plans for a review by the district design personnel, the central office design personnel, the bridge design personnel, and the geotechnical personnel.
  - These interested parties shall submit their comments and recommendations during the office review or the field review of the proposed bridge.
  - The drainage engineer shall submit the Drainage Inspection Report which is a summary of the comments and recommendations. Attached to this report shall be a proposed sounding layout.
  - The Division of Materials, Geotechnical Branch shall perform the subsurface investigation to determine the scour potential of bedrock and /or the D50 of the soil foundation in millimeters and present this information to the Drainage Section, Division of Highway Design. If the foundations bear upon non-scourable rock, the geotechnical report will be issued at this time.
  - The drainage engineer shall determine the scour potential based upon this Geotechnical information and the procedures shown in Drainage Guidance Manual, H E C - 11, H E C - 18 and H E C - 20.
  - The drainage engineer shall submit the Advance Drainage Folder which includes the hydraulics, scour calculations and the proposed bridge foundation based upon the scour potential.
  - The Division of Materials, Geotechnical Branch shall issue a Geotechnical Report which will present the foundation design recommendations.
  - The drainage engineer shall submit the Final Drainage Folder which documents the design of the recommended bridge.
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