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RESEARCH UPDATE

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X.J.S. EXPANSION JOINT SYSTEM

Reference Category II Work Plan WP 93-R-21

Introduction

The X.J.S. Expansion Joint is a system composed of a two-component silicone sealant placed between a polymer concrete nosing. The system was installed on two expansion joints on Interstate 89 Bridge No. 72 in the Town of Winooski during the summer of 1997. The product was installed by a representative from Garvin Construction Products, the regional supplier. Cost of the complete system was \$104.23/LF.

Product Evaluation

A successful application must maintain a watertight seal, provide acceptable ride quality, and withstand traffic loading and snow plowing. The most common causes of failure with elastomeric systems, such as X.J.S., are debonding of the sealant with the face of the nosing, and destruction of the nosing material from plow strikes. Loss of bond is generally caused by traffic loading on debris collected in the joint which pulls the sealant away from the face of the nosing. Damage to the nosing is most often attributable to raised profiles on the nosing which get struck by plow blades.

The feature was inspected on September 30, 1998 after the product had been in service for 13 months. The inspection revealed minor damage to the polymer nosing. The southerly joint had three D-shaped cracks on the outer edge of the nosing, each approximately 50 mm in length. The chips could not be pulled out by hand and seem to be held in place by the silicone sealant. The exact cause of the cracks is unknown, but is most likely due to snow plowing. In spite of the cracked nosing, the silicone sealant appears to be intact through the entire length of the joint. The X.J.S. system continues to provide a watertight seal at the expansion joint and has suffered only minimal damage during its first expansion cycle.

Follow Up

The system will be inspected again next summer after an additional expansion cycle and winter maintenance. An update report will follow.