Attachment 9

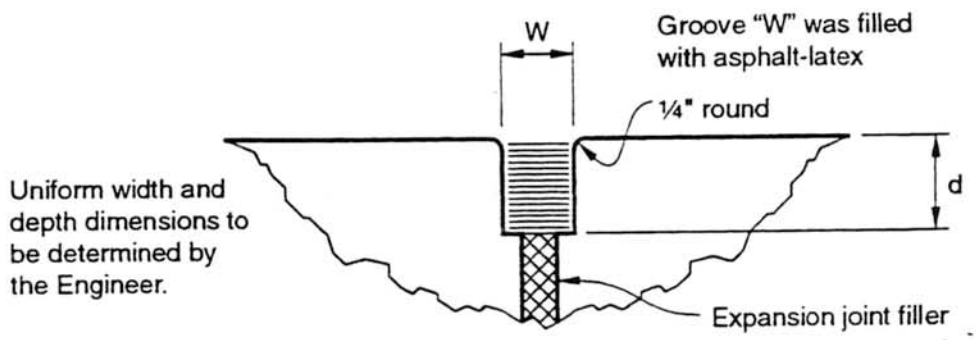
Bridge Deck Joint Rehabilitation Projects

Projects involving the rehabilitation of malfunctioning deck joints in existing structures may qualify for Federal funding under the Resurfacing, Restoring and Rehabilitation (RRR) program if the FHWA's requirements are met. The primary requirement is that the new joint be an improvement over the existing joint. Restoration of a joint or a joint seal to the original condition is not eligible. Refer to the Bridge Books in the Office of Structure Maintenance and Investigations for joint recommendations when modifying or widening an existing bridge.

To assist the District, the Structure Design project engineer should determine if the new joints will be an improvement over the existing joints, and should include a statement in the General Plan transmittal letter that the proposed joint rehabilitation is or is not considered an improvement.

The Structure Design project engineer may determine if the replacement seal is an improvement over the existing seal by using the following guidelines:

A. MR = ½ inch or less: A Type A seal is used to replace existing seals constructed in accordance with Detail L-1 (as shown below) or to replace any other pourable seal placed under contracts completed before 1966.



Detail L-1

B. MR = Over ½" to 2": A Type B seal is used to replace any pourable seal.

Deck joints of questionable nature can be discussed with the Joint Seals and Bearing Technical Specialist.

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In order for a project involving deck joints to qualify for Federal RRR funding, at least one of the two following conditions must also be met:

1. The project should improve all of the joints for a substantial length of roadway or be part of a pavement overlay project of a substantial length.

2. The cost of the proposed project should be significantly more than the cost of a project that normally would be accomplished by State maintenance forces or handled by an incidental maintenance contract.

The District's project engineer will assess these additional two requirements and determine if Federal funds should be applied for.

In new construction projects joint geometry is readily controllable, being set to accommodate the joint seal.

Rehabilitation projects differ from new construction projects in that the joint seal is selected to fit the existing joint.

Rehabilitation projects with Type B seals require that both the Min W_1, the maximum joint width at minimum temperature (after prestress shortening), and the MR be indicated on the plans. To ensure a correct fit, the W_1 of the joint seal must be greater than the Min W_1 of the joint. To minimize confusion, W_1 of the joint will be referred to as Min W_1.

$$\text{Min } W_1 = W_e + \tfrac{1}{2}'' + \left(\frac{T_{str} - T_{min}}{①}\right)(②)\left(\frac{④}{100}\right)$$

Where:

Min W_1	=	maximum joint width in inches
W_e	=	existing joint width in inches
½"	=	minimum practical concrete removal = ¼" each side of joint
T_{str}	=	structure temperature, degree F
T_{min}	=	minimum temperature at structure site—from DS-D-0129
①	=	temperature range at structure site—from DS-D-0129
②	=	thermal movement in inches/100 feet—from DS-D-0129
④	=	contributory length in feet—from DS-D-0129

When available, use the actual physical movement of the joint as indicated by expansion joint scribes, or marks on the barrier rail, to determine the MR and Min W_1.

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Estimate the required length of joint cleaning as well as the required length of joint seal.

The designer should add supplemental funds to the contract to cover the possibility of repairing joint spalls and cleaning expansion joints below damaged waterstops if they are not included as a repair item.

When AC overlays cross an expansion joint, the designer must determine whether to use expansion dams (*Bridge Design Details*, page 8-45), continuous AC across the joint (joints with a MR of ½" or less), or a proprietary "jointless" system. The Joint Seals and Bearings Technical Specialist and Structure Maintenance should be consulted for advice.