**METHOD OF TEST FOR DETERMINATION OF V.M.A. IN COMPACTED BITUMINOUS MIXTURES**

LS-266 R29

## 4. CALCULATIONS

4.1 VMA based on BRD of individual aggregates..............................................................._____

$$\text{VMA} = \frac{Gb - Gc}{Gb} \times 100$$

$$= 100 - \frac{Db\,(100 - \%\,AC)}{Gb}$$

Where:

$$Gb = \frac{100}{\dfrac{\%\ Co\ Agg}{BRD\ Co\ Agg} + \dfrac{\%\ Fi\ Agg\ \#1}{BRD\ Fi\ Agg\ \#1} + \dfrac{\%\ Fi\ Agg\ \#2}{BRD\ Fi\ Agg\ \#2} + \cdots}$$

$$Gc = 100 - \frac{Db\,(100 - \%AC)}{100}$$

Gb   = bulk relative density of aggregate

Db   = bulk relative density of compacted hot mix

BRD = bulk relative density

4.2 VMA based on BRD of blended coarse and blended fine aggregates........................................_____

$$\text{VMA} = \frac{Gsb - Gc}{Gsb} \times 100$$

$$= 100 - \frac{Gmb\,(100 - \%\,AC)}{Gsb}$$

Where:

$$Gsb = \frac{100}{\dfrac{\%\ Co\ Agg\ (see\ Note\ 1)}{BRD\ Blended\ Co\ Agg} + \dfrac{\%\ Fi\ Agg\ (see\ Note\ 1)}{BRD\ Blended\ Fi\ Agg\ \#1}}$$

$$Gc = \frac{Gmb\,(100 - \%AC)}{100}$$

Gsb   = combined bulk relative density of blended coarse and blended fine aggregates

Gmb = bulk relative density of compacted hot mix

BRD  = bulk relative density

Note 1: % coarse and % fine aggregates shall be based on Job Mix Formula

(% passing/retained on 4.75 mm sieve)

## 6. NOTES

6.1 If the plant check gradation and AC content is very close to the mix design, then the Gsb from the mix design may be used..............................................................................................._____

**COMMENTS**