

WMA...

DISTRICT 2 PERSPECTIVE

Dec 12, 2012
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WARM MIX ASPHALT (BDE)

- ▶ This special provision should be inserted in all HMA contracts.
- ▶ Revised: November 1, 2012
- ▶ Description. at the Contractor's option.

WHAT IS WARM?

- ▶ temperatures in excess of 275°F will not be considered WMA when determining the grade reduction of the virgin asphalt binder grade.
- ▶ **RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (BDE)**
- ▶ When ABR exceeds 20%, reduce high and low virgin grades each by one grade. If WMA technology and production temps do not exceed 275°F, reduce high and low virgin grades by one grade when ABR exceeds 25%

MIX DESIGN VERIFICATION

- ▶ (1) Foaming. WMA mix design verification will not be required when foaming technology is used alone (shall only be used on HMA designs previously approved by the Department)
- ▶ (2) Additives. WMA mix designs utilizing additives shall be submitted to the Engineer for mix design verification. Additional mixture verification requirements includes Hamburg Wheel (IL Modified AASHTO T324) and tensile strength testing (IL Modified AASHTO T283)

WARM MIX ASPHALT

DISTRICT 2

DISTRICT 2 MIX PLANTS

- ▶ 23 APPROVED PLANTS
- ▶ 17 CURRENTLY PRODUCING FOR IDOT
- ▶ 9 ARE EQUIPPED TO PRODUCE WMA
 - 7 FOAMERS
 - 2 ADDITIVE

IL 81 I-74 TO CAMBRIDGE HENRY COUNTY (S OF QUAD CITIES)

- ▶ WMA SURFACE
 - 8100 TONS WITH 64-22
 - 300 TONS WITH SBS 70-22

- ▶ HMA SURFACE
 - 1700 TONS WITH 64-22
 - 300 TONS WITH SBS 70-22

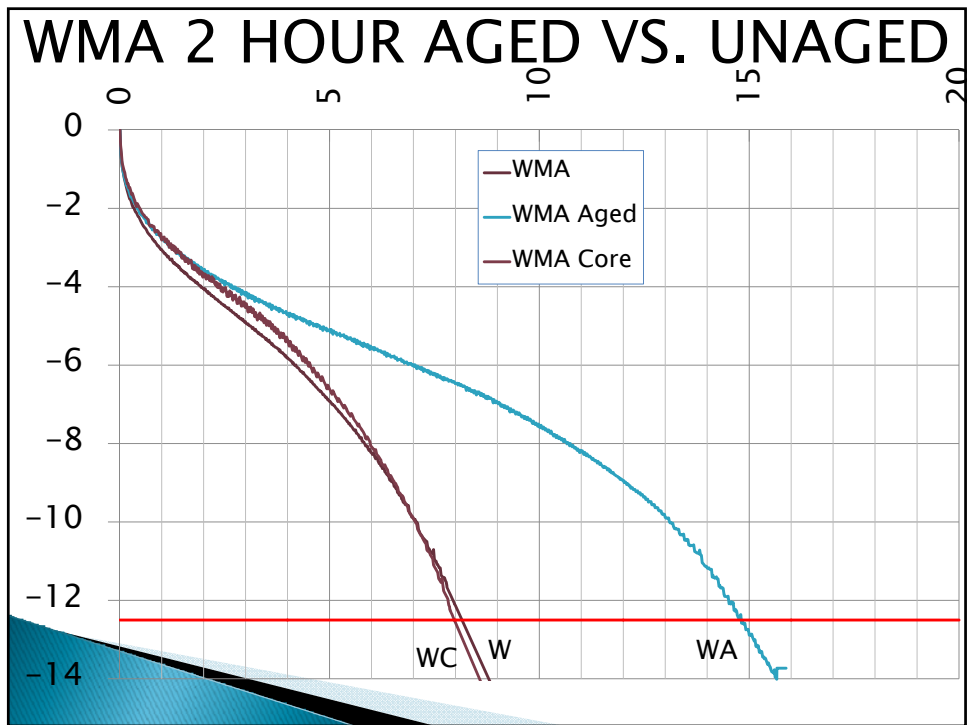
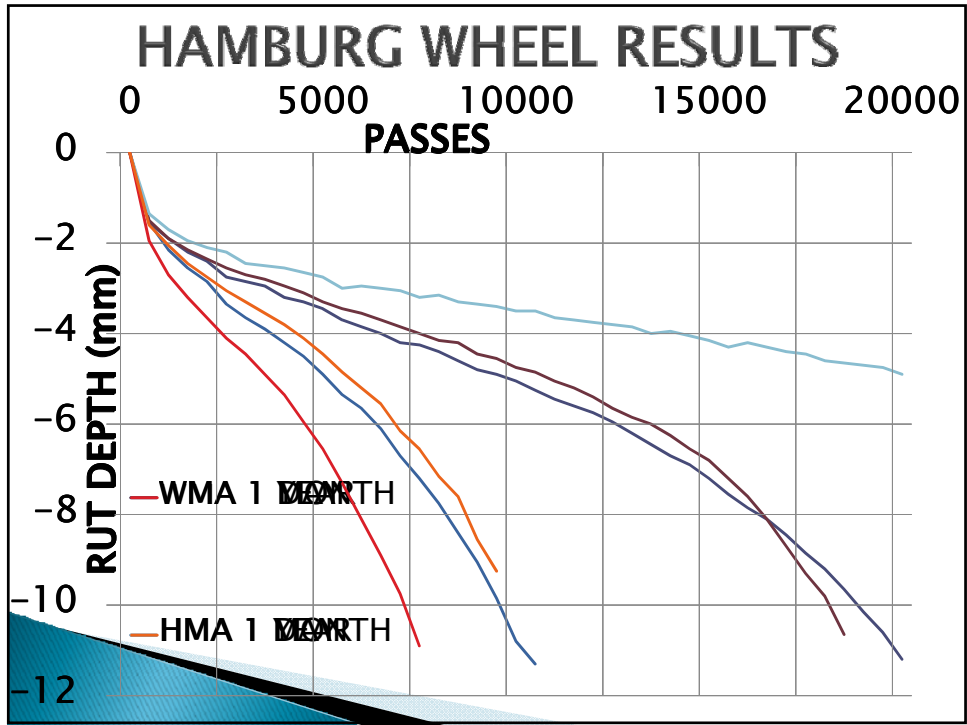
HAMBURG WHEEL DATA

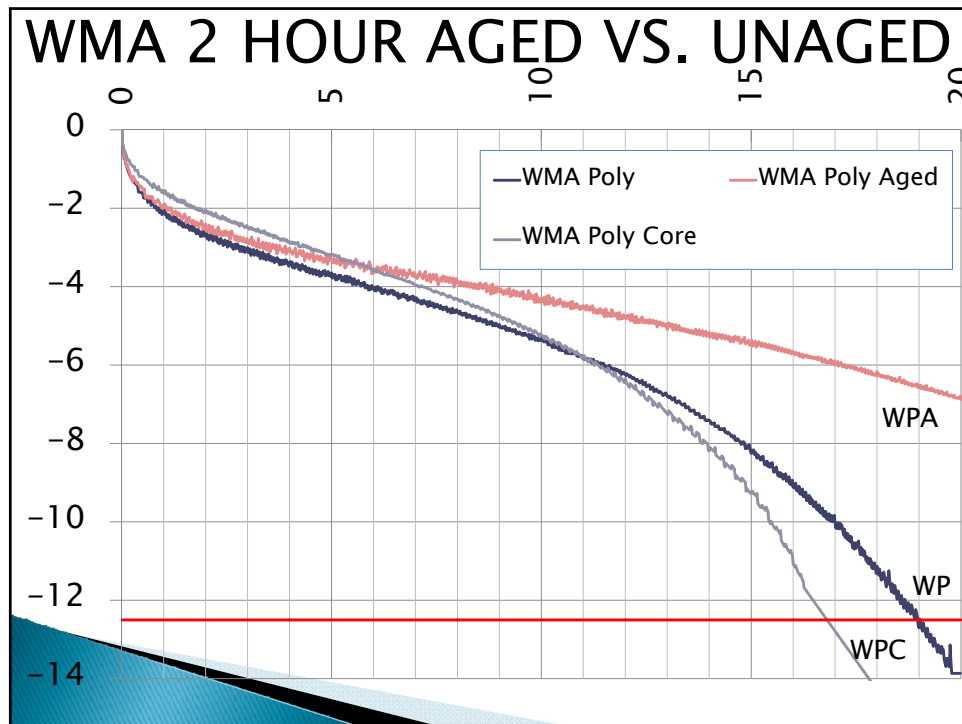
WMA						HMA			
64-22			SBS 70-22			64-22		SBS 70-22	
MIX (NO AGE)	MIX (2 HR AGE)	CORES	MIX (NO AGE)	MIX (2 HR AGE)	CORES	MIX	CORES	MIX	CORES

HAMBURG WHEEL DATA

WMA					HMA				
64-22			SBS 70-22		64-22		SBS 70-22		
MIX (NO AGE)	MIX (2 HR AGE)	CORES	MIX (NO AGE)	MIX (2 HR AGE)	CORES	MIX	CORES	MIX	CORES







FINDINGS FROM HAMBURG WHEEL

- ▶ HW RESULTS FOR CORES WERE LOWER THAN MIX
- ▶ WMA WITHOUT AGING WAS MUCH LOWER THAN 2 HOUR AGING
- ▶ SBS70-22 DID MUCH BETTER THAN 64-22 FOR WMA OR HMA (~7000 more passes).

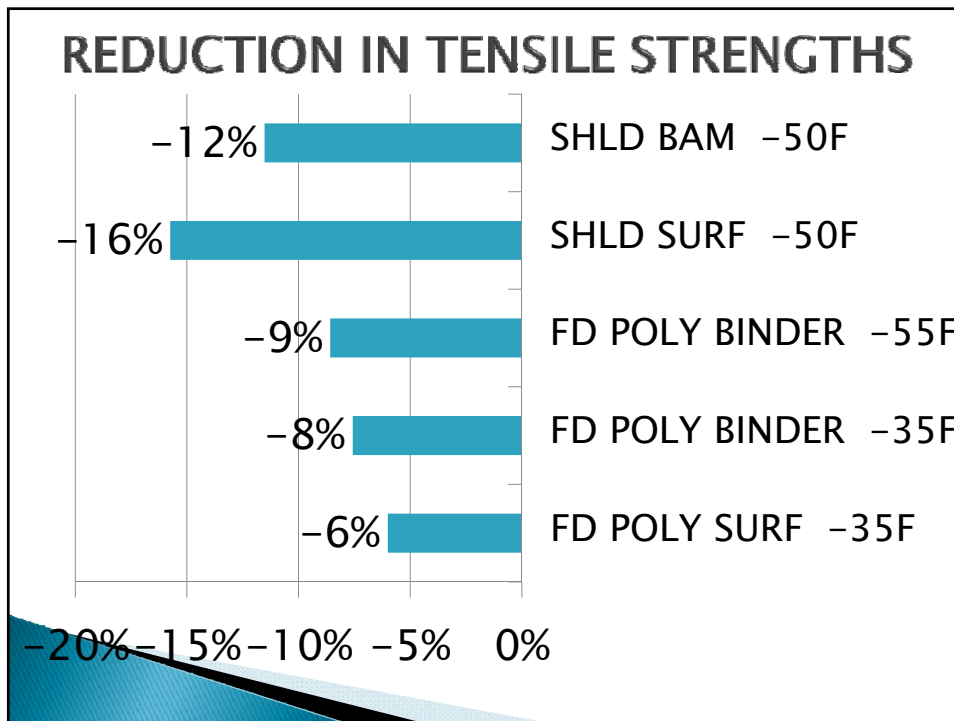
FINDINGS

- ▶ PLANT
 - BURNER FUEL USAGE DECREASES BY 10–15%
 - COATING OF MIX IS MUCH QUICKER, LESS WASTE
 - PRODUCTION 30–40 TONS/HOUR HIGHER
- ▶ LAYDOWN
 - DENSITY INCREASED 0.5 – 1.0%
 - WORKABILITY WAS LONGER
 - CREW MUCH PREFERRED

US 20 FREEPORT BYPASS STEPHENSON CO

- ▶ FIRST WMA FULL DEPTH PAVEMENT BY DISTRICT 2

		WB US 20 FREEPORT WMA DEMONSTRATION				
		POLY SURFACE				
DL		RIVER	TEST STRIP	REC PATH		
PL		BRIDGE		BRIDGE		
466+11		536+87	544+44	569+17	570+61	641+00
		WB US 20 TOP LIFT OF BINDER (POLY)				
DL		RIVER		REC PATH		
PL		BRIDGE	TEST STRIP	BRIDGE		
Note: Initial tensile results were below 80 lbs so the balance of the mix was HMA.						
		WB US 20 LOWER 2 LIFTS OF BINDER				
DL		RIVER		REC PATH		
PL		BRIDGE	TEST STRIP	BRIDGE		



FINDINGS

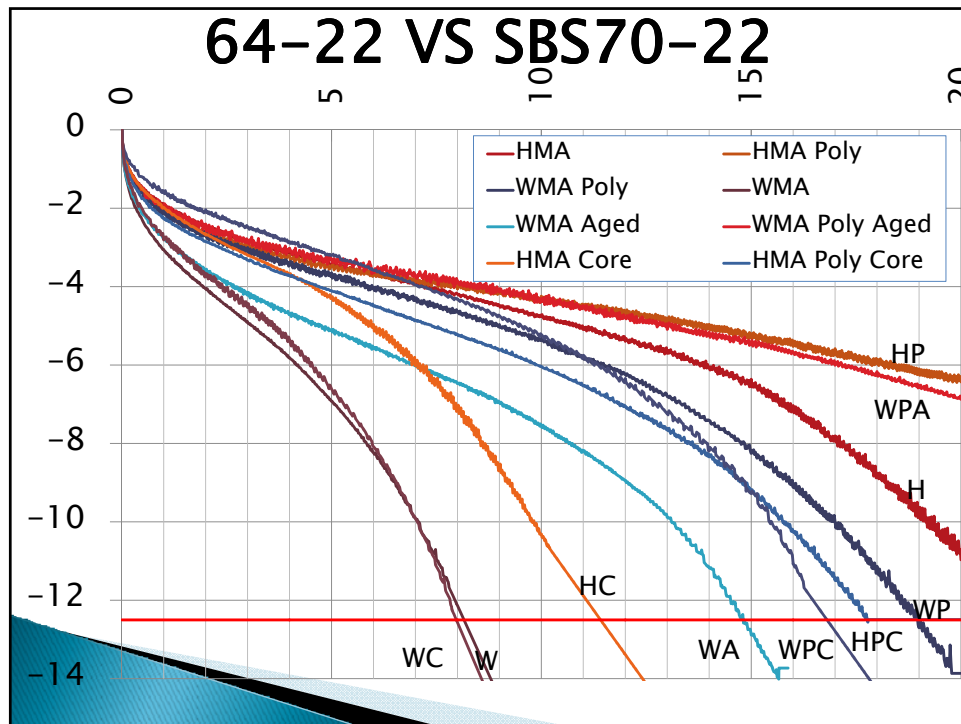
- ▶ PLANT
 - BURNER FUEL USAGE DECREASED SLIGHTLY
 - POLY MIXES LESS THAN 295F WAS DIFFICULT
 - HAD TO REFLIGHT DRUM TO PREVENT MOISTURE IN BAGHOUSE

FINDINGS

- ▶ LAYDOWN
 - FOAMING WAS HELPFUL REGARDLESS OF PRODUCTION TEMPERATURE
 - WMA APPEARED TO BE LESS TENDER
 - WORKABILITY WAS LONGER
 - RUBBER TIRE ROLLER WORKED BETTER
 - BETTER WORKING CONDITIONS FOR ALL

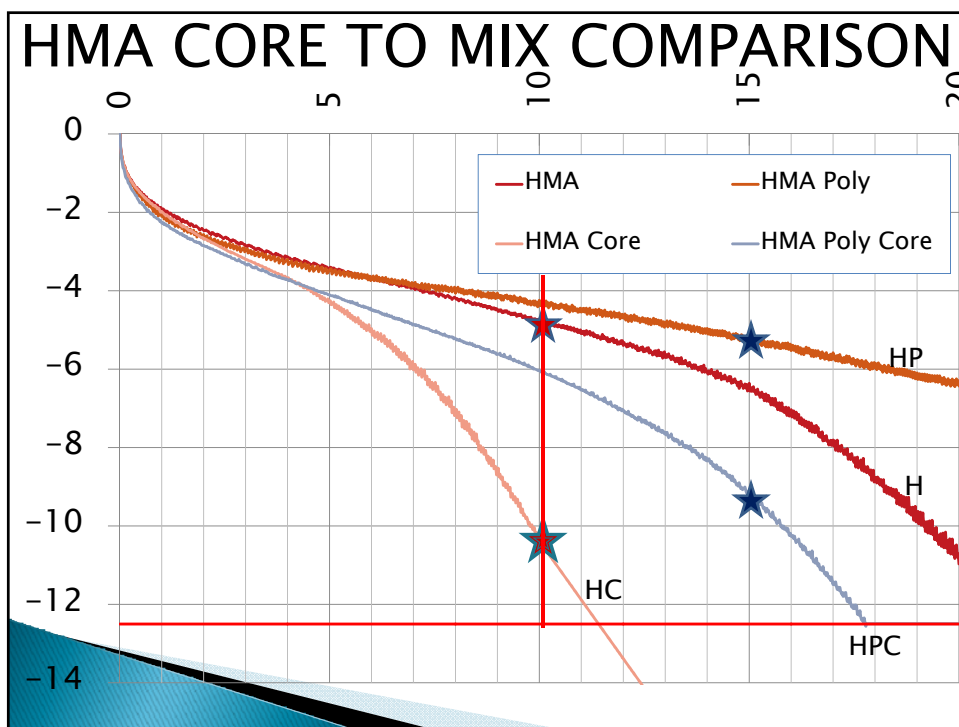
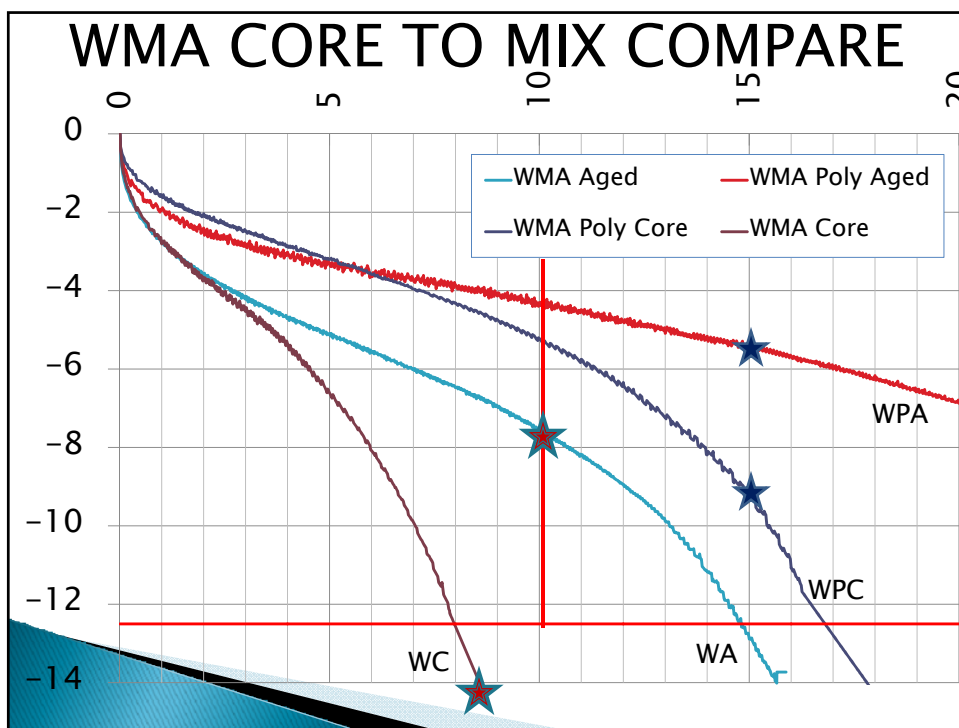
QUESTIONS?





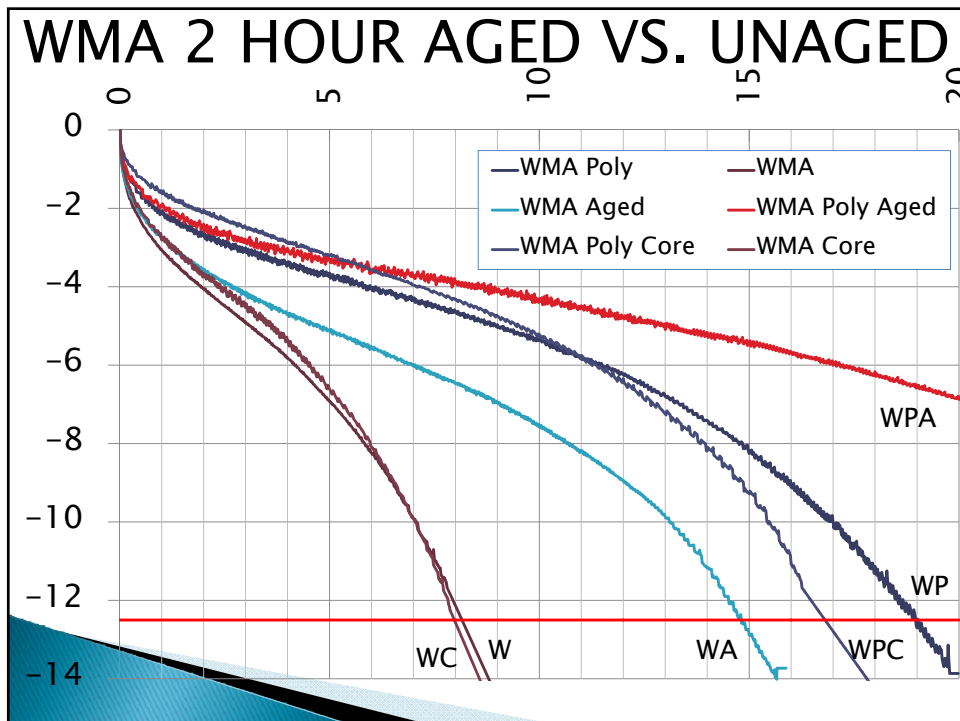
THEREFORE?

- ▶ A MIX WITH 64-22 THAT MEETS SPEC AT 10,000 PASSES SHOULD MEET WITH SBS 70-22 AT 15,000 PASSES BASED ON AN AVERAGE OF 7000 PASS INCREASE.



THEREFORE?

- ▶ MIX PERFORMS SIGNIFICANTLY BETTER THAN CORES (TWICE THE PASSES OR ½ THE RUTTING)
- ▶ HOW WILL WE USE CORES TO ANALYZE MIX?



THEREFORE?

- ▶ THE 2 HOUR AGING FOR WMA MAKES SENSE IF WE WANT IT TO COMPARE BETTER TO HMA
- ▶ NO CURING MATCHES THE CORES.