

Module 3-5

Surface Rehabilitation Treatments

Objectives

Describe the major types of surface rehabilitation techniques

Discuss the basic design principles and characteristics of the various surface treatments

Describe the construction techniques and equipment required for successful application of the surface treatments

Introduction

Surface rehabilitation techniques

- Have been historically used on low-volume roads in rural areas
- With improved materials and processes are now being used on higher volume roads

Definitions

Surface application of asphaltic material with or without aggregate

- Fog seal
- Sand seal
- Asphalt chip seal
- Slurry seal
- Micro-surfacing
- Cape seal

Fog Seal



Asphalt Chip Seal



Slurry Seal



Micro-Surfacing



Cape Seal



Functions of Surface Treatments

- Provide a new wearing surface
- Seal cracks in the surface
- Waterproof the surface
- Improve pavement surface friction and surface drainage

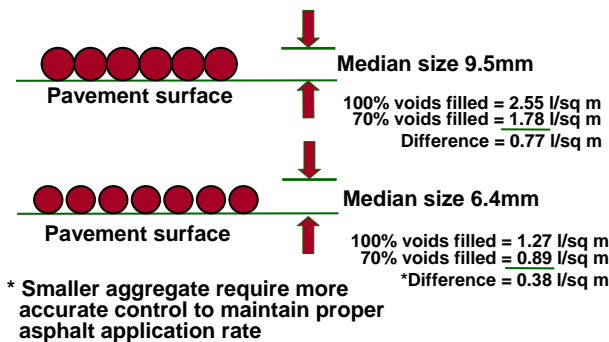
Functions of Surface Treatments

- Slow pavement weathering and aging
- Improve the surface appearance
- Provide visual delineation between the mainline pavement and the shoulder

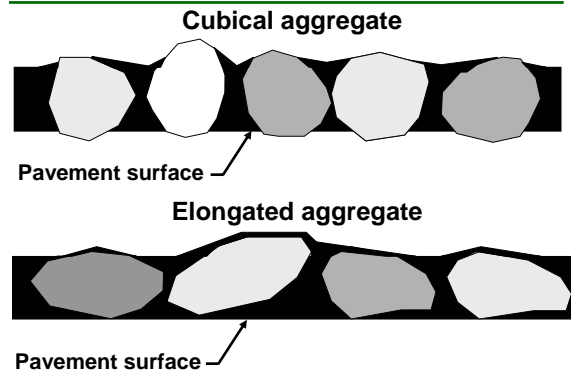
Design Considerations

- Asphalt chip seals
 - Existing pavement condition
 - Asphalt type
 - Aggregate
 - Quantity selections
 - Local conditions and experience
 - General environment

Design Considerations for Asphalt Chip Seals



Design Considerations for Asphalt Chip Seals



Design Problems - Asphalt Chip Seals



Pavement Surveys

Performance of surface treatments highly dependent upon existing surface condition

- Amount of distress may restrict the choice of surface treatments
- More severe cracking require multiple lifts of asphalt chip seal
- Distorted pavement surface may require leveling up layers

Cost Considerations

Typical surface treatment costs

- Chip seal \$0.90 /m²
- Db. chip seal \$1.35 /m²
- Slurry seal \$0.84 to \$1.14 /m²
- Micro-surfacing \$1.05 to \$2.00 /m²
- Fog seal \$0.12 to \$0.17 /m²
- Sand seal \$0.30 to \$0.48 /m²
- Cape seal \$1.70 to \$2.40 /m²

Construction Procedures

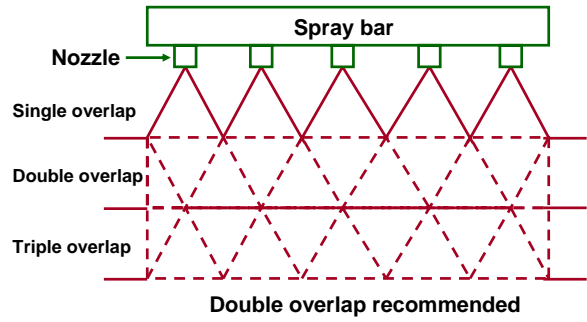
Chip seal construction issues:

- Equipment calibration
- Pavement surface preparation
- Application of asphalt
- Application of aggregate
- Rolling of aggregate
- Curing of binder
- Brooming of loose aggregate

Asphalt Application



Spray Bar on Asphalt Distributor



Rock Application



Emulsion and Rock Application



Optimum Rock Distribution



Rolling



Embedment Check



BST with 19mm Aggregate



BST Construction



BST Second Layer of 12mm Aggregate



Compaction



BST Roadway



Construction Procedures

- Fog seal
- Sand seal
- Slurry seal
- Cape seal
- Micro-surfacing

Slurry Seal



Cape Seal



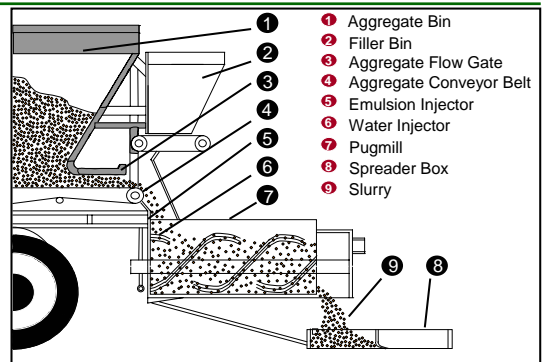
Cape Seal



Micro-Surfacing



Construction Procedures



Rutted Pavement



Rut Fill



Finished Micro-Surfacing Layer



Summary

This section covered the use of various surface treatments which may be used for specific rehabilitation treatments

Included were the various surface treatments, the materials used as well as a brief description of the types, design, and construction procedures