

**PROPOSED DRAFT
December 2015**

401.02.5 Binder Replacement

A portion of the asphalt binder may be obtained from either RAP and/or recycled asphalt shingles (RAS). Do not use RAS when producing warm mix. Inclusion of recycled materials will be evaluated by percent binder replacement, the ratio of the recycled binder to the total binder. Meet the requirements of the following table.

MAXIMUM ALLOWABLE PERCENT BINDER REPLACEMENT

Recycled Material	Replacement Allowed	
	Lower Layers	Upper Layer (top 0.15-feet)
RAS (used alone)	15	15
RAP	35	25
RAP and RAS (combination) ¹	25	25

Note 1: When using RAS in combination with RAP, ensure the RAS does not exceed 3% by weight of the total aggregate blend.

If binder replacement is included in the job mix formula and the final mix, meet all of the plant mix requirements. Utilize separate stockpiles and feeds for each recycled component. It is recommended that at least 2 separate RAP stockpiles be produced.

Furnish RAS in accordance with AASHTO MP 23-145. The specific gravity of the RAS may be obtained in accordance with AASHTO PP 78. If RAS is used, meet the following requirements:

TABLE OF GRADATIONS - RAS

Percentage By Weight Passing Square Mesh Sieves	
Sieve Size	Percent Passing
3/8-inch (9.5 mm)	100
No. 4 (4.75 mm)	93

401.03.1 Mix Design

For mix designs using binder replacement, furnish the asphalt content and gradation of each recycled component and furnish the total asphalt content and Job Mix Formula gradation including the RAP/RAS. Furnish all specific gravities.

NO COMMENTS

**FINAL
EFFECTIVE July 14, 2016**

401.02.5 Binder Replacement

A portion of the asphalt binder may be obtained from either RAP and/or recycled asphalt shingles (RAS). Do not use RAS when producing warm mix. Inclusion of recycled materials will

Deleted: Recycled Asphalt Pavement (RAP)

Deleted: Up to 15% RAP by weight may be incorporated into mix used in the top 0.15-foot (45 mm) and up to 30% RAP by weight may be incorporated into mix used in lower lifts.

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be evaluated by percent binder replacement, the ratio of the recycled binder to the total binder. Meet the requirements of the Table 401-6.

**TABLE 401-6
MAXIMUM ALLOWABLE PERCENT BINDER REPLACEMENT**

Recycled Material	Replacement Allowed	
	Lower Layers	Upper Layer (top 0.15-feet)
RAS (used alone)	15	15
RAP	35	25
RAP and RAS (combination) ¹	25	25

Note 1: When using RAS in combination with RAP, ensure the RAS does not exceed 3% by weight of the total aggregate blend.

If binder replacement is included in the job mix formula and the final mix, meet all of the plant mix requirements. Utilize separate stockpiles and feeds for each recycled component.

It is recommended that at least 2 separate RAP stockpiles be produced.

Furnish RAS in accordance with AASHTO MP 23-145. The specific gravity of the RAS may be obtained in accordance with AASHTO PP 78. If RAS is used, meet the requirements of Table 401-7:

**TABLE 401-7
TABLE OF GRADATIONS - RAS**

Percentage By Weight Passing Square Mesh Sieves	
Sieve Size	Percent Passing
$\frac{3}{8}$ -inch (9.5 mm)	100
No. 4 (4.75 mm)	93

401.03.1 Mix Design

For mix designs using binder replacement, furnish the asphalt content and gradation of each recycled component and furnish the total asphalt content and Job Mix Formula gradation including the RAP/RAS. Furnish all specific gravities.