

## Module 3-3

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### *Patching With Bituminous Mixtures*

## Objectives

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Describe patching materials

Review procedures

## Introduction

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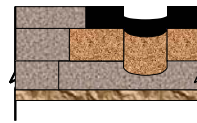
Patching the existing pavement with bituminous materials

- Extends the service life of the existing HMA
- Used in the preparation of existing pavement prior to construction of an HMA overlay

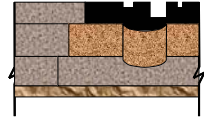
## Introduction

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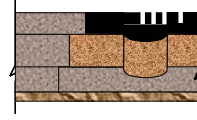
a. Weak area deflects



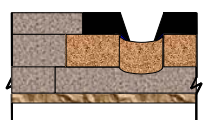
c. Pieces pop out



b. Cracks



d. Pothole



## Definitions

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### Bituminous patching materials

- Cold-mix
  - Used as temporary patches
  - Placed in stockpile and used over a period of time (Emulsion binders)
  - Special open-graded mixes
- Hot-mix asphalt (HMA)
  - Placed immediately while hot
  - Standard dense graded HMA

## Purpose and Application

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### Patching of existing HMA to:

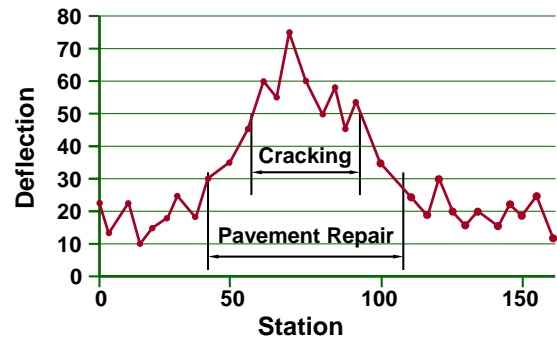
- Repair localized distress
- Improve motorist safety
- Reduce pavement roughness
- Reduce the rate of deterioration
- Repair pavement prior to overlay

## Limitations and Effectiveness

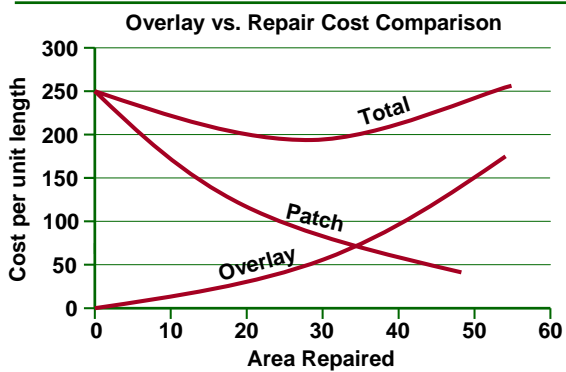
Patching is used to treat structurally or functionally deteriorated pavement

- Application may not be appropriate
- Temporary patches are temporary
- Design may not be adequate
- Principal problem may not be corrected

## Pavement Survey and Marking



## Cost Considerations



## Construction

### Winter maintenance

- "Throw and Go" the most cost effective

### Summer maintenance

- Semi-permanent patch the most cost effective
- Found to be three times more cost effective when considering full life cycle costs in a Pennsylvania study

## Construction - Poor Conditions

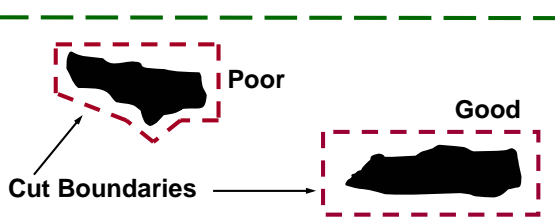


## Construction

### Procedures for construction of a semi-permanent patch

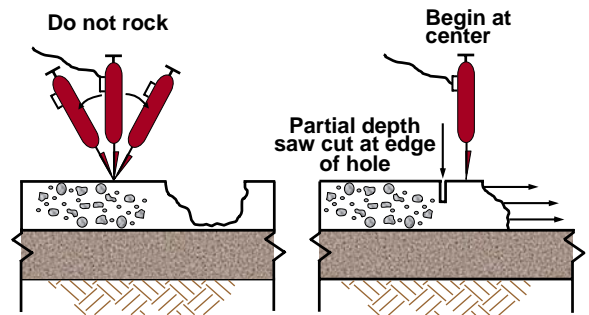
- Mark patch boundaries
- Cut boundaries
- Clean and repair foundation
- Apply tack coat
- Fill the hole with patching material
- Compact the patch
- Cleanup

### Marking Patch Boundaries



Straight boundaries, recommended rectangular  
Consider width of equipment  
Adjacent area-sound pavement

### Cut Boundaries



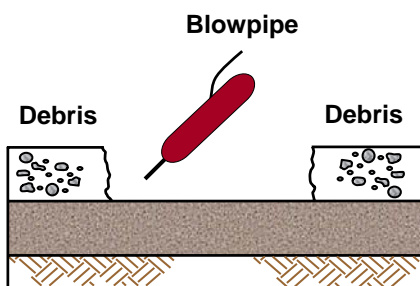
### Cut Boundaries



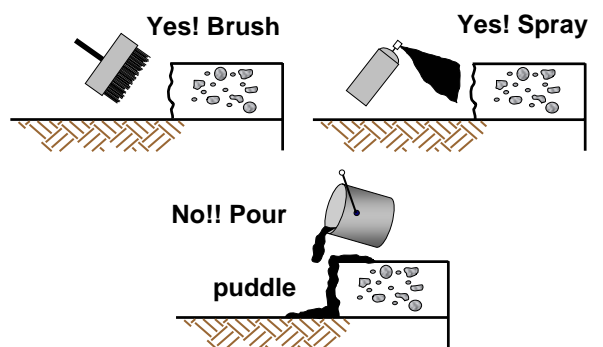
### Remove Material



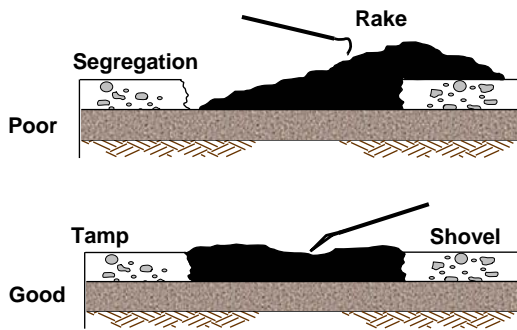
### Clean Debris



### Seal Edges

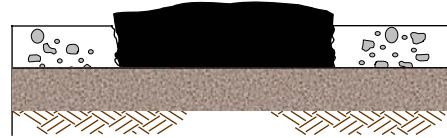


### Material Placement

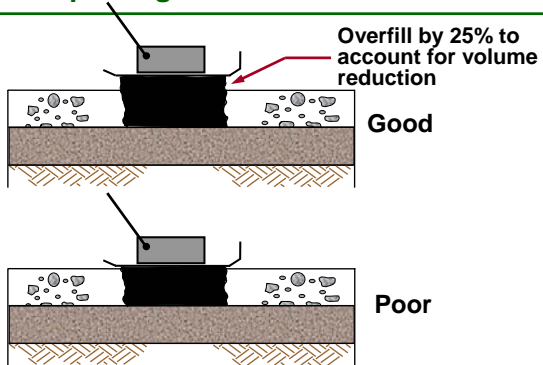


### Sufficient Material for Compaction

Max lift - 150 mm (6in)



### Compacting the Patch



### Compacting the Patch



### Finished Patch



### Automated Patching Equipment

Rosco RA-200

Durapatcher

Wildcat Roadpatcher

## Automated Patching Equipment

### Spray injection procedures

- Blow debris from hole
- Spray hole with binder for tack coat
- Blow aggregate and binder into hole
- Top off with a layer of uncoated aggregate to prevent tracking
- May be rolled to improve smoothness

## Automated Patching Equipment



## Automated Patching Equipment



## Summary

This section covered the basic aspects of patching with bituminous materials which is used for maintenance, or as preparation for an HMA overlay

Included were bituminous patching materials, design, and construction procedures