Structural Engineering Guidance No. 12-01

Date: January 5, 2012

Distribution: All Engineering Resources

SUBJECT: TOP SURFACE PREPARATION AND MEMBRANE REQUIREMENTS FOR ADJACENT

PRECAST CONCRETE BOX AND VOIDED SLAB BEAMS

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EPG Submittal Status: No Revisions To Be Submitted

Effective Date: Current Practice

Expiration/Duration: Indefinite

Background and Purpose:

Guidance is not given in the Engineering Policy Guide regarding the design and details of adjacent precast concrete box and voided slab beams and applications. Structural Engineering Guidance is used to disseminate important information regarding these beams and structures until such time that it may be decided to incorporate such guidance into the EPG.

The guidance given herein represents current practice and therefore is not new and should be regarded as formal documentation of this practice for future retrieval and use.

Guidance:

Adjacent precast concrete box and voided slab beams shall be protected with a reinforced concrete overlay (preferred) or an asphalt wearing surface. For concrete overlays, the top surface of the box and voided slab beams shall be roughened to improve bond between the overlay and the box beam. If an asphalt wearing surface is specified, the top surface of the box and voided slab beams shall be float finished and protected with a waterproof membrane. Such a finish minimizes the 1) amount of preparation and material needed for the membrane, 2) potential puncture of the membrane due to unforeseen thin spots, and 3) movement of the membrane (particularly those with a membrane applied over an asphalt binder) during paving operations.

Whichever overlay is proposed, instructions for preparing the top surface of the beams shall be noted on the plans. This is necessary because Sec 1029 of the Specifications does not give any surface finish requirements for precast concrete box and voided slab beams at this time.

Membrane Requirements:

PolyCarb by Dow is a membrane that has been used successfully for the Safe and Sound bridge replacement program and should be proposed. It was selected after many trial membranes were used unsuccessfully. A generic specification is available upon request from either Safe and Sound or the Development Section. The specification may not meet the requirements for use of proprietary products and should be reviewed for compliance on a case-by-case basis.

Suggestions and recommendations concerning this guidance or procedure should be directed to the Development Section for review and updating.