Module 3-2

Crack Sealing

Objectives

Describes recommended procedures for crack sealing operations in HMA pavements

Introduction

Crack sealing is applied to

- **Extend the service life of the existing HMA**
- **Prepare the existing pavement prior to construction of an HMA overlay**

Thermoplastic Sealant Materials

Bitumen-based materials that typically soften upon heating and harden upon cooling

- **Hot Applied**
- **Cold Applied**

Thermosetting Sealant Materials

Typically one or two-component materials that set by the release of solvents or cure through a chemical reaction

- **Chemically Cured**
- **Solvent Release**

Purpose and Application

Cracks allow moisture and debris to enter the pavement

- **Contribute to stripping, spalling, cupping, lipping, delaminating, etc.**
- **Reduce pavement and base stiffness which contributes to further load related cracking**

Purpose - seal cracks or joints

Application - Flexible and rigid pavements

Limitations and Effectiveness

There is a continuing debate regarding the cost effectiveness of crack sealing

SHRP experiments SPS-3 and SPS-4 are examining the effect of sealing activities on pavement performance

Limitations and Effectiveness

There is a general consensus among states that support sealing cracks as a cost effective rehabilitation or maintenance treatment

Design Considerations

Factors to be considered

- Climate conditions
- Highway classification
- Traffic level and % trucks
- Crack characteristics
- Materials and placement configuration
- Procedures, equipment, and safety

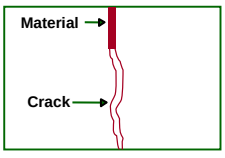
Design Considerations

Two different procedures are now defined (SHRP-H-348)

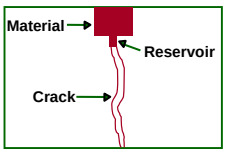
- Crack sealing
- Crack filling

Placement Configurations

Flush Fill

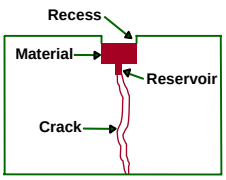


Reservoir And Flush

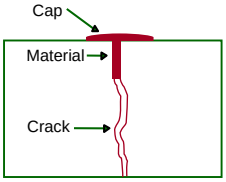


Placement Configurations

Reservoir And Recess

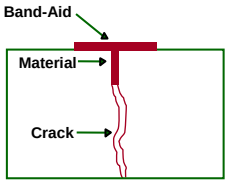


Capped

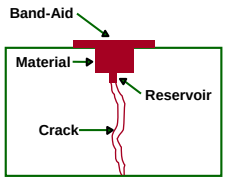


Placement Configurations

Simple Band-Aid



Recessed Band-Aid



Pavement Surveys

Information needed to determine crack sealing needs from survey

- Type of pavement
- Overall pavement condition
- Type and width of crack
- Extent of cracking

Cost Considerations

Information needed to determine costs

- Amount of crack to be filled, sealed
- Type of crack filler, sealer
- Equipment and personnel required
- Estimated performance of crack fill or seal

Construction Sequence

Crack sealing

Crack filling

Crack Sealing

Crack refacing

Crack cleaning

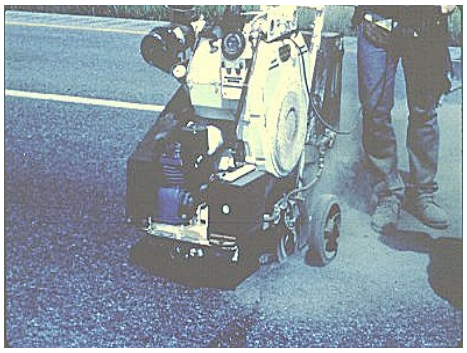
Sealant installation

Vertical Spindle Router

Rotary Impact Router

Rotary Wheel

Rotary Impact Router



Airblasting

Hot Compressed Air Lance

Hot Compressed Air Lance

Excessive Hot Air Lance

Squeegeed Sealant

Finish Crack Seal

Crack Filling

Crack cleaning

Sealant Installation

Summary

This section covered the basic aspects of crack sealing and filling which is used as a specific rehabilitation treatment, or as preparation for an HMA overlay

Included were crack sealing materials, design, and construction procedures