

**Replace paragraphs 12-22 of section 5-1. __ PAYMENT ADJUSTMENTS FOR PRICE INDEX
FLUCTUATIONS of the special provisions with:**

ASPHALT QUANTITIES

General

Interpret the term "ton" as "tonne" for projects using metric units.

Hot Mix Asphalt

The Engineer calculates the quantity of asphalt in HMA using the following formula:

$$Q_h = \text{HMATT} \times X_a / 100$$

where:

Q_h = quantity in tons of asphalt used in HMA
 HMATT = HMA total tons placed
 X_a = theoretical asphalt content from job mix formula expressed as percentage of the total weight of HMA

Rubberized Hot Mix Asphalt

The Engineer calculates the quantity of asphalt in rubberized HMA (RHMA) using the following formula:

$$Q_{rh} = \text{RHMATT} \times 0.80 \times X_{arb} / 100$$

where:

Q_{rh} = quantity in tons of asphalt in asphalt rubber binder used in RHMA
 RHMATT = RHMA total tons placed
 X_{arb} = theoretical asphalt rubber binder content from the job mix formula expressed as percentage of the total weight of rubberized HMA

Hot Mix Asphalt with Modified Asphalt Binder

The Engineer calculates the quantity of asphalt in HMA with modified asphalt binder using the following formula:

$$Q_{mh} = \text{MHMATT} \times [(100 - X_{am}) / 100] \times X_{mab} / 100$$

where:

Q_{mh} = quantity in tons of asphalt in modified asphalt binder used in HMA
 MHMATT = modified asphalt binder HMA total tons placed
 X_{am} = specified percentage of asphalt modifier
 X_{mab} = theoretical modified asphalt binder content from the job mix formula expressed as percentage of the total weight of HMA

Hot Mix Asphalt Containing Reclaimed Asphalt Pavement (RAP)

The Engineer calculates the quantity of asphalt in HMA containing RAP using the following formulas:

$$Q_{rap} = HMATT \times X_{aa}/100$$

where:

$$X_{aa} = X_{ta} - [(100 - X_{new}) \times (X_{ra} / 100)]$$

and

- Q_{rap} = quantity in tons of asphalt used in HMA containing RAP
- $HMATT$ = HMA total tons placed
- X_{aa} = asphalt content of HMA adjusted to account for the asphalt content in RAP expressed as percentage of the total weight of HMA
- X_{ta} = total asphalt content of HMA expressed as percentage of the total weight of HMA
- X_{new} = theoretical percentage of new aggregate in the HMA containing RAP determined from RAP percentage in the job mix formula
- X_{ra} = asphalt content of RAP expressed as percentage

Tack Coat

The Engineer calculates the quantity of asphalt in tack coat (Q_{tc}) as either:

1. Asphalt binder using the asphalt binder total tons placed as tack coat
2. Asphaltic emulsion by applying the formula in "Asphaltic Emulsion" to the asphaltic emulsion total tons placed as tack coat

Asphaltic Emulsion

The Engineer calculates the quantity of asphalt in asphaltic emulsions, including fog seals and tack coat, using the following formula:

$$Q_e = AETT \times (X_e / 100)$$

where:

- Q_e = quantity in tons of asphalt used in asphaltic emulsions
- $AETT$ = undiluted asphaltic emulsions total tons placed
- X_e = minimum percent residue specified in Section 94, "Asphaltic Emulsions," of the Standard Specifications based on the type of emulsion used

You may, as an option, determine " X_e " by submitting actual daily test results for asphalt residue for the asphaltic emulsion used. If you choose this option, you must:

1. Take 1 sample every 200 tons but not less than 1 sample per day in the presence of the Engineer from the delivery truck, at midload from a sampling tap or thief, and in the following order:
 - 1.1. Draw and discard the 1st gallon
 - 1.2. Take two separate 1/2-gallon samples
2. Submit 1st sample at the time of sampling
3. Provide 2nd sample within 3 business days of sampling to an independent testing laboratory that participates in the AASHTO Proficiency Sample Program
4. Submit test results from independent testing laboratory within 10 business days of sample date

Slurry Seal

The Engineer calculates the quantity of asphalt in slurry seals (Qss) by applying the formula in "Asphaltic Emulsion" to the actual quantity of asphaltic emulsion used in producing the slurry seal mix.

Modified Asphalt Binder

The Engineer calculates the quantity of asphalt in modified asphalt binder using the following formula:

$$Q_{mab} = MABTT \times [(100 - X_{am}) / 100]$$

where:

Q_{mab} = quantity in tons of asphalt used in modified asphalt binder
MABTT = modified asphalt binder total tons placed
X_{am} = specified percentage of asphalt modifier

The quantity of extender oil is included in the quantity of asphalt.

Other Materials

For other materials containing asphalt not covered above, the Engineer determines the quantity of asphalt (Qo).