 Nova Scotia Asphalt User Producer
Association

 MAINTENANCE / SURFACE
TREATMENTS

 April 2011

Gary Foux



TREATMENT TYPES



-Chip Seals



-Slurry Seals



-Micro Surface



-Graded Seals



-HMA

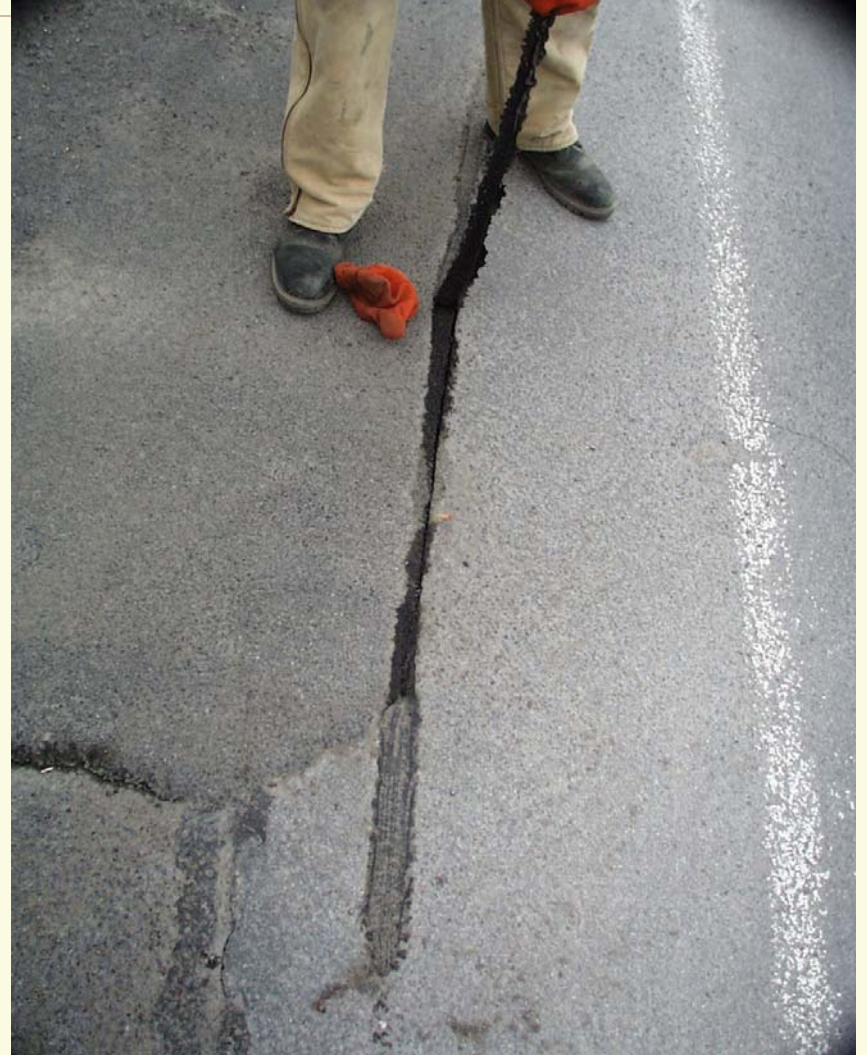
A good surface treatment can....

- 📄 protect the underlying pavement
- 📄 waterproof the road's surface
- 📄 seal small cracks
- 📄 improve surface friction
- 📄 extend service life
- 📄 improve safety

Surface Preparation

- 📄 Patch holes or fill wheel ruts
- 📄 Fog or seal newly patched areas
- 📄 Protect manholes, drop inlets, etc.
- 📄 Fill or seal cracks
- 📄 Remove epoxy and plastic striping

⚡ Crack repairs



● Patching



● Year-round activity

● Cold

Throw and Roll

● Hot

Semi-permanent

Spray patch

● Does not fix the
problem



A Chip Seal is...

- application of emulsified asphalt
- followed by application of aggregate
- which is then rolled
- and broomed

Material Requirements

☞ If AADT < 500, conventional emulsions may be used

☞ Emulsified Asphalt - RS-2, HFRS-2, CRS-2
HFMS-2

☞ If AADT > 500, polymer modified versions of the above emulsions are warranted

☞ Emulsified Asphalt - HFRS-2P, CRS-2PM
HF-MS2P

Application of Bituminous Material

☞ The quantity of Bituminous Material to be used shall be that which has been established by the contractor in the mix design.

☞ e.g. 1.58 L/m² to 2.72 L/m²
(.35 gals/yd² to .60 gals/yd²)



Application of the cover aggregate

Immediately following the application of the bituminous material, cover aggregate shall be spread at the rate established by the contractor in the mix design.

e.g. 9.77 kg/m² to 14.1 kg/m²
(18 lbs/yd² to 26 lbs/yd²)

Aggregates for chip seals should be...

 one-sized

 cubical

 clean

 angular

 hard

– resistant to abrasion

Aggregate Grading

NYSDOT # 1ST

<u>Screen</u>	<u>% Passing</u>
12.5 mm	100
6.3 mm	0 - 15
75 μm	0 - 1

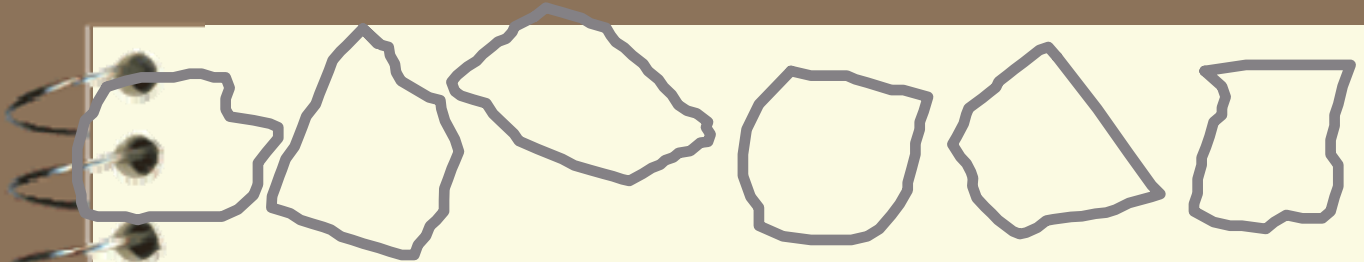
NYSDOT #1A

<u>Screen</u>	<u>% Passing</u>
12.5 mm	100
6.3 mm	90 - 100
3.2 mm	0 - 15
75 μm	0 - 1

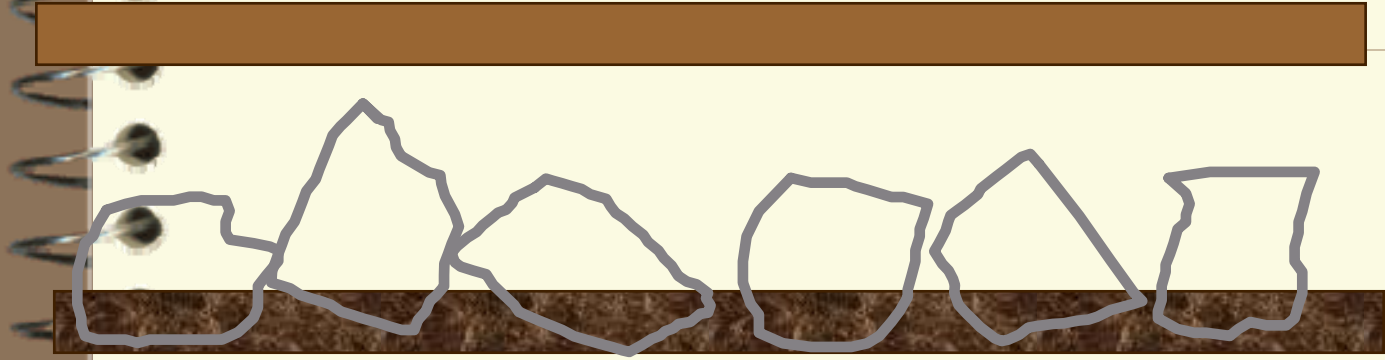


Rolling

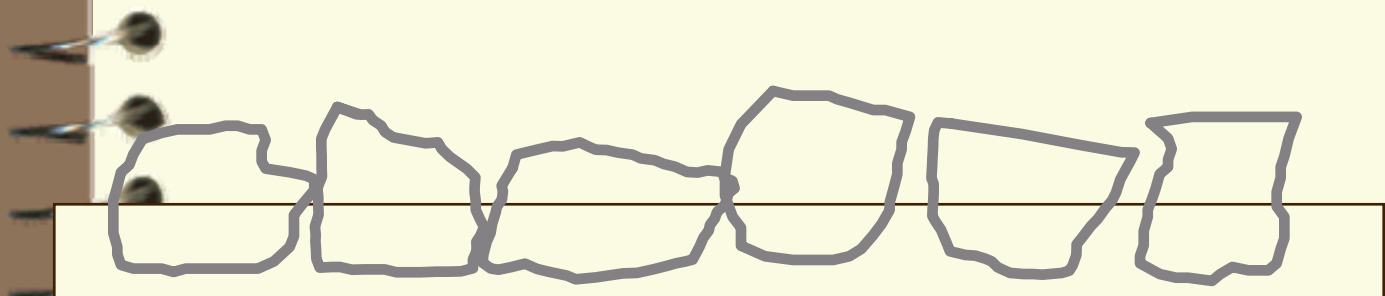
- ☞ Immediately After Chipping
- ☞ Pneumatic Tires: +/- 35 kilopascals (60 psi)
- ☞ 9 Metric Ton Minimum
- ☞ Stop After Set
- ☞ Traffic shall be maintained at a speed not to exceed 24 kilometers per hour for a period of 4 hours.



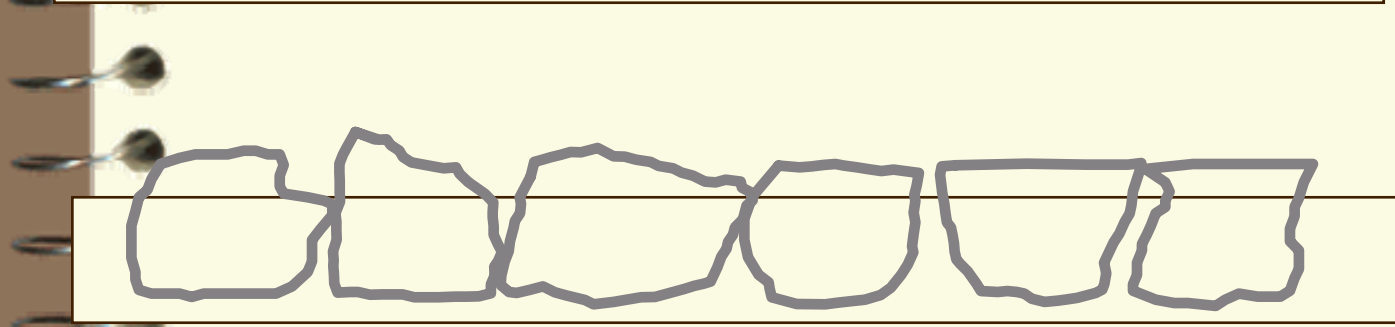
Depth of asphalt binder just before chip application



Depth of asphalt binder just after chip application



Depth of asphalt binder just after rolling



Depth of asphalt binder after considerable traffic







Fog and Sand Treatment

- ☞ Fog and Sand over single surface treatment
 - a. mitigates stone loss
 - b. retains salt near top of the aggregate particles
 - c. striping paint is better retained

Components of Fog Treatment

☞ Material Requirements

- ☞ a. Emulsion Type: HFMS-2h and CSS-1h diluted
- ☞ b. Application Rate: 0.2 L/m² to 0.7 L/m²
(.05 gals/yd² to 0.15 gals/yd²)
- ☞ c. Aggregate Type : Processed Sand
- ☞ d. Aggregate Application Rate:
1.08 kg/m² to 2.71 kg/m²
(2 lbs/yd² to 5 lbs/yd²)





Quick-Set Slurry

- *A design mixture of emulsified asphalt, mineral aggregate, water, and specified additives - proportioned, mixed, and uniformly spread over a properly prepared surface.*
- *Expected Service Life 3 to 5 years*
- *ISSA A-105*
- *ASTM D-3910*

Quick-Set Slurry (Conditions for use)

- *Low severity cracking, raveling and rutting*
- *Low Volume Traffic*
 - *< 10% truck traffic*

Typical Application Rates and Thickness Slurry

Type 2

➤ 5.5-8.5 kg/m² (10.1 - 15.8 lbs/sy)

➤ 1/8 to 1/4 inch depth

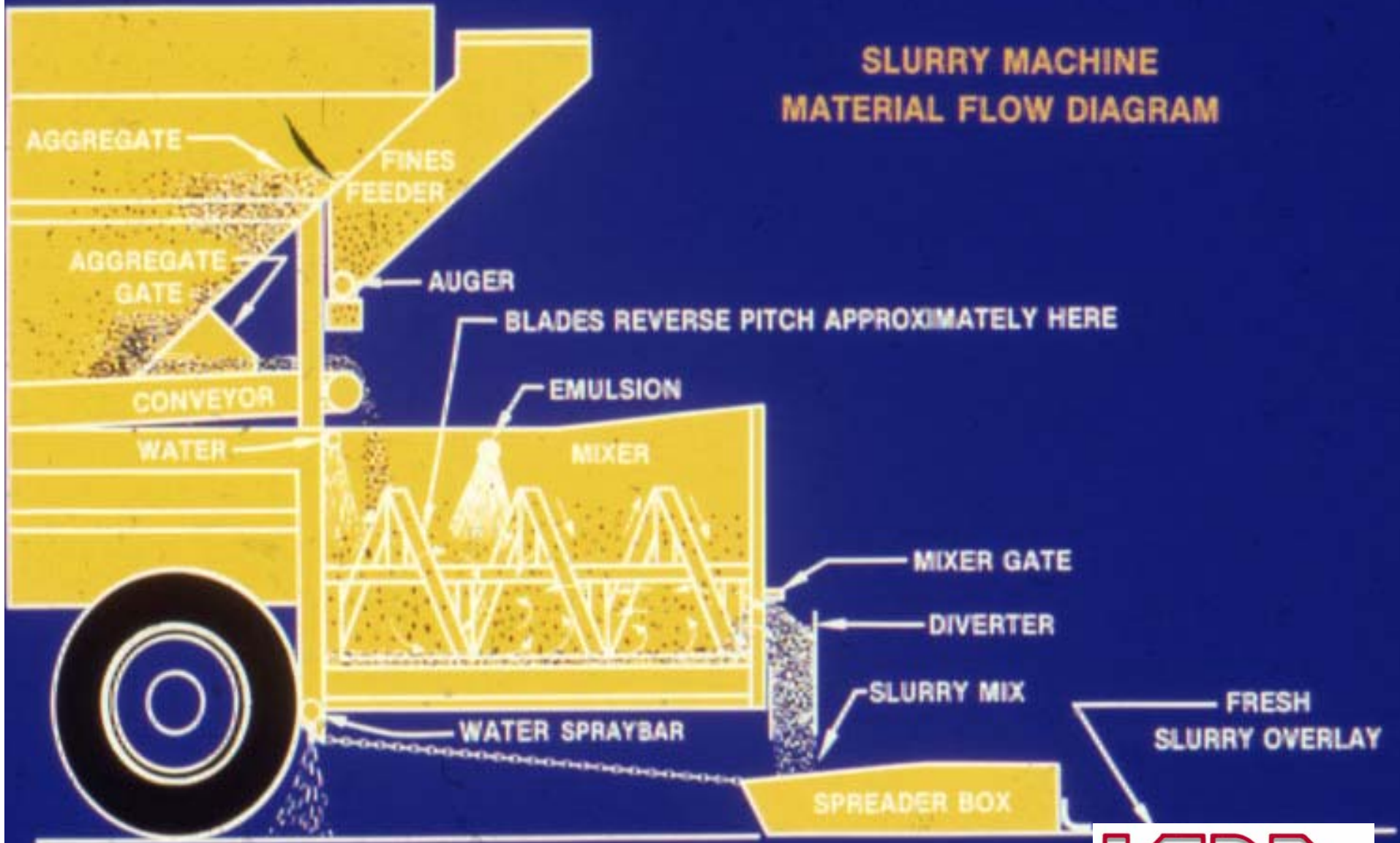
Type 3

➤ 8.0-14 kg/m² (14.7 - 26.0 lbs/sy)

➤ 1/4 to 3/8 inch depth



SLURRY MACHINE MATERIAL FLOW DIAGRAM



Comparison of Type 2 & 3 (Slurry and Micro)

- *Type 2 is used to correct surface oxidation and restore friction. Best used on moderate traffic roads.*
- *Type 3 is used to fill minor surface irregularities and restore friction. Best used on higher traffic roads.*

Typical Application Rates and Thickness

Micro

Type 2

➤ *14 - 22 kg/m²*
(25 - 39 lbs/sy)

➤ *1/2 to 3/8 inch*
depth

Type 3

➤ *20 - 32kg/m²*
(35- 56 lbs/sy)

➤ *3/8 to 3/4 inch*
depth











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Seasonal Limitations

- *Temperature - 7°C (45°F) and rising*
- *If < 0°C (32°F) with in 24 hrs of paving*
- *Do not pave in the rain*



DENSE SEALS



R



Wearing Courses

*Waterproof pavement
Restores skid resistance
Restores oxidized surface
True & level minor ruts*



Chip seal

✓	✓	✓	
✓	✓	✓	
✓	✓	✓	✓
✓	✓	✓	
✓	✓	✓	



Slurry seal



Micropave



Dense Seal



Thin overlay





A spiral-bound notebook with a textured, light brown cover and a dark brown border. The spiral binding is on the left side. The word "Questions" is written in a brown serif font in the center. Below it, a row of eight question marks is displayed in a larger, brown serif font.

Questions

????????