

# NorthEast Transportation Training & Certification Program

## HMA Gyrotory Volumetric Properties Test Report (T 312, T 166)

Date/Time:	Lab/Location:	
Weather:	Date Rec'd #:	Random Sample: Yes No
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 #:	1	2	3
Estimated Single Axle Loads (ESALs):			
Mass of Dry Specimen in Air (A):			
Mass of Specimen at SSD (B):			
Mass of Specimen in Water (C): ( @ 77 +/- 1.8 °F )			
<b>Bulk Specific Gravity of Specimen at Nmax (G<sub>mb</sub>@N<sub>max</sub>):</b> (A / (B - C))			

Density of HMA by Means of Gyrotory Compactor (T 312)			
Height at N <sub>ini</sub> (Hi):			
Height at N <sub>des</sub> (Hd):			
Height at N <sub>max</sub> (Hm):			
%G <sub>mm</sub> at N <sub>ini</sub> : (((G <sub>mb</sub> @N <sub>max</sub> * (Hm / Hi)) / G <sub>mm</sub> ) * 100)			
%G <sub>mm</sub> at N <sub>des</sub> (E): (((G <sub>mb</sub> @N <sub>max</sub> * (Hm / Hd)) / G <sub>mm</sub> ) * 100)			
%G <sub>mm</sub> at N <sub>max</sub> (F): ((G <sub>mb</sub> @N <sub>max</sub> / G <sub>mm</sub> ) * 100)			

Volumetric Analysis of Compacted HMA			
Theoretical Maximum Specific Gravity (G <sub>mm</sub> ): (From T 209)			
Percent Minus 75 µm of Sample (75 µm):			
Percent PG Binder of Sample (P <sub>b</sub> ):			
Bulk Specific Gravity of Combined Aggregate (G <sub>sb</sub> ):			
Specific Gravity of PG Binder (G <sub>b</sub> ):			
<b>Bulk Specific Gravity at N<sub>des</sub> (G<sub>mb</sub>):</b> (G <sub>mb</sub> @N <sub>max</sub> * (%G <sub>mm</sub> @N <sub>des</sub> / %G <sub>mm</sub> @N <sub>max</sub> ))			
<b>Percent Voids in Mix (P<sub>a</sub>):</b> (100 * ((G <sub>mm</sub> - G <sub>mb</sub> @N <sub>des</sub> ) / G <sub>mm</sub> ))			
<b>Voids in the Mineral Agg. (VMA):</b> (100 - ((G <sub>mb</sub> @N <sub>des</sub> * (100 - P <sub>b</sub> )) / G <sub>sb</sub> ))			
<b>Voids Filled with Asphalt (VFA):</b> ((100 * (VMA - P <sub>a</sub> )) / VMA)			
<b>Effective Agg. Specific Gravity (G<sub>se</sub>):</b> (100 - P <sub>b</sub> ) / ((100 / G <sub>mm</sub> ) - (P <sub>b</sub> / G <sub>b</sub> ))			
<b>Percent Binder Absorbed: (P<sub>ba</sub>):</b> (100 * ((G <sub>se</sub> - G <sub>sb</sub> ) / (G <sub>sb</sub> * G <sub>se</sub> )) * G <sub>b</sub> )			
<b>Percent Binder Effective: (P<sub>be</sub>):</b> (P <sub>b</sub> - ((P <sub>ba</sub> / 100) * (100 - P <sub>b</sub> )))			
<b>Fines to Effective Asphalt Ratio:</b> (75 µm / P <sub>be</sub> )			

	Average	Specification

Comments:

Tested by: _____	Reviewed by: _____
Certification #: _____	Certification #: _____
Date: _____	Date: _____
Results Within Specification Limits: <input type="checkbox"/>	Results Outside Specification Limits: <input type="checkbox"/>