

WHAT'S TRENDING IN PAVEMENT PRESERVATION

Rex W. Eberly
Executive Director
PAAMA

EMULSION PERFORMANCE RELATED SPECIFICATIONS FOR EMULSION BINDER

- ▶ NCHRP 09-63
- ▶ PROJECT OBJECTIVE IS TO •
- ▶ Develop a national performance-related material specification for emulsified asphalt binder for use with chip seals and micro surfacing/slurry seals that:
 - a) is similar in concept and format to AASHTO M 320 and M 332
 - b) is calibrated and validated with performance data from field test sections
 - c) uses readily available testing equipment (i.e., Superpave test equipment)
 - d) reflects varying climatic and traffic conditions

SCRUB SEALS

- ▶ SIMILAR TO A STANDARD CHIP SEAL EXCEPT THE EMULSION BINDER IS SCRUBBED OR BROOMED INTO THE PAVEMENT PRIOR TO APPLYING THE CHIPS. ACTS AS A MASS CRACK FILLER FOR PAVEMENT WITH HIGH RATES OF SURFACE CRACKING
- ▶ EMULSION CAN BE:
 - ▶ STANDARD - CRS-2P OR
 - ▶ PMRE - POLYMER MODIFIED REJUVENATING EMULISON



CAPE SEALS

- ▶ STANDARD CHIP SEAL FOLLOWED BY SLURRY SEAL OR MICRO SURFACING.
 - The Chip Seal lasts longer because it is protected from traffic and weather oxidation by the Micro surfacing.
 - Because it is capped by the Micro surfacing, the Chip Seal emulsion can be applied at a higher rate without fear of bleeding.
 - The Chip Seal, provides a consistent, textured surface that helps the Micro surface adhere to the pavement.
 - The transverse leveling capabilities of the Micro surfacing improves drainage which further protects the chip seal from deterioration.
 - The addition of Micro surfacing allows the Road Manager to gain the advantages of a Chip Seal without the perceived liabilities of a Chip Seal.
 - No loose chips
 - Darker surface
 - “looks like asphalt”



HI-MOD MICRO SURFACING

- ▶ HIGHLY MODIFIED MICRO-SURFACING EMULSION
 - ▶ STANDARD MICRO SURFACING IS MADE WITH 3 % POLYMER
 - ▶ HI-MOD IS MADE WITH AT LEAST 6% POLYMER
 - ▶ ADVANTAGES
 - ▶ HIGHER RESISTANCE TO TRAFFIC WEAR
 - ▶ ADDITIONAL FLEXIBILITY
 - ▶ LONGER LIFE
 - ▶ ADDITIONAL TESTING ON BASE ASPHALT AND MICRO SURFACING MIX
 - ▶ CANTABRO MASS LOSS - TX 245-F -ON RECOMMENDED JMF
 - ▶ MSCR - AASHTO T350 - ON RESIDUE FROM LOW TEMPERATURE EVAPORATION

SOFTER BINDERS FOR MICRO SURFACING

- ▶ MINNESOTA DOT IS EXPERIMENTING WITH SOFTER BINDERS AND HIGHER EMULSION CONTENTS IN THEIR MICRO SURFACING.
 - ▶ The goal is to decrease cracking and snowplow damage.
- ▶ In one project, they used PG49-34 asphalt with 4.5% SBS polymer modified emulsion on TH64 near Motley MN. Asphalt emulsion content was increased to 14.5% from the 13% traditionally used. This project was also micro milled prior to placement of the modified micro surfacing to help further improve the ride of the project.
 - ▶ Results have been favorable. However, due to the softer base, their Wet Track Abrasion tests do not pass at normal temperatures. MNDOT and ISSA are working on adapting current mix design test to accommodate soft binders.

FIBERS IN MICRO SURFACING

- ▶ FIBERS ARE BEING USED IN MICRO SURFACING AND SLURRY MIXES THROUGHOUT THE COUNTRY.
- ▶ MOST APPLICATIONS USE E-GLASS FIBER:
- ▶ FIBERS IMPROVE:
 - ▶ PAVEMENT FLEXIBILITY
 - ▶ LONG-TERM DURABILITY



RAP CHIP / RAP SLURRY

- ▶ CONTRACTORS AND AGENCIES ACROSS THE COUNTRY ARE EXPERIMENTING WITH USING RAP IN THEIR PAVEMENT PRESERVATION PROCESSES.
 - ▶ PROCESSES CAN BE 100% RAP OR BLENDED WITH STANDARD AGGREGATES
- ▶ PRODUCING TYPE II RAP SLURRY AGGREGATE USUALLY PRODUCES A VERY NICE CHIP AGGREGATE.
 - ▶ RAP PRODUCTION AND STOCKPILE MAINTENANCE ARE KEYS TO SUCCESS
- ▶ MOST EARLY WORK WITH RAP HAS BEEN DONE IN THE DRYER REGIONS OF THE WEST AND SOUTHWEST USING SINGLE LIFT CHIP SEALS AND SLURRY SEAL.



FOG SEALS

EMULSION / REJUVENATING / PMRE

- ▶ FOG SEALS ARE AN EXCELLENT TOOL FOR EARLY PRESERVATION
- ▶ STANDARD EMULSION FOR PROTECTION FROM OXIDATION AND LOCKING IN CHIP SEALS.
- ▶ REJUVENATING SEALS, (BIO BASED AND MALTENE BASED) COUNTERACT THE EFFECTS OF OXIDATION.
 - ▶ VERY USEFUL EARLY IN THE LIFE OF HIGH RAP MIXES.
- ▶ POLYMER MODIFIED REJUVENATING EMULSIONS CAN PERFORM BOTH ROLES.

HOT APPLIED CHIP SEALS

- ▶ CHIP SEAL BINDER IS APPLIED HOT AND CAN BE:
 - ▶ STRAIGHT AC
 - ▶ POLYMER MODIFIED AC
 - ▶ AC BLENDED WITH TIRE RUBBER
- ▶ CHIP SEAL AGGREGATE IS PRE-COATED WITH ASPHALT. CAN BE APPLIED HOT, DIRECTLY FROM HMA PLANT.
- ▶ HOT APPLIED CHIP SEALS CAN PROVIDE BETTER PERFORMANCE ON HIGH ADT AND/OR HIGH SHEAR AREAS (RAMPS / INTERSECTIONS)
- ▶ SAME EQUIPMENT / SLIGHTLY DIFFERENT TECHNIQUES

RECYCLING CIR / CCPR / FDR

- ▶ HIGH-QUALITY AGGREGATES AND ASPHALTS ARE “STOCKPILED” IN OUR CURRENT ROAD SYSTEM.
 - ▶ REUSE WHAT WE’VE PAID FOR INSTEAD OF MINING FROM NEW SOURCES.
 - ▶ A RECENT PENNDOT STUDY ESTIMATES THAT PENNSYLVANIA PRODUCES 1.5 MILLIION TONS OF EXCESS RAP PER YEAR. (ENOUGH TO PAVE 300 MILES OF 2-LANE WITH 6 INCHES HMA)
- ▶ IN-PLACE RECYCLING SIGNIFICANTLY REDUCES TRUCKING.
 - ▶ PROTECTS YOUR OTHER ROADS
 - ▶ REDUCES COST
 - ▶ SPEEDS UP PRODUCTION
- ▶ RECYCLING WITH COLD PROCESSES DOESN’T FURTHER OXIDIZE OR HARDEN THE ASPHALT.
- ▶ NEW EQUIPMENT / TECHNIQUES / ENGINEERED EMULSIONS HAVE INCREASED THE VIABILITY OF RECYCLING.

WANT TO LEARN MORE?

- ▶ CONTACT YOUR LOCAL PAAMA MEMBER.
- ▶ SEND ME AN EMAIL OR GIVE ME A CALL.
- ▶ CHECK OUT WWW.ROADRESOURCE.COM
- ▶ JOIN YOUR REGIONAL AASHTO TSP2 PRESERVATION PARTNERSHIP.
- ▶ VOLUNTEER WITH THE AASHTO EMULSION TASK FORCE (ETF)
- ▶ STUDY FOR AND PASS THE AASHTO NATIONAL CERTIFICATION EXAM
 - ▶ SLURRY SURFACING
 - ▶ CHIP SEAL
 - ▶ CRACK TREATMENTS

THANK YOU!



**REX W. EBERLY
EXECUTIVE DIRECTOR
785-819-1403
DIRECTOR@PAAMA.ORG**