# NorthEast Transportation Training & Certification Program

## HMA Marshall Volumetric Properties Test Report (T 166, T 209, T 245)

| | | | | | |
|---|---|---|---|---|---|
| Date/Time: | | Lab/Location: | | | |
| Weather: | | Date Rec'd #: | | Random Sample: | |
| Project: | | Lab Login #: | | Lot #: | |
| Contract #: | | Material ID: | | Sublot #: | |
| Contractor: | | Material #: | | Sample Location: | |
| Pay Item #: | | Sample #: | | Station: | |
| Source: | | Sample Type: | QC A-V IA DR Other | Offset: | |
| Plant Type: | | Sampled By/Cert. #: | | | |

| Bulk Specific Gravity of Compacted HMA (T 166) | | | | |
|---|---|---|---|---|
| Specimen #: | | | | |
| Mass of Dry Specimen in Air (A): | | | | |
| Mass of Specimen at SSD (B): | | | | |
| Mass of Specimen in Water (C): | (@ 77 +/- 1.8 ºF) | | | |
| Specimen Volume (V): | (B-C) | | | |
| Bulk Specific Gravity of Specimen (Gmb): | (A / ( B - C)) | | | |
| Unit Weight, Kg/m³: | ($G_{mb}$ * 1000) | | | |

| Maximum Specific Gravity of HMA (T 209) | | | | | | |
|---|---|---|---|---|---|---|
| Mass of Dry Sample in Air (A): | | | | | | |
| Bowl Method | Mass of Empty Pycnometer on Weigh Below in Water (T): | Water temperature 77±1.8˚F | | | | |
| | s of Pycnometer and Sample on Weigh Below in Water (S): | | | | | |
| Flask Method | Mass of Pycnometer filled with Water (D): | | | | | |
| | Mass of Pycnometer filled with Sample and Water (E): | | | | | Average |
| Theoretical Maximum Specific Gravity ($G_{mm}$): | | | | | | |
| Unit Weight, lb/ft³: | ($G_{mm}$ * 1000) | | | | | |

| Volumetric Analysis of Compacted HMA | | | | | | |
|---|---|---|---|---|---|---|
| Percent Minus 75 µm of Sample (75 µm): | (From T 11) | | | | | |
| Percent PG Binder of Sample ($P_b$): | | | | | | |
| Bulk Specific Gravity of Combined Aggregate ($G_{sb}$): | | | | | | |
| Specific Gravity of PG Binder ($G_b$): | | | | | Average | Specification |
| Percent Voids in Mix ($P_a$): | (100 * (($G_{mm}$ - $G_{mb}$) / $G_{mm}$)) | | | | | |
| Voids in the Mineral Agg. (VMA): | (100-(($G_{mb}$ * (100 - $P_b$)) / $G_{sb}$)) | | | | | |
| Voids Filled with Asphalt (VFA): | ((100 * (VMA - $P_a$)) / VMA) | | | | | |
| Effective Agg. Specific Gravity (Gse): | (100 - $P_b$)/((100/$G_{mm}$)-($P_b$/$G_b$)) | | | | | |
| Percent Binder Absorbed: (Pba): | (100 *(($G_{se}$ - $G_{sb}$)/($G_{sb}$*$G_{se}$))*$G_b$) | | | | | |
| Percent Binder Effective: (Pbe): | ($P_b$ - (( $P_{ba}$ / 100) * ( 100 - $P_b$))) | | | | | |
| Fines to Effective Asphalt Ratio: | ( 75 µm/ $P_{be}$) | | | | | |

| HMA Marshall Stability and Flow (T 245) | | | | | | |
|---|---|---|---|---|---|---|
| Number of Blows Each Side: | | | | | | |
| Marshall Specimen Fabrication Temp.: | ( ºF ) | | | | | |
| Maximum Load Dial Reading: | | | | | | |
| Volume (V)/ Height Correction Factor (Vcf): | | | | | | |
| Uncorrected Stability (Su): | | | | | Average | |
| Corrected Stability (Sc): | (Vcf*Su) | | | | | |
| Flow in 0.01 in.: | | | | | | |

Comments:

| | | | |
|---|---|---|---|
| Tested by: | | Reviewed by: | |
| Certification #: | | Certification #: | |
| Date: | | Date: | |

Results Within Specification Limits: ☐ Results Outside Specification Limits: ☐