



# INDIANA DEPARTMENT OF TRANSPORTATION

## *Driving Indiana's Economic Growth*

Office of Materials Management  
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April 17, 2014

### MEMORANDUM

TO: Approved HMA Mix Design Laboratories

FROM: Matthew Beeson, P.E.  
Asphalt Engineer, Office of Materials Management

RE: 2014 INDOT HMA Aggregate Bulk Specific Gravity List & Procedures

1. The following procedure will be used for contracts let *after October 1, 2013*:

- Virgin aggregate bulk specific gravity values supplied with 2014 mix design submittals shall be values shown on the attached list. The procedure to determine which bulk specific value to use is as follows:
  - If the exact aggregate product is shown on the list, use that value
  - If the exact aggregate product is not shown on the list, and values are shown for 8s, 11s, and sand, determine which value to use based on the fineness modulus of the aggregate in accordance with AASHTO T 27:
    - Fineness Modulus  $\geq 6.00$  – use average value for 8s, or value for 8s from corresponding bench for stone sources if available
    - $3.50 < \text{Fineness Modulus} < 6.00$  – use average value for 11s, or value for 11s from corresponding bench for stone sources if available
    - Fineness Modulus  $\leq 3.50$  – use average value for sand, or value for sand from corresponding bench for stone sources if available
  - If only one size of coarse aggregate (8s or 11s) is shown on the list, use that value for all coarse aggregates
  - If only one value is shown for a source or bench for stone sources, use that value for all aggregates from that source or bench
  - When using SF, ACBF, GBF, or Wet Bottom Boiler Slag: The value shown on the list may be used. However, upon request, INDOT will obtain a sample from a stockpile at the Producer's location and determine a bulk specific gravity value. The Producer may use this value for mix designs utilizing that particular stockpile only.

- If no values are shown for a source, please contact the District Testing Engineer or Office of Materials Management
  - Bulk specific gravity value of RAP shall be 2.640. However, if a Producer has a RAP stockpile with a bulk specific gravity value greater than or equal to **2.680** or less than **2.600**, upon request, INDOT will obtain a sample from a RAP stockpile at the Producer's location and determine a bulk specific gravity value in accordance with ITM 584. The Producer may use this value for mix designs utilizing that particular RAP stockpile only. Requests for sampling shall be directed to the District Testing Engineer and Asphalt Engineer.
  - Bulk specific gravity of RAS material shall be 2.500
  - Bulk specific gravity of baghouse fines shall be 2.800
  - Bulk specific gravity of mineral fillers shall be 2.800
  - Reference designs may be submitted with bulk specific gravities determined by the above procedure. Any affected properties, including VMA, VFA, FAA, and dust/effective binder ratio shall be recalculated based on the new Gsb values. If any recalculated property is outside specification limits, the design cannot be referenced and a new design must be submitted.
2. The following procedure will be used for contracts let *prior to October 1, 2013*:
- The dry bulk specific gravity of fine aggregates shall be determined in accordance with AASHTO T 84 and the dry bulk specific gravity of coarse aggregates shall be determined in accordance with AASHTO T 85. These values shall be compared with the values published by INDOT annually. If there is a more recent District Testing value then that value shall be used for comparison. If the design values vary by more than the precision limits in the respective AASHTO test method of  $\pm 0.066$  for fine aggregates and  $\pm 0.038$  for coarse aggregates, an investigation will be made.
  - The specific gravity of mineral filler shall be determined in accordance with AASHTO T 133.
  - The bulk specific gravity of the combined aggregate blend with RAP shall be determined in accordance with ITM 584. For mixture on contracts let after 9/1/11, the new ITM 584 method shall be used. For mixture on contracts let prior to 9/1/11, the old ITM 584 method or the new ITM 584 method can be used. Bulk specific gravity values determined using the new ITM 584 method can simply be plugged into designs using the old method if all design criteria is met.
  - The bulk specific gravity of the combined aggregate blend reported on the DMF shall be based on the specific gravities noted above.



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- *If desired, the design lab may submit designs using the “new” procedure for contracts let before October 1, 2013.*