

CAPE SEALS**PROCESS DESIGN OVERVIEW**

1 SCOPE

A cape seal is used as an economical maintenance treatment. A cape seal can be placed on an existing road that is starting to show some distresses. Cape seals are ideally suited for the following:

- To provide a tighter texture to a road surface and still maintain good texture.
- To prevent moisture and air from penetrating through the existing surface.

1.1 DEFINITIONS**Cape Seal**

A cape seal consists of a single layer chip seal covered by a slurry seal on an existing road surface. Normally there is a few days delay after the chip seal before the slurry seal is placed.

2 MATERIALS**2.1 Asphalt Emulsion:**

A number of different grades of asphalt emulsion can be used in cape seals. The proper emulsion to be used for chip seals has to be determined by running compatibility tests between the emulsion and the aggregate to be used. Typically the most common emulsions used are RS-1, RS-2, CRS-1 and CRS-2. The slurry seal would normally use a CSS-1h, SS-1h or quick set type emulsion.

2.1 Aggregate:

The type of cover aggregate used in chip seals must meet certain requirements of shape, size, cleanliness and surface properties. The aggregate should be single sized and cubical in shape. The number of flat and elongated particles should be kept to a minimum so that the proper quantity of asphalt emulsion can be applied to hold the stone in place. Also the asphalt emulsion to be used and the aggregate must be compatible to ensure the asphalt-aggregate bond is effective.

The type of mix aggregate used in slurry seals must meet certain requirements of shape, size, cleanliness and gradation. The asphalt emulsion to be used and the aggregate must be compatible to ensure the asphalt-aggregate bond is effective.

3 DESIGN CRITERIA

When designing a cape seal a number of factors have to be examined and assessed to ensure a proper surface will be placed that will perform for its service life. A properly designed chip seal and slurry seal should be completed prior to construction. The compatibility of the emulsions to be used should be checked against the aggregates. The quantity of slurry seal should be closely monitored so that the proper amount is placed such that the larger chip seal particles show through the slurry seal.

If these factors are taken into consideration in designing the cape seal then the chances of a successful seal are greatly improved.

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4 RECOMMENDED PERFORMANCE GUIDELINES

In order to construct a proper well designed sand seal the following guidelines should be followed:

- Design a chip seal with aggregate to be used on job.
- Use a clean coarse aggregate.
- Ensure compatibility of aggregate and emulsion.
- Design a slurry seal with aggregate to be used on job.
- Ensure compatibility of aggregate and emulsion.
- Calibrate and inspect all equipment.
- Follow proper construction techniques.
- Use traffic control to protect seal.
- Work only in weather suitable for type and grade of emulsion being used.

5 RESOURCES

1. "Basic Asphalt Emulsion Manual", Fourth Edition, Asphalt Institute and Asphalt Emulsion Manufacturers Association, 2008
2. "Recommended Performance Guidelines", Second Edition, Asphalt Emulsion Manufacturers Association, Annapolis Maryland, 2006
3. "Recommended Performance Guidelines for Emulsified Slurry Seal Surfaces", A-105, International Slurry Surfacing Association, Annapolis, Maryland, 2010.
4. "Recommended Performance Guideline for Chip Seal", A-165, International Slurry Surfacing Association, Annapolis, Maryland, 2010.



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