

**MATERIALS DIVISION**  
  
 Virginia Department of Transportation  
**MEMORANDUM**

<b>GENERAL SUBJECT:</b> Chapter VI - Pavement Evaluation and Design	<b>NUMBER:</b> MD 323-09
<b>SPECIFIC SUBJECT:</b> Sections 604.02 and 604.03 ESAL factors for Asphalt and Rigid Pavements	<b>DATE:</b> September 17, 2009
<b>DIRECTED TO:</b>  District Materials Engineers	<b>SIGNATURE:</b>  Charles A. Babish, P.E. State Materials Engineer <i>Signature on original copy of memorandum</i>

*This Memorandum serves to notify users of the Materials Division’s Manual of Instructions that the Equivalent Single Axle Load (ESAL) factors for single unit and tractor trailer trucks for designing both flexible and rigid pavements have been updated based on the data and recommendations provided in recent VTRC study on Truck ESAL factors using Weigh In Motion (WIM) data (<http://vtrc.virginiadot.org/PubDetails.aspx?PubNo=09-R18>). ESAL factors for cars or passenger vehicles remain unchanged. Special truck factors for the coal counties in Bristol district are being developed to account for the higher coal county weights. These changes have also been identically reflected in the document titled “Guidelines for 1993 AASHTO Pavement Design”.*

**Revise paragraph and table on asphalt ESAL factors in Section 604.02 (a) of Chapter VI of Materials Division MOI (see page VI-40) as indicated below:**

ESAL Factors

When no *site specific* Weigh in Motion (WIM) or vehicle classification data are available to determine actual 18-kip Equivalent Single Axle Loads (ESAL) factors, use the following values:

Vehicle Classification	ESAL Factor (ESALs/vehicle)
Cars/Passenger Vehicles	0.0002
Single Unit Trucks	<del>0.37</del> 0.46
Tractor Trailer Trucks	<del>1.28</del> 1.05

**Revise paragraph and table on concrete ESAL factors in Section 604.03 of Chapter VI of Materials Division MOI (see page VI-46) as indicated below:**

## ESAL Factors

When no *site specific* Weigh in Motion (WIM) or vehicle classification data are available to determine actual 18-kip Equivalent Single Axle Loads (ESAL) factors, use the following values:

Vehicle Classification	ESAL Factor (ESALs/vehicle)
Cars/Passenger Vehicles	0.0002
Single Unit Trucks	<del>0.56</del> 0.59
Tractor Trailer Trucks	<del>1.92</del> 1.59

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Commissioner  
Chief Engineer  
Division Administrators  
Resident Administrators  
District Materials Engineers  
District Construction Engineers  
District Maintenance Engineers  
American Concrete Paving Association  
NE Chapter, Southern Region

Virginia Asphalt Association  
Virginia Dept. of Minority Business Enterprise  
Virginia Ready-Mixed Concrete Association  
Federal Highway Administration  
Virginia Transportation Construction Alliance  
Precast Concrete Association of Virginia  
Old Dominion Highway Contractors Association