Rocky Mountain West Pavement Preservation Partnership

Peppermill Hotel
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FOG SEALS
Fog Seal / Flush Coat
- Fog Seal - Definition
- Material choices
- Equipment
- Application
- Cost
- Traffic Control
Fog Seal- A light spray application of dilute asphalt emulsion used primarily to seal existing asphalt surfaces to reduce raveling and enrich dry and weathered surfaces.
Emulsion Types

- **CSS-1, CSS-1H, SS-1 and SS-1H**
  - Slow setting, uses a soft pen AC
  - Good for filling small cracks and air voids
  - Availability
  - Stable Storage

- **CRS-2, RS-2**
  - Faster cure time
  - Not as good for filling cracks and voids
  - Not as stable

- **CQS-1H**
  - Quick, good for cracks
  - Uses harder pen AC
  - Slightly higher price
  - May not be available in early spring

- **CQS-FS**
  - Quick setting
  - Helps reduce water intrusion
  - Helps seal surface

**Sealers**
- TRMSS- Wright Asphalt
- HA5- Holbrook Asphalt

Many products may work well. Consult your Suppliers
Dilution Process

- Always add water to the emulsion, not emulsion to the water
- Use clean water
- Use warm water if available
- Heat dilution to 120-160°F
- Circulate while heating
- Shoot what you dilute
Best Dilution Process

- Have your supplier dilute the material at the plant
  - Controlled Environment
  - Consistent results
  - Higher production
Surface Preparation

- Surface should be free of dust, loose or foreign matter that would hinder adhesion of the emulsion
- If the dust is minimal and brooming is unavailable, a light (.15g/yd$^2$) application of water can improve adhesion (allow excess water to drain prior to fog seal application)
Equipment

- **Hand Sprayer or Distributor**
  - Properly calibrated
  - Free of harmful contaminants
    - Solvents, oppositely charged emulsions

- **Spray Bar**
  - Correct height for proper overlap
  - **Nozzles**
    - 1/8 to 3/16” according to desired rate
    - Adjusted angle for proper overlap
Distributor Trucks

- Tachometer, pressure gauges, accurate measuring devices, thermometer for measuring temperatures
- Insulated Tank
- Tank with baffles to prevent pressure surges from emulsion sloshing when starting and stopping
- Circulating spray bar with a positive shutoff valve
Figure 6.6 Proper Nozzle Angle Setting

Figure 6.7 Spray Bar Height Must Be Set Exactly for Proper Coverage
Construction - Binder Application
Overlap
When to Apply?

- Early Spring and Late Fall are ideal
  - Cracks are at their widest
  - Traffic is at its lightest
  - Equipment is most available
  - Contractors are least busy
  - Suppliers are most flexible
  - Cost to the Agency is at its lowest
Factors Affecting Cure Time

- Emulsion selected
- Dilution temperature
- Pavement temperature
- Weather conditions
- Application rate
- Dilution rate
Things to Avoid

- Over application
- Extremely wet pavements
- Ruts ½” or more
- Uncontrolled traffic
- Early traffic
- Overheating the dilution
Common Sense

• Goes a long way
  ✓ Have a sand truck available
  ✓ Perform a test strip
  ✓ Avoid high profile areas when using unproven or unfamiliar materials
  ✓ Mix materials to evaluate properties such as storage stability and compatibility in a container smaller than a distributor truck
Fog Seal

- 0.10 – 0.15 gals sq. yd. of CSS-1 dilute
- 1 mile x 24’ = 14,080 sq. yds.
  - 1,408 gals @ 0.10 sq. yd.
  - 2,112 gals @ 0.15 sq. yd.
- 40 ton load = approx. $12,000/ emulsion
  - 94,000 sq. yds. @ 0.10 sq. yd. = $.12 sq. yd.
Other Uses

- **Post construction improvements**
  - Low asphalt HMA
    - Adds residual asphalt
  - Chip seals
    - Improves aggregate retention
    - Extends life expectancy
    - Raises public acceptance
  - Slurry and Micro-surfacing
    - Helps tie in any surface variations
Weather

- Avoid application when rain is likely prior to expected cure time or when freezing weather is forecast overnight.
- Pavement and air temperature should be above 40F.
THANK YOU!

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