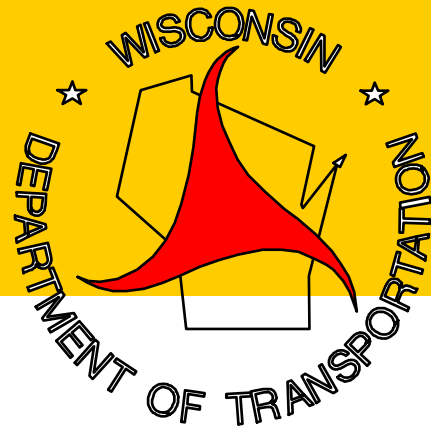


# Acceptance of Recycled Materials



*North Central Asphalt User/Producer Group*

*February 4<sup>th</sup>, 2009*

# Why Recycle?

- ✚ Save Natural Resources

- Asphalt Cement
- Aggregates

- ✚ Environmental Sustainability “Be Green”

- ✚ Manufacturer Pressure

- ✚ Political Pressure

# Wisconsin's Position

- ✦ Our State's governors have historically emphasized environmental issues
- ✦ WisDOT has tried to be "proactive" not "reactive"
- ✦ Adopt materials if the use is determined to be engineeringly sound
- ✦ Standardly implement their use as contractor option
- ✦ Typically start conservatively

# “Everything but the Kitchen Sink”

• For base course material we allow:

- Crushed concrete
- Reclaimed asphaltic pavement
- Reprocessed material
  - Waste material for which a commercially demonstrated process uses the material as a raw material.

# “But Close”

## 301.2.4.4 By-Product Materials

(1) The contractor may provide an aggregate with one of the following by-product materials mixed with crushed gravel, crushed concrete, or crushed stone up to the listed maximum percentage, by weight.

BY-PRODUCT MATERIAL	MAXIMUM PERCENTAGE (by weight)
Glass	12
Foundry slag	7
Steel mill slag	15
Bottom ash	8
Pottery cull	7

# Out with the Old

- ✦ Specifications controlling the use of RAP were similar to most others

- ✦ **460.2.5 Reclaimed Asphaltic Pavement Materials**

- (1) The contractor may use up to **35 percent RAP material in lower layer and base mixtures** and up to **20percent in upper layer mixtures**. Ensure that the combined RAP and virgin aggregate conforms to aggregate requirements of **table 460-2**.

# Out with the Old

## 💡 460.2.6 Recovered Asphaltic Binders

- (1) Establish the percent of recovered asphaltic binder from RAP for the mixture design according to AASHTO T 164 using the appropriate dust correction procedure. If test results indicate a change in the percent of recovered asphaltic binder from RAP, the contractor or the engineer may request a change in the design recovered asphaltic binder from RAP. Accompany that request with at least 2 recent RAP extractions from the contractor's mixture design laboratory supporting that change.
- (2) The contractor may use **up to 25 percent RAP for lower layers** and **up to 20 percent RAP for upper layers** without changing the asphaltic binder grade. If using more than that amount of RAP, furnish binder with a low temperature rating one grade lower than the contract designates, unless testing indicates the resultant binder meets the grade the contract originally specified.

# In with the NEW

- Specifications previously allowed the use of only RAP
- New update allows use of FRAP, RAP, and RAS
  - FRAP: Fractioned reclaimed asphaltic pavement - Material resulting from cold milling or crushing existing asphaltic pavement processed to control gradation properties.
  - RAP: Reclaimed asphaltic pavement - Material resulting from cold milling or crushing existing asphaltic pavement.
  - RAS: Recycled asphalt shingles - Waste material from a shingle manufacturing facility, either new or used material salvaged from residential roofing operations, or any combination of these materials ground to ensure that 100 percent will pass a 1/2" sieve and processed to remove deleterious material.



# Recycled Asphaltic Materials

- ✿ Reminder: All Wisconsin DNR requirements must also be met for the use of these products
  - Covered in standard specifications under 107.1(1)  
“At all times, observe and comply with all applicable federal and state laws and administrative rules, codes, local laws, ordinances, and regulations that affect the conduct of the work, and applicable orders or decrees of bodies or tribunals having jurisdiction or authority over the work.”
- ✿ New requirements are based on % binder replacement instead of % by weight as used in the past

# Recycled Asphaltic Materials

- Where are the new requirements located?
- Requirements are in ASP-6 (Additional Special Provision)
  - ASP's are located following the special provisions in WisDOT Highway Construction proposals
- The new ASP 6 will be effective for all contracts starting with the January 2009 bid letting

# New Specification

## 460.2.5 Recycled Asphaltic Materials

- (1) The contractor may use recycled asphaltic materials from FRAP, RAP, and RAS in HMA mixtures. Stockpile recycled materials separately from virgin materials and list each as individual JMF components.
- (2) Control recycled materials used in HMA by evaluating the percent binder replacement, the ratio of recovered binder to the total binder. Conform to the following:

### MAXIMUM ALLOWABLE **PERCENT BINDER REPLACEMENT**

RECYCLED ASPHALTIC MATERIAL	LOWER LAYERS	UPPER LAYER
RAS only	20	15
RAP only	35	20
FRAP only	35	25
RAS and RAP	30	20
RAS and FRAP	30	25
RAS, RAP, and FRAP	30	25

- (3) Ensure that the combined recycled and virgin aggregate conforms to the requirements of table 460-2 and to the gradation requirements of table 460-1.

# New Specification

## 460.2.6 Recovered Asphaltic Binders

- (1) Establish the percent of recovered asphaltic binder from FRAP, RAP, and RAS for the mixture design according to AASHTO T 164 using the appropriate dust correction procedure. If production test results indicate a change in the percent of recovered asphaltic binder, the contractor or the engineer may request a change in the design recovered asphaltic binder. Provide at least 2 recent extractions from the contractor's mixture design laboratory supporting that change.
- (2) The contractor may replace virgin binder with recovered binder up to the maximum percentage allowed under 460.2.5 without changing the asphaltic binder grade. If using more than the maximum allowed under 460.2.5, furnish test results indicating that the resultant binder meets the grade the contract originally specified.

# How Do We Accept?

- ✚ Our philosophy is to accept as close to final product as possible
- ✚ Accept as similar to same item with no “recycle” as possible
- ✚ Modify or eliminate tests as required
- ✚ Learn and adjust as we go

