

GEORGIA DOT RESEARCH PROJECT 18-04

FINAL REPORT

**DETERMINATION OF EQUIVALENT
SINGLE AXLE LOAD (ESAL) FACTOR FOR
GEORGIA PAVEMENT DESIGN**



**OFFICE OF PERFORMANCE-BASED
MANAGEMENT AND RESEARCH**

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| 16. Abstract The Georgia Department of Transportation (GDOT) is currently using the 1972 AASHTO <i>Pavement Design Guide</i> in which the damage caused by traveling vehicles in the pavement's design life is defined in terms of equivalent single axle load (ESAL). The last updates of truck ESAL factors in Georgia were made in 1984. Thus, there is a need to update ESAL factors due to the changes in traffic patterns over time, especially during recent years. In this study, truck ESAL factors were updated using actual traffic loadings from weigh-in-motion (WIM) sensors installed throughout Georgia. As GDOT is adopting the pavement mechanistic–empirical (ME) design, customized truck traffic classification (TTC) groups were developed as well to simplify the pavement ME design process, which requires high-dimensional traffic feature inputs by categories, including vehicle class distributions (VCDs), monthly distribution factors (MDFs), hourly distribution factors (HDFs), and normalized axle load spectra (NALS). Specifically, an effective data analytics procedure was developed to reduce the high-dimensional traffic features by stratified principal component analysis (PCA), followed by K-means clustering to establish the appropriate TTC groups. For a case study, the performance of two typical pavement designs was evaluated using the AASHTOWare® Pavement ME Design software with respect to two scenarios of traffic inputs: (1) the derived cluster-based groups, and (2) the national default TTC groups. The results indicated that direct application of the national default TTC groups resulted in over-design of pavement structure, especially the jointed plain concrete pavement (JPCP), in Georgia. Therefore, it is recommended that customized TTC groups derived from state-specific WIM data should be used. | | | | | |
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The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Georgia Department of Transportation or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

| Symbol | When You Know | Multiply By | To Find | Symbol |
|--------------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|
| LENGTH | | | | |
| in | inches | 25.4 | millimeters | mm |
| ft | feet | 0.305 | meters | m |
| yd | yards | 0.914 | meters | m |
| mi | miles | 1.61 | kilometers | km |
| AREA | | | | |
| in ² | square inches | 645.2 | square millimeters | mm ² |
| ft ² | square feet | 0.093 | square meters | m ² |
| yd ² | square yard | 0.836 | square meters | m ² |
| ac | acres | 0.405 | hectares | ha |
| mi ² | square miles | 2.59 | square kilometers | km ² |
| VOLUME | | | | |
| fl oz | fluid ounces | 29.57 | milliliters | mL |
| gal | gallons | 3.785 | liters | L |
| ft ³ | cubic feet | 0.028 | cubic meters | m ³ |
| yd ³ | cubic yards | 0.765 | cubic meters | m ³ |
| NOTE: volumes greater than 1000 L shall be shown in m ³ | | | | |
| MASS | | | | |
| oz | ounces | 28.35 | grams | g |
| lb | pounds | 0.454 | kilograms | kg |
| T | short tons (2000 lb) | 0.907 | megagrams (or "metric ton") | Mg (or "t") |
| TEMPERATURE (exact degrees) | | | | |
| °F | Fahrenheit | 5 (F-32)/9 or (F-32)/1.8 | Celsius | °C |
| ILLUMINATION | | | | |
| fc | foot-candles | 10.76 | lux | lx |
| fl | foot-Lamberts | 3.426 | candela/m ² | cd/m ² |
| FORCE and PRESSURE or STRESS | | | | |
| lbf | poundforce | 4.45 | newtons | N |
| lbf/in ² | poundforce per square inch | 6.89 | kilopascals | kPa |
| APPROXIMATE CONVERSIONS FROM SI UNITS | | | | |
| Symbol | When You Know | Multiply By | To Find | Symbol |
| LENGTH | | | | |
| mm | millimeters | 0.039 | inches | in |
| m | meters | 3.28 | feet | ft |
| m | meters | 1.09 | yards | yd |
| km | kilometers | 0.621 | miles | mi |
| AREA | | | | |
| mm ² | square millimeters | 0.0016 | square inches | in ² |
| m ² | square meters | 10.764 | square feet | ft ² |
| m ² | square meters | 1.195 | square yards | yd ² |
| ha | hectares | 2.47 | acres | ac |
| km ² | square kilometers | 0.386 | square miles | mi ² |
| VOLUME | | | | |
| mL | milliliters | 0.034 | fluid ounces | fl oz |
| L | liters | 0.264 | gallons | gal |
| m ³ | cubic meters | 35.314 | cubic feet | ft ³ |
| m ³ | cubic meters | 1.307 | cubic yards | yd ³ |
| MASS | | | | |
| g | grams | 0.035 | ounces | oz |
| kg | kilograms | 2.202 | pounds | lb |
| Mg (or "t") | megagrams (or "metric ton") | 1.103 | short tons (2000 lb) | T |
| TEMPERATURE (exact degrees) | | | | |
| °C | Celsius | 1.8C+32 | Fahrenheit | °F |
| ILLUMINATION | | | | |
| lx | lux | 0.0929 | foot-candles | fc |
| cd/m ² | candela/m ² | 0.2919 | foot-Lamberts | fl |
| FORCE and PRESSURE or STRESS | | | | |
| N | newtons | 0.225 | poundforce | lbf |
| kPa | kilopascals | 0.145 | poundforce per square inch | lbf/in ² |

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EXECUTIVE SUMMARY

The Georgia Department of Transportation (GDOT) is currently using the 1972 AASHTO *Guide for Design of Pavement Structures*, known as the Pavement Design Guide, in which the damage caused by traveling vehicles in the pavement's design life is defined in terms of equivalent single axle load (ESAL). An update of ESAL factors is needed in Georgia as the existing ESAL factors utilized by GDOT were established in 1984. Since then, traffic has changed dramatically in Georgia due to population and economic growths, especially over recent years. For example, the Savannah Port expansion has inevitably increased the number of multi-trailer trucks in the region. The traffic loading data for updating ESAL factors were obtained from weigh-in-motion (WIM) sensors. WIM sensors collect information, including the number of vehicles, the gross vehicle weight (GVW), and type of the axles for calculation of ESAL factors, which can be used during the transition period prior to full adoption of the pavement mechanistic– empirical (ME) design process in Georgia. The ESAL factors were determined with various reliability levels for WIM stations located on rural and urban interstate highways, respectively.

According to the results, the ESAL factors with 85 % reliability are close to the GDOT's current ESAL factors for flexible pavement design in either rural or urban interstate highways. For rigid pavement, ESALs calculated based on 90 % reliability are close to the GDOT's current ESAL Factors. Further, a site specific ESAL factors are recommended for pavement design due to the high variability among the WIM sites.

In the pavement ME design practice, truck traffic classification (TTC) groups are typically used for characterizing traffic inputs. Thus, it is important that TTC groups reflect the actual traffic patterns. In this study, customized TTC groups are developed using the WIM sensor data by

considering all pavement ME design traffic inputs, including vehicle class distributions (VCDs), monthly distribution factors (MDFs), hourly distribution factors (HDFs), and normalized axle load spectra (NALS). Given the high-dimensional features of traffic inputs, machine learning techniques are leveraged to (1) reduce the feature's dimension, and (2) characterize (cluster) traffic patterns in a low-dimensional space. Specifically, a category-specific principal component analysis (PCA) was used for feature reduction, followed by K-means cluster analysis.

For validation purposes, the performance of two typical pavement designs was evaluated using the AASHTOWare Pavement ME software with respect to two scenarios of traffic inputs: (1) the derived cluster-based groups, and (2) the national default TTC groups. The results showed that the national default TTC groups resulted in over-design of pavement structure, especially the jointed plain concrete pavement (JPCP), in Georgia. Therefore, it is recommended that customized TTC groups derived from state-specific WIM data should be used in practice.

INDEX WORDS: Weigh-in-Motion Sensors, Pavement ME Design, Traffic Inputs, Truck Traffic Classification Groups, Principal Component Analysis, Machine Learning.

CHAPTER 1. INTRODUCTION

BACKGROUND AND PROBLEM STATEMENT

The Georgia Department of Transportation's (GDOT) pavement design procedure is based on the 1972 American Association of State Highways and Transportation Officials (AASHTO) *Interim Guide for Design of Pavement Structures* (AASHTO 1972) and 1981 AASHTO rigid pavement design revisions (AASHTO 1981) for the design of pavements in Georgia. In this procedure, a required structural number (SN) for flexible pavement and concrete thickness (D) for rigid pavement are estimated based on the pavement service life, the serviceability of the pavement, and the number of equivalent loads applied, among others. The concept of equivalent single axle loads (ESALs) allows for pavement designers to convert the damage caused by loads of varying magnitudes and axle configurations to an equivalent standard 18-kip single axle load. The Federal Highway Administration (FHWA) divides vehicles into 13 different classes. When ESALs are calculated, the effects of vehicle classes 1–3 (i.e., motorcycles, passenger cars, and pickup trucks) are minimal and far less as compared to other heavier vehicle classes. For example, one passenger car is equivalent to only 0.0004 ESAL, while one tractor-semitrailer combination is approximately 2.0 ESALs. As such, vehicle classes 1–3 are commonly disregarded for pavement design.

Pavement damage is computed per axle. However, expressing the damage in terms of the average damage caused by a particular vehicle is more convenient in practice. This is referred to as a truck ESAL factor, which is simply the average number of ESAL applications per vehicle class or per group of vehicle classes. GDOT's current fixed ESAL factors for passenger vehicles, single-unit trucks, and multi-unit trucks are shown in table 1.

Table 1. Default ESAL factors used by GDOT.

| Vehicle Classification | Flexible Pavement | Rigid Pavement |
|-------------------------------------------|--------------------------|-----------------------|
| Passenger Cars & Pickup Trucks | 0.004 | 0.0004 |
| Single-unit Trucks | 0.40 | 0.50 |
| Multi-unit Trucks | 1.50 | 2.68 |

Empirical pavement design has been based on the cumulative truck ESALs over the design period of pavement structure. Truck ESAL factors are different from distribution of trucks on different classes of highways (i.e., rural system, urban system, interstate, other principal, minor arterial, and collectors, etc.). Therefore, the determination of correct (up-to-date) ESAL factors is important for a reliable pavement design to minimize over- or under-design of pavement structures, which is directly translated to increased management and rehabilitation costs.

The last updates of truck ESAL factors in Georgia were made in 1984. Further, the ESAL factors may be subject to change in the coming years because of the Savannah Port expansion project that will produce larger/heavier containers to be transported by trucks. There is also a need to update ESAL factors using field-measured actual traffic loadings. Based on *Georgia's Traffic Monitoring Guide* (Wiegand 2018) published by GDOT, the GDOT Office of Transportation Data (OTD) collects weigh-in-motion (WIM) data at 14 permanent continuous count stations (CCSs) and approximately 35 portable sites located throughout Georgia. WIM technology helps to collect traffic loading related information, such as vehicle counts, axle and gross weights, vehicle classification, etc. It allows for continuous data acquisition and provides an accurate representation of actual traffic loadings on Georgia's highways. Therefore, it is important to leverage the WIM data to update GDOT's truck ESAL factors for more effective and reliable pavement design as an interim practice prior to the full adoption of the AASHTOWare Pavement ME Design in Georgia.

STUDY OBJECTIVES

The primary objectives of this study are:

- To develop a method to calculate the truck ESAL factors using data from permanent WIM sites in Georgia.
- To develop updated truck ESAL factors for both flexible and rigid pavements.
- To update the FHWA's existing default traffic inputs in the *AASHTO MEPDG Manual of Practice (MOP)* if needed and develop TTC groups to facilitate the adoption of the MEPDG in Georgia.
- To develop a standard operating procedure (SOP) that allows GDOT to maintain and update the ESAL factors beyond the project completion, as necessary. The SOP would include references to evaluate/update the ESAL factors and timing of a future update.

CHAPTER 2. LITERATURE REVIEW

ESAL FACTORS

Damage to pavement caused by the wheel load of vehicles is of primary concern to pavement engineers. However, it is complicated to calculate the axle loads that a pavement section will be subject to over its design life. The historical approach is to convert damage from wheel loads of different magnitudes and repetitions to damage from an equivalent number of standard loads. The single-axle 18-kip (80 kN) load is the commonly used standard load in the U.S., and is referred to as an *equivalent single axle load* (ESAL). Figure 1 shows the standard 18-kip single axle, i.e., 1.0 ESAL. The development of the ESAL factor dates to the early 1960s when the AASHO Road Test was conducted. The purpose was to use a consistent loading impact unit for capturing various traffic loadings (i.e., different loads and axle configurations) with empirical equations being developed using the AASHO Road Test data.

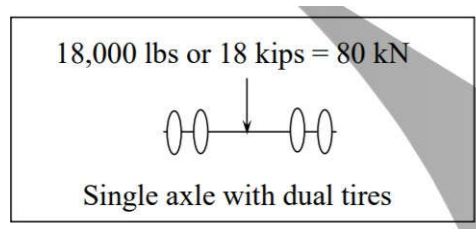


Figure 1. Diagram. 18-kip single axle load.

There are two empirical equations derived from AASHO Road Test results, one for flexible pavements and one for rigid pavements. The load equivalency factor (LEF) for each axle group type per vehicle can be computed based on those equations. The sum of the LEFs results in the ESAL factor for that specific vehicle.

The parameters needed for the ESAL factor calculations are:

- Axle weights.
- Axle configuration (i.e., single axle, tandem axle, tridem axle, and quad axle).
- Type of pavement (i.e., flexible or rigid).
- Structural number for flexible pavements.
- Slab thickness for rigid pavements.
- Terminal serviceability.

Terminal serviceability is defined as the lowest acceptable serviceability rating before resurfacing or reconstruction becomes necessary for a particular class of highway. In its *Pavement Design Manual*, GDOT's default values for terminal serviceability of flexible pavements are 2.5 for interstates and 2.0 for highways with lesser traffic volumes (GDOT 2005).

ESAL Factors for Flexible Pavements

For flexible pavement design, the equations used to calculate the LEF are shown as equations 1 through 3, adopted in the 1993 AASHTO design guide (Smith and Diefenderfer 2009). Structural numbers of 4, 6, and 8 were used for LEF calculations for flexible pavements.

$$\log\left(\frac{W_{tx}}{W_{t1}}\right) = 4.79 \log(18 + 1) - 4.79 \log(L_x + L_2) + 4.33 \log(L_2) + \frac{G_t}{\beta_x} - \frac{G_t}{\beta_1} \quad (1)$$

$$G_t = \log\left(\frac{4.2 - p_t}{4.2 - 1.5}\right) \quad (2)$$

$$\beta_x = 0.40 + \frac{0.081(L_x + L_2)^{3.23}}{(N + 1)^{5.19} L_2^{3.23}} \quad (3)$$

Where:

W_{tx} = number of applications of given axle

W_{t18} = number of standard axle passes (single 18-kip axle)

L_x = load in kips of axle group

L_2 = axle code (1 for single axle, 2 for tandem axles, 3 for tridem axles, and 4 for quad axles)

β_{18} = value of β_x when $L_x = 18$ and $L_2 = 1$

p_t = terminal serviceability

SN = structural number

ESAL Factors for Rigid Pavements

The ESAL factor equations for rigid pavements are slightly different from those of flexible pavements. To determine truck ESAL factors for rigid pavements, the same WIM data were used with ESAL equations specifically for rigid pavements as shown in equations 4 through 6. Slab thicknesses of 8, 10, and 12 inches were used for rigid pavement ESAL factor calculation. The same terminal serviceability values for flexible pavements were assumed, as well.

$$\log\left(\frac{W_{tx}}{W_{t1}}\right) = 4.62 \log(18 + 1) - 4.62 \log(L_x + L_2) + 3.28 \log(L_2) + \frac{G_t}{\beta_x} - \frac{G_t}{\beta_1} \quad (4)$$

$$G_t = \log\left(\frac{4.5 - p_t}{4.5 - 1.5}\right) \quad (5)$$

$$\beta_x = 1.00 + \frac{3.63(L_x + L_2)^{5.20}}{(D + 1)^{.46} L_2^{3.52}} \quad (6)$$

Where:

W_{tx} = number of applications of given axle

W_{t18} = number of standard axle passes (single 18-kip axle)

L_x = load in kips of axle group

L_2 = axle code (1 for single axle, 2 for tandem axles, 3 for tridem axles, and 4 for quad axles)

β_{18} = value of β_x when $L_x = 18$ and $L_2 = 1$

p_t = terminal serviceability

D = slab thickness in inches

Site-Specific Truck ESAL Factors

For design purposes, aggregate LEFs, such as state or regional average LEFs, are used for estimating cumulative ESALs over the design period. For example, the Virginia Department of Transportation (VDOT) averages the results to develop site-specific truck ESAL factors by WIM site, pavement type, and vehicle classification. The resulting ESAL factors are simply weighted averages based on their respective vehicle counts (Smith and Diefenderfer 2009). FHWA defined 13 vehicle classes (figure 2), ranging from motorcycles and passenger cars to multi-trailer trucks. However, ESALs are only computed for vehicle classes 4 through 13, as the impacts of classes 1 through 3 are negligible from the pavement design standpoint. The North Carolina Department of Transportation (NCDOT) also uses site-specific traffic, environment, and location information to analyze the damage factor (DF), which is defined as the ratio of the fatigue damage caused by an axle type-load combination to the fatigue damage caused by a standard 18-kip ESAL (Stone et al. 2011).

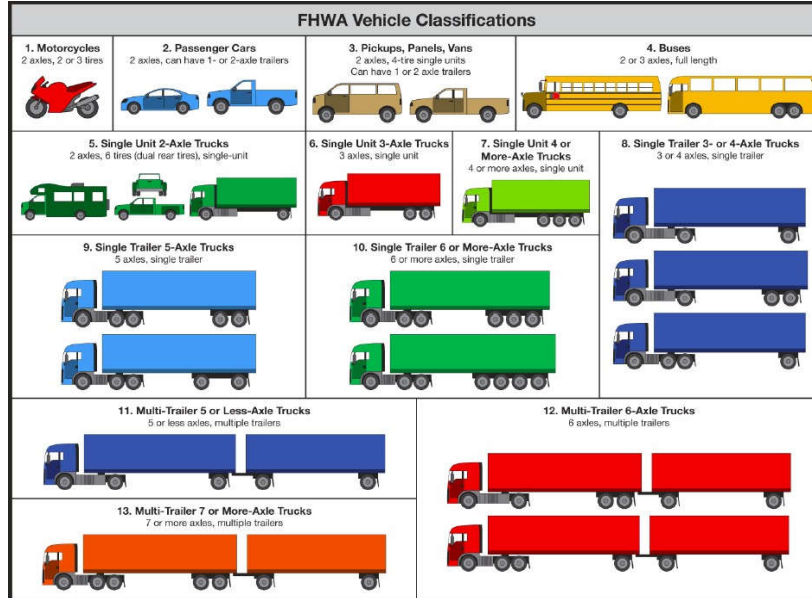


Figure 2. Chart. FHWA vehicle classification system.

ESAL FACTORS USED BY STATE DOTs

Georgia DOT

The current truck ESAL factors in Georgia were established in 1984. Since then, traffic patterns have changed dramatically, especially over recent years, due to continuing growth in the state's population and economy. In addition, the Savannah Port expansion project will produce much larger/heavier containers to be transported by trucks within the state. As such, there is an urgent need to update the ESAL factors to reflect actual traffic loadings. Figure 3 shows the historical ESAL factors used by GDOT from 1964 through 1984.

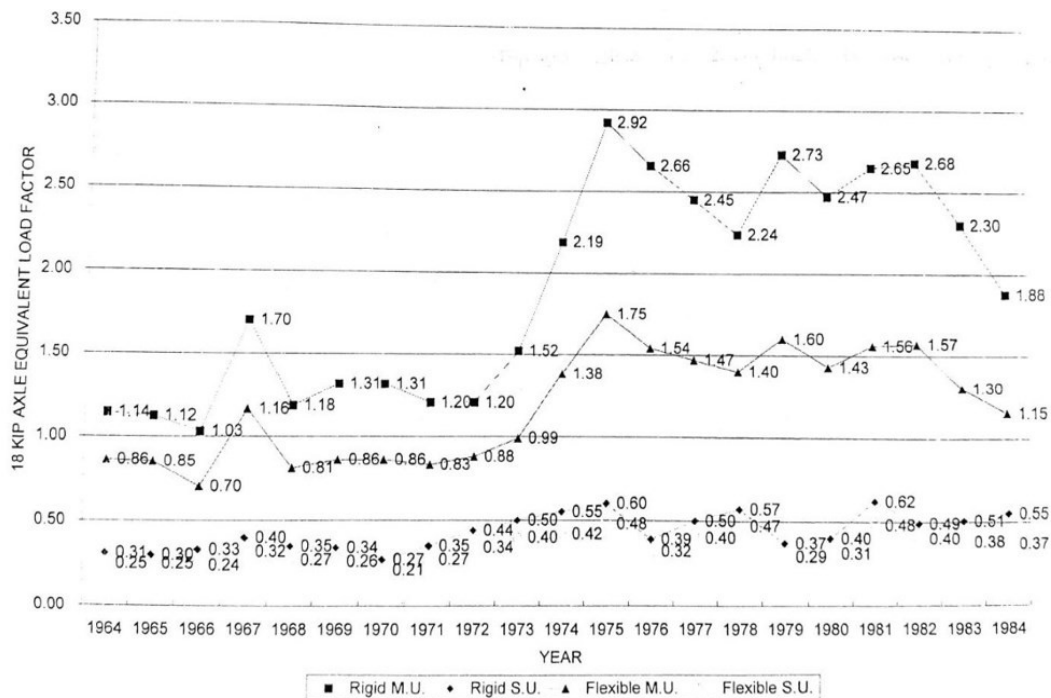


Figure 3. Line graph. Truck ESAL factors history for Georgia.

Virginia DOT

The Virginia DOT currently uses the 1993 AASHTO *Guide for Design of Pavement Structures* (AASHTO 1993). VDOT’s pavement design procedure divides truck traffic into two categories: single-unit trucks and multi-unit (combination) trucks. VDOT has also divided the Virginia roads into two categories: interstate and primary highways. Table 2 and table 3 show the truck ESAL factors in Virginia derived from WIM data from June 2007 through May 2008 using the MATLAB¹ programming language (Smith and Diefenderfer 2009).

¹MATLAB is short for “matrix laboratory” and is a registered trademark of MathWorks.

Table 2. Virginia’s average truck ESAL factors for flexible pavement by vehicle classification and administrative roadway classification (Smith and Diefenderfer 2009).

| Vehicle Classification | Interstate | | Primary | |
|----------------------------------------|-----------------|---------------------------|-----------------|---------------------------|
| | No. of Vehicles | Average Truck ESAL Factor | No. of Vehicles | Average Truck ESAL Factor |
| <i>FHWA Classes</i> | | | | |
| 4 | 83,584 | 0.44 | 42,445 | 0.35 |
| 5 | 91,173 | 0.28 | 87,006 | 0.36 |
| 6 | 69,069 | 0.42 | 102,112 | 0.60 |
| 7 | 5,043 | 1.00 | 27,921 | 1.09 |
| 8 | 71,606 | 0.47 | 36,751 | 0.50 |
| 9 | 2,307,904 | 1.06 | 467,982 | 1.01 |
| 10 | 20,160 | 1.07 | 16,307 | 1.06 |
| 11 | 114,922 | 1.52 | 13,574 | 1.19 |
| 12 | 44,496 | 0.83 | 2,933 | 0.70 |
| 13 | 227 | 1.59 | 39 | 2.23 |
| <i>VDOT Classifications</i> | | | | |
| Single-unit trucks (FHWA Classes 4-7) | 248,869 | 0.39 | 259,484 | 0.53 |
| Combination trucks (FHWA Classes 8-13) | 2,559,315 | 1.06 | 537,587 | 0.98 |

FHWA Classes: Class 4 = buses; Class 5 = 2 axle 6 tire single units; Class 6 = 3 axle single units; Class 7 = 4 or more axle single units; Class 8 = 4 or less axle single trailers; Class 9 = 5 axle single trailers; Class 10 = 6 or more axle single trailers; Class 11 = 5 or less axle multi-trailers; Class 12 = 6 axle multi-trailers; Class 13 = 7 or more axle multi-trailers.

Table 3. Virginia’s average truck ESAL factors for rigid pavement by vehicle classification and administrative roadway classification (Smith and Diefenderfer 2009).

| Vehicle Classification | Interstate | | Primary | |
|----------------------------------------|-----------------|---------------------------|-----------------|---------------------------|
| | No. of Vehicles | Average Truck ESAL Factor | No. of Vehicles | Average Truck ESAL Factor |
| <i>FHWA Classes</i> | | | | |
| 4 | 83,584 | 0.48 | 42,445 | 0.34 |
| 5 | 91,173 | 0.28 | 87,006 | 0.35 |
| 6 | 69,069 | 0.55 | 102,112 | 0.83 |
| 7 | 5,043 | 1.75 | 27,921 | 2.02 |
| 8 | 71,606 | 0.50 | 36,751 | 0.51 |
| 9 | 2,307,904 | 1.67 | 467,982 | 1.53 |
| 10 | 20,160 | 2.16 | 16,307 | 2.03 |
| 11 | 114,922 | 1.48 | 13,574 | 1.08 |
| 12 | 44,496 | 0.87 | 2,933 | 0.67 |
| 13 | 227 | 2.83 | 39 | 4.16 |
| <i>VDOT Classifications</i> | | | | |
| Single-unit trucks (FHWA Classes 4-7) | 248,869 | 0.45 | 259,484 | 0.72 |
| Combination trucks (FHWA Classes 8-13) | 2,559,315 | 1.62 | 537,587 | 1.46 |

FHWA Classes: Class 4 = buses; Class 5 = 2 axle 6 tire single units; Class 6 = 3 axle single units; Class 7 = 4 or more axle single units; Class 8 = 4 or less axle single trailers; Class 9 = 5 axle single trailers; Class 10 = 6 or more axle single trailers; Class 11 = 5 or less axle multi-trailers; Class 12 = 6 axle multi-trailers; Class 13 = 7 or more axle multi-trailers.

North Carolina DOT

NCDOT operates 44 WIM sites, including 19 long-term pavement performance (LTPP) stations (Stone et al. 2011). Table 4 represents NCDOT's truck loading factors of flexible and rigid pavements by roadway classifications. Truck weights from WIM data are used to determine average loadings for two different truck classifications: single-unit single-axle trucks (i.e., duals) and combinations of multiple-unit and multiple-axle trucks (i.e., truck, tractor with semi trailer; TTST). Like other DOTs' policies, loadings from automobiles are negligible (NCDOT 2019).

Table 4. Average truck ESAL factors by vehicle classification and administrative roadway classification (NCDOT 2019).

Flexible Pavement

| | 18 kip ESALs | |
|-----------------------------|--------------|------|
| | DUALS | TTST |
| Rural Freeway & Interstates | 0.30 | 1.15 |
| Rural Other | 0.30 | 0.95 |
| Urban Freeway & Interstates | 0.30 | 0.85 |
| Urban Other | 0.25 | 0.80 |

Rigid Pavement

| | 18 kip ESALs | |
|-----------------------------|--------------|------|
| | DUALS | TTST |
| Rural Freeway & Interstates | 0.30 | 1.60 |
| Rural Other | 0.35 | 1.30 |
| Urban Freeway & Interstates | 0.35 | 1.20 |
| Urban Other | 0.25 | 1.10 |

Comparison of ESAL Factors

Figure 4 and figure 5 represent the comparison of GDOT's current ESAL factors with North Carolina and Virginia DOTs' ESAL factors for rural and urban interstate highways for flexible pavement design. The same comparison is provided for rigid pavements in figure 6 and

figure 7. As seen, GDOT's default ESAL factors are relatively higher than these other state DOTs' ESALs for either rigid or flexible pavement design.

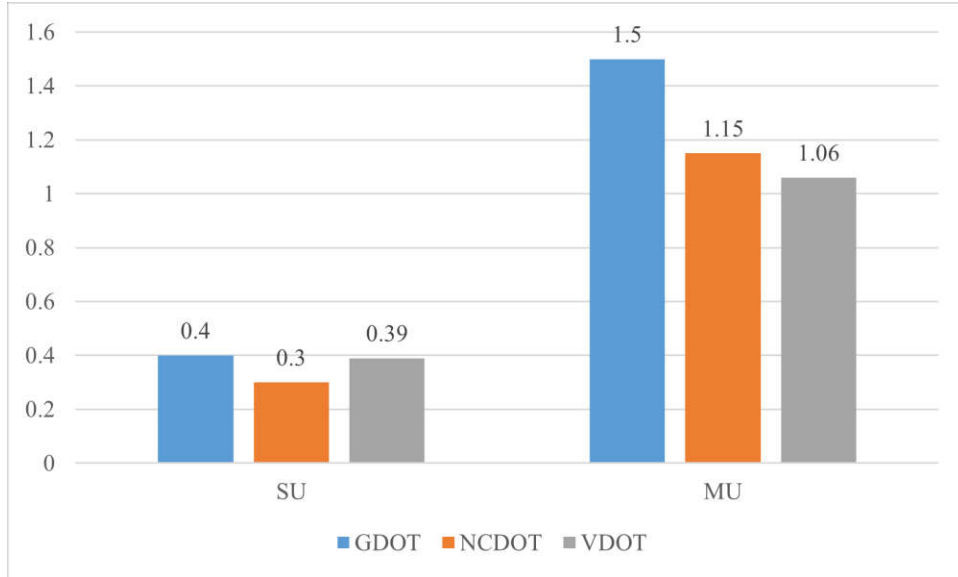


Figure 4. Bar graph. DOTs' ESAL factor comparison results on rural interstate highways for flexible pavement.

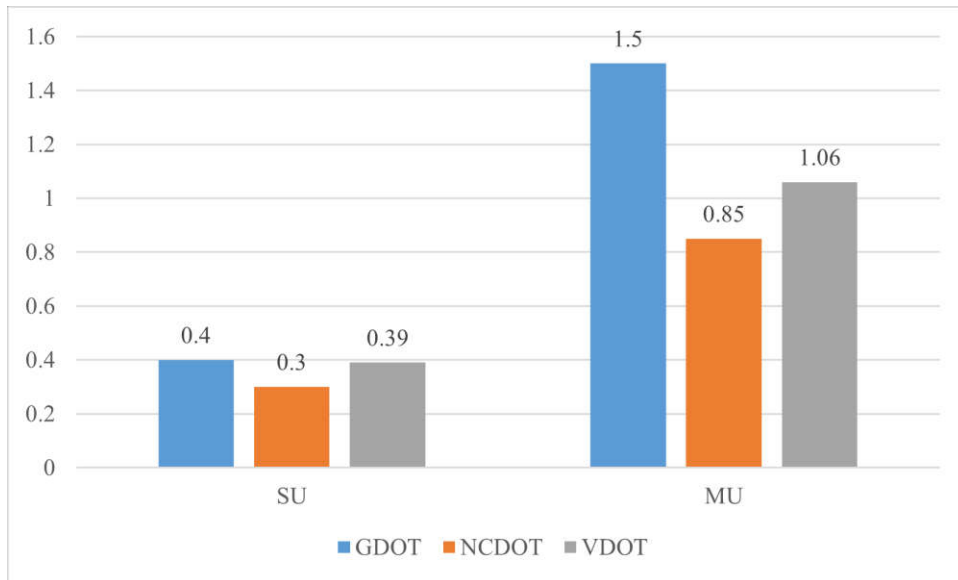


Figure 5. Bar graph. DOTs' ESAL factor comparison results on urban interstate highways for flexible pavement.

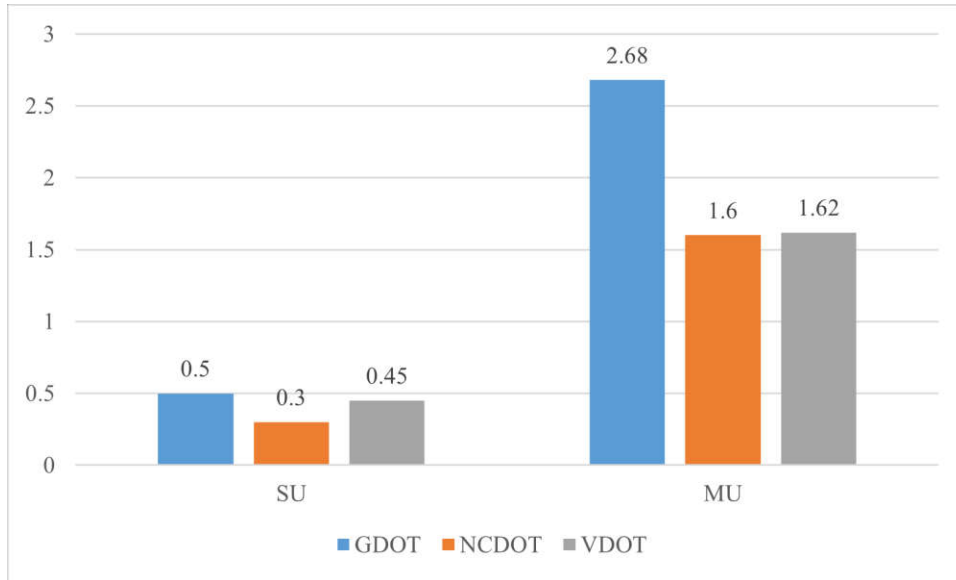


Figure 6. Bar graph. DOTs' ESAL factor comparison results on rural interstate highways for rigid pavement.

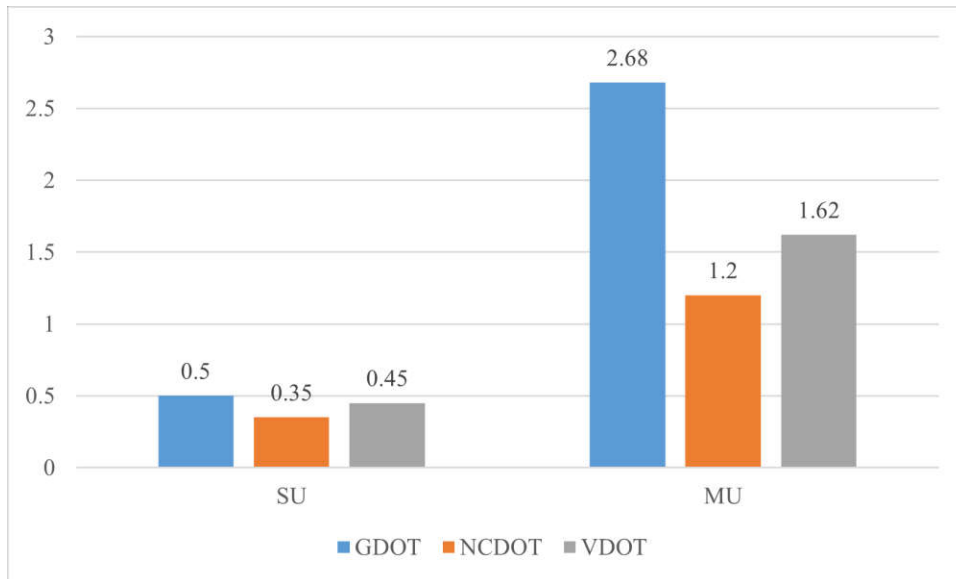


Figure 7. Bar graph. DOTs' ESAL factor comparison results on urban interstate highways for rigid pavement.

As described previously, ESAL factors are weighted averages for each WIM station based on their respective vehicle counts. Many DOTs have developed average ESAL factors for each truck class based on measurements of trucks throughout the state. Class 9 vehicles are the most dominant vehicles in many state DOTs (Selezneva and Hallenbeck 2013, Smith and Diefenderfer 2009). The

dominant vehicle class, gross vehicle weight (GVW) of trucks, and axle loads of each axle group are determining factors that differentiate ESAL factors of different states. In addition to the traffic data, the design guide, which is the basis for pavement design, has an essential role in the resultant ESAL factors.

DIFFERENCES BETWEEN 1972 AND 1993 AASHTO PAVEMENT DESIGN GUIDE

The 1972 AASHTO *Interim Guide for Design of Pavement Structures* does not explicitly consider the reliability factor in the pavement design process. Equation 7 shows the way in which the structural number is calculated by giving an initial estimate and allowing the equation solver to iterate for the solution. The important factors in the 1972 design guide are traffic, terminal serviceability, soil support value, and regional factor.

$$\log(W_1) = 9.36 \log(N + 1) - 0.2 + \frac{\log\left(\frac{4.2 - p_t}{4.2 - 1.5}\right)}{0.4 + \frac{1094}{(SN + 1)^{5.19}}} + 0.372(V - 3.0) + \log\left(\frac{1}{RF}\right) \quad (7)$$

Design reliability must account for uncertainties in traffic loading, environmental conditions, and construction materials. The 1993 AASHTO design method accounts for these uncertainties by incorporating a reliability level, R, to provide a factor of safety into the pavement design over its design life. The factors affecting the pavement design in the 1993 design guide are shown in equation 8.

$$\log(W_1) = Z_R S_0 + 9.36 \log(SN + 1) - 0.2 + \frac{\log\left(\frac{4.2 - p_t}{4.2 - 1.5}\right)}{0.4 + \frac{1094}{(SN + 1)^{5.19}}} + 2.32 \log(M_R) - 8.07 \quad (8)$$

The design inputs for the 1993 AASHTO design guide include:

- Time constraints.
- Reliability (corresponding to Z_R in equation 8).
- Standard deviation.
- Traffic (ESALs).
- Materials (M_R).
- Design serviceability loss.
- Design output is required SN.

RELIABILITY

Reliability reflects the inevitable uncertainty and variability in the design inputs and the importance of the project. It is important to incorporate some degree of certainty into the design process to ensure that the structure will perform satisfactorily over the intended design period. The levels of reliability recommended by AASHTO for various classes of roads are summarized in table 5.

Table 5. Suggested levels of reliability for various functional classifications (AASHTO 1993).

| Functional Classification | Recommended Level of Reliability | |
|-------------------------------|----------------------------------|---------|
| | Urban | Rural |
| Interstate and Other Freeways | 85–99.9 | 80–99.9 |
| Principal Arterials | 80–99 | 75–95 |
| Collectors | 80–95 | 75–95 |
| Local | 50–80 | 50–80 |

The reliability level is reflected by Z_R , assuming traffic and other uncertainties are jointly captured by a normal distribution. Some commonly used levels of reliability are summarized in table 6. The AASHTO design equations also require specification of the overall standard deviation, S_0 . For

flexible pavements, values for S_0 typically range between 0.35 and 0.50. In this report, the value of 0.40 was selected for both flexible and rigid pavement (Christopher et al. 2006).

Table 6. Standard normal deviates for various levels of reliability.

| Reliability (%) | Standard Normal Deviate (Z_R) | Reliability (%) | Standard Normal Deviate (Z_R) |
|-----------------|-----------------------------------|-----------------|-----------------------------------|
| 50 | 0.000 | 93 | -1.476 |
| 60 | -0.253 | 94 | -1.555 |
| 70 | -0.524 | 95 | -1.645 |
| 75 | -0.674 | 96 | -1.751 |
| 80 | -0.841 | 97 | -1.881 |
| 85 | -1.037 | 98 | -2.054 |
| 90 | -1.282 | 99 | -2.327 |
| 91 | -1.340 | 99.9 | -3.090 |
| 92 | -1.405 | 99.99 | -3.750 |

The implementation of the reliability concept in GDOT's truck ESAL factors is discussed in detail in chapter 5.

CHAPTER 3. WEIGH IN MOTION

BACKGROUND

The weigh-in-motion technology, using sensors embedded in pavement, has enabled continuous collection of high-resolution vehicle class and axle weight data, such as gross vehicle weights, axle configurations and weights, axle spacings, vehicle classifications, and speeds. The WIM data are used for various purposes, including the design of pavements or bridges, highway planning, motor vehicle enforcement, and legislative/regulatory studies (FHWA 2018).

The main components of WIM systems include:

- WIM sensor embedded in the roadway surface or under a bridge deck to detect, weigh, and classify vehicles. A *sensor array* is the combination of WIM sensor and loop detectors within a weighing lane.
- Electronics to control system functions, process sensor outputs, and provide recorded information for display and storage.
- Infrastructure, including conduit, bore, cabinet, poles, and junction boxes.
- Support devices to power the WIM electronics and communication devices to transmit the collected data to a remote server.
- Software installed in the WIM electronics to process sensor measurements, analyze, format, and store collected data (FHWA 2018).

TYPES OF WIM SENSORS

Several types of in-road WIM sensors are available, but the most frequently used types include bending plate, load cell, quartz piezo, polymer piezo, and the strain gauge strip sensor. Wide sensors, such as bending plate and load cell, provide the opportunity for the tire to rest fully on the sensor, while other sensors, referred to as narrow or strip sensors, meet only a part of the tire footprint as a vehicle moves over them. The available sensors have a broad range in accuracy and cost that should be considered during the sensor selection process. If high-accuracy weight data collection over a long period of time is required, then either a load cell or bending plate sensor would be the preferred solution. In terms of life cycle costs, the bending plate and load cell sensors are more cost effective in comparison with piezo sensors with high data quality if properly maintained/calibrated. The polymer piezo sensors are sensitive to temperature fluctuations and pavement stiffness due to seasonal changes; thus, these sensors must be calibrated every 6 to 12 months to keep accuracy in weight measurements.

In summary, for projects with a typical life expectancy of 8 to 10 years, load cells or bending plate sensors would be preferred. Quartz piezo or strain gauge strip sensors typically have shorter lifespans of 3 to 5 years (FHWA 2018). The characteristics of each WIM sensor type are discussed in the following subsections.

Bending Plate

Strain gauges are utilized under the surface of bending plates to collect loading data. The bending plate WIM sensor illustrated in figure 8 is typically 6 ft long, 20 inches wide, and 1 inch thick. Figure 9 shows a bending plate within the pavement structure. The bending plate system measures

the strain on the plate roughly 2,000 times per second, as axles pass over the plate at highway speeds, and then calculates the load required to produce that level of strain.

The bending plate is one of the most accurate WIM sensors, and it is not sensitive to temperature changes and speed variation. However, it is recommended to be only used in portland cement concrete (PCC) pavements. In asphalt concrete (AC) pavements, the pavement around the frame is prone to cracking, which makes the frame loose and creates a hazard for the traveling public.



Figure 8. Illustration. Bending plate sensor (FHWA 2018).



Figure 9. Photo. Bending plate installation (FHWA 2018).

Load Cell

A load cell sensor system includes two weighing platforms, each with a surface size of 6 ft by 3 ft, that can cover a 12-ft traffic lane when placed adjacent to each other. In this scaling system, mechanical or hydraulic transducers measure the applied forces, which are analyzed by system

electronics to calculate axle loads. Figure 10 and figure 11 show a load cell sensor and its installment in the pavement structure, respectively.

Among the commercially available WIM sensors, the load cell is the most accurate sensor at highway speeds (FHWA 2018). However, the sensors need to be calibrated every 12 to 24 months. Time-consuming installment and relatively higher cost are the major disadvantages of load cell sensors.



Figure 10. Illustration. Load cell sensor (FHWA 2018).



Figure 11. Illustration. Load cell installation (FHWA 2018).

Polymer Piezo Sensor

A polymer piezo sensor consists of a copper strand surrounded by a piezoelectric polymer material covered by a brass sheath, as shown in figure 12. These sensors can be ordered in different cable lengths. As vehicles pass over the WIM system, the changes in voltage (electrical charge) caused

by exerted pressure are detected by piezo sensors. Thus, the weight due to the passing tire/axle group can be determined—the heavier the vehicle, the larger the charge.

The polymer piezo WIM systems are the least expensive, most durable, and easiest to install. Therefore, these sensors are widely used for vehicle classification purposes. However, due to their sensitivity to temperature and pavement stiffness, they are less accurate than other WIM sensor types.



Figure 12. Photo. Polymer piezo sensor (FHWA 2018).

Quartz Piezo Sensor

Quartz crystal technology has been utilized in the quartz piezo WIM sensor. As vehicles pass over the sensor, vertical forces are applied and distributed through the quartz crystals in the system, producing an electrical charge proportional to the applied vertical forces. These sensors can be installed in either AC or PCC pavements; however, the installation in PCC pavement structure is much more durable. The main advantage of the quartz sensors is that they are less sensitive to temperature changes, thus making them more precise and subsequently more expensive when compared to other piezo-style sensors. The disadvantage of this sensor type is sensitivity to the

structural strength of the pavement due to material softening in high temperatures or high soil moisture content.

The quartz piezo sensor is approximately 2 inches wide, 2 inches thick, and 1.5 or 2 m long, and it can be varied in length to provide half-lane or full-lane width coverage, as shown in figure 13. Figure 14 illustrates a quartz piezo installation embedded in a pavement cross section.

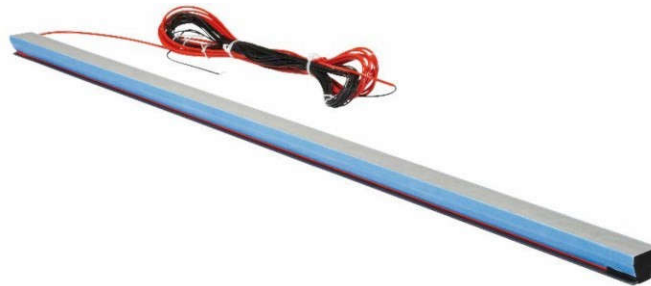


Figure 13. Illustration. Quartz piezo sensor (FHWA 2018).

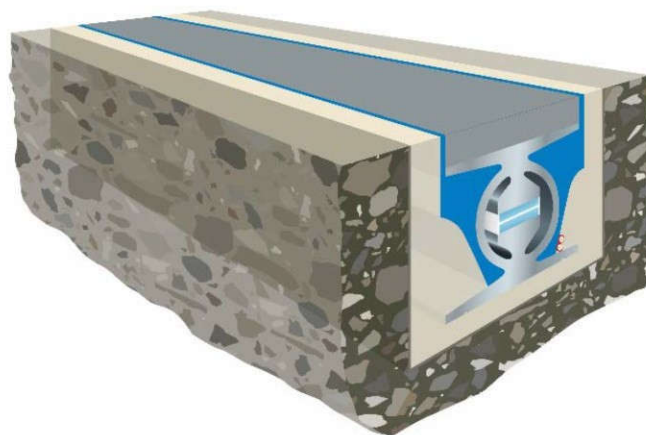


Figure 14. Illustration. Quartz piezo installation depiction (FHWA 2018).

Strain Gauge Strip Sensor

Figure 15 illustrates a strain gauge strip sensor. This type of WIM sensor is based on the strain gauge load cell technology in which the vertical strains are measured as vehicles pass over the system. The induced electronic changes in the strain gauge load cells are converted into dynamic

loads. Each strip sensor is approximately 3 inches wide and 3 inches tall, and weighs 45 to 65 lb, depending on the length of the sensor. These sensors can be installed in either AC or PCC pavement. Because of the sensor's design, which is slightly larger, the sensor is less sensitive to the structure of the pavement compared to quartz piezo sensors. The strain gauge strip sensors are less expensive than quartz piezo sensors and less sensitive to temperature changes as compared to polymer piezo sensors.



Figure 15. Illustration. Strain gauge strip sensor (FHWA 2018).

WIM Sensors in Georgia

In Georgia, the vendor uses two WIM sensor models in the state's current WIM system: quartz and bending plate sensors. Lanes instrumented with quartz sensors provide information on both vehicle weight and class. Although bending plate sensors also record vehicle class and weight data simultaneously, the vendor considers the weight data from quartz sensors to be more accurate and reliable (Chorzepa et al. 2020).

MISSING AND ERRONEOUS DATA

Generally, there are two quality issues with WIM data: missing values and erroneous data. Power outages or sensor malfunctions can cause missing values (Wei and Fricker 2003). A variety of other factors may affect WIM data quality, including environmental changes, pavement conditions, lack of calibration, and the type of WIM technology. Moreover, drivers' behavior, such as accelerating, decelerating, and weaving, also impact the data quality depending on the sensor

technologies (Wei and Fricker 2003, Stone et al. 2011). In addressing the data quality issues in practice, state departments of transportation (DOTs) have developed standard quality control (QC) checks to ensure the quality of the data before releasing them for planning or design practice. To ensure the quality of WIM data used in the analysis in this project, the research team implemented a customized QC procedure derived from the QC policies currently used by GDOT (Wiegand 2018) and NCDOT (Stone et al. 2011).

QUALITY CONTROL CHECKS

Based on previous studies, only 15–25 percent of the collected WIM data are considered good quality data due to lack of skilled staffing, resources, and support software. Thus, both the *Traffic Monitoring Guide* (FHWA 2016) and *AASHTO Guidelines for Traffic Data Programs* (AASHTO 2009) emphasize the QC requirements in traffic monitoring programs. The FHWA Long-Term Pavement Performance Program developed mandatory verification QC checks and software on the collected traffic data in the field before merging with the database. Moreover, state-specific traffic data QC rules (e.g., New Mexico, North Carolina, and Georgia) have been developed to ensure accurate and reliable data are being collected for further analysis (Li et al. 2018). In the following subsections, the QC rules of three state DOTs are discussed. Through the QC process, a portion of raw WIM data are eliminated, which indicates the quality of WIM data. Detailed QC process for Georgia WIM data is discussed in chapter 4.

New Mexico DOT

The New Mexico Department of Transportation (NMDOT) used Microsoft’s Visual Basic for Applications (VBA) language to develop a program for implementing QC rules to their raw WIM data. The first set of rules is to check the time and location of each vehicle. The remaining rules check the consistency of the vehicle class, GVW, number of axles, weights, and their spacings.

Table 7 shows the NMDOT multiple rules in the order applied to check the quality of the WIM data (Brogan et al. 2011).

Table 7. NMDOT QC rule list for WIM data.

| Order | Rule | Rule Description |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| 1 | Year is correct and unique. | If year \neq 09, then error. |
| 2 | Month is correct and unique. | If month \neq 01, then error (e.g., for January). |
| 3 | Day is correct. | If day \neq 1–31, then error. |
| 4 | Hour is correct. | If hour \neq 0–23, then error. |
| 5 | WIM station ID is correct. | If station code \neq 21020, then error. |
| 6 | Direction is correct. | If direction \neq 1 or 5, then error. |
| 7 | Lane number is correct. | If lane number \neq 1–4, then error. |
| 8 | Vehicle class is correct. | If vehicle class \neq 4–13, then error. |
| 9 | Number of axles consistent with the number of axle spacings. | If number of axles \neq number of axle spacings + 1, then error. |
| 10 | Number of axles consistent with the number of axle weights. | If number of axles \neq number of axle weights, then error. |
| 11 | GVW consistent with the sum of axle weights. | If sum of axle weights \neq total weight, then error. |
| 12 | Number of axles consistent with the vehicle class. | If number of axles \neq range of axles for that vehicle class, then error. |
| 13 | Sum of axle spacings consistent with maximum wheelbase. | If sum of axle spaces $>$ 29.93 m, then error. |
| 14 | Axle weights within acceptable range. | If 200 kg $<$ axle weight $<$ 20,003.4 kg, then ok. |
| 15 | Axle spacings within acceptable range. | If 0.6 m $<$ axle spacings $<$ 15 m, then ok. |
| 16 | Visual review of the GVW frequency distribution for each class to check consistency with the peaks for loaded and unloaded vehicles. | |
| 17 | Visual interpretation of the front steering axle weight frequency distribution for each class to check whether the majority of axles fall within the proper range. | |

North Carolina DOT

The NCDOT WIM QC process is a combination of automated and manually applied procedures: a series of class and weight data checks. The priority QC checks are on weights, as weight measurements are more likely to be erroneous than vehicle class data. Table 8 and table 9 present the class and weight QC checks applied by the NCDOT WIM QC database (Stone et al. 2011).

Table 8. NCDOT QC rule list for class data.

| Order | ID | Description | Criteria | Tools |
|-------|--------|--------------------------------------------------------------------|----------------------------------------------------|----------|
| 1 | C_NULL | Any field with a null value | Field Value = Null | QC Set 3 |
| 2 | C8 | Invalid month | MONTH \neq (1-12) | QC Set 3 |
| 3 | C10 | Invalid hour | HOUR \neq (0-23) | QC Set 3 |
| 4 | C1 | Total lane volume exceeds max. limit | TOTAL_VOL > 3000 | QC Set 4 |
| 5 | C11 | Invalid FIPS ¹ code | STATE_CD \neq 37 | Forms 2 |
| 6 | C4 | Invalid station ID | STATION_ID \neq Expected station identifier | Forms 2 |
| 7 | C6 | Invalid direction for station | DRCTN_CD \neq Valid values for station | Forms 2 |
| 8 | C5 | Invalid lane number for station | TRVL_LN_NBR \neq Valid values for station | Forms 2 |
| 9 | C7 | Invalid year | YEAR \neq Valid year for date range captured | Forms 2 |
| 10 | C9 | Invalid day | DAY \neq Valid date for the MONTH | Forms 2 |
| 11 | C3 | A full day of data is not available for a day for all lanes | Manual audit of hours and days | Forms 2 |
| 12 | C2 | Class volume exceeds maximum limit | CLS_CNT_## = TOTAL_VOL | Forms 3 |
| 13 | C13 | 1 AM total lane volume exceeds 1 PM total lane volume | HOUR (1) TOTAL_VOL > HOUR (13) TOTAL_VOL | Forms 3 |
| 14 | C14 | Static total lane volume for four consecutive hours | HOUR (X) TOTAL_VOL = HOUR (X+1, +2, +3) TOTAL_VOL | Forms 3 |
| 15 | CP1 | Review avg. DOW ² volumes by month for unusual patterns | A pattern deviates significantly from other months | Plots |
| 16 | CP2 | Review class distribution by month for unusual patterns | A pattern deviates significantly from other months | Plots |
| 17 | CP3 | Review class % distributions for unusual patterns | The summary data exhibits an unusual pattern | Plots |

¹ FIPS is the two-digit Federal Information Processing Standard state code.

² DOW stands for day of week.

Table 9. NCDOT QC rule list for weight data.

| Order | ID | Description | Criteria | Tools |
|-------|--------|----------------------------------------------------------------------------------------|------------------------------------------------------|----------|
| 1 | W_NULL | Any field with a null value | Field Value = Null | QC Set 1 |
| 2 | W12 | Invalid hour | HOUR \neq (0–23) | QC Set 1 |
| 3 | W10 | Invalid month | MONTH \neq (1–12) | QC Set 1 |
| 4 | W16 | Invalid vehicle class code | VHCL_CLASS \neq (4–13) | QC Set 1 |
| 5 | W14 | Invalid FIPS code | STATE_CD \neq 37 | Forms 1 |
| 6 | W6 | Invalid station ID | STATION_ID \neq Expected station identifier | Forms 1 |
| 7 | W8 | Invalid direction for station | DRCTN_CD \neq Valid values for station | Forms 1 |
| 8 | W7 | Invalid lane number for station | TRVL_LN_NBR \neq Valid values for station | Forms 1 |
| 9 | W9 | Invalid year | YEAR \neq Valid year for date range captured | Forms 1 |
| 10 | W11 | Invalid day | DAY \neq Valid date for the MONTH | Forms 1 |
| 11 | W13 | Hour without any weight records. A full day of data may not be available for all lanes | Manual audit of hours without weight records | Forms 1 |
| 12 | W1 | Axle count inconsistent with number of axle spacings | AXLE_COUNT \neq (# of spacings + 1) | QC Set 2 |
| 13 | W2 | Axle count inconsistent with number of axle weights | AXLE_COUNT \neq # of axle weights | QC Set 2 |
| 14 | W3 | GVW inconsistent with sum of axle weights | TOTAL_WGHT \neq Sum of axle weights | QC Set 2 |
| 15 | W4 | Axle weight out of acceptable range | 441 lb (200 kg) < (X) WGHT < 44,100 lb (20,003.4 kg) | QC Set 2 |
| 16 | W5 | Axle spacing out of acceptable range | 1.97 ft (0.6 m) < (X) (Y) SPACING < 49.2 ft (15 m) | QC Set 2 |
| 17 | W17 | Sum of axle spacings exceeds maximum wheelbase | Sum of axle spacings > 98.2 ft (29.93 m) | QC Set 2 |
| 18 | WP1 | Review average DOW volumes by month for unusual patterns | A pattern deviates significantly from other months | Plots |
| 19 | WP2 | Review GVW plots by class by month for unusual patterns | A pattern deviates significantly from other months | Plots |

Georgia DOT

The GDOT Office of Transportation Data currently has a comprehensive quality control and quality assurance (QA) process in place. Table 10 shows GDOT's quality control rules for WIM sites (Wiegand 2018).

Table 10. GDOT QC rules list for WIM sites.

| Quality Control Rule | Description | Data Type |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Error Ratio | The system will reject the day(s) that have vehicles in class 15 (the error bin) greater than X percent of the total volume. | Class |
| Minimum Class Hours | The system will reject data that do not provide a complete 24 hours of truck data. | Class |
| No Truck Data | The system will reject the day(s) if no truck data exist for the day. | Class |
| No Trucks Lane | The system will reject the data if there is no truck traffic in one lane for the day. | Class |
| Ratio of Class 1 to Class 2 | The system will flag any day(s) for which the volume in vehicle class 1 (motorcycles) exceeds the volume in vehicle class 2 (cars). | Class |
| Ratio of Class 13 to Class 9 | The system will flag any day(s) for which the volume in vehicle class 13 exceeds the volume in vehicle class 9. | Class |
| Ratio of Long Class to Short Class | The system will flag any day(s) for which the total of the volumes in vehicle classes, 11, 12, and 13 (long class) exceeds the volumes in vehicle classes 8, 9, and 10 (short class). | Class |
| Trucks Last Year | The system will reject any daily truck traffic volumes that are substantially different from the previous year. | Class |
| Zero Long Class | The system will reject day(s) for which the long truck classes have a zero volume. | Class |
| Zero Short Class | The system will reject day(s) for which the short truck classes have a zero volume. | Class |
| Minimum Hours | The system will reject any day that does not have data for every hour | Volume |
| No Data | The system will reject a day for which there are no data. | Volume |
| Volume Last Year | The system will reject any daily traffic volumes that are substantially different from the previous year. | Volume |
| Volume Split | The system will flag the entire set of counts if volume in one direction is over X percent of the total volume. This check is not applied to nondirectional data. | Volume |
| Volume Step | The system will reject the day(s) that show a sudden dramatic change in hourly volumes. | Volume |
| Volume Step Lane | The system will flag the day(s) that have a sudden dramatic change in hourly lane volumes. | Volume |
| Zero Hours All Day | The system will reject any day that has consecutive zero volumes for the entire day. | Volume |
| Zero Hours During Day | The system will reject any day that has consecutive zero volumes at any time during the day. | Volume |

(Continued on next page)

Table 10. (Continued)

| Quality Control Rule | Description | Data Type |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------|
| Zero Hours During the Night | The system will reject any day for which there are consecutive zero volumes at any time during the night. | Volume |
| Class 9 Average Steer Weight | The system will reject any day for which the Class 9 average steer weight is outside the parameters. | WIM |
| Class 9 BC Spacing | The system will reject any day for which the Class 9 average B-C axle spacing is outside the parameters. | WIM |
| Maximum Axle Count | The system will reject any day for which the ratio of vehicles to axles is more than X. | WIM |
| Maximum Wheelbase | The system will reject any day for which the wheelbase is more than X. | WIM |
| Minimum Axle Count | The system will reject any day for which the ratio of vehicles to axles is less than X. | WIM |

CHAPTER 4. DATA ACQUISITION

PROPERTIES OF GEORGIA WIM SITES

For this study, the researchers obtained data from 10 active WIM stations in the state of Georgia. Each station covers both directions of traffic, and WIM data were collected by direction. The locations of these WIM stations are shown in figure 16. Given the potentially distinct directional truck traffic patterns, each direction was treated as a separate WIM site (Li et al. 2017), resulting in a total of 20 WIM sites for this study.

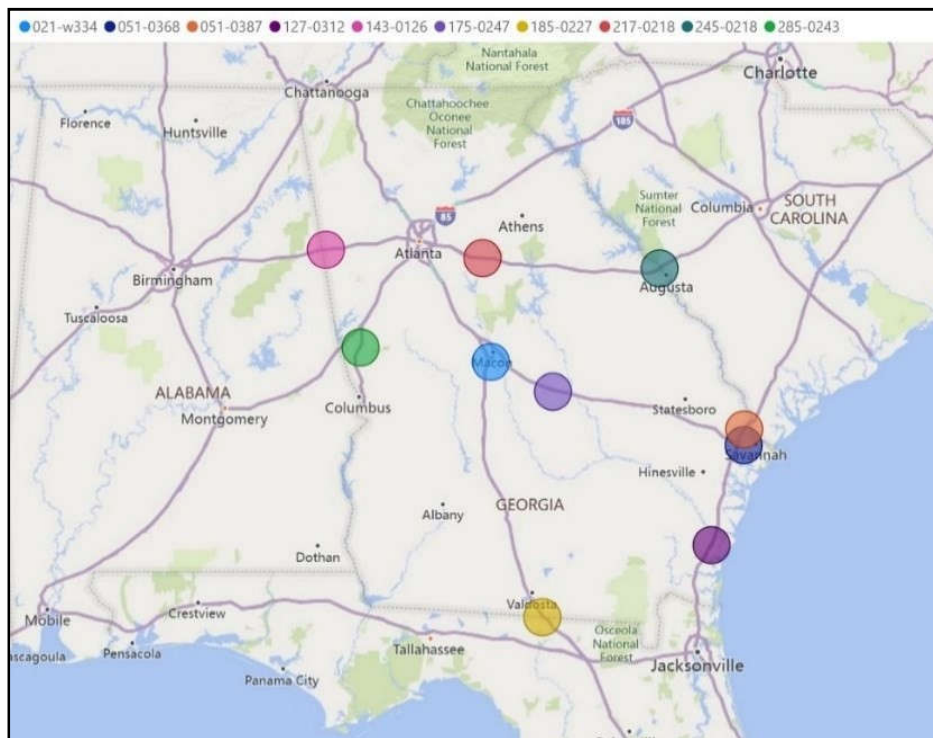


Figure 16. Map. Active WIM stations with available data in Georgia.

Only vehicle classes 4 through 13 were considered in this study since the impact of classes 1 through 3 is negligible from a pavement design standpoint. The traffic data were retrieved and

compiled for vehicle classes 4 through 13 from the 10 WIM stations (20 WIM sites). Table 11 summarizes the properties of the WIM sites in Georgia.

INACTIVE WIM STATIONS

GDOT uses the Traffic Analysis and Data Application (TADA), a web application, to disseminate traffic data collected from the Georgia Traffic Monitoring Program. The application utilizes a dynamic mapping interface that allows users to access data from the map in a variety of reports, graphs, and data formats. Historical data from two inactive WIM stations, 245-0218 and 143-0126, were evaluated. The 245-0218 WIM data (figure 17) are erroneous and incomplete; thus, they were excluded from the ESAL calculations. Figure 17 shows a screenshot of TADA in which the details of one of the inactive WIM stations are characterized.

WIM DATA ANALYSIS

Different Python codes were developed to analyze the raw WIM data. First, the vehicle class distribution of directional WIM stations was visualized. Figure 18 and figure 19 show the vehicle class distribution by month for north- and southbound directions of WIM station 185-0227, respectively. The vehicle class distributions for the other nine WIM stations are presented in appendix A. As seen in the figures, the class 9 vehicle is the most dominant truck for all the WIM stations throughout the year.

Moreover, figure 20 shows the GVW frequency distribution of WIM station 185-0227. Based on the figure, the first few weight ranges were considered outliers and were removed in the QC process to retrieve the real weight distribution of vehicles.

Table 11. Properties of WIM Sites in Georgia.

| No. | Pavement Type | Site Name | Site ID | Description | Latitude | Longitude | Functional Class | Lanes | County | City |
|-----|---------------|--------------|----------|-----------------------------------------------------|----------|-----------|--------------------|---------|----------|---------------|
| 1 | Rigid | 000000217334 | 021-w334 | I-75 N of I-475 Split Dr. Macon | 32.75959 | -83.68055 | Interstate (Urban) | 1N, 1S. | Bibb | Macon |
| 2 | Rigid | 000000510368 | 051-0368 | I-16 East of Dean Forest exit | 32.06899 | -81.19281 | Interstate (Urban) | 2E, 2W | Chatham | Savannah |
| 3 | Rigid | 000001270312 | 127-0312 | I-95 btwn SR 27 & Golden Isles Parkway SR 25 Spur M | 31.23438 | -81.5093 | Interstate (Urban) | 4N, 4S | Glynn | Brunswick |
| 4 | Rigid | 000001430126 | 143-0126 | I-20 Alabama state line & SR 100 Veterans Mem Hwy | 33.68077 | -85.30221 | Interstate (Rural) | 2E, 2W | Haralson | Tallapoosa |
| 5 | Flexible | 000001850227 | 185-0227 | I-75/SR 401 @ FLA SL, Lake Park, Lowndes Co | 30.62671 | -83.17308 | Interstate (Rural) | 3S, 3N | Lowndes | Lake Park |
| 6 | Rigid | 000002450218 | 245-0218 | I-20 E of I-520 @ SC state line, Augusta | 33.52746 | -82.01906 | Interstate (Urban) | 2E, 4W | Richmond | Augusta |
| 7 | Rigid | 000000510387 | 051-0387 | I-95, 2 mi N of SR-21 (Augusta Rd) @ SC state line | 32.2002 | -81.18769 | Interstate (Urban) | 3N, 3S | Chatham | Savannah |
| 8 | Rigid | 000001750247 | 175-0247 | I-16, 1.4 miles East of SR-338 MP 43 | 32.51342 | -83.0697 | Interstate (Rural) | 2E, 2W | Laurens | Dublin |
| 9 | Flexible | 000002170218 | 217-0218 | I-20 WEST OF SR 11 BTWN SR 142 | 33.61157 | -83.76155 | Interstate (Urban) | 2E, 2W | Newton | Covington |
| 10 | Flexible | 000002850243 | 285-0243 | I-185 N of SR 18 @ Dennis Smith Rd, Pine Mtn | 32.87801 | -84.96221 | Interstate (Rural) | 2N, 2S | Troup | Pine Mountain |

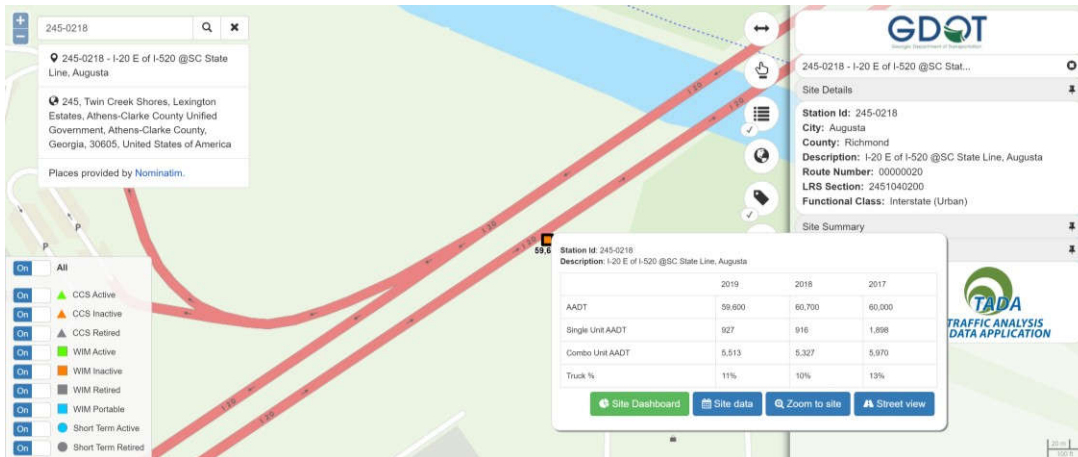


Figure 17. Screenshot. Inactive WIM station in TADA.²

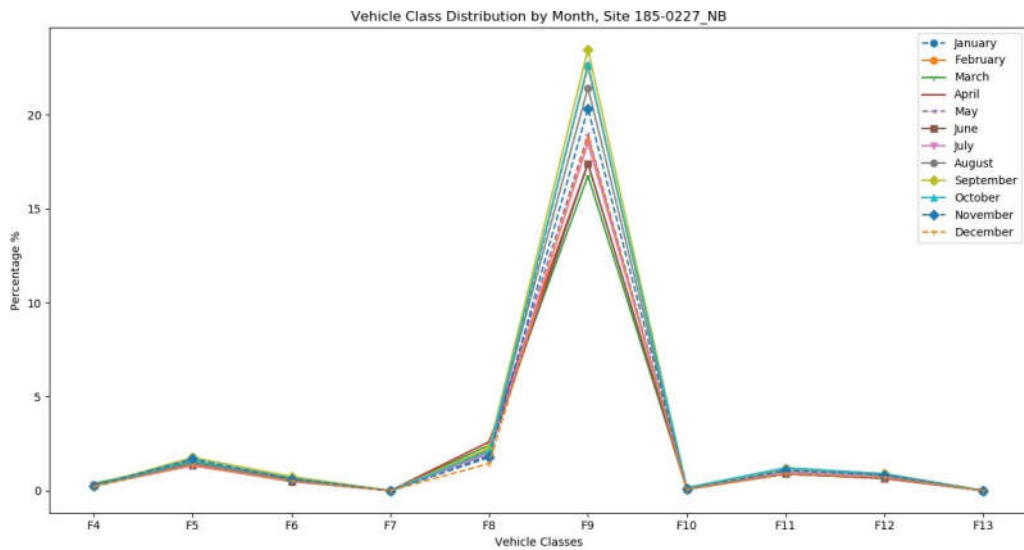


Figure 18. Line graph. Vehicle class distribution by month, Site 185-0227 NB.

² <https://gdottrafficdata.drakewell.com/publicmultinodemap.asp>

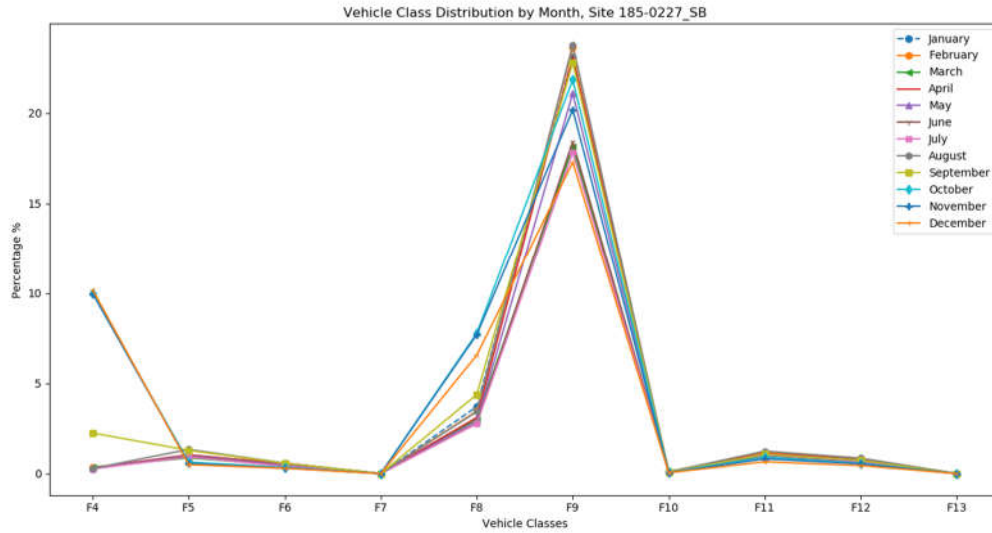


Figure 19. Line graph. Vehicle class distribution by month, Site 185-0227 SB.

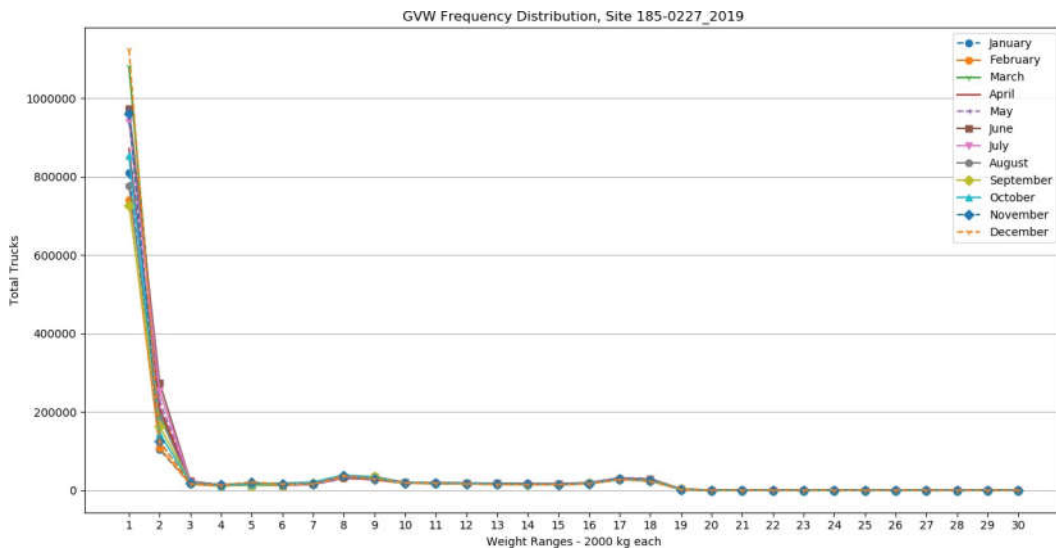


Figure 20. Line graph. GVW frequency distribution, Site 185-0227.

WIM DATA QUALITY CONTROL

As discussed in Quality Control Checks in chapter 3, the NCDOT and GDOT QC criteria were applied to raw WIM data to process and generate truck ESAL factors and AASHTOWare Pavement ME Design traffic inputs.

WIM DATA AFTER QC CHECKS

Figure 21 and figure 22 show the monthly distribution factors of the directional WIM stations after applying the QC criteria. Furthermore, figure 23 illustrates the GVW frequency distribution for site 185-0227 after QC checks. The results for individual WIM stations are presented in appendix B. As shown in the figures in appendix B, portions of yearly WIM data were eliminated after the QC process, which indicates the quality of the data. Based on the QC process results, it is recommended to continuously monitor the WIM data quality and calibrate the WIM sensors if necessary to obtain good quality yearly data in the future.

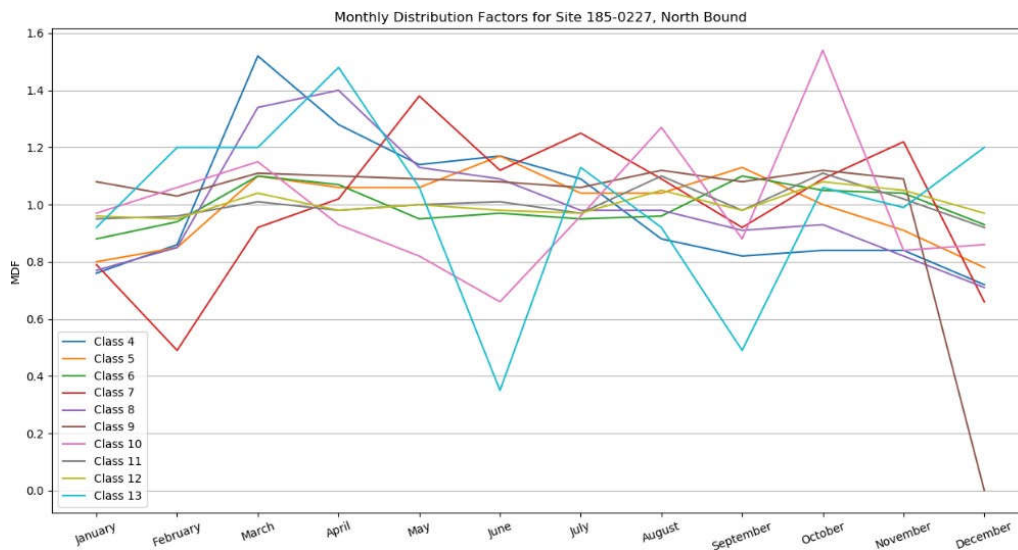


Figure 21. Line graph. Monthly distribution factors, Site 185-0227 NB.

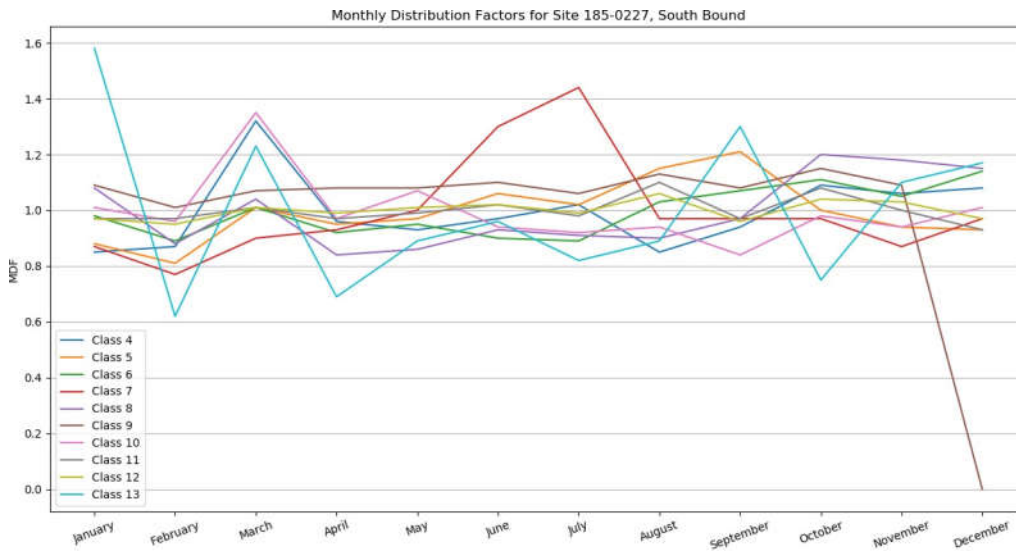


Figure 22. Line graph. Monthly distribution factors, Site 185-0227 SB.

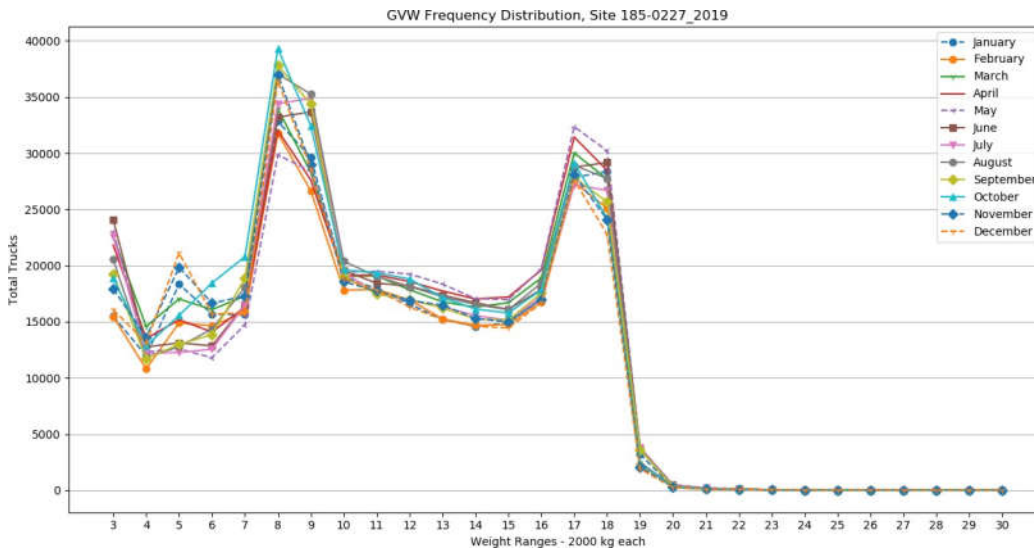


Figure 23. Line graph. GVW frequency distribution, Site 185-0227.

DATA ACQUISITION

The compiled WIM data include five feature categories consistent with the AASHTOWare Pavement ME Design traffic inputs:

- (1) vehicle class distribution (VCD) factors, (2) monthly distribution factors (MDFs) for each

vehicle class, (3) hourly distribution factors (HDFs) for each hour of the day, (4) normalized axle load spectra (NALS) for single-axle loads across vehicle classes and weight bins, and (5) NALS for tandem-axle loads across vehicle classes and weight bins. In compiling WIM data in AASHTOWare Pavement ME Design traffic input format, the tridem- and quad-axle load spectra were generally excluded from the analysis since pavement designs are less sensitive to tridem and quad axles due to their low impact and representation as compared to single- and tandem-axle load applications (Selezneva et al. 2016). As a result, a total of 564 design-related traffic features were obtained for each WIM site, including 10 VCD features, 120 MDF features, 24 HDF features, 230 NALS – single-axle features, and 180 NALS – tandem-axle features. These feature categories for each of the 20 WIM sites are available in appendix C.

CHAPTER 5. DEVELOPMENT OF GDOT TRUCK ESAL FACTORS

GEORGIA ESAL FACTORS

Based on the instructions presented in chapter 2, ESAL factors were calculated using the available WIM data. The results are presented in appendix D.

ESAL Factors Variation vs. Structural Number

In the case of flexible pavement, ESAL factors were calculated assuming different structural numbers to determine if structural number variation had any effect on the resultant ESAL factors. For this purpose, structural numbers of 4, 5, 6, 7, and 8 were considered, and then ESAL factors were computed separately. The results show that there is no significant difference between ESAL factors when different structural numbers are considered. Figure 24 illustrates different ESAL factors for FHWA vehicle classes for WIM station 185-0227. As shown, the effect of SN variation is negligible. The same result was seen for the other WIM stations.

ESAL Factors Variation vs. Slab Thickness

The same procedure was repeated for rigid pavement design by considering different slab thicknesses before ESAL calculation. For this purpose, slab thicknesses of 8, 10, and 12 inches were assumed. The results show that there is no considerable difference when choosing different slab thickness for rigid pavement design in Georgia. Figure 25 shows the effect of slab thickness variation on the rigid pavement ESAL factors.

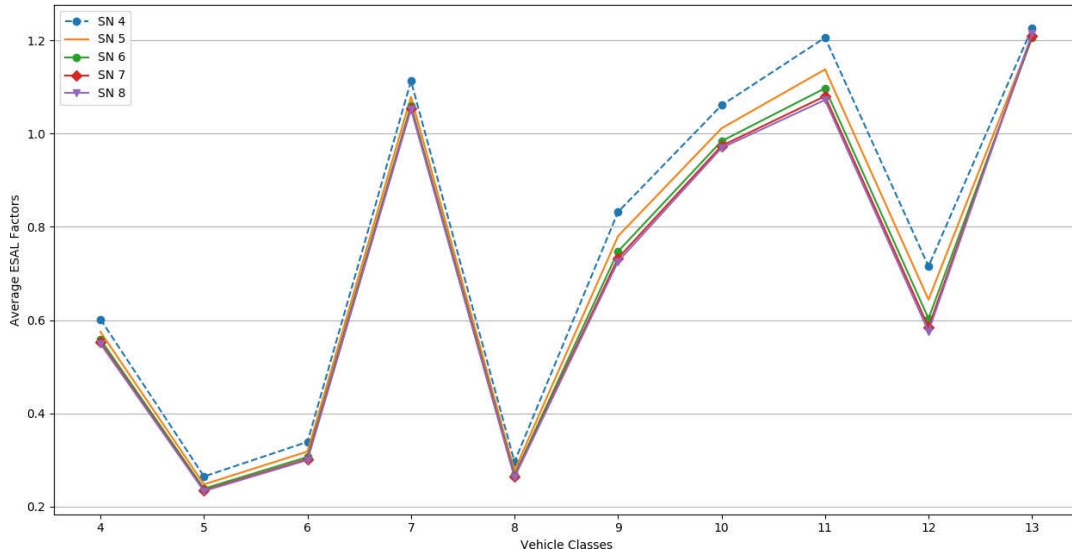


Figure 24. Line graph. ESAL factors with different SNs vs. vehicle classes, Site 185-0227.

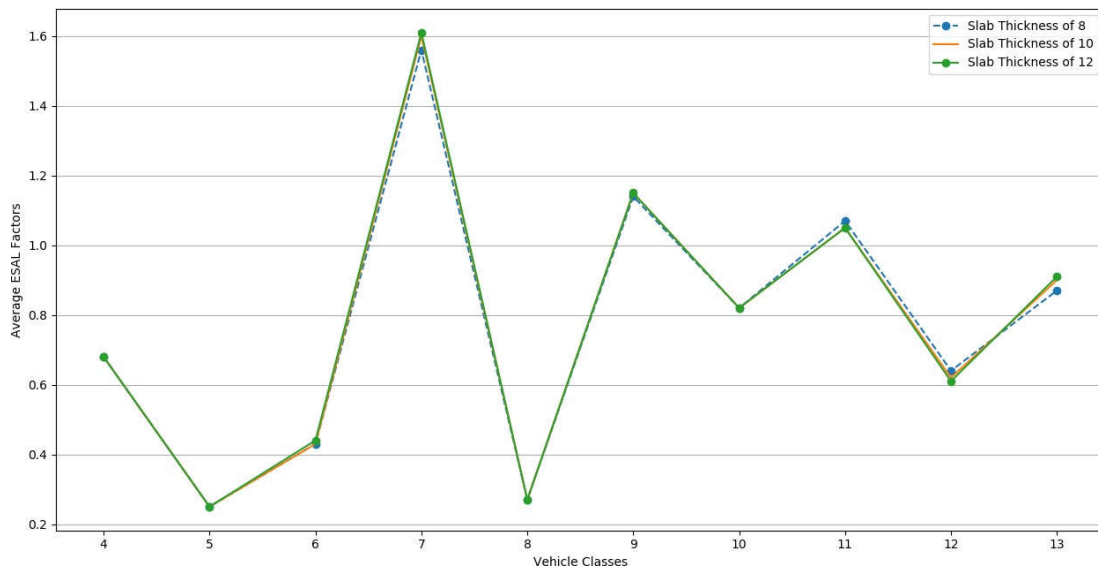


Figure 25. Line graph. ESAL factors with different slab thicknesses vs. vehicle classes, Site 185-0227.

ESAL Factors Variation vs. Vehicle Classes

Figure 26 shows the average ESAL factors of site 185-0227, which were calculated assuming various structural numbers for different vehicle classes. The results indicate the ESAL factor varies across vehicle classes while remaining relatively constant across SNs.

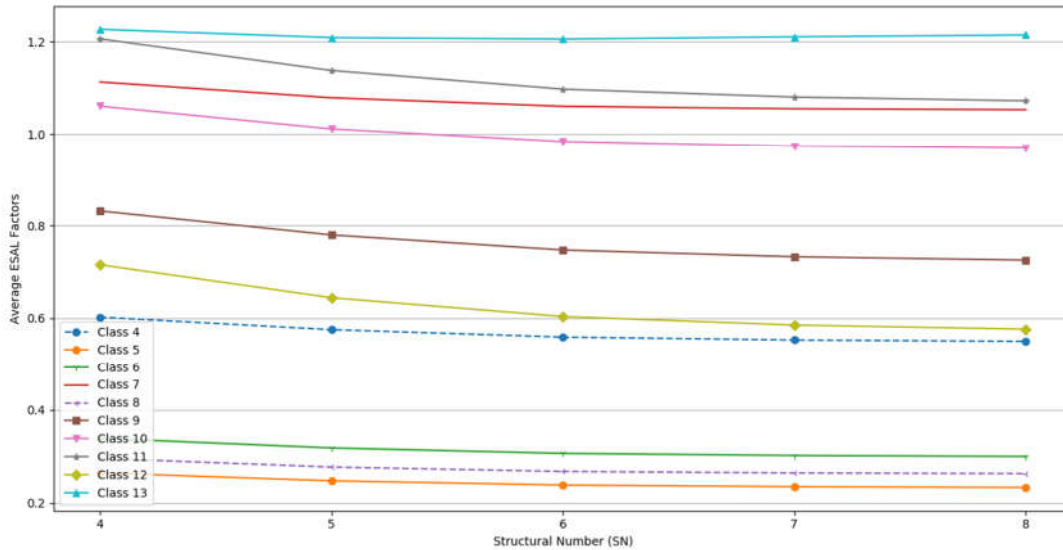


Figure 26. Line graph. ESAL factors comparison with different SNs for FHWA vehicle classes, Site 185-0227.

Figure 27 shows similar patterns for rigid pavement design where the ESAL factor varies across vehicle classes but remains nearly constant over different slab thicknesses.

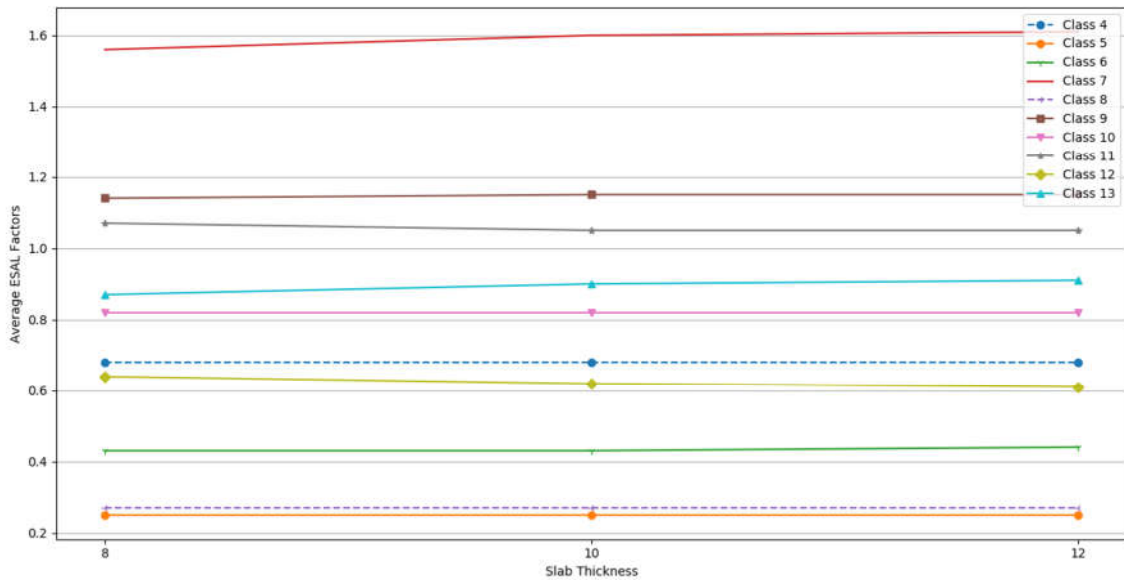


Figure 27. Line graph. ESAL factors comparison with different slab thicknesses for FHWA vehicle classes, Site 185-0227.

RELIABILITY INCLUSION IN GEORGIA ESAL FACTORS

Table 12 shows the default ESAL factors that GDOT is currently using. It should be mentioned that these values were derived based on the 1972 AASHTO design guide in which reliability was not explicitly considered. To account for uncertainty, ESAL factors were calculated in this study using the formulas in the 1993 AASHTO design guide.

Table 12. GDOT's default truck ESAL factors.

| Vehicle Classification | Flexible Pavement | Rigid Pavement |
|--------------------------------|-------------------|----------------|
| Passenger Cars & Pickup Trucks | 0.004 | 0.0004 |
| Single-unit Trucks | 0.40 | 0.50 |
| Multi-unit Trucks | 1.50 | 2.68 |

For this purpose, the relationship between the 1972 and 1993 design guides was determined and then the new ESAL factors were calculated with specified levels of reliability. In the 1993 design

guide, the resilient modulus term has been replaced by the soil support value and regional factor in the 1972 design guide. The remaining part of the equation retains the basic approach from the 1972 interim guide. Therefore, the relationship between the two traffic (ESAL) terms in the 1972 and 1993 design guides is related by equation 9:

$$\frac{\widehat{W}_1}{W_1} = 10^{-Z_R S_0} \quad (9)$$

Where, W_{18} is the traffic (weighted ESAL factor) from the available WIM data, and \widehat{W}_8 is the estimated traffic (ESAL) after considering the reliability term.

Table 13 through table 15 show the new ESAL factors for flexible pavement design with different structural numbers by considering various levels of reliability. Similarly, table 16 through table 18 present the ESAL factors for rigid pavement design with different slab thicknesses and reliability levels.

Site 051-0368, which is close to the Savannah port, is one of the high traffic volume WIM stations. However, this WIM site was excluded from the computed averages in Table 13 through Table 18 due to erroneous/missing 2018 and 2019 WIM data.

Table 13. Truck ESAL factors with different reliability levels for flexible pavement design, structural number 4.

| Site ID | Reliability Level | | | | | | | | | |
|------------------|--------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 75% | | 80% | | 85% | | 90% | | 95% | |
| | ESAL Factors for Single-unit (SU) and Multi-unit (MU) Trucks | | | | | | | | | |
| | SU | MU | SU | MU | SU | MU | SU | MU | SU | MU |
| 185-0227 | 0.4 | 1.50 | 0.45 | 1.70 | 0.54 | 2.02 | 0.67 | 2.53 | 0.94 | 3.54 |
| 285-0243 | 0.36 | 1.35 | 0.40 | 1.53 | 0.49 | 1.83 | 0.61 | 2.29 | 0.85 | 3.21 |
| 021-w334 | 0.29 | 1.08 | 0.32 | 1.23 | 0.39 | 1.47 | 0.49 | 1.84 | 0.69 | 2.58 |
| 127-0312 | 0.34 | 1.29 | 0.39 | 1.46 | 0.46 | 1.75 | 0.58 | 2.19 | 0.81 | 3.06 |
| 051-0387 | 0.42 | 1.56 | 0.47 | 1.77 | 0.56 | 2.11 | 0.70 | 2.65 | 0.98 | 3.70 |
| 217-0218 | 0.47 | 1.77 | 0.53 | 2.00 | 0.64 | 2.40 | 0.80 | 3.00 | 1.12 | 4.20 |
| 051-0368* | 0.86 | 3.23 | 0.97 | 3.66 | 1.17 | 4.39 | 1.46 | 5.50 | 2.05 | 7.68 |
| 143-0126 | 0.29 | 1.09 | 0.33 | 1.25 | 0.40 | 1.49 | 0.50 | 1.86 | 0.70 | 2.60 |
| 175-0247 | 0.30 | 1.14 | 0.34 | 1.30 | 0.41 | 1.55 | 0.52 | 1.94 | 0.72 | 2.71 |
| Average | 0.36 | 1.35 | 0.40 | 1.53 | 0.49 | 1.83 | 0.61 | 2.29 | 0.85 | 3.20 |

*This site has been excluded from the average.

Note: Site 245-0218 also has been excluded due to erroneous and incomplete data.

Table 14. Truck ESAL factors with different reliability levels for flexible pavement design, structural number 6.

| Site ID | Reliability Level | | | | | | | | | |
|------------------|----------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 75% | | 80% | | 85% | | 90% | | 95% | |
| | ESAL Factors for Single-unit and Multi-unit Trucks | | | | | | | | | |
| | SU | MU | SU | MU | SU | MU | SU | MU | SU | MU |
| 185-0227 | 0.35 | 1.33 | 0.40 | 1.51 | 0.48 | 1.81 | 0.60 | 2.27 | 0.85 | 3.18 |
| 285-0243 | 0.32 | 1.21 | 0.37 | 1.38 | 0.44 | 1.65 | 0.55 | 2.07 | 0.77 | 2.89 |
| 021-w334 | 0.25 | 0.97 | 0.29 | 1.09 | 0.35 | 1.31 | 0.44 | 1.64 | 0.61 | 2.30 |
| 127-0312 | 0.30 | 1.15 | 0.35 | 1.31 | 0.42 | 1.57 | 0.52 | 1.96 | 0.73 | 2.74 |
| 051-0387 | 0.37 | 1.41 | 0.42 | 1.60 | 0.51 | 1.90 | 0.64 | 2.39 | 0.89 | 3.34 |
| 217-0218 | 0.42 | 1.58 | 0.48 | 1.79 | 0.57 | 2.14 | 0.72 | 2.68 | 1.00 | 3.75 |
| 051-0368* | 0.83 | 3.13 | 0.95 | 3.55 | 1.13 | 4.25 | 1.42 | 5.32 | 1.98 | 7.43 |
| 143-0126 | 0.26 | 0.97 | 0.29 | 1.09 | 0.35 | 1.30 | 0.44 | 1.64 | 0.61 | 2.29 |
| 175-0247 | 0.26 | 1.00 | 0.31 | 1.17 | 0.37 | 1.40 | 0.47 | 1.75 | 0.65 | 2.45 |
| Average | 0.32 | 1.20 | 0.36 | 1.37 | 0.44 | 1.64 | 0.55 | 2.05 | 0.76 | 2.87 |

*This site has been excluded from the average.

Note: Site 245-0218 also has been excluded due to erroneous and incomplete data.

Table 15. Truck ESAL factors with different reliability levels for flexible pavement design, structural number 8.

| Site ID | Reliability Level | | | | | | | | | |
|------------------|----------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 75% | | 80% | | 85% | | 90% | | 95% | |
| | ESAL Factors for Single-unit and Multi-unit Trucks | | | | | | | | | |
| | SU | MU | SU | MU | SU | MU | SU | MU | SU | MU |
| 185-0227 | 0.35 | 1.30 | 0.39 | 1.47 | 0.47 | 1.76 | 0.59 | 2.20 | 0.82 | 3.08 |
| 285-0243 | 0.31 | 1.17 | 0.35 | 1.33 | 0.42 | 1.59 | 0.53 | 2.00 | 0.74 | 2.79 |
| 021-w334 | 0.25 | 0.95 | 0.29 | 1.08 | 0.35 | 1.30 | 0.43 | 1.62 | 0.60 | 2.27 |
| 127-0312 | 0.30 | 1.12 | 0.34 | 1.27 | 0.40 | 1.52 | 0.50 | 1.90 | 0.71 | 2.66 |
| 051-0387 | 0.36 | 1.37 | 0.41 | 1.55 | 0.49 | 1.85 | 0.62 | 2.32 | 0.87 | 3.25 |
| 217-0218 | 0.41 | 1.54 | 0.47 | 1.75 | 0.56 | 2.09 | 0.70 | 2.62 | 0.98 | 3.66 |
| 051-0368* | 0.85 | 3.19 | 0.97 | 3.62 | 1.15 | 4.33 | 1.45 | 5.43 | 2.02 | 7.59 |
| 143-0126 | 0.25 | 0.95 | 0.29 | 1.07 | 0.34 | 1.28 | 0.43 | 1.61 | 0.60 | 2.25 |
| 175-0247 | 0.26 | 0.98 | 0.30 | 1.14 | 0.37 | 1.37 | 0.46 | 1.72 | 0.64 | 2.40 |
| Average | 0.31 | 1.17 | 0.36 | 1.33 | 0.43 | 1.60 | 0.53 | 2.00 | 0.75 | 2.80 |

*This site has been excluded from the average.

Note: Site 245-0218 also has been excluded due to erroneous and incomplete data.

Table 16. Truck ESAL factors with different reliability levels for rigid pavement design, slab thickness of 8.

| Site ID | Reliability Level | | | | | | | | | |
|------------------|----------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 75% | | 80% | | 85% | | 90% | | 95% | |
| | ESAL Factors for Single-unit and Multi-unit Trucks | | | | | | | | | |
| | SU | MU | SU | MU | SU | MU | SU | MU | SU | MU |
| 185-0227 | 0.37 | 2.00 | 0.42 | 2.26 | 0.50 | 2.70 | 0.63 | 3.40 | 0.88 | 4.74 |
| 285-0243 | 0.32 | 1.72 | 0.36 | 1.94 | 0.43 | 2.33 | 0.54 | 2.92 | 0.76 | 4.07 |
| 021-w334 | 0.27 | 1.46 | 0.30 | 1.65 | 0.37 | 1.97 | 0.46 | 2.47 | 0.64 | 3.45 |
| 127-0312 | 0.33 | 1.78 | 0.37 | 2.01 | 0.45 | 2.41 | 0.56 | 3.02 | 0.79 | 4.23 |
| 051-0387 | 0.40 | 2.10 | 0.44 | 2.38 | 0.53 | 2.85 | 0.66 | 3.57 | 0.66 | 3.57 |
| 217-0218 | 0.27 | 1.43 | 0.30 | 1.62 | 0.36 | 1.94 | 0.45 | 2.43 | 0.63 | 3.40 |
| 051-0368* | 0.73 | 3.91 | 0.82 | 4.43 | 0.99 | 5.30 | 1.24 | 6.65 | 1.73 | 9.29 |
| 143-0126 | 0.23 | 1.26 | 0.26 | 1.43 | 0.32 | 1.71 | 0.40 | 2.14 | 0.56 | 3.00 |
| 175-0247 | 0.28 | 1.52 | 0.33 | 1.77 | 0.39 | 2.11 | 0.49 | 2.65 | 0.70 | 3.71 |
| Average | 0.31 | 1.66 | 0.35 | 1.88 | 0.42 | 2.25 | 0.52 | 2.83 | 0.70 | 3.77 |

*This site has been excluded from the average.

Note: Site 245-0218 also has been excluded due to erroneous and incomplete data.

Table 17. Truck ESAL factors with different reliability levels for rigid pavement design, slab thickness of 10.

| Site ID | Reliability Level | | | | | | | | | |
|----------------|----------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 75% | | 80% | | 85% | | 90% | | 95% | |
| | ESAL Factors for Single-unit and Multi-unit Trucks | | | | | | | | | |
| | SU | MU | SU | MU | SU | MU | SU | MU | SU | MU |
| 185-0227 | 0.37 | 2.00 | 0.42 | 2.26 | 0.50 | 2.70 | 0.63 | 3.40 | 0.88 | 4.74 |
| 285-0243 | 0.32 | 1.72 | 0.36 | 1.95 | 0.43 | 2.33 | 0.55 | 2.92 | 0.76 | 4.09 |
| 021-w334 | 0.27 | 1.46 | 0.31 | 1.66 | 0.37 | 1.99 | 0.46 | 2.5 | 0.65 | 3.48 |
| 127-0312 | 0.33 | 1.78 | 0.37 | 2.02 | 0.45 | 2.42 | 0.56 | 3.03 | 0.79 | 4.23 |
| 051-0387 | 0.39 | 2.10 | 0.44 | 2.38 | 0.53 | 2.85 | 0.66 | 3.57 | 0.93 | 5.00 |
| 217-0218 | 0.27 | 1.43 | 0.30 | 1.62 | 0.36 | 1.94 | 0.45 | 2.44 | 0.63 | 3.41 |
| 051-0368* | 0.75 | 4.00 | 0.84 | 4.53 | 1.01 | 5.42 | 1.26 | 6.80 | 1.77 | 9.50 |
| 143-0126 | 0.23 | 1.26 | 0.27 | 1.43 | 0.32 | 1.71 | 0.40 | 2.14 | 0.56 | 3.00 |
| 175-0247 | 0.28 | 1.52 | 0.33 | 1.77 | 0.39 | 2.12 | 0.50 | 2.66 | 0.70 | 3.71 |
| Average | 0.31 | 1.66 | 0.35 | 1.89 | 0.42 | 2.26 | 0.53 | 2.83 | 0.74 | 3.96 |

*This site has been excluded from the average.

Note: Site 245-0218 also has been excluded due to erroneous and incomplete data.

Table 18. Truck ESAL factors with different reliability levels for rigid pavement design, slab thickness of 12.

| Site ID | Reliability Level | | | | | | | | | |
|----------------|----------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 75% | | 80% | | 85% | | 90% | | 95% | |
| | ESAL Factors for Single-unit and Multi-unit Trucks | | | | | | | | | |
| | SU | MU | SU | MU | SU | MU | SU | MU | SU | MU |
| 185-0227 | 0.38 | 2.01 | 0.43 | 2.28 | 0.50 | 2.73 | 0.64 | 3.42 | 0.89 | 4.78 |
| 285-0243 | 0.32 | 1.74 | 0.37 | 1.97 | 0.44 | 2.36 | 0.55 | 2.96 | 0.77 | 4.13 |
| 021-w334 | 0.27 | 1.46 | 0.31 | 1.66 | 0.37 | 1.99 | 0.46 | 2.5 | 0.65 | 3.48 |
| 127-0312 | 0.33 | 1.78 | 0.37 | 2.02 | 0.45 | 2.42 | 0.56 | 3.03 | 0.79 | 4.23 |
| 051-0387 | 0.39 | 2.10 | 0.44 | 2.38 | 0.53 | 2.85 | 0.66 | 3.57 | 0.93 | 5.00 |
| 217-0218 | 0.27 | 1.45 | 0.31 | 1.65 | 0.37 | 1.97 | 0.46 | 2.47 | 0.64 | 3.46 |
| 051-0368* | 0.75 | 4.05 | 0.85 | 4.60 | 1.02 | 5.50 | 1.28 | 6.88 | 1.80 | 9.62 |
| 143-0126 | 0.23 | 1.27 | 0.27 | 1.44 | 0.32 | 1.72 | 0.40 | 2.16 | 0.56 | 3.01 |
| 175-0247 | 0.28 | 1.52 | 0.33 | 1.77 | 0.40 | 2.12 | 0.50 | 2.66 | 0.70 | 3.72 |
| Average | 0.31 | 1.67 | 0.35 | 1.90 | 0.42 | 2.27 | 0.53 | 2.85 | 0.74 | 3.98 |

*This site has been excluded from the average.

Note: Site 245-0218 also has been excluded due to erroneous and incomplete data.

The results facilitate the pavement design process in which engineers could select the desired reliability level and the corresponding ESAL factor for a specific road section. Table 19 summarizes the location of the interstates (i.e., rural or urban) based on TADA. Table 20 and table 21 show the ESALs with various reliability levels for flexible pavements for WIM stations located on rural and urban interstate highways, respectively. For flexible pavement design, a structural number of 8 has been selected.

Table 22 and table 23 represent the ESALs calculated for rigid pavement design, assuming a slab thickness of 12 inches in which different reliability levels are considered for rural and urban WIM stations, respectively.

Table 19. Type of interstate highway for each Georgia WIM site.

| Site ID | Interstate Type |
|----------|-----------------|
| 185-0227 | Rural |
| 285-0243 | Rural |
| 021-w334 | Urban |
| 127-0312 | Urban |
| 051-0387 | Urban |
| 217-0218 | Urban |
| 051-0368 | Urban |
| 143-0126 | Rural |
| 175-0247 | Rural |

Table 20. Truck ESAL factors with different reliability levels for flexible pavement design in rural WIM stations, structural number 8.

| Site ID | Reliability Level | | | | | | | | | |
|----------------|----------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 75% | | 80% | | 85% | | 90% | | 95% | |
| | ESAL Factors for Single-unit and Multi-unit Trucks | | | | | | | | | |
| | SU | MU | SU | MU | SU | MU | SU | MU | SU | MU |
| 185-0227 | 0.35 | 1.30 | 0.39 | 1.47 | 0.47 | 1.76 | 0.59 | 2.20 | 0.82 | 3.08 |
| 285-0243 | 0.31 | 1.17 | 0.35 | 1.33 | 0.42 | 1.59 | 0.53 | 2.00 | 0.74 | 2.79 |
| 143-0126 | 0.25 | 0.95 | 0.29 | 1.07 | 0.34 | 1.28 | 0.43 | 1.61 | 0.60 | 2.25 |
| 175-0247 | 0.26 | 0.98 | 0.30 | 1.14 | 0.37 | 1.37 | 0.46 | 1.72 | 0.64 | 2.40 |
| Average | 0.29 | 1.10 | 0.33 | 1.25 | 0.40 | 1.50 | 0.50 | 1.88 | 0.70 | 2.63 |

Table 21. Truck ESAL factors with different reliability levels for flexible pavement design in urban WIM stations, structural number 8.

| Site ID | Reliability Level | | | | | | | | | |
|----------------|----------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 75% | | 80% | | 85% | | 90% | | 95% | |
| | ESAL Factors for Single-unit and Multi-unit Trucks | | | | | | | | | |
| | SU | MU | SU | MU | SU | MU | SU | MU | SU | MU |
| 021-w334 | 0.25 | 0.95 | 0.29 | 1.08 | 0.35 | 1.30 | 0.43 | 1.62 | 0.60 | 2.27 |
| 127-0312 | 0.30 | 1.12 | 0.34 | 1.27 | 0.40 | 1.52 | 0.50 | 1.90 | 0.71 | 2.66 |
| 051-0387 | 0.36 | 1.37 | 0.41 | 1.55 | 0.49 | 1.85 | 0.62 | 2.32 | 0.87 | 3.25 |
| 217-0218 | 0.41 | 1.54 | 0.47 | 1.75 | 0.56 | 2.09 | 0.70 | 2.62 | 0.98 | 3.66 |
| Average | 0.33 | 1.25 | 0.38 | 1.41 | 0.45 | 1.69 | 0.56 | 2.12 | 0.79 | 2.96 |

Table 22. Truck ESAL factors with different reliability levels for rigid pavement design in rural WIM stations, slab thickness of 12.

| Site ID | Reliability Level | | | | | | | | | |
|-----------------|----------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 75% | | 80% | | 85% | | 90% | | 95% | |
| | ESAL Factors for Single-unit and Multi-unit Trucks | | | | | | | | | |
| | SU | MU | SU | MU | SU | MU | SU | MU | SU | MU |
| 185-0227 | 0.38 | 2.01 | 0.43 | 2.28 | 0.50 | 2.73 | 0.64 | 3.42 | 0.89 | 4.78 |
| 285-0243 | 0.32 | 1.74 | 0.37 | 1.97 | 0.44 | 2.36 | 0.55 | 2.96 | 0.77 | 4.13 |
| 143-0126 | 0.23 | 1.27 | 0.27 | 1.44 | 0.32 | 1.72 | 0.40 | 2.16 | 0.56 | 3.01 |
| 175-0247 | 0.28 | 1.52 | 0.33 | 1.77 | 0.40 | 2.12 | 0.50 | 2.66 | 0.70 | 3.72 |
| Average | 0.30 | 1.64 | 0.35 | 1.87 | 0.42 | 2.23 | 0.52 | 2.80 | 0.73 | 3.91 |

Table 23. Truck ESAL factors with different reliability levels for rigid pavement design in urban WIM stations, slab thickness of 12.

| Site ID | Reliability Level | | | | | | | | | |
|-----------------|----------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 75% | | 80% | | 85% | | 90% | | 95% | |
| | ESAL Factors for Single-unit and Multi-unit Trucks | | | | | | | | | |
| | SU | MU | SU | MU | SU | MU | SU | MU | SU | MU |
| 021-w334 | 0.27 | 1.46 | 0.31 | 1.66 | 0.37 | 1.99 | 0.46 | 2.5 | 0.65 | 3.48 |
| 127-0312 | 0.33 | 1.78 | 0.37 | 2.02 | 0.45 | 2.42 | 0.56 | 3.03 | 0.79 | 4.23 |
| 051-0387 | 0.39 | 2.10 | 0.44 | 2.38 | 0.53 | 2.85 | 0.66 | 3.57 | 0.93 | 5.00 |
| 217-0218 | 0.27 | 1.45 | 0.31 | 1.65 | 0.37 | 1.97 | 0.46 | 2.47 | 0.64 | 3.46 |
| Average | 0.32 | 1.70 | 0.36 | 1.93 | 0.43 | 2.31 | 0.54 | 2.89 | 0.75 | 4.04 |

RESULTS

According to the results, the ESAL factors with 85 percent reliability are close to GDOT’s default values for flexible pavement design in either rural or urban interstate highways. For rigid pavement, ESALs calculated based on 90 percent reliability are close to GDOT’s default values. Since the variation of ESAL factors is significant, it is recommended to verify with site-specific ESAL factors before selecting ESAL factors and reliability levels for pavement design.

COST ANALYSIS

From the viewpoint of pavement design, it is important to know how the pavement thickness and associated cost would vary in response to different reliability levels, especially how they compare

to those based on GDOT’s current default ESAL factors. In the following analysis, the design inputs for flexible pavement were extracted from WIM stations. Then, GDOT pavement design software was used to calculate the required and proposed structural number. Three different ESAL factors were considered, and the results were compared.

Table 24 and table 25 present the design inputs used in the GDOT pavement design software in which the values for different categories are specific to the type of interstate highways (i.e., rural or urban). Table 26 through table 28 show the pavement design results using GDOT’s default ESALs, ESALs from WIM data with 85 percent reliability level, and ESALs from WIM data with 90 percent reliability level, respectively. Finally, the increases in HMA costs are summarized in table 29.

Table 24. 1972 pavement design inputs for rural WIM stations.

| Site ID | Initial 1-way Traffic | 24 Hour Truck % | SU Truck % | MU Truck % | No. of Lanes in Each Direction | LDF % | Soil Support Value | Regional Factor |
|----------------|-----------------------|-----------------|------------|------------|--------------------------------|-------|--------------------|-----------------|
| 185-0227 | 26602.67 | 28.86 | 3.44 | 25.42 | 3 | 70 | 4 | 1.4 |
| 285-0243 | 23368.71 | 10.84 | 2.41 | 8.43 | 2 | 100 | 3 | 1.6 |
| 143-0126 | 34293.14 | 27.55 | 2.03 | 25.51 | 2 | 100 | 2.5 | 1.8 |
| 175-0247 | 21571.71 | 23.74 | 2.26 | 21.48 | 2 | 100 | 3.5 | 1.4 |
| Average | 26459.00 | 22.75=23 | 2.53 | 20.21 | – | 100 | Default value | Default value |

Table 25. 1972 pavement design inputs for urban WIM stations.

| Site ID | Initial 1-way Traffic | 24 Hour Truck % | SU Truck % | MU Truck % | No. of Lanes in Each Direction | LDF % | Soil Support Value | Regional Factor |
|----------------|-----------------------|-----------------|------------|------------|--------------------------------|-------|--------------------|-----------------|
| 021-w334 | 21901.00 | 12.48 | 3.05 | 9.42 | 1 | 100 | 3 | 1.6 |
| 127-0312 | 17223.46 | 17.89 | 2.17 | 15.71 | 4 | 60 | 4 | 1.7 |
| 051-0387 | 24830.05 | 17.61 | 2.02 | 15.58 | 3 | 60 | 4 | 1.7 |
| 217-0218 | 55272.64 | 13.67 | 2.16 | 11.5 | 2 | 80 | 2.5 | 1.6 |
| Average | 29807.00 | 15.41=15 | 2.35 | 13.05 | – | 100 | Default value | Default value |

Table 26. 1972 pavement design results for WIM stations using GDOT's default ESAL factors.

| WIM Station Location | Proposed SN | Required SN | Design Policy | Course 3 Thickness (inch) | Structural Coefficient | Structural Value | HMA Tonnage per Lane Mile | Expense (\$)* |
|----------------------|-------------|-------------|----------------------|---------------------------|------------------------|------------------|---------------------------|---------------|
| Rural | 6.38 | 6.70 | 4.91% Under designed | 1.00 | 0.44 | 0.44 | 3,582.0 | 232,947.0 |
| | | | | 8.25 | 0.30 | 2.48 | | |
| Urban | 6.15 | 6.41 | 4.11% Under designed | 1.00 | 0.44 | 0.44 | 3,291.0 | 214,060.0 |
| | | | | 7.5 | 0.30 | 2.25 | | |

* Expense for hot mix asphalt (HMA) tonnage per lane mile.

Table 27. 1972 pavement design results for WIM stations using 85% reliability level ESAL factors.

| WIM Station Location | Proposed SN | Required SN | Design Policy | Course 3 Thickness (inch) | Structural Coefficient | Structural Value | HMA Tonnage per Lane Mile | Expense (\$)* |
|----------------------|-------------|-------------|----------------------|---------------------------|------------------------|------------------|---------------------------|---------------|
| Rural | 6.38 | 6.70 | 4.91% Under designed | 1.00 | 0.44 | 0.44 | 3,582.0 | 232,947.0 |
| | | | | 8.25 | 0.30 | 2.48 | | |
| Urban | 6.23 | 6.52 | 4.45% Under designed | 1.00 | 0.44 | 0.44 | 3,388.0 | 220,356.0 |
| | | | | 7.75 | 0.30 | 2.33 | | |

* Expense for HMA tonnage per lane mile.

Table 28. 1972 pavement design results for WIM stations using 90% reliability level ESAL factors.

| WIM Station Location | Proposed SN | Required SN | Design Policy | Course 3 Thickness (inch) | Structural Coefficient | Structural Value | HMA Tonnage per Lane Mile | Expense (\$)* |
|----------------------|-------------|-------------|----------------------|---------------------------|------------------------|------------------|---------------------------|---------------|
| Rural | 6.60 | 6.90 | 4.38% Under designed | 1.00 | 0.44 | 0.44 | 3,872.0 | 251,835.0 |
| | | | | 9.00 | 0.30 | 2.70 | | |
| Urban | 6.38 | 6.70 | 4.90% Under designed | 1.00 | 0.44 | 0.44 | 3,582.0 | 232,973.0 |
| | | | | 8.25 | 0.30 | 2.48 | | |

* Expense for HMA tonnage per lane mile.

Table 29. Average increase in HMA cost.

| WIM Station Location | Reliability Level | |
|----------------------|-------------------|-------|
| | 85% | 90% |
| Rural | 0% | 8.10% |
| Urban | 2.94% | 8.84% |

CHAPTER 6. DEVELOPMENT OF PAVEMENT ME INPUTS

TRAFFIC INPUTS IN AASHTO MEPDG MOP

The *AASHTO MEPDG MOP* requires various data to design new or rehabilitated pavement structures. Generally, there are four different categories of inputs in AASHTOWare Pavement ME Design software (PMED). These input data are: climate inputs, layer/material property inputs, design features and layer property inputs, and traffic inputs. The required traffic input data which can be extracted from WIM data are: VCDs, MDFs, HDFs, axles per truck class, and axle load distribution factors or NALS. For each of these traffic inputs, depending on the level of design, the PMED requires traffic distributions for each of 10 standard FHWA vehicle classes (i.e., classes 4 through 13). The design levels are defined as follows:

- Level 1: Most accurate design level requiring site-specific weight and volume data collected at or near the project site.
- Level 2: Intermediate accuracy design level with a modest knowledge of traffic characteristics requiring regional weight data and site-specific volume data.
- Level 3: Least accurate design level with knowledge only of statewide default weight and volume data.

In the following sections, the five different traffic input data are defined separately.

Vehicle Class Distribution

VCD represents the percentage of each truck class (i.e., 4 through 13) within the annual average daily truck traffic (AADTT) for the base year, which is defined as the first year of the forecast period. The sum of the percent AADTT of all truck classes must equal 100.

Monthly Distribution Factor

MDF is defined as the seasonal differences in AADTT by allocating a normalized weight factor to each month of the year. As the default, a seasonally independent value of 1 for each of the 12 months is assumed as level 3 data. In this way, months with higher AADTT will receive a weight factor greater than 1, whereas months with lower AADTT will receive a factor less than 1 (ARA, Inc. 2004). The sum of the MDF of all truck classes must equal 12.

Hourly Distribution Factor

HDF is defined as the percentage of total trucks within each hour using data measured continuously over a 24-hour period. The sum of the percent of daily truck traffic per time increment should add up to 100 percent.

Axles per Truck Class

This input represents the average number of axles for each truck class (i.e., 4 to 13) for each axle group type (i.e., single, tandem, tridem, and quad).

Axle Load Distribution Factors or Normalized Axle Load Spectra

The axle load distribution factors represent the percentage of the total axle applications for load intervals in a specific axle group type (i.e., single, tandem, tridem, and quad) and vehicle classes 4 through 13. The load intervals for each axle group type are as below:

- Single axles – 3,000 lb to 40,000 lb at 1,000-lb intervals.
- Tandem axles – 6,000 lb to 80,000 lb at 2,000-lb intervals.
- Tridem and quad axles – 12,000 lb to 102,000 lb at 3,000-lb intervals.

The NALS can only be extracted from WIM data. Thus, the level of input depends on the data source (i.e., site, regional, or national).

To generate AASHTOWare Pavement ME Design traffic inputs, the WIM volume and weight data were reviewed using a quality control procedure. The QC procedure will be discussed comprehensively in the following section. The cleaned data were then processed using computer programming to generate traffic inputs, including VCD, MDF, HDF, axles per truck class, and NALS.

TRUCK TRAFFIC CLASSIFICATION GROUPS

Truck traffic classification (TTC) groups were originally developed based on the LTPP databases and provide the opportunity for engineers to use the national default values (i.e., Level 3 design inputs) when site-specific traffic data are not available. Seventeen TTC groups were defined based on the distributions of vehicle classes in traffic streams (ARA 2004), as shown in figure 28. In the PMED process, one typically obtains traffic composition on a specific roadway section from short-term traffic counts to identify the closely matched TTC group. Then, the required design traffic inputs associated with the identified TTC group can be obtained from the historical databases (Wang et al. 2015). However, the actual traffic data may not match well with any of the national default TTC groups. Thus, using the closely matched TTC group for design may result in over- or under-design of pavement structure. Nassiri et al. (2014) investigated the influence of site-specific traffic characteristics and the AASHTOWare Pavement ME Design default values on the performance of both flexible and rigid pavements in Alberta. Based on the results, TTC groups were found to be influential on AC pavement performance, especially for rutting. In another study, Li et al. (2015) aimed at developing simplified TTC groups based on cluster analysis of vehicle class

distributions in Arkansas. Like many other states in the U.S., Georgia currently uses national default values (Level 3 design inputs) for pavement design.

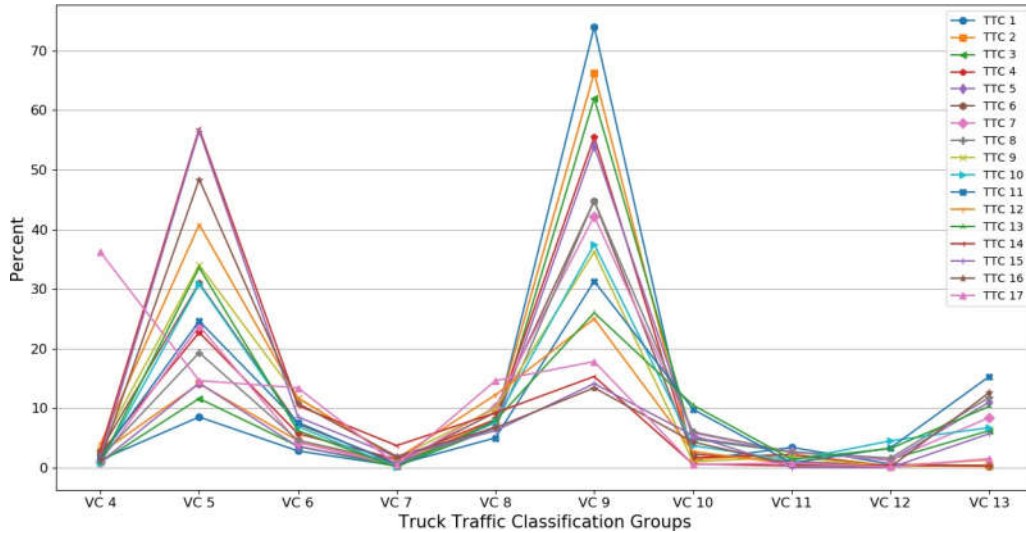


Figure 28. Line graph. Truck traffic classification groups based on National Cooperative Highway Research Program (NCHRP) Project 1-37A (Ara, Inc. 2004).

The purpose of this study was to develop customized or state-specific TTC groups using existing WIM data in Georgia. The researchers aimed to leverage unsupervised machine learning techniques to develop clusters (groups) of truck traffic by mining the comprehensive WIM data compiled in the AASHTOWare Pavement ME Design traffic input formats by categories, including VCD, MDF, HDF, and NALS. Table 30 represents the 17 TTC groups and their corresponding description and vehicle class distribution.

Table 30. TTC group description and corresponding vehicle class distribution default values (percentages) (ARA, Inc. 2004).

| TTC Group | TTC Description | Vehicle/Truck Class Distribution (percent) | | | | | | | | | |
|-----------|---------------------------------------------------------|--------------------------------------------|------|------|-----|------|------|------|-----|-----|------|
| | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1 | Major single-trailer truck route (type I) | 1.3 | 8.5 | 2.8 | 0.3 | 7.6 | 74.0 | 1.2 | 3.4 | 0.6 | 0.3 |
| 2 | Major single-trailer truck route (Type II) | 2.4 | 14.1 | 4.5 | 0.7 | 7.9 | 66.3 | 1.4 | 2.2 | 0.3 | 0.2 |
| 3 | Major single- and multi- trailer truck route (Type I) | 0.9 | 11.6 | 3.6 | 0.2 | 6.7 | 62.0 | 4.8 | 2.6 | 1.4 | 6.2 |
| 4 | Major single-trailer truck route (Type III) | 2.4 | 22.7 | 5.7 | 1.4 | 8.1 | 55.5 | 1.7 | 2.2 | 0.2 | 0.4 |
| 5 | Major single- and multi- trailer truck route (Type II). | 0.9 | 14.2 | 3.5 | 0.6 | 6.9 | 54.0 | 5.0 | 2.7 | 1.2 | 11.0 |
| 6 | Intermediate light and single-trailer truck route (I) | 2.8 | 31.0 | 7.3 | 0.8 | 9.3 | 44.8 | 2.3 | 1.0 | 0.4 | 0.3 |
| 7 | Major mixed truck route (Type I) | 1.0 | 23.8 | 4.2 | 0.5 | 10.2 | 42.2 | 5.8 | 2.6 | 1.3 | 8.4 |
| 8 | Major multi-trailer truck route (Type I) | 1.7 | 19.3 | 4.6 | 0.9 | 6.7 | 44.8 | 6.0 | 2.6 | 1.6 | 11.8 |
| 9 | Intermediate light and single-trailer truck route (II) | 3.3 | 34.0 | 11.7 | 1.6 | 9.9 | 36.2 | 1.0 | 1.8 | 0.2 | 0.3 |
| 10 | Major mixed truck route (Type II) | 0.8 | 30.8 | 6.9 | 0.1 | 7.8 | 37.5 | 3.7 | 1.2 | 4.5 | 6.7 |
| 11 | Major multi-trailer truck route (Type II) | 1.8 | 24.6 | 7.6 | 0.5 | 5.0 | 31.3 | 9.8 | 0.8 | 3.3 | 15.3 |
| 12 | Intermediate light and single-trailer truck route (III) | 3.9 | 40.8 | 11.7 | 1.5 | 12.2 | 25.0 | 2.7 | 0.6 | 0.3 | 1.3 |
| 13 | Major mixed truck route (Type III) | 0.8 | 33.6 | 6.2 | 0.1 | 7.9 | 26.0 | 10.5 | 1.4 | 3.2 | 10.3 |
| 14 | Major light truck route (Type I) | 2.9 | 56.9 | 10.4 | 3.7 | 9.2 | 15.3 | 0.6 | 0.3 | 0.4 | 0.3 |
| 15 | Major light truck route (Type II) | 1.8 | 56.5 | 8.5 | 1.8 | 6.2 | 14.1 | 5.4 | 0.0 | 0.0 | 5.7 |
| 16 | Major light and multi-trailer truck route | 1.3 | 48.4 | 10.8 | 1.9 | 6.7 | 13.4 | 4.3 | 0.5 | 0.1 | 12.6 |
| 17 | Major bus route | 36.2 | 14.6 | 13.4 | 0.5 | 14.6 | 17.8 | 0.5 | 0.8 | 0.1 | 1.5 |

MACHINE LEARNING TECHNIQUES

Since obtaining high-quality WIM data is an expensive and time-consuming process, not all roads are equipped with WIM sensors. As a result, site-specific traffic data are limited to specific road sections. The issue appears when designing new pavements since designers have no idea about the TTC grouping of the section, subsequently leading to confusion in the selection of PMED input data.

Machine learning methodologies in transportation engineering have been widely used in recent years. One common approach is clustering WIM stations to generate similar traffic-loading spectra as well as traffic data for designing new road sections without site-specific traffic information. Generally, the traffic vehicle class distribution has been utilized as a feature for clustering WIM stations. In this study, VCD, MDF, HDF, and NALS for single- and tandem-axle loads were generated and used as features for clustering analysis. Therefore, the purpose of this study was to find the trucking pattern of the Georgia roads based on PMED traffic input data and generate new TTCs to determine whether, apart from VCD, other input data play a considerable role in clustering WIM sites.

Principal Component Analysis

Principal component analysis (PCA) is an unsupervised method that is commonly used for dimension reduction, in which high-dimensional features are projected to a low-dimensional space without losing much information. Principal components (PCs) are created in the order of the amount of the variation and are orthogonal to each other. In other words, PC1 captures the direction of most variance, PC2 is orthogonal to PC1 and captures the direction of second most variation, and so forth. As discussed previously, PCA is applied to each feature category separately. Figure 29 shows the top 10 PCs for each of 5 feature categories defined previously.

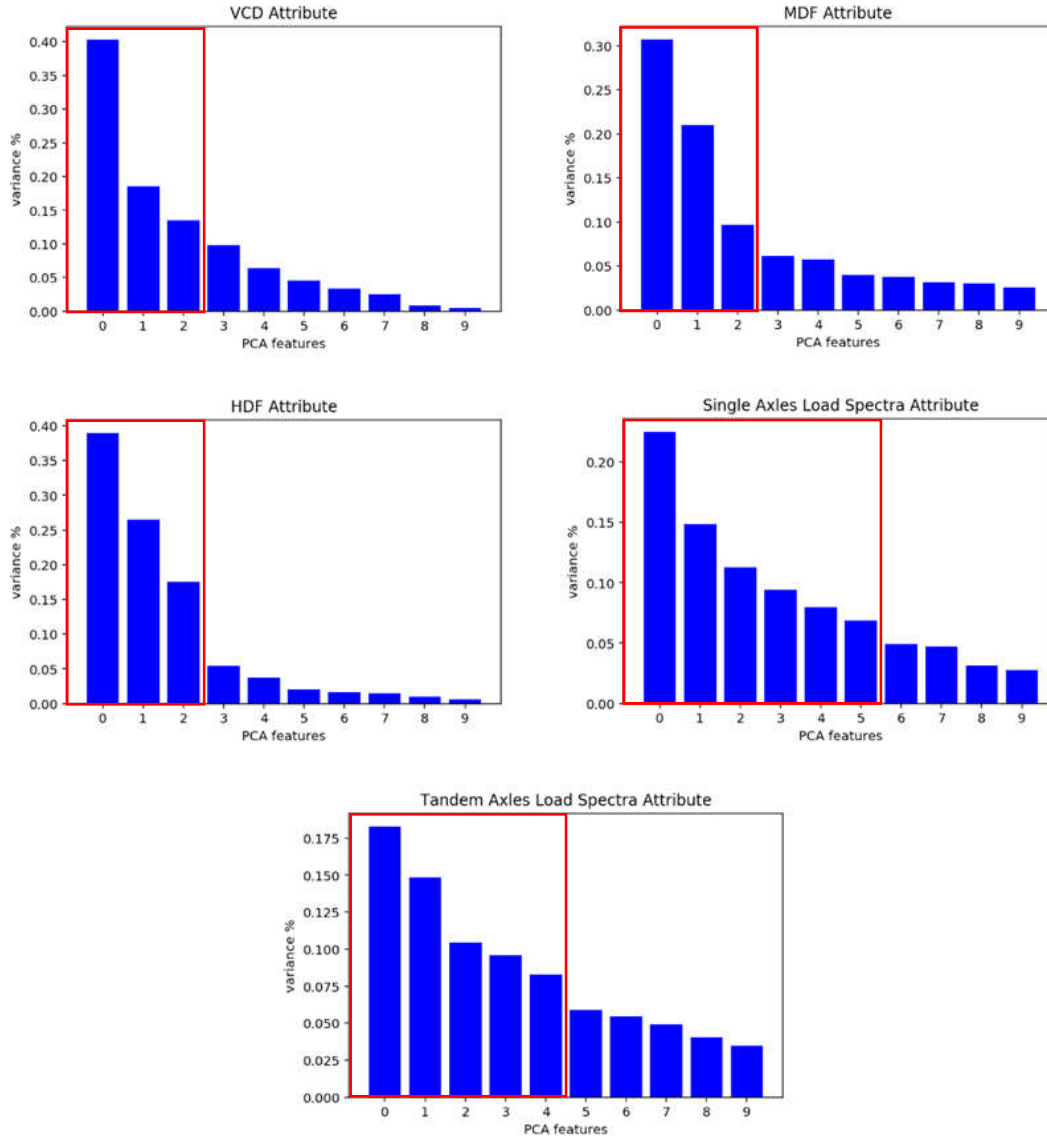


Figure 29. Bar graph. Determining the optimal number of principal components for the attributes.

As seen in figure 29, the variance captured by each subsequent PC decreases. The number of PCs (i.e., dimensions) to keep is a judgment call that reflects the trade-off between the amount of variance to retain and the complexity (dimensionality) of the resulting feature space. For this analysis, the decision was based on the sudden drop of variance as well as retaining at least 60 percent of variances for each feature category. The ultimately retained PCs are indicated in the red rectangle in figure 29, and the corresponding percentages of variance captured are summarized

in table 31. As a result, a total of 20 PCs (i.e., three PCs each for VCD, MDF, and HDF, respectively; six PCs for NALS-Single Axles; five PCs for NALS-Tandem Axles) were retained, which is a significant reduction from the original 565 features. The 20 PCs were used for the subsequent cluster analysis.

Table 31. Percent of variance explained by feature categories.

| Feature Category | Principal Component (PC) | | | | | | Total |
|-------------------|--------------------------|------|------|------|------|------|-------|
| | PC1 | PC2 | PC3 | PC4 | PC5 | PC6 | |
| VCD | 0.41 | 0.19 | 0.14 | | | | 0.74 |
| MDF | 0.30 | 0.21 | 0.09 | | | | 0.60 |
| HDF | 0.40 | 0.27 | 0.18 | | | | 0.85 |
| NALS-Single Axles | 0.22 | 0.14 | 0.11 | 0.09 | 0.08 | 0.06 | 0.70 |
| NALS-Tandem Axles | 0.18 | 0.15 | 0.10 | 0.09 | 0.08 | | 0.60 |

Shading denotes “Not Used”.

Clustering Technique

Cluster analysis aims to find homogeneous subgroups among observations such that the observations within one group will be similar to one another and different from the objects in other groups. A variety of cluster methods have been developed, with K-means being the most popular one that works well with many different data sets. In K-means clustering, the number of clusters, K, needs to be prespecified. The idea behind the K-means method is to find the K clusters so that the within-cluster variation is minimized. With the commonly used Euclidean distance as the proximity measure, the K-means algorithm can be expressed as an optimization problem as in equation 10.

$$\text{minimize}_{C_1, \dots, C_k} \left\{ \sum_{k=1}^K \frac{1}{|C_k|} \sum_{i, i' \in C_k} \sum_{j=1}^p (x_{ij} - x_{i'j})^2 \right\} \quad (10)$$

Where,

x_{ij} = the j th feature of observation i

p = the number of features

$|C_k|$ = the number of observations in the k th cluster

The within-cluster sum-of-squares is also referred to as inertia, which measures how internally coherent the clusters are. Inertia is commonly used to determine the optimal number of clusters (K). A range of K values were experimented within the PC features derived previously. The inertia was then plotted against K in figure 30, showing the inertia reduces as K increases. In extreme cases, when the number of observations equals K , the inertia reduces to zero. In practice, the elbow method is often applied, where K is chosen as the point of the maximum curvature in the inertia plot (indicated by the red arrow in figure 30). Following this approach, K was chosen to be 4 in this study.

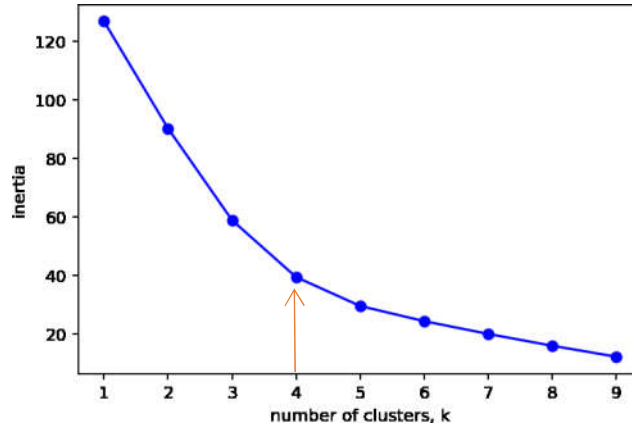


Figure 30. Line graph. Elbow method for determining K .

For visualization purposes, the 20 PCs derived previously (referred to as the lower-level PCA) were further projected onto a two-dimensional space again using the PCA method, referred to as the higher-level PCA. This allowed the researchers to visually inspect how the 20 WIM sites are clustered on a two-dimensional plane. This nested PCA procedure is illustrated in figure 31.

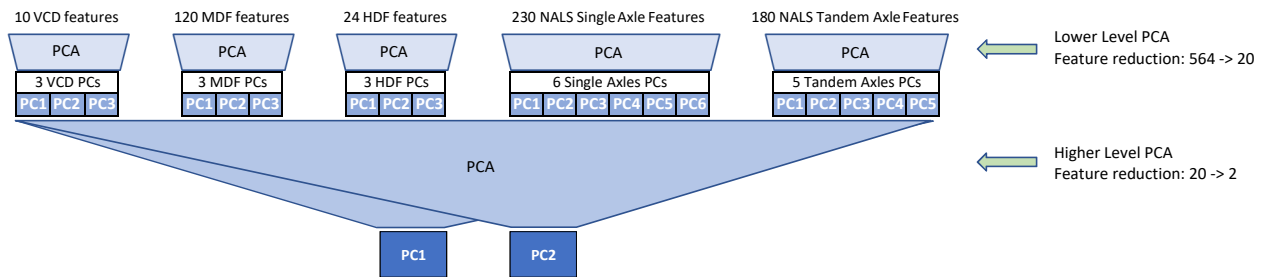


Figure 31. Illustration. Nested PCA procedure.

Corresponding to the higher-level PCA, the loading factors of the 20 lower-level PCs were calculated with respect to the two higher-level PC axes and are shown in table 32.

Table 32. Loading factors of 20 lower-level PCs

| Variables | PC1 | PC2 |
|-------------------------|-----------|-----------|
| PC2 Single axles | -0.151155 | -0.275597 |
| PC2 VCD | -0.135996 | -0.308707 |
| PC2 MDF | -0.128659 | 0.191469 |
| PC1 MDF | -0.050055 | 0.115607 |
| PC3 Tandem axles | -0.047125 | 0.012843 |
| PC5 Single axles | -0.019196 | -0.093869 |
| PC4 Single axles | -0.010344 | 0.061058 |
| PC3 VCD | -0.009486 | -0.223399 |
| PC3 HDF | 0.010548 | 0.173314 |
| PC2 HDF | 0.025426 | -0.308047 |
| PC5 Tandem axles | 0.056787 | -0.321616 |
| PC1 Tandem axles | 0.181245 | 0.214771 |
| PC1 Single axles | 0.201175 | 0.267167 |
| PC6 Single axles | 0.242751 | -0.330624 |
| PC4 Tandem axles | 0.272299 | -0.301626 |
| PC3 Single axles | 0.280960 | 0.040971 |
| PC2 Tandem axles | 0.348197 | 0.196957 |
| PC1 HDF | 0.360387 | -0.236826 |
| PC3 MDF | 0.432520 | 0.237685 |
| PC1 VCD | 0.457495 | -0.129976 |

The clusters of 20 WIM sites were plotted in the two-dimensional plane in the higher-level PC space, together with the scaled loading vectors, shown in figure 32.

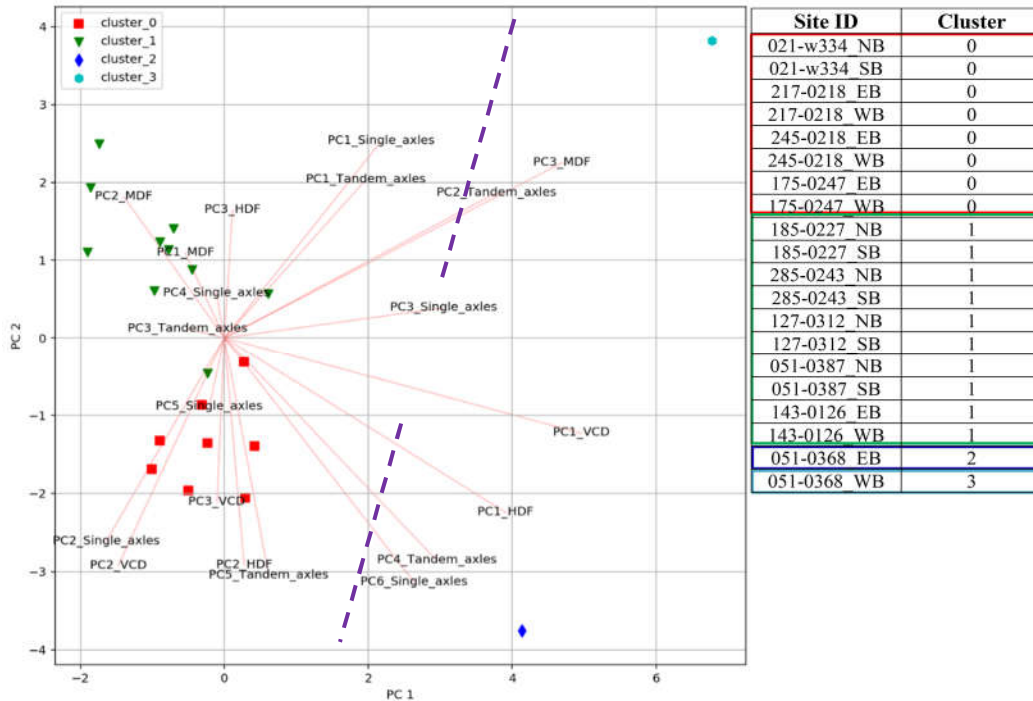


Figure 32. Plot. Clustering result and loading vectors.

As shown in figure 32, all clusters are clearly separated in the two-dimensional higher-level PC space. Cluster 0 (red square) consists of 8 WIM sites, which are in the lower left region, while cluster 1 (green triangles) consists of 10 WIM sites, which are located in the upper left region. Clusters 2 and 3 (blue diamond and cyan circle) contain only one WIM site each and both belong to the same WIM station 051-0368. For direct reference, the WIM site IDs, and their corresponding clusters are included in figure 32, as well.

Apparently, clusters 2 and 3 (representing directional traffic at the same WIM station: 051-0368) are further separated from other sites and they are also farther apart from each other in figure 33. This seemingly strange clustering outcome is intuitively interpretable, as the station 051-0368 is located on Interstate 16 near the City of Savannah and serves as the gateway for heavy trucks entering and leaving the Savannah Port. The distinct directional patterns of truck traffic at this station are well expected.

The lines in figure 32 represent loading vectors for the 20 lower-level PCs. They can be used to interpret which features or feature categories have contributed to separating different clusters. For example, the VCD feature category (PC1_VCD) plays the most important role in separating clusters 2 and 3 from clusters 0 and 1. This can be seen from figure 32 by drawing an imaginary line that is perpendicular to the PC1_VCD vector (see the dashed purple line). This is due to the fact that the vehicle class distribution at the station 051-0368 near the Savannah Port is quite different from other sites in Georgia. Besides PC1_VCD, other vectors, especially those crossing the dashed purple line (e.g., PC1-HDF, PC3-MDF, and PC2-tandem-axles, etc.), more or less contributed to separating this special station from other stations. Figure 33 shows the clusters of the 20 WIM sites by their geographical locations.

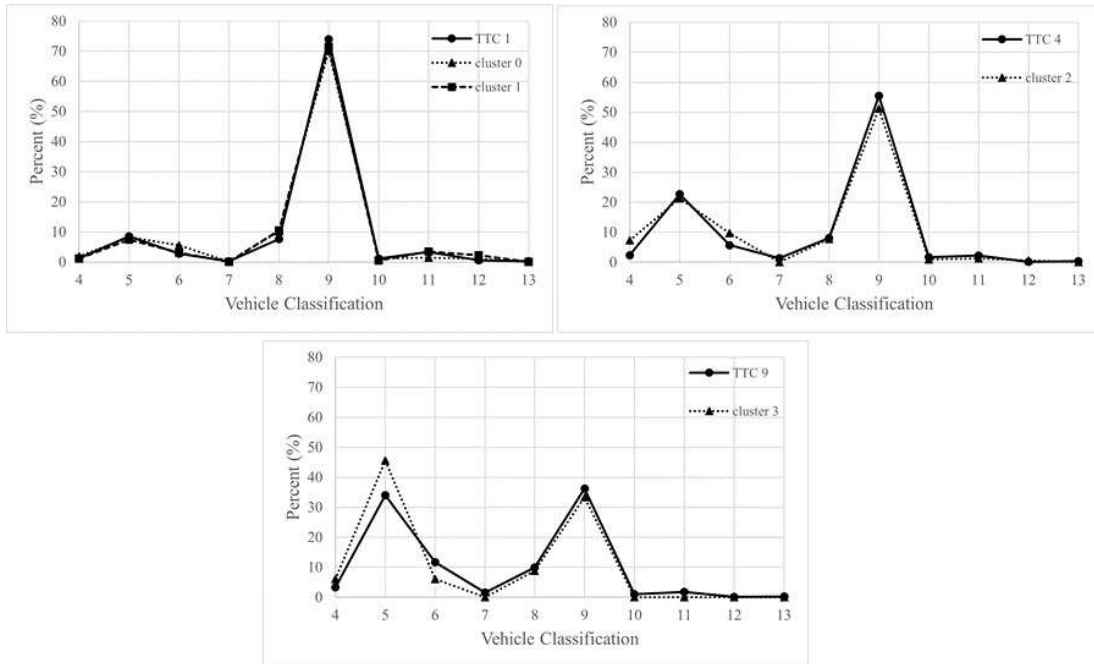


Figure 34. Line graph. Traffic pattern comparison of clusters and default TTC groups.

Both the cluster-based traffic inputs and the corresponding TTC group-based traffic inputs were entered into the AASHTOWare Pavement ME Design software to simulate pavement performance. Two pavement designs (one for jointed plain concrete pavement [JPCP] and one for flexible pavement) were evaluated. The JPCP design consisted of five layers commonly used in Georgia. The top layer was a 12” PCC layer with the recommended JPCP values. The second layer was a 3” AC layer with Superior Performing Asphalt Pavement (Superpave): 64-22. The third layer was a 12” crushed gravel layer, serving as the nonstabilized base. The fourth and fifth layers were two subgrade A-7-6 sections, with a 12” layer on the top and the bottom layer serving as a semi-infinite layer. The flexible pavement design included a 8” asphalt concrete layer followed by a 12” unbound aggregate base layer on A-2-4 subgrade soils.

The AASHTOWare Pavement ME Design software requires a series of traffic inputs, which can be obtained from the WIM data. The software allows pavement design to be conducted with three

levels of inputs depending on the data availability. Level 1 uses site-specific data, which provide the highest level of input accuracy for the pavement design. Level 2 uses regional data, which provide an intermediate level of input accuracy for the pavement design. Level 3 uses national or global averages, which provide the least detailed input values.

As the purpose of this analysis was focused on the performance comparison of different traffic input scenarios, Level 3 inputs were used. Specifically, the performance difference was analyzed between two traffic input scenarios: one with the cluster-based traffic inputs derived in this project and the other with the national traffic inputs based on the default TTC groups. All the material inputs used in the analysis followed the recently developed input library from *The GDOT Pavement ME Design User Input Guide* (Kim et al. 2020).

The performance curves over a design period of 20 years are plotted in figure 35 and figure 36 for JPCP and flexible pavement designs, respectively. For the JPCP, the default TTC groups resulted in worse performance than the cluster group counterparts. The performance gap was the largest between TTC group 1 and clusters 0 and 1 (with about 50 inch in International Roughness Index (IRI) and over 0.1 inch in faulting at the end of the design period). For the flexible pavement, similar performance trends were observed. The TTC groups generally performed equally well or worse than the cluster groups. The apparent gap in bottom-up cracks occurred between TTC group 1 and clusters 0 and 1, which is about 6 percent at the end of the design period. The difference in permanent deformation between TTC group 9 and cluster 3 was about 0.15 inch at the end of the design period. The findings indicate that using the national default TTC groups that closely match the actual traffic data resulted in over-design of the pavement structure, especially for JPCP, in Georgia. This highlights the importance of developing customized TTC groups using state-specific WIM data.

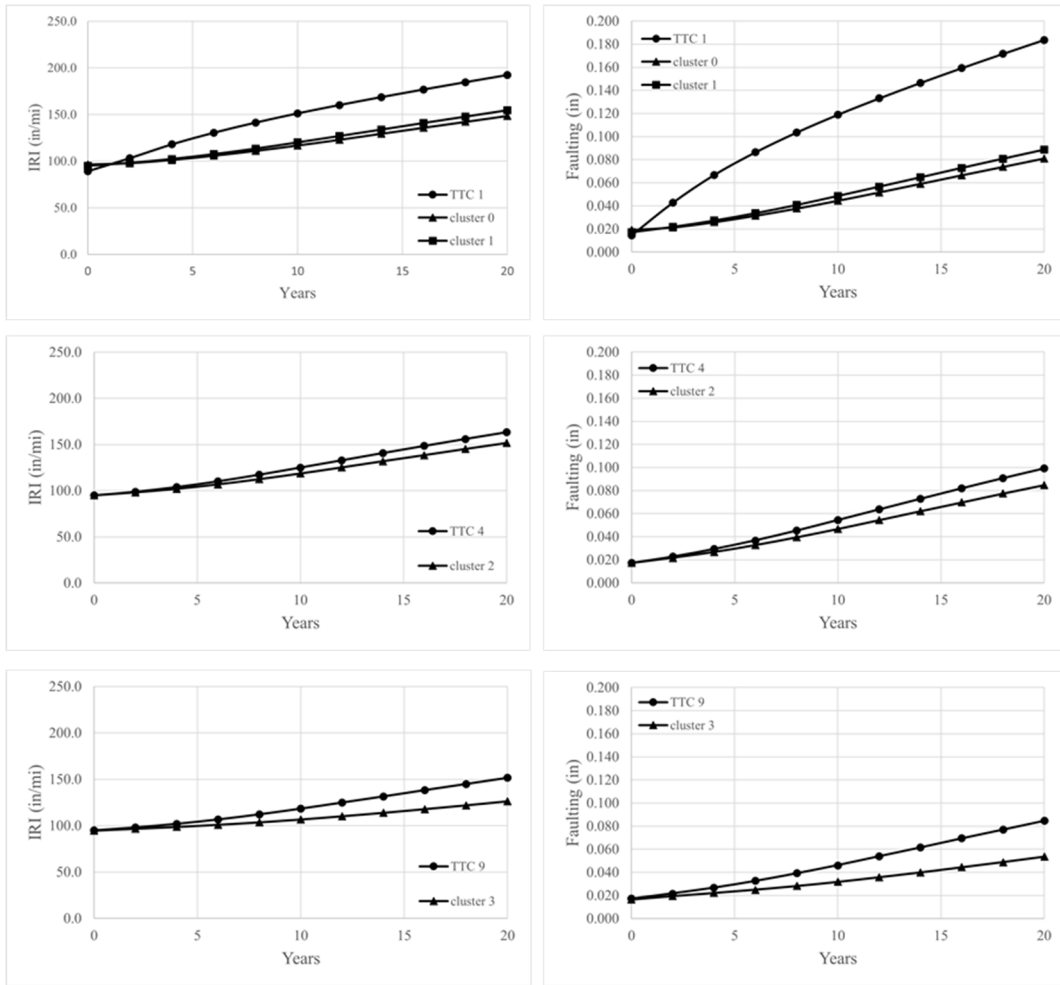


Figure 35. Line graph. JPCP pavement performance comparison of cluster-based traffic inputs and default TTC groups.

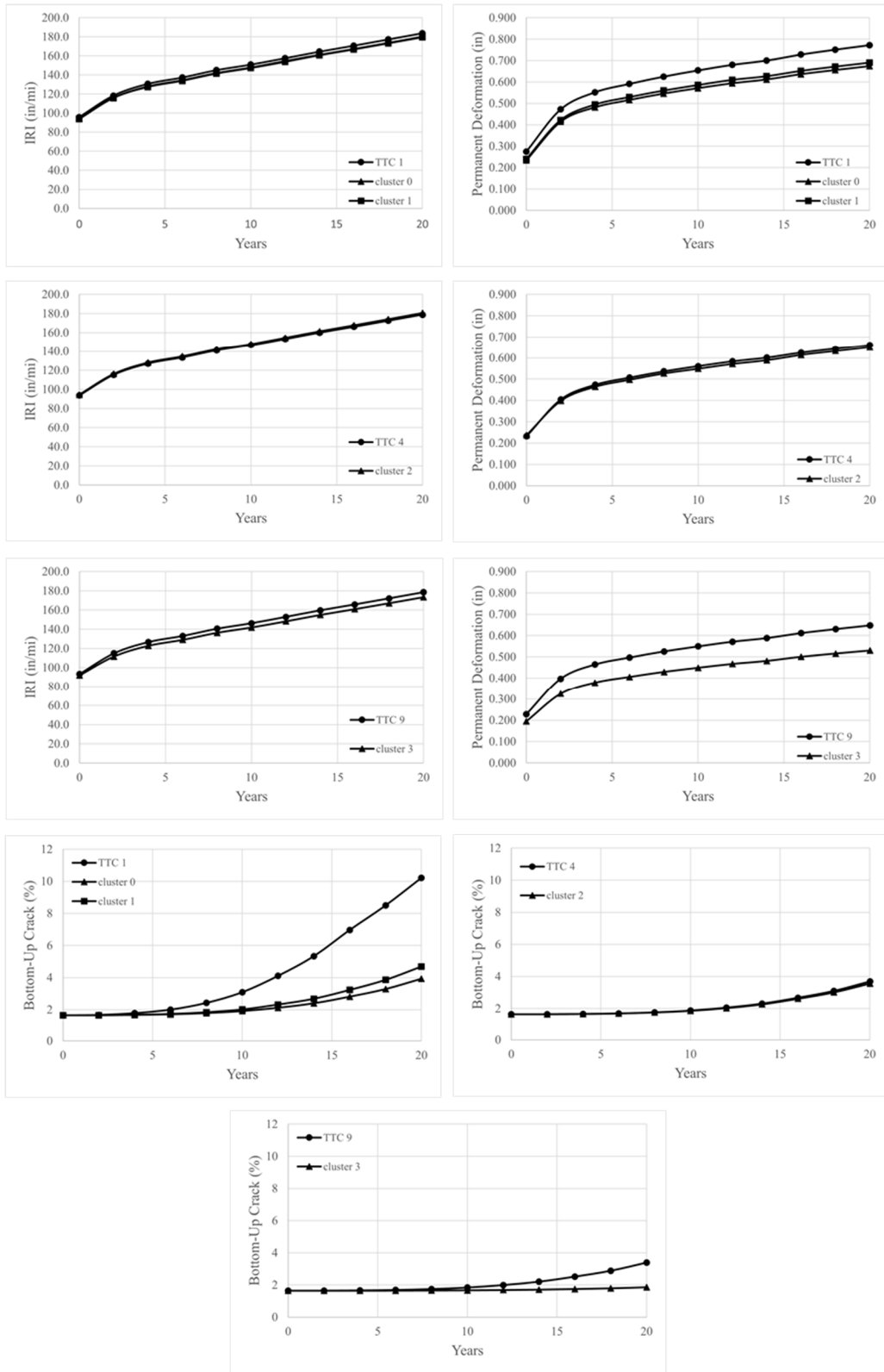


Figure 36. Line graph. Flexible pavement performance comparison of cluster-based traffic inputs and default TTC groups.

CHAPTER 7. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

In this study, data from 10 WIM stations throughout the state of Georgia were analyzed and truck ESAL factors were updated using QC-checked data. Different structural numbers and slab thicknesses were selected for flexible and rigid pavement designs. According to the results, neither variation of structural number nor slab thickness has a significant effect on the resultant ESAL factors. Also, the reliability concept was implemented and Georgia's ESAL factors were calculated using different reliability levels. The results showed that the ESAL factors with 85 percent reliability are close to GDOT's currently used default values for flexible pavement design in either rural or urban interstate highways. In the case of rigid pavement design, ESALs calculated based on a 90 percent reliability level are close to GDOT's default values.

As a result, WIM data provide the opportunity to develop more accurate truck ESAL factors than GDOT's default ESAL factors since WIM data represent the actual traffic data on roadways. Thus, the data obtained from this study can be utilized by pavement designers and engineers for the design of new pavements as well as pavement maintenance purposes. GDOT should continue to obtain good quality WIM data for longer periods to consider the possible variation in truck ESAL factors over time.

In this study, unsupervised learning algorithms were leveraged to analyze high-dimensional traffic characteristic data collected from the existing WIM stations in Georgia. A practical analytics procedure was developed to first apply stratified principal component analysis to each of the traffic feature categories consistent with the AASHTOWare Pavement ME Design inputs. This results in a significantly reduced feature space formed by the top principal components that capture most of

the data variance in each feature category. Then, K-means cluster analysis was conducted in the reduced dimension space. Knowing that most traffic features, especially those within the same category, are highly correlated, the proposed procedure is capable of extracting higher-level sparse features from low-level dense features and effectively clustering WIM sites in the low-dimensional feature space.

The proposed analytics procedure was applied to the WIM data in Georgia. The resulting clusters were verified by their geographical locations as well as their projections in the higher-level two-dimensional PC space, in which influential feature categories can be visually inspected. The performances of two exemplar designs (one JPCP and one flexible pavement) were evaluated using AASHTOWare Pavement ME Design software with respect to two traffic input scenarios: one based on the derived clusters and one based on the corresponding national default TTC groups. The results showed that using the national default TTC groups led to over-design of the pavement structure, especially JPCP, in Georgia. The performance gaps between the national default TTC groups and state-specific traffic characteristics highlight the importance of developing customized TTC groups using state-specific WIM data.

RECOMMENDATIONS

It should be noted that the quality of clusters derived largely depends on the quality of the WIM data. Thus, it is important that reliable quality control procedures are implemented to continuously monitor any data errors or anomalies likely arising from internal or external sources. Additionally, WIM sensors should be calibrated on a regular basis to ensure high-quality data are collected in support of pavement design practice. Also, the more data are utilized for clustering, the more precise results are obtained. Therefore, it is recommended to gather data from more WIM stations

that have been monitored from continuous years to obtain a wide range of datasets for the analysis. Further, it is highly recommended to re-evaluate AASHTOWare Pavement ME Design traffic inputs and ESAL factors when the WIM data are calibrated by the vendor following the updated GDOT QC process.

APPENDIX A: VEHICLE CLASS DISTRIBUTION BY MONTH FOR DIRECTIONAL WIM STATIONS

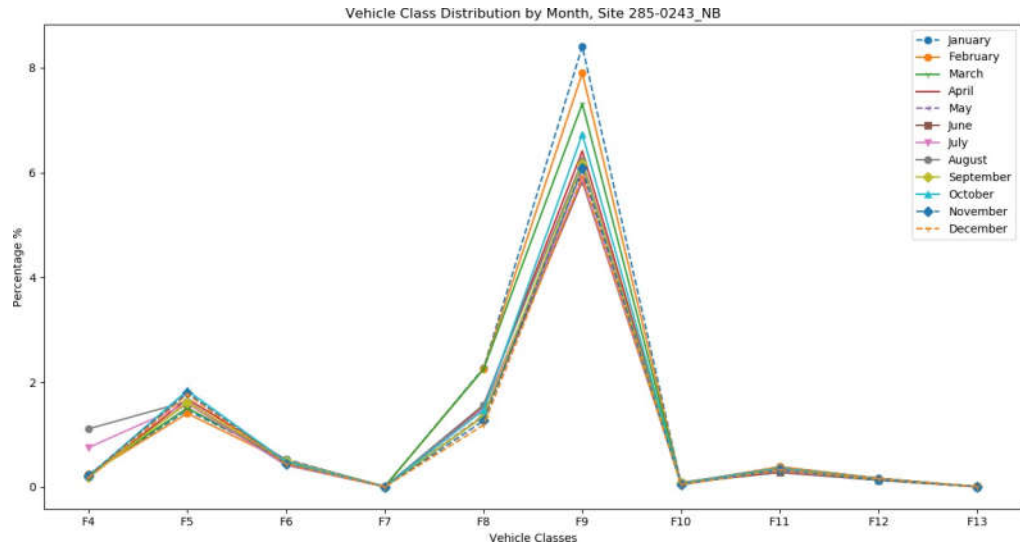


Figure 37. Line graph. Vehicle class distribution by month, Site 285-0243 NB.

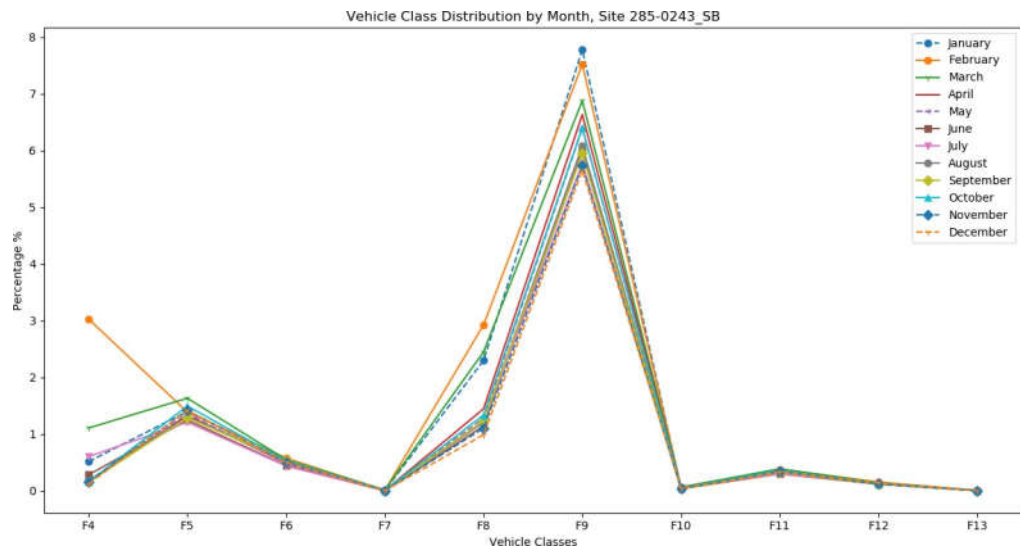


Figure 38. Line graph. Vehicle class distribution by month, Site 285-0243 SB.

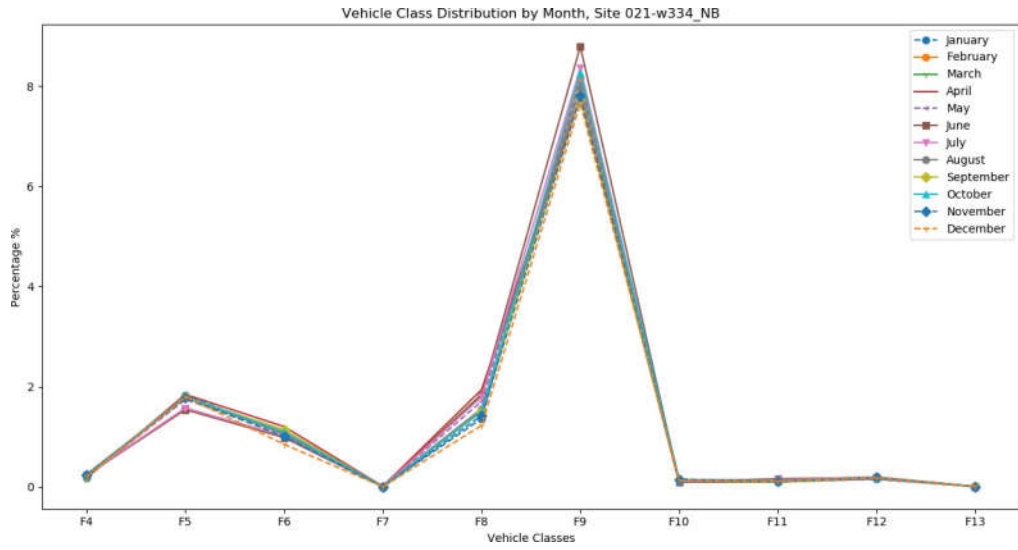


Figure 39. Line graph. Vehicle class distribution by month, Site 021-w334 NB.

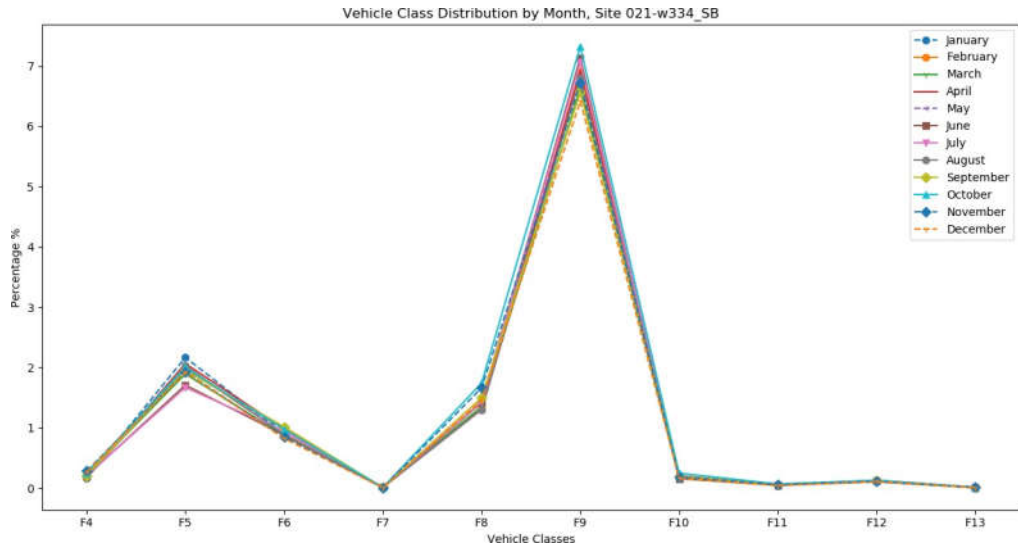


Figure 40. Line graph. Vehicle class distribution by month, Site 021-w334 SB.

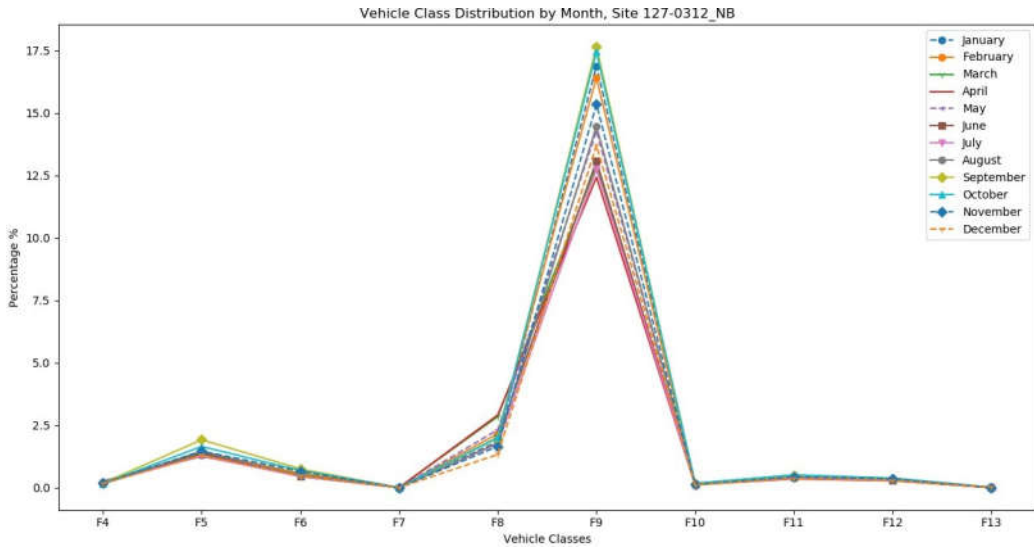


Figure 41. Line graph. Vehicle class distribution by month, Site 127-0312 NB.

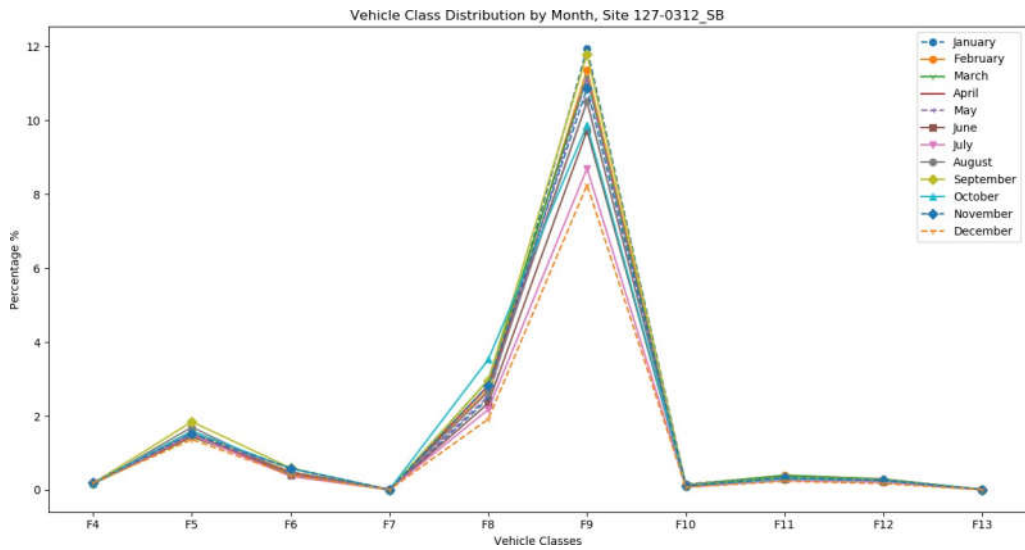


Figure 42. Line graph. Vehicle class distribution by month, Site 127-0312 SB.

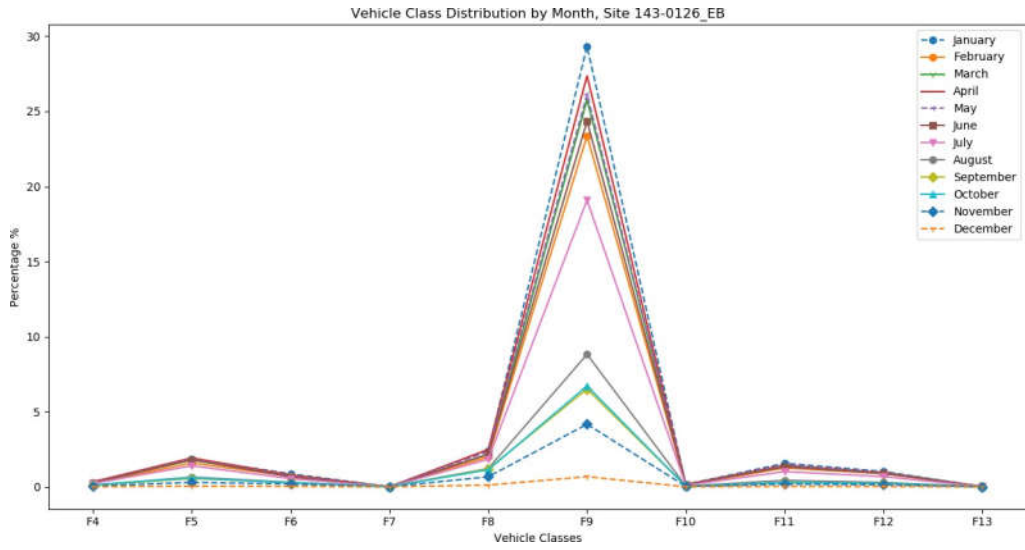


Figure 43. Line graph. Vehicle class distribution by month, Site 143-0126 EB.

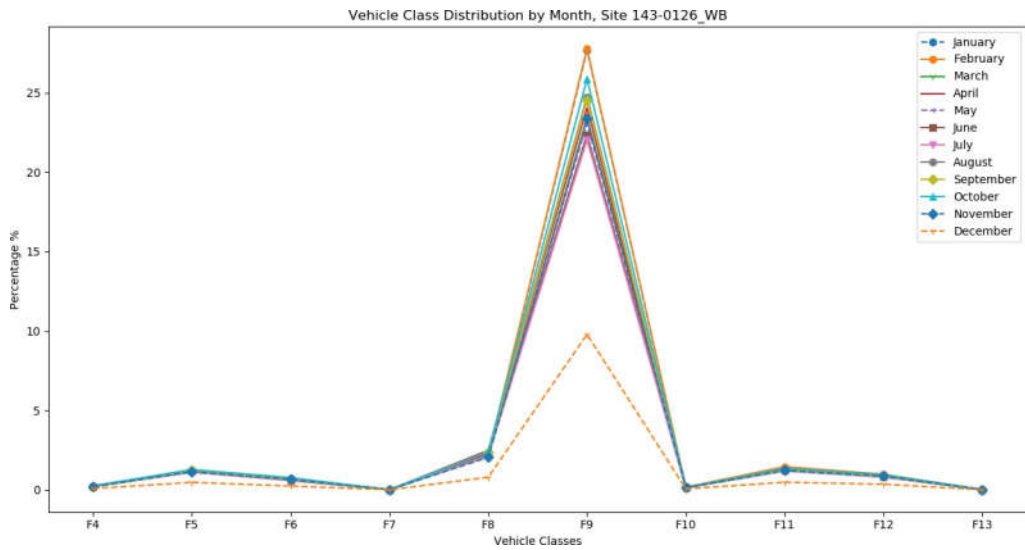


Figure 44. Line graph. Vehicle class distribution by month, Site 143-0126 WB.

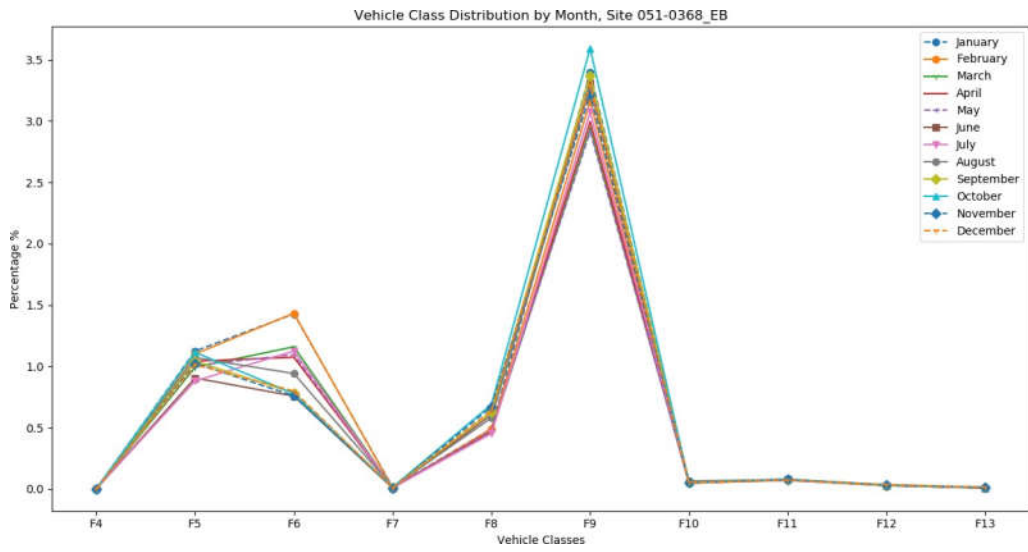


Figure 45. Line graph. Vehicle class distribution by month, Site 051-0368 EB.

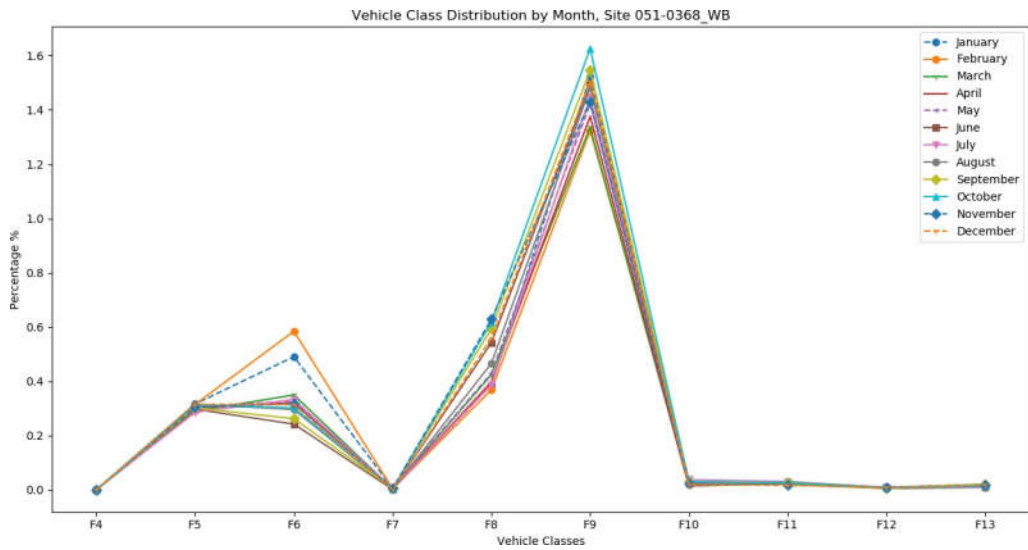


Figure 46. Line graph. Vehicle class distribution by month, Site 051-0368 WB.

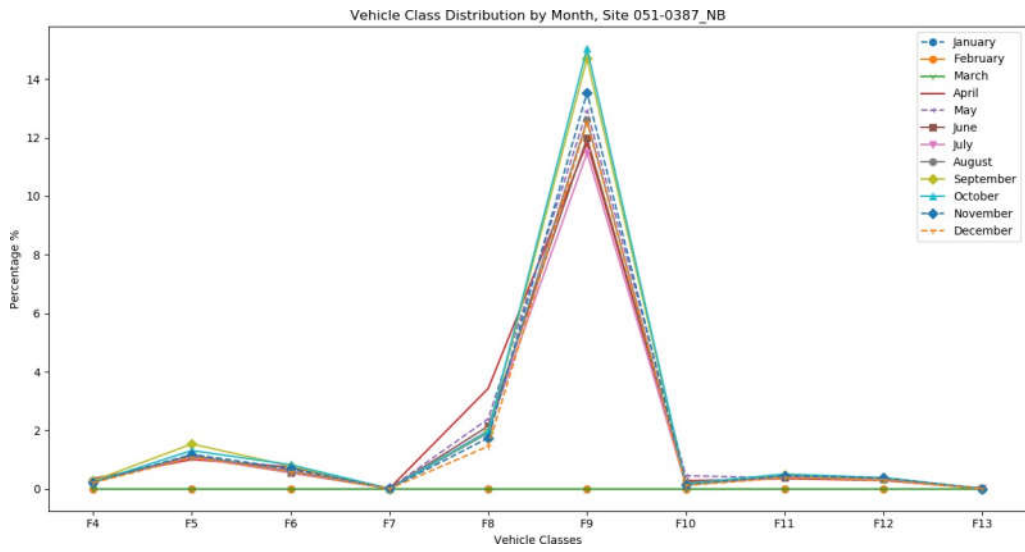


Figure 47. Line graph. Vehicle class distribution by month, Site 051-0387 NB.

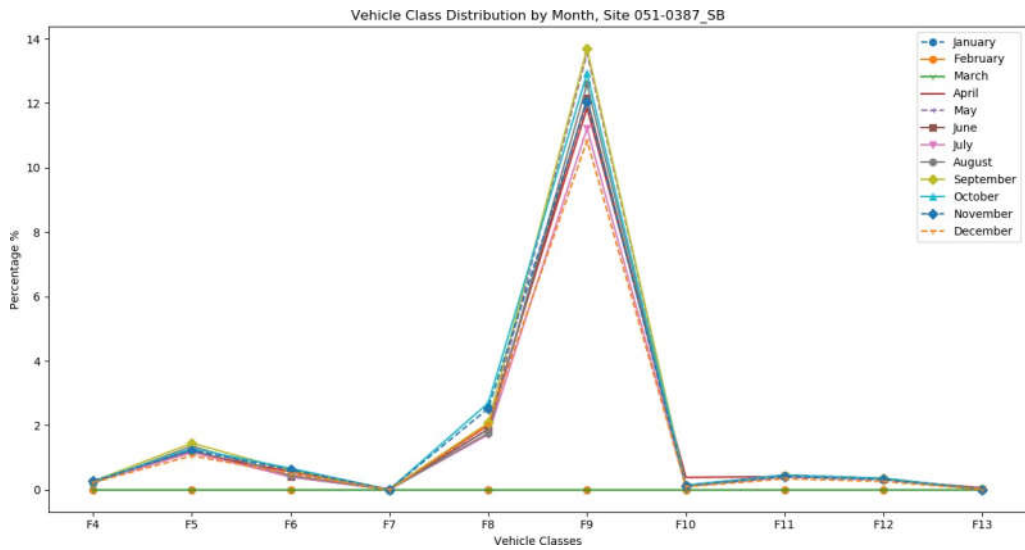


Figure 48. Line graph. Vehicle class distribution by month, Site 051-0387 SB.

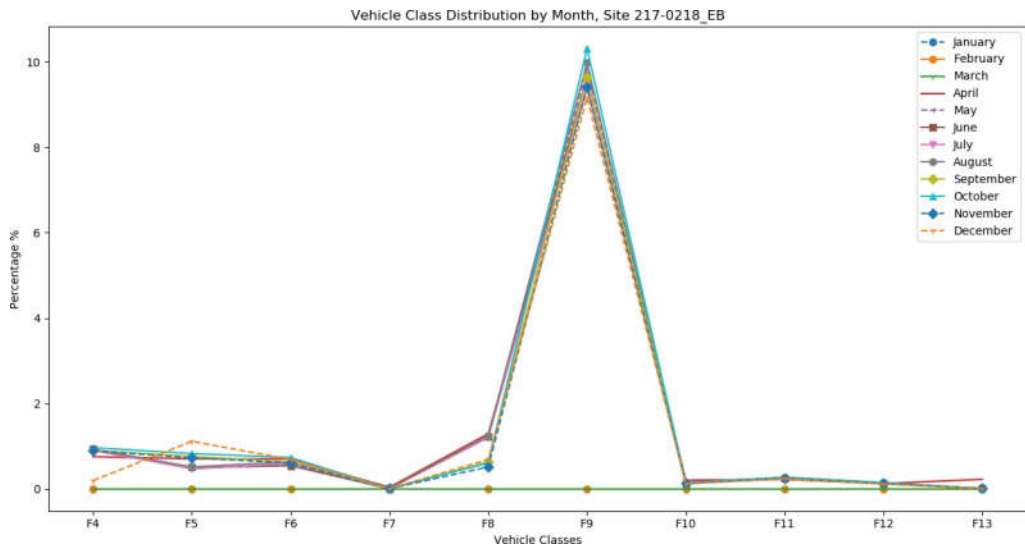


Figure 49. Line graph. Vehicle class distribution by month, Site 217-0218 EB.

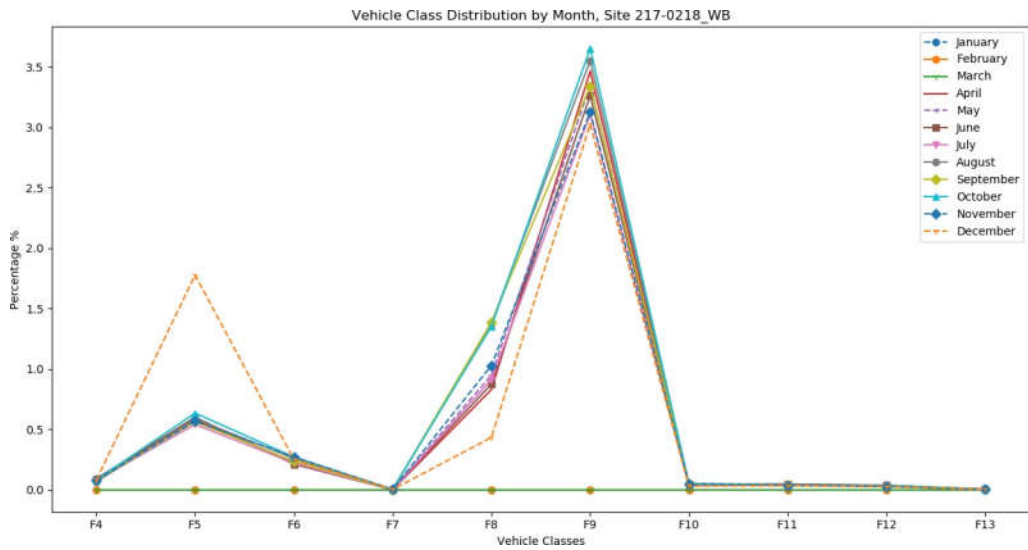


Figure 50. Line graph. Vehicle class distribution by month, Site 217-0218 WB.

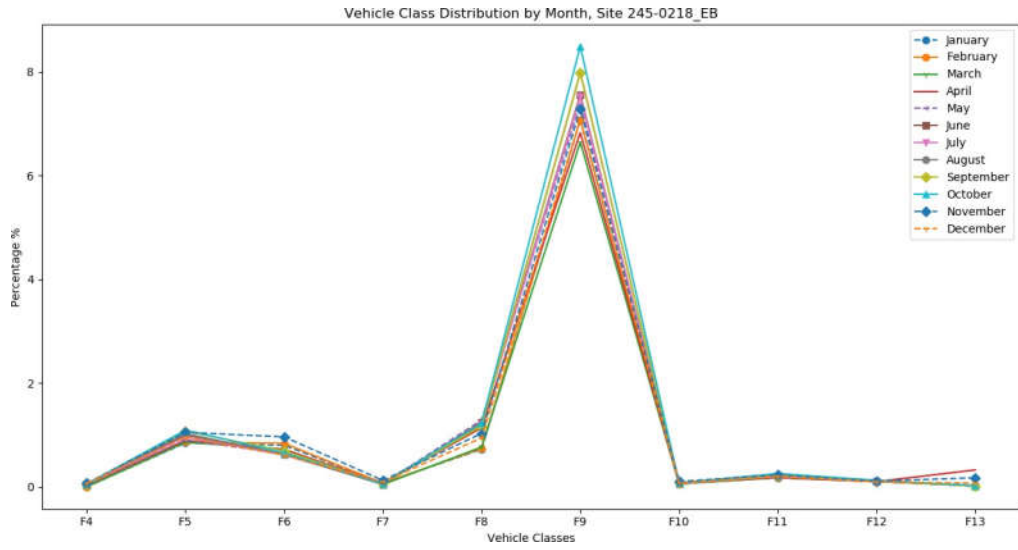


Figure 51. Line graph. Vehicle class distribution by month, Site 245-0218 EB.

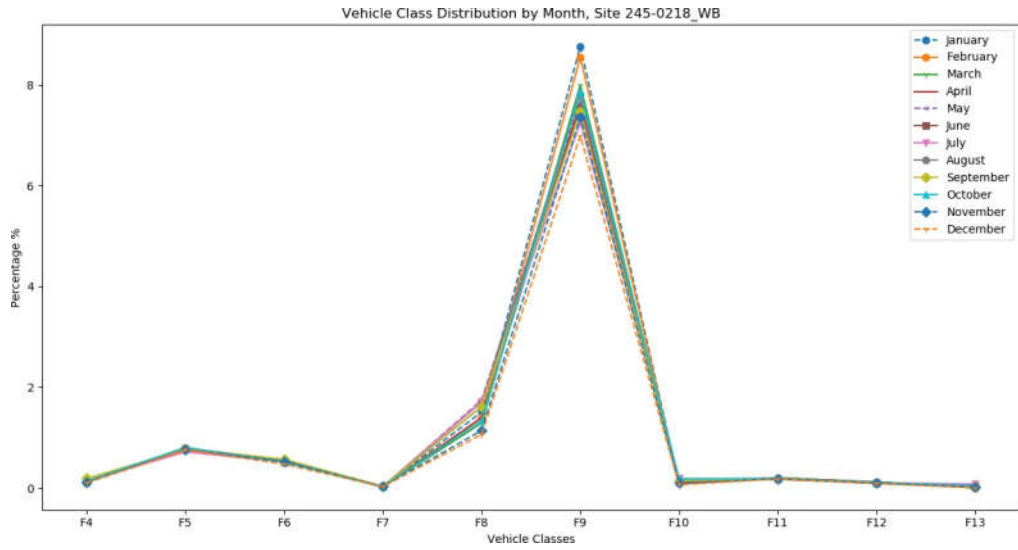


Figure 52. Line graph. Vehicle class distribution by month, Site 245-0218 WB.

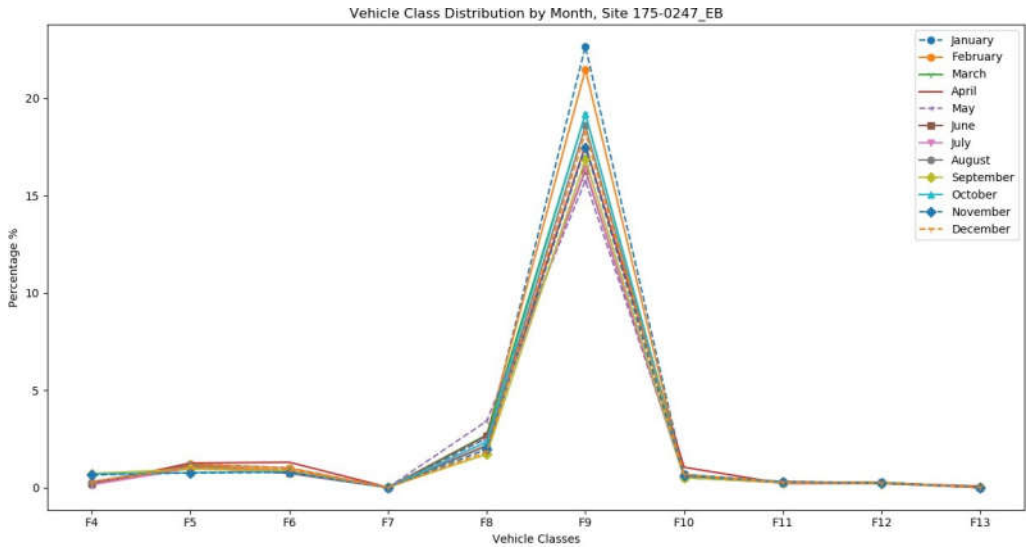


Figure 53. Line graph. Vehicle class distribution by month, Site 175-0247 EB.

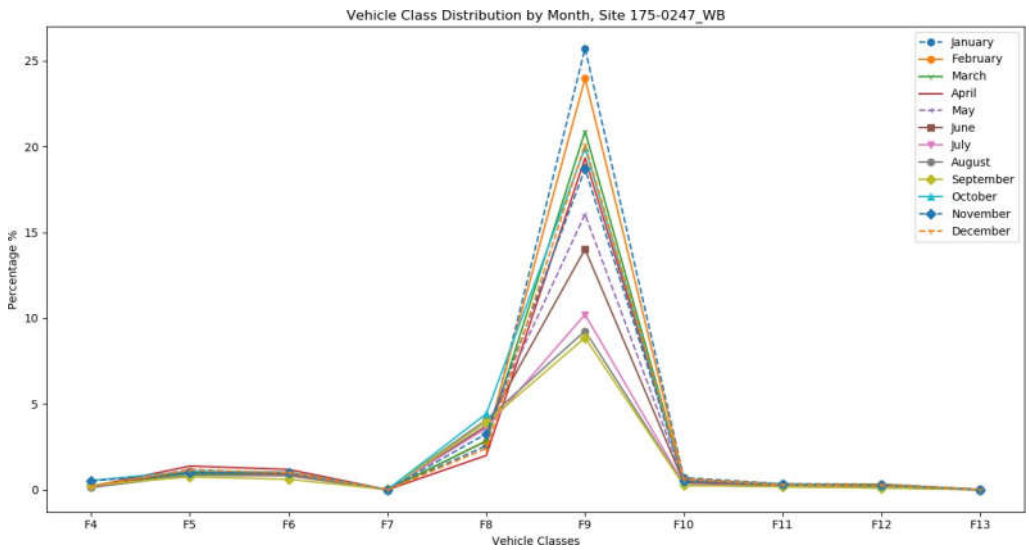


Figure 54. Line graph. Vehicle class distribution by month, Site 175-0247 WB.

APPENDIX B: WIM DATA ANALYSIS AFTER QC CHECKS

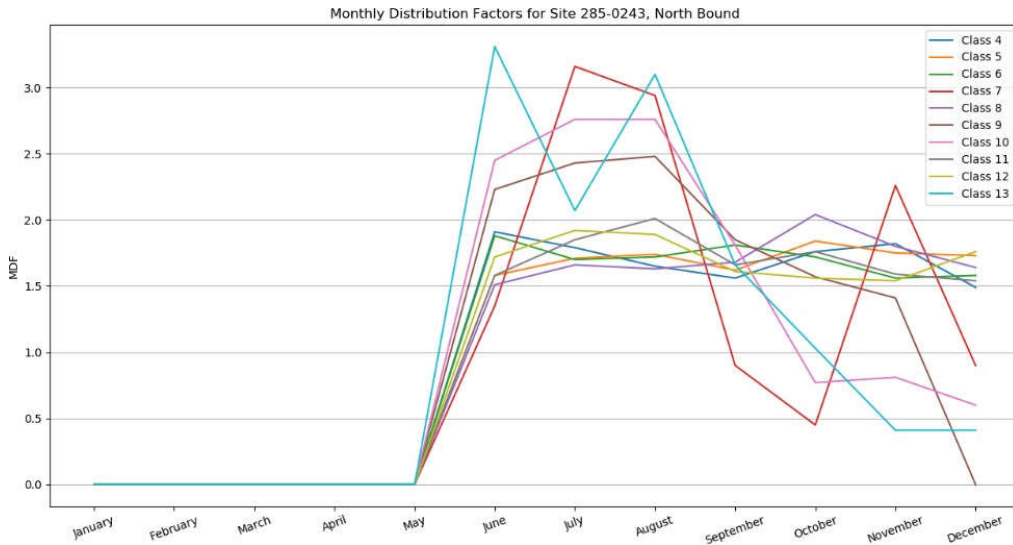


Figure 55. Line graph. Monthly distribution factors, Site 285-0243 NB.

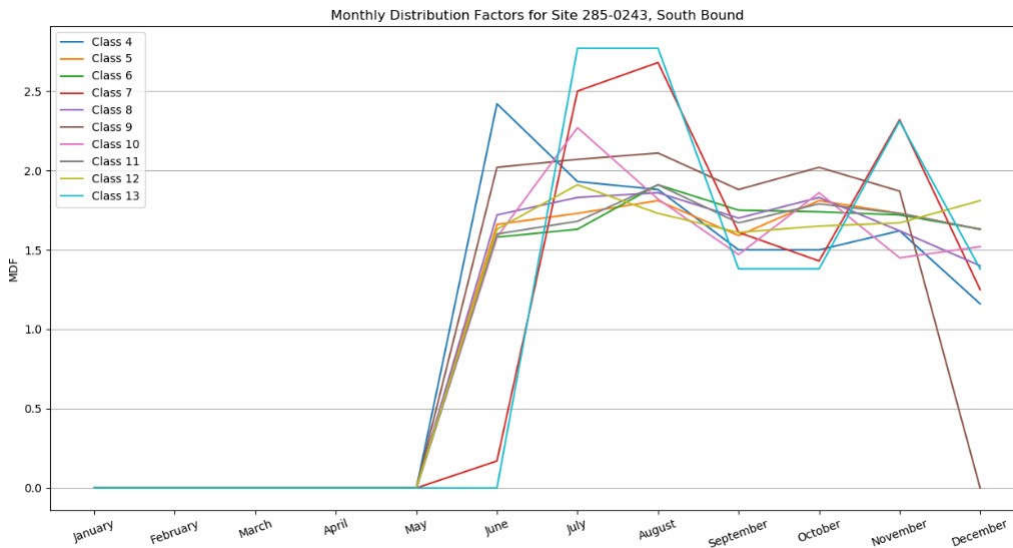


Figure 56. Line graph. Monthly distribution factors, Site 285-0243 SB.

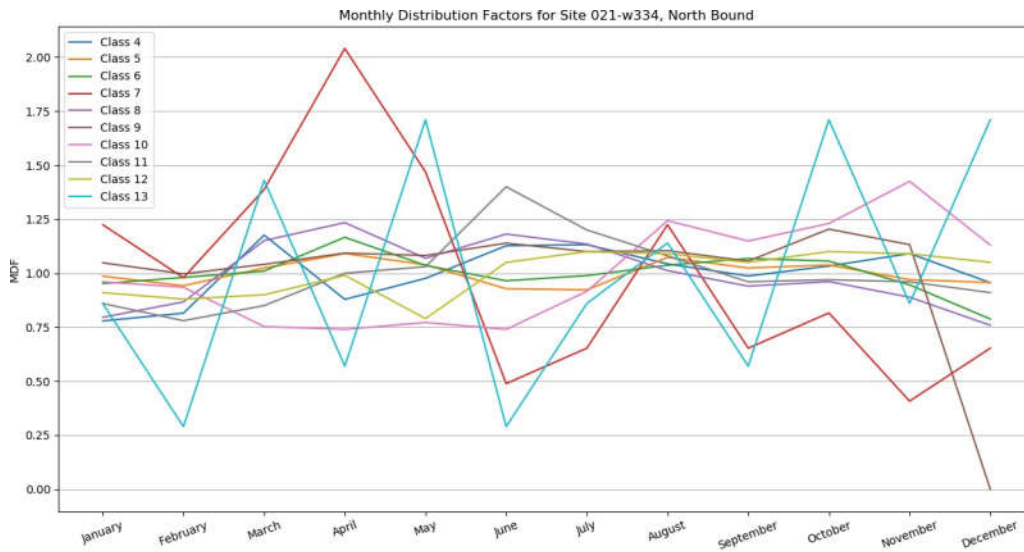


Figure 57. Line graph. Monthly distribution factors, Site 021-w334 NB.

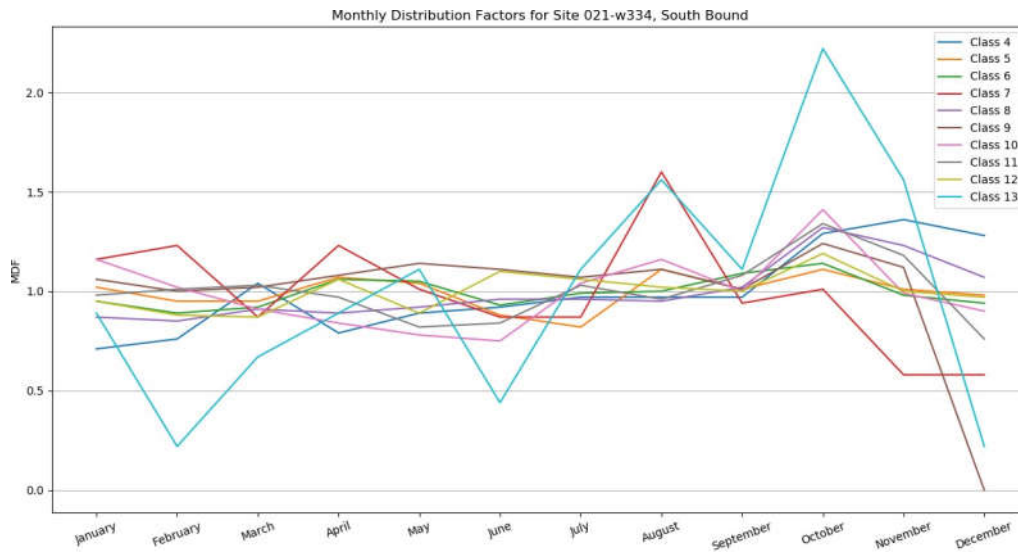


Figure 58. Line graph. Monthly distribution factors, Site 021-w334 SB.

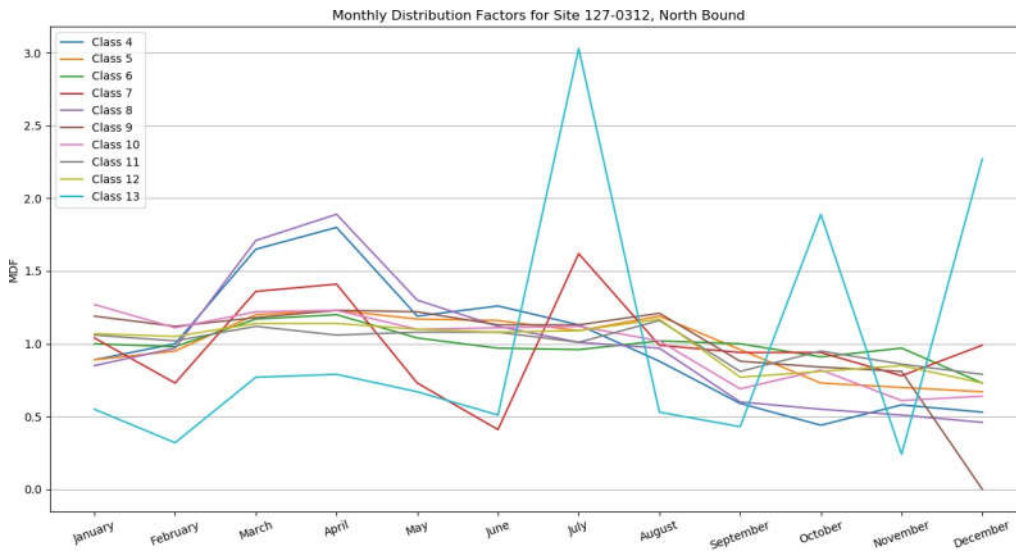


Figure 59. Line graph. Monthly distribution factors, Site 127-0312 NB.

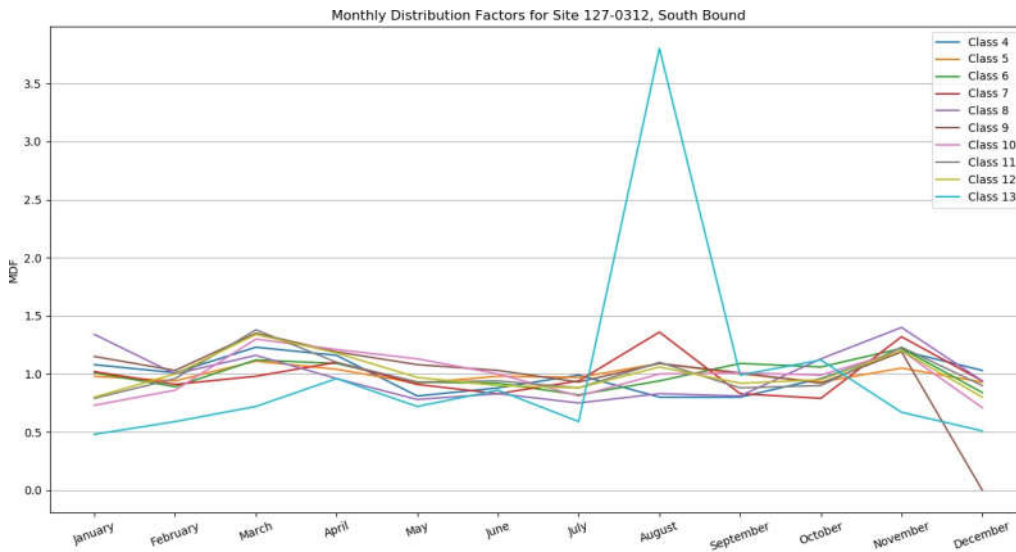


Figure 60. Line graph. Monthly distribution factors, Site 127-0312 SB.

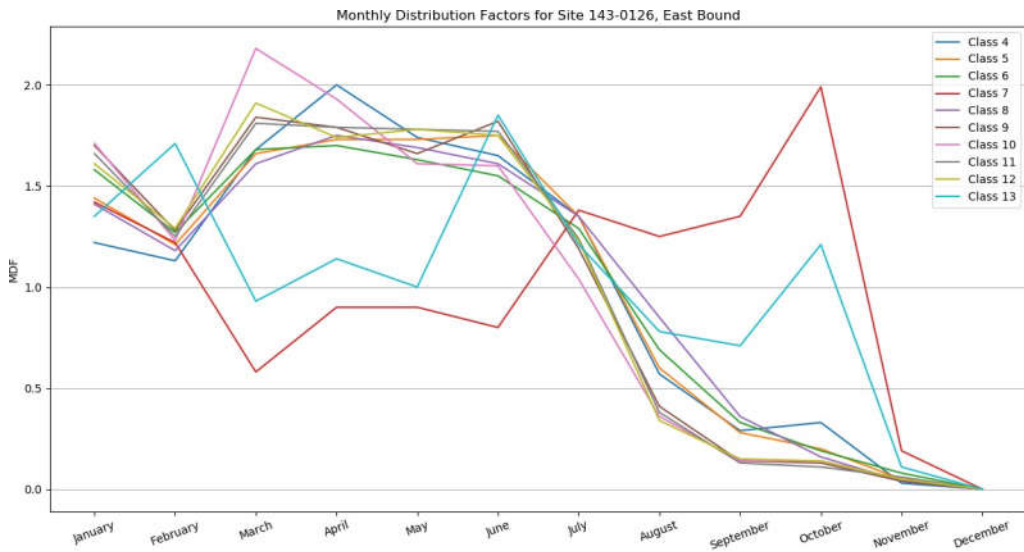


Figure 61. Line graph. Monthly distribution factors, Site 143-0126 EB.

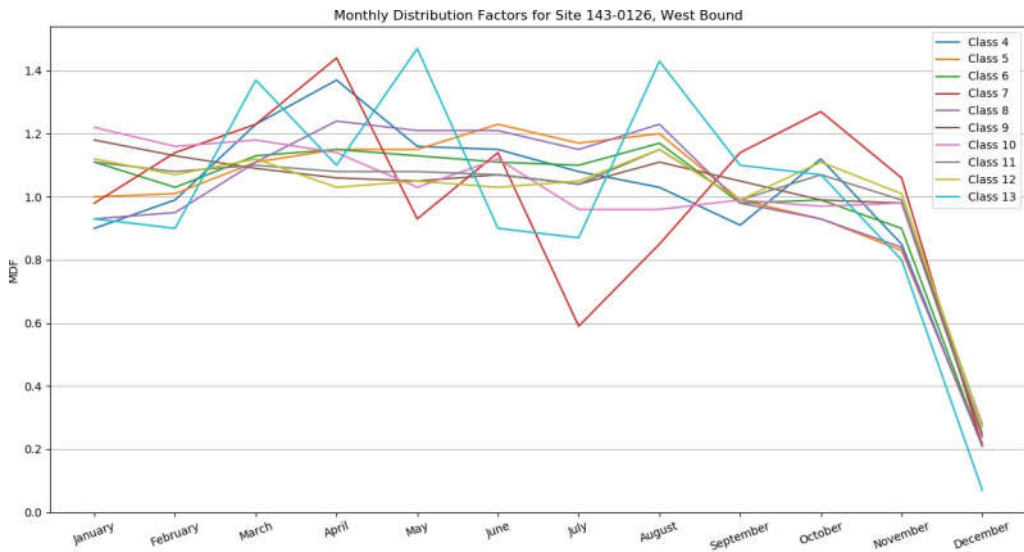


Figure 62. Line graph. Monthly distribution factors, Site 143-0126 WB.

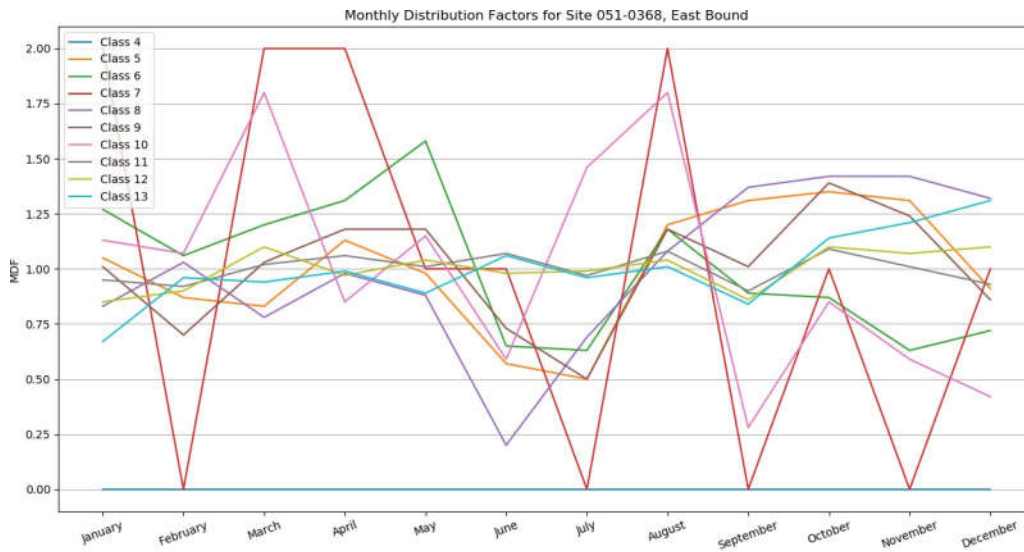


Figure 63. Line graph. Monthly distribution factors, Site 051-0368 EB.

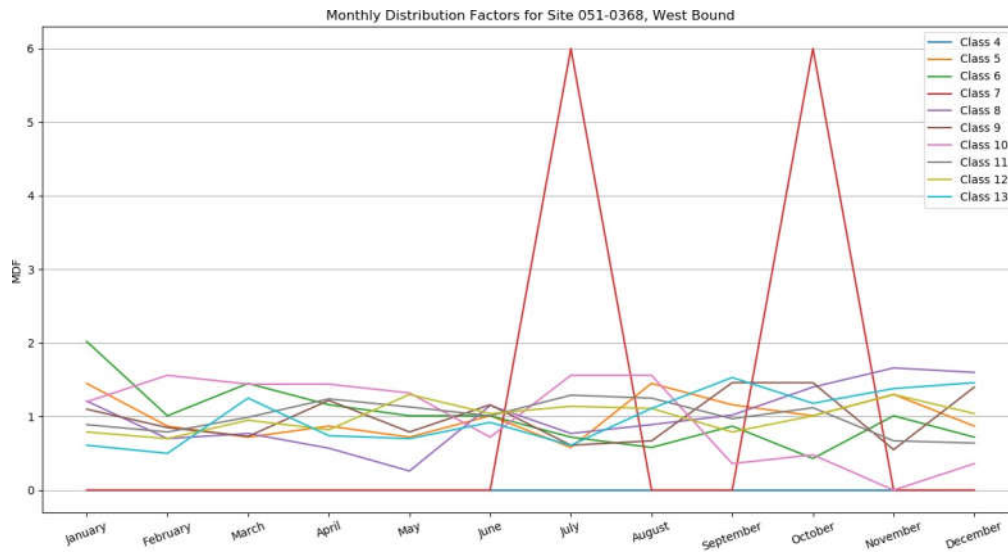


Figure 64. Line graph. Monthly distribution factors, Site 051-0368 WB.

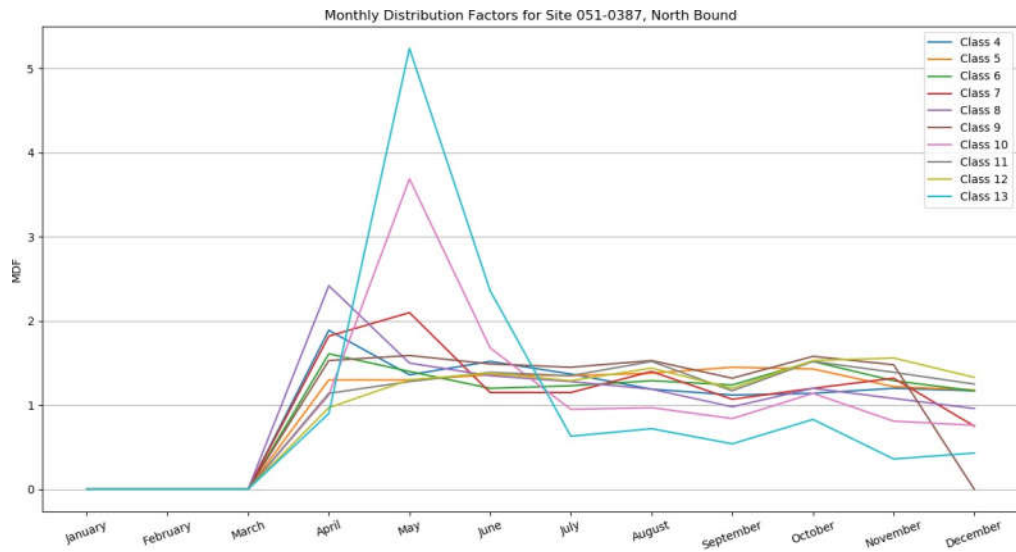


Figure 65. Line graph. Monthly distribution factors, Site 051-0387 NB.

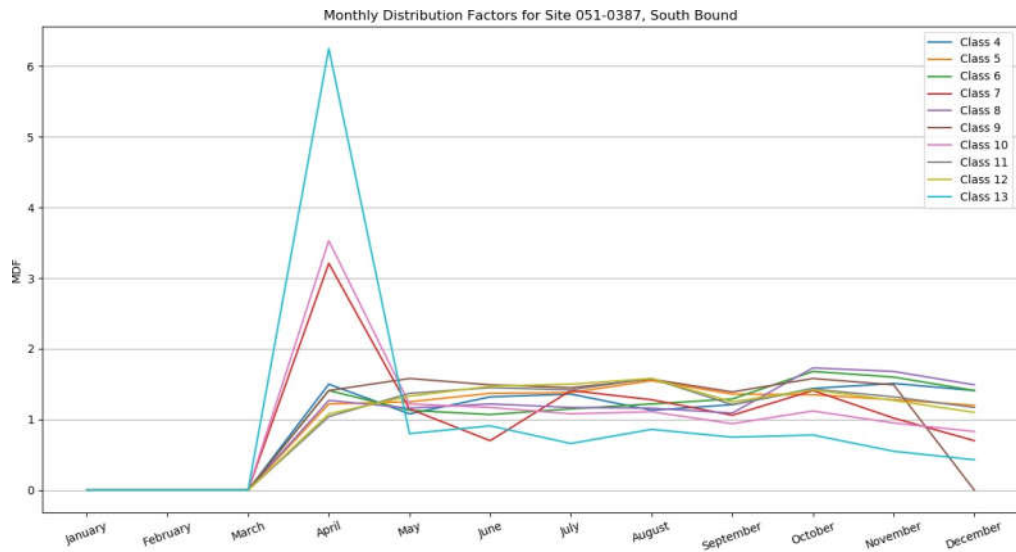


Figure 66. Line graph. Monthly distribution factors, Site 051-0387 SB.

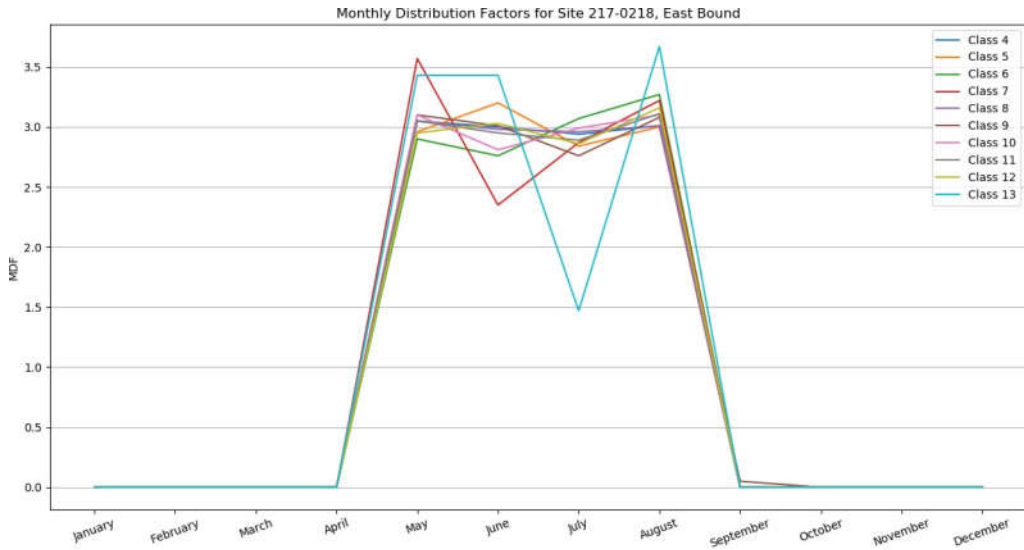


Figure 67. Line graph. Monthly distribution factors, Site 217-0218 EB.

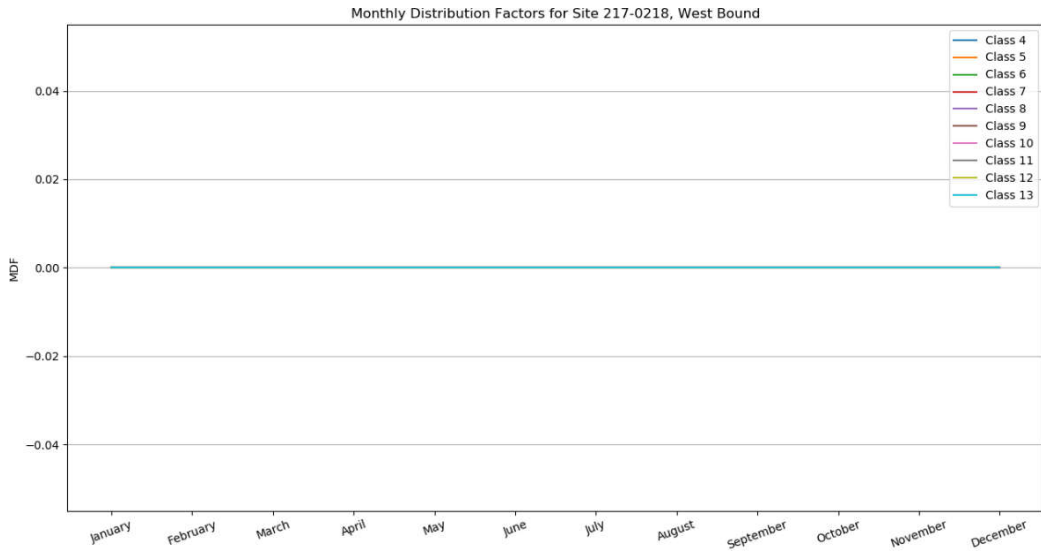


Figure 68. Line graph. Monthly distribution factors, Site 217-0218 WB.

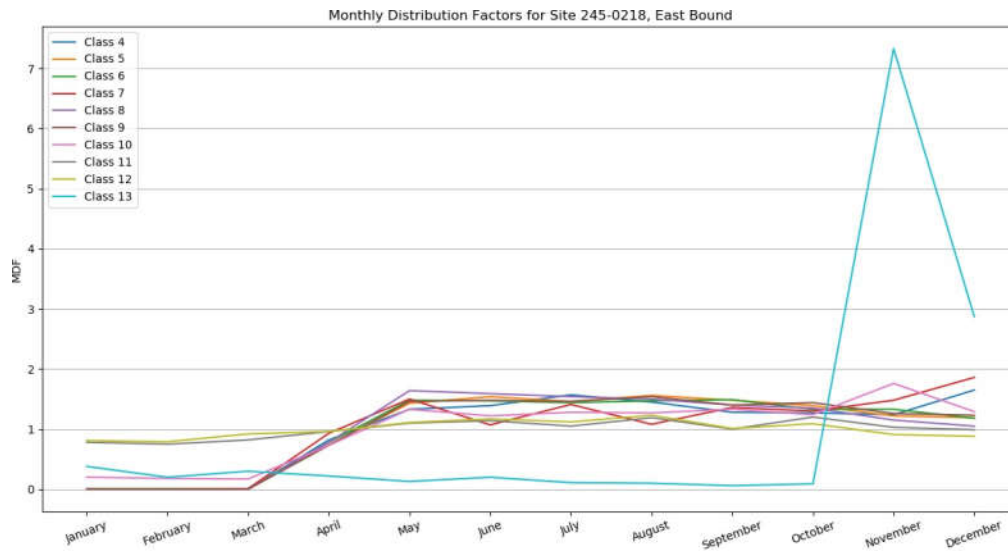


Figure 69. Line graph. Monthly distribution factors, Site 245-0218 EB.

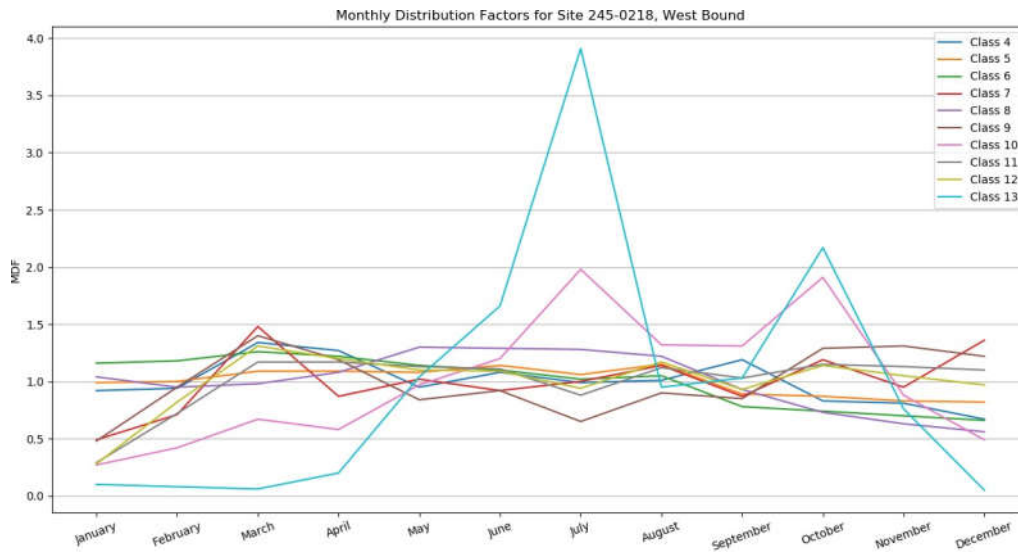


Figure 70. Line graph. Monthly distribution factors, Site 245-0218 WB.

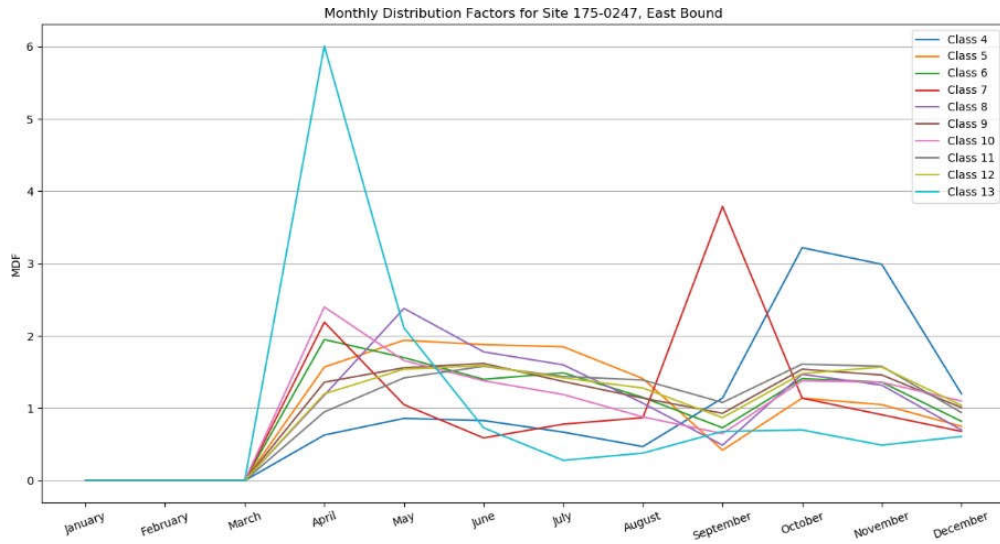


Figure 71. Line graph. Monthly distribution factors, Site 175-0247 EB.

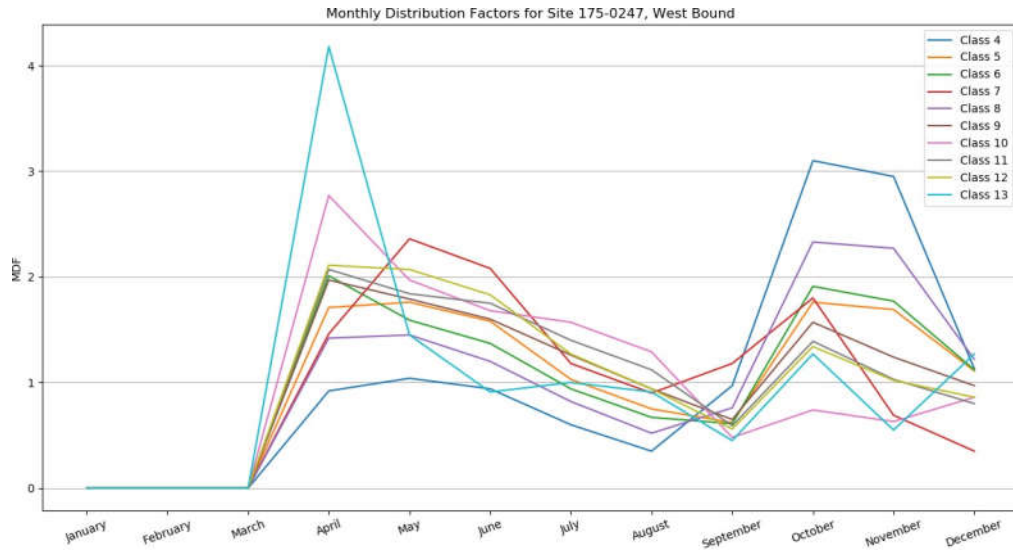


Figure 72. Line graph. Monthly distribution factors, Site 175-0247 WB.

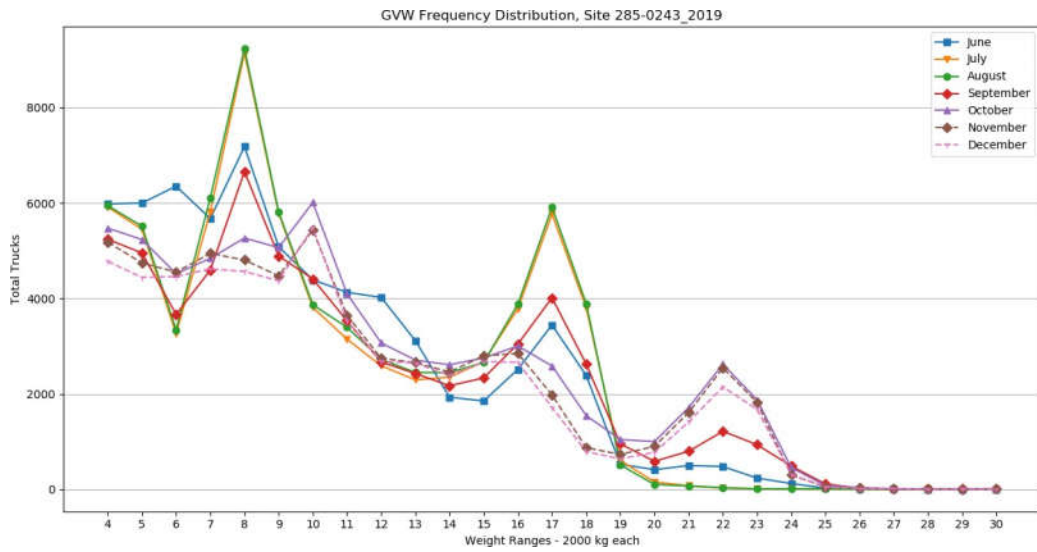


Figure 73. Line graph. GVW frequency distribution, Site 285-0243.

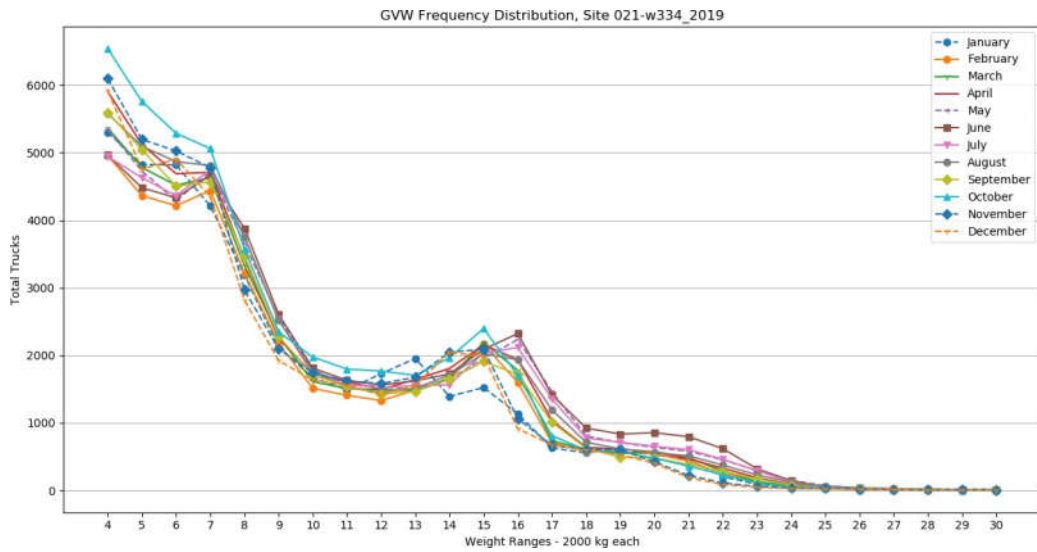


Figure 74. Line graph. GVW frequency distribution, Site 021-w334.

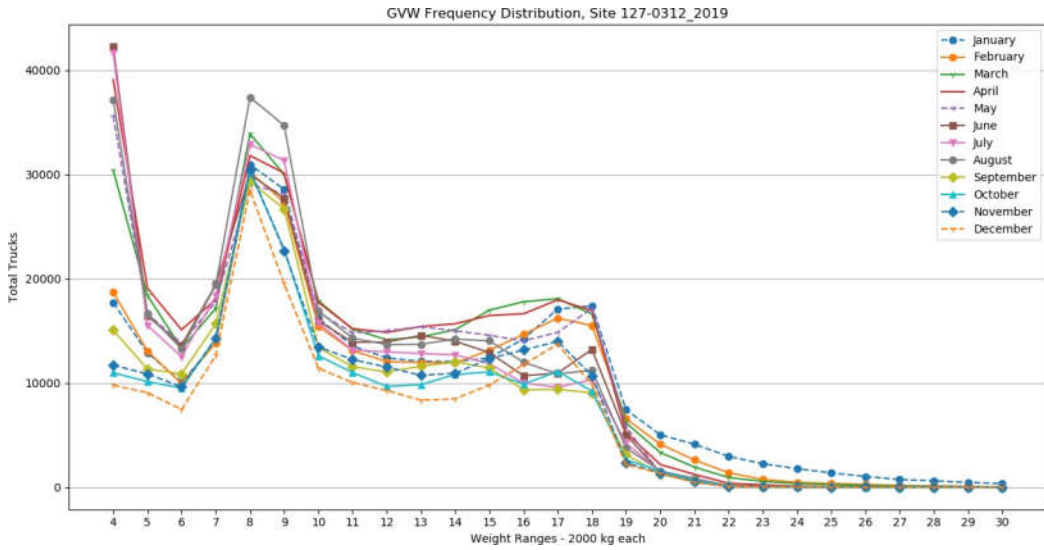


Figure 75. Line graph. GVW frequency distribution, Site 127-0312.

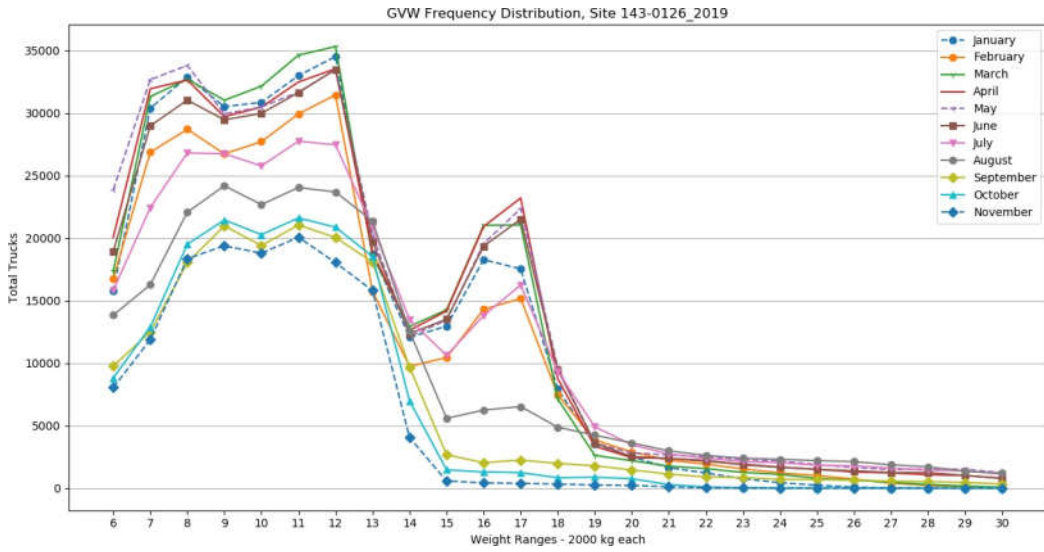


Figure 76. Line graph. GVW frequency distribution, Site 143-0126.

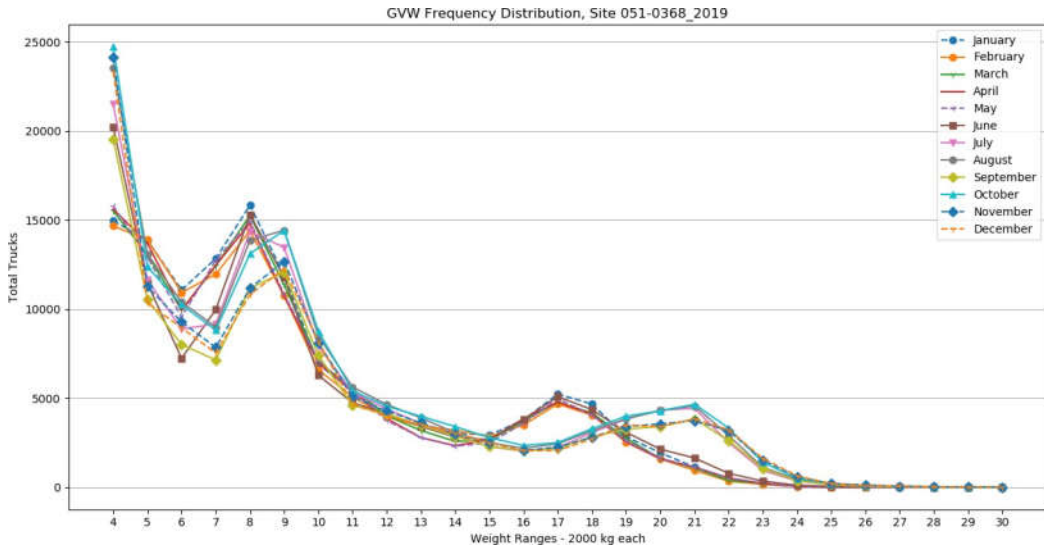


Figure 77. Line graph. GVW frequency distribution, Site 051-0368.

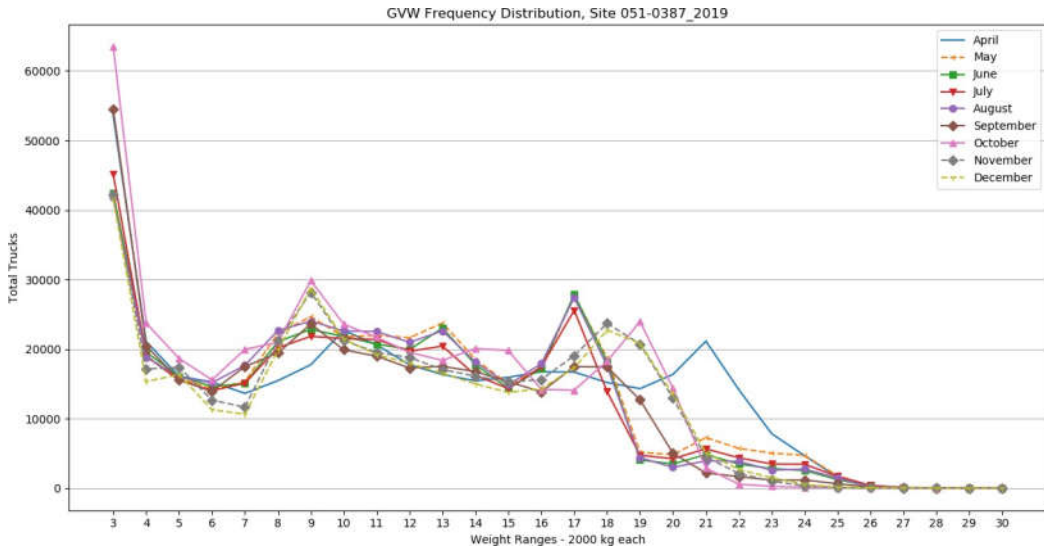


Figure 78. Line graph. GVW frequency distribution, Site 051-0387.

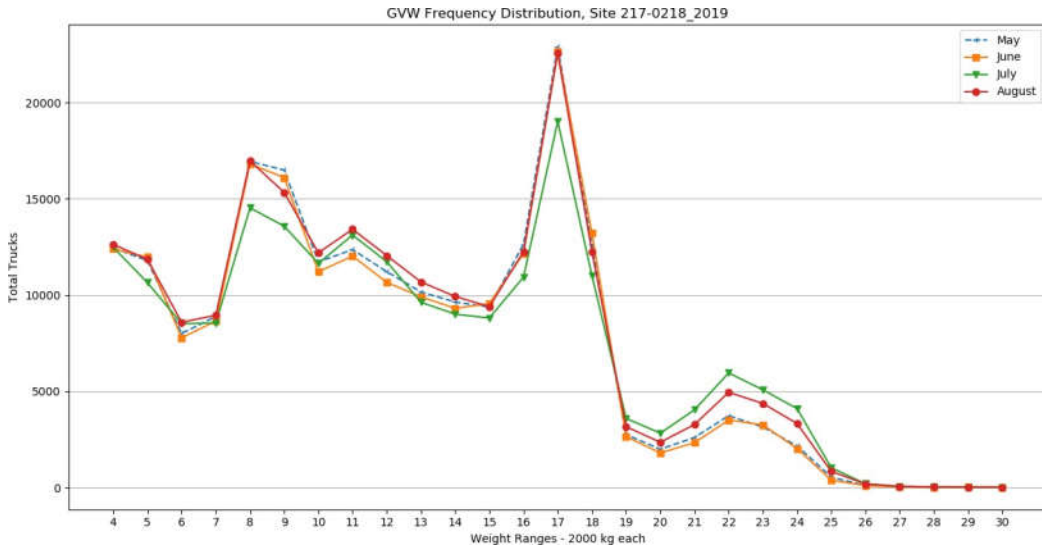


Figure 79. Line graph. GVW frequency distribution, Site 217-0218.

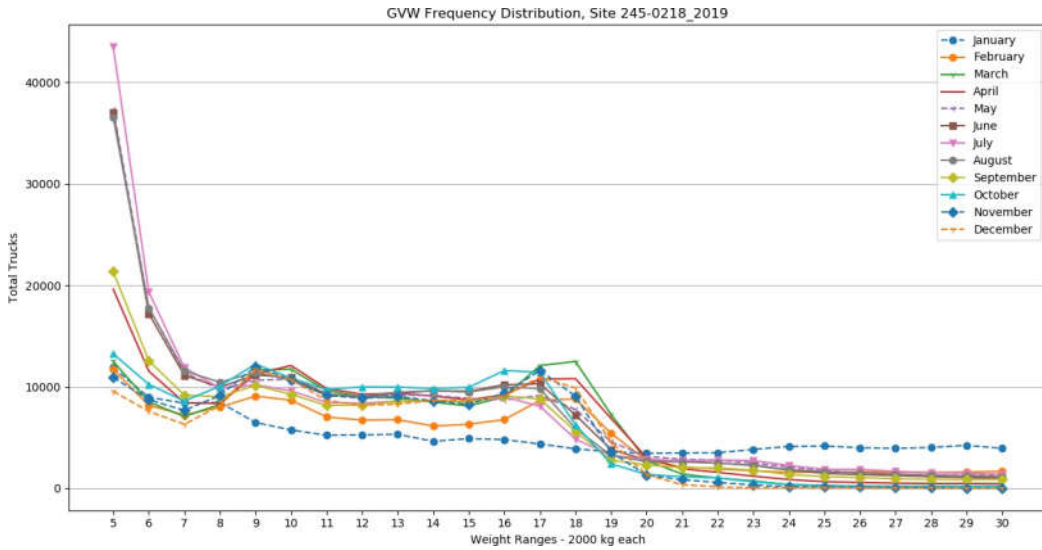


Figure 80. Line graph. GVW frequency distribution, Site 245-0218.

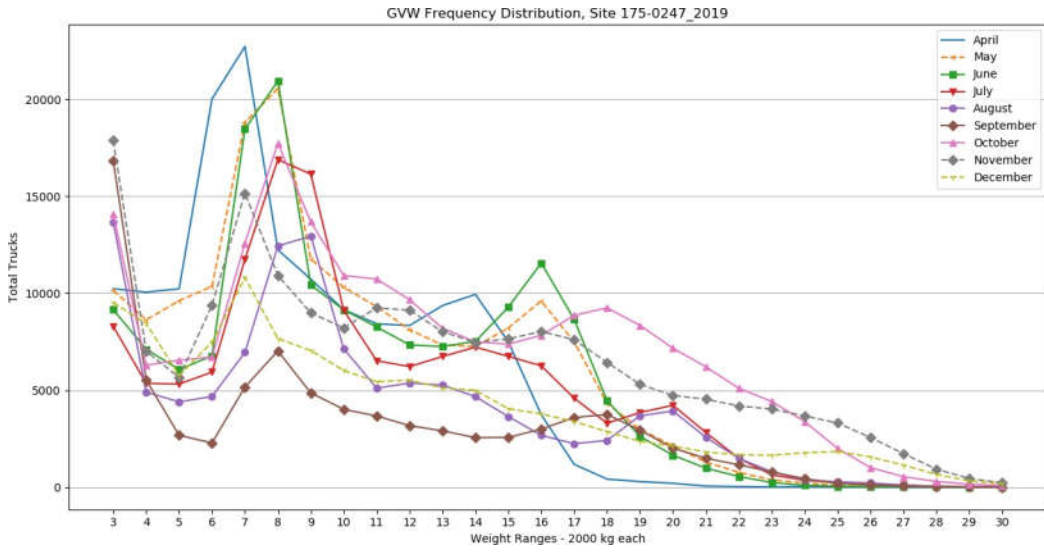


Figure 81. Line graph. GVW frequency distribution, Site 175-0247.

**APPENDIX C: MEPDG TRAFFIC INPUT DATA EXTRACTED FROM WIM DATA AS
FEATURE CATEGORIES**

VEHICLE CLASS DISTRIBUTIONS

Table 33. Vehicle class distribution, Site 185-0227 NB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|-------|------|-------|--------|------|-------|-------|------|--------|
| AADTT | 60.0 | 247.0 | 119.0 | 1.0 | 451.0 | 4405.0 | 19.0 | 227.0 | 170.0 | 0.0 | 5699.0 |
| VCD | 1.05 | 4.33 | 2.08 | 0.01 | 7.91 | 77.29 | 0.33 | 3.98 | 2.98 | 0.00 | 100.0 |

Table 34. Vehicle class distribution, Site 185-0227 SB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|-------|--------|------|-------|-------|------|--------|
| AADTT | 37.0 | 118.0 | 67.0 | 1.0 | 335.0 | 3382.0 | 10.0 | 192.0 | 124.0 | 0.00 | 4266.0 |
| VCD | 0.86 | 2.76 | 1.57 | 0.02 | 7.85 | 79.27 | 0.23 | 4.50 | 2.90 | 0.00 | 100.0 |

Table 35. Vehicle class distribution, Site 285-0243 NB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total | |
|-------------|------|---|-------|------|------|-------|-------|------|------|------|-------|-------|
| AADTT | 21.0 | | 192.0 | 58.0 | 0.0 | 157.0 | 715.0 | 6.0 | 42.0 | 18.0 | 0.0 | 1209 |
| VCD | 1.74 | | 15.88 | 4.80 | 0.00 | 13.0 | 59.14 | 0.50 | 3.47 | 1.49 | 0.00 | 100.0 |

Table 36. Vehicle class distribution, Site 285-0243 SB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|-------|-------|------|------|------|------|--------|
| AADTT | 18.0 | 156.0 | 61.0 | 0.0 | 142.0 | 755.0 | 4.0 | 42.0 | 16.0 | 0.0 | 1194.0 |
| VCD | 1.51 | 13.07 | 5.11 | 0.00 | 11.89 | 63.23 | 0.34 | 3.52 | 1.34 | 0.00 | 100.0 |

Table 37. Vehicle class distribution, Site 021-w334 NB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|-------|-------|------|------|------|------|-------|
| AADTT | 13.0 | 97.0 | 63.0 | 0.00 | 96.0 | 494.0 | 5.0 | 7.0 | 11.0 | 0.00 | 786.0 |
| VCD | 1.65 | 12.34 | 8.01 | 0.00 | 12.21 | 62.84 | 0.63 | 0.89 | 1.40 | 0.00 | 100.0 |

Table 38. Vehicle class distribution, Site 021-w334 SB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|-------|-------|------|------|------|------|-------|
| AADTT | 11.0 | 86.0 | 48.0 | 0.00 | 73.0 | 363.0 | 8.0 | 3.0 | 6.0 | 0.00 | 598.0 |
| VCD | 1.84 | 14.38 | 8.02 | 0.00 | 12.20 | 60.70 | 1.33 | 0.50 | 1.00 | 0.00 | 100.0 |

Table 39. Vehicle class distribution, Site 127-0312 NB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|-------|--------|-------|-------|--------|--------|-------|-------|-------|-------|--------|
| AADTT | 51.0 | 344.0 | 145.0 | 1.0 | 550.0 | 1977.0 | 29.0 | 121.0 | 87.0 | 1.0 | 3306.0 |
| VCD | 1.540 | 10.405 | 4.385 | 0.030 | 16.636 | 59.800 | 0.877 | 3.660 | 2.631 | 0.030 | 100.0 |

Table 40. Vehicle class distribution, Site 127-0312 SB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|-------|--------|------|------|------|------|--------|
| AADTT | 23.0 | 190.0 | 69.0 | 1.0 | 266.0 | 3933.0 | 14.0 | 63.0 | 42.0 | 1.0 | 4602.0 |
| VCD | 0.50 | 4.12 | 1.50 | 0.02 | 5.78 | 85.46 | 0.30 | 1.36 | 0.91 | 0.02 | 100.0 |

Table 41. Vehicle class distribution, Site 051-0387 NB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|-------|------|-------|--------|------|-------|------|------|-------|
| AADTT | 70.0 | 301.0 | 183.0 | 2.0 | 570.0 | 3192.0 | 44.0 | 117.0 | 89.0 | 2.0 | 4570 |
| VCD | 1.53 | 6.59 | 4.00 | 0.04 | 12.47 | 69.85 | 0.96 | 2.56 | 1.95 | 0.04 | 100.0 |

Table 42. Vehicle class distribution, Site 051-0387 SB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|-------|------|-------|--------|------|-------|------|------|--------|
| AADTT | 68.0 | 310.0 | 149.0 | 1.0 | 576.0 | 3230.0 | 32.0 | 118.0 | 92.0 | 2.0 | 4578.0 |
| VCD | 1.49 | 6.77 | 3.25 | 0.02 | 12.58 | 70.55 | 0.70 | 2.58 | 2.01 | 0.04 | 100.0 |

Table 43. Vehicle class distribution, Site 217-0218 EB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|-------|-------|-------|------|-------|--------|------|------|------|------|--------|
| AADTT | 127.0 | 115.0 | 135.0 | 2.0 | 208.0 | 2130.0 | 26.0 | 61.0 | 31.0 | 4.0 | 2839.0 |
| VCD | 4.47 | 4.05 | 4.76 | 0.07 | 7.33 | 75.03 | 0.92 | 2.15 | 1.09 | 0.14 | 100.0 |

Table 44. Vehicle class distribution, Site 217-0218 WB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|------|-------|------|------|------|------|-------|
| AADTT | 5.0 | 86.0 | 50.0 | 0.0 | 51.0 | 638.0 | 6.0 | 15.0 | 8.0 | 0.0 | 859.0 |
| VCD | 0.58 | 10.01 | 5.82 | 0.00 | 5.94 | 74.27 | 0.70 | 1.75 | 0.93 | 0.00 | 100.0 |

Table 45. Vehicle class distribution, Site 051-0368 EB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|------|-------|------|------|------|------|-------|
| AADTT | 48.0 | 140.0 | 64.0 | 0.0 | 51.0 | 337.0 | 6.0 | 8.0 | 4.0 | 0.0 | 658.0 |
| VCD | 7.29 | 21.28 | 9.73 | 0.00 | 7.75 | 51.22 | 0.91 | 1.22 | 0.61 | 0.00 | 100.0 |

Table 46. Vehicle class distribution, Site 051-0368 WB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|------|-------|------|------|------|------|-------|
| AADTT | 9.0 | 67.0 | 9.0 | 0.0 | 13.0 | 49.0 | 0.0 | 0.0 | 0.0 | 0.0 | 147.0 |
| VCD | 6.12 | 45.58 | 6.12 | 0.00 | 8.84 | 33.33 | 0.00 | 0.00 | 0.00 | 0.00 | 100.0 |

Table 47. Vehicle class distribution, Site 143-0126 EB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|-------|--------|------|-------|------|------|--------|
| AADTT | 26.0 | 152.0 | 67.0 | 1.0 | 227.0 | 1977.0 | 9.0 | 122.0 | 81.0 | 1.0 | 2663.0 |
| VCD | 0.98 | 5.71 | 2.52 | 0.04 | 8.52 | 74.24 | 0.34 | 4.58 | 3.04 | 0.04 | 100.0 |

Table 48. Vehicle class distribution, Site 143-0126 WB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|-------|--------|------|-------|-------|------|--------|
| AADTT | 33.0 | 182.0 | 97.0 | 1.0 | 359.0 | 3294.0 | 20.0 | 206.0 | 138.0 | 1.0 | 4331.0 |
| VCD | 0.76 | 4.20 | 2.24 | 0.02 | 8.29 | 76.06 | 0.46 | 4.76 | 3.19 | 0.02 | 100.0 |

Table 49. Vehicle class distribution, Site 245-0218 EB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|------|------|-------|--------|------|------|------|------|--------|
| AADTT | 21.0 | 128.0 | 80.0 | 10.0 | 160.0 | 1055.0 | 8.0 | 35.0 | 18.0 | 3.0 | 1518.0 |
| VCD | 1.38 | 8.43 | 5.27 | 0.66 | 10.54 | 69.50 | 0.53 | 2.31 | 1.19 | 0.20 | 100.0 |

Table 50. Vehicle class distribution, Site 245-0218 WB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|-------|-------|------|-------|--------|------|------|------|------|--------|
| AADTT | 40.0 | 219.0 | 126.0 | 3.0 | 404.0 | 1602.0 | 22.0 | 49.0 | 24.0 | 6.0 | 2495.0 |
| VCD | 1.60 | 8.78 | 5.05 | 0.12 | 16.19 | 64.21 | 0.88 | 1.96 | 0.96 | 0.24 | 100.0 |

Table 51. Vehicle class distribution, Site 175-0247 EB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|------|------|------|-------|--------|------|------|------|------|--------|
| AADTT | 31.0 | 97.0 | 84.0 | 1.0 | 210.0 | 1689.0 | 61.0 | 31.0 | 26.0 | 2.0 | 2232.0 |
| VCD | 1.39 | 4.35 | 3.76 | 0.04 | 9.41 | 75.67 | 2.73 | 1.39 | 1.16 | 0.09 | 100.0 |

Table 52. Vehicle class distribution, Site 175-0247 WB.

| Truck Class | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|-------------|------|------|------|------|-------|--------|------|------|------|------|--------|
| AADTT | 26.0 | 94.0 | 84.0 | 1.0 | 161.0 | 1662.0 | 38.0 | 27.0 | 23.0 | 1.0 | 2117.0 |
| VCD | 1.23 | 4.44 | 3.97 | 0.05 | 7.61 | 78.51 | 1.79 | 1.28 | 1.09 | 0.05 | 100.0 |

MONTHLY DISTRIBUTION FACTORS

Table 53. Monthly distribution factors, Site 185-0227 NB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.76 | 0.80 | 0.88 | 0.79 | 0.77 | 1.08 | 0.97 | 0.95 | 0.96 | 0.92 |
| February | 0.86 | 0.85 | 0.94 | 0.49 | 0.85 | 1.03 | 1.06 | 0.96 | 0.95 | 1.20 |
| March | 1.52 | 1.10 | 1.10 | 0.92 | 1.34 | 1.11 | 1.15 | 1.01 | 1.04 | 1.20 |
| April | 1.28 | 1.06 | 1.07 | 1.02 | 1.40 | 1.10 | 0.93 | 0.98 | 0.98 | 1.48 |
| May | 1.14 | 1.06 | 0.95 | 1.38 | 1.13 | 1.09 | 0.82 | 1.00 | 1.00 | 1.06 |
| June | 1.17 | 1.17 | 0.97 | 1.12 | 1.09 | 1.08 | 0.66 | 1.01 | 0.98 | 0.35 |
| July | 1.09 | 1.04 | 0.95 | 1.25 | 0.98 | 1.06 | 0.96 | 0.97 | 0.97 | 1.13 |
| August | 0.88 | 1.04 | 0.96 | 1.09 | 0.98 | 1.12 | 1.27 | 1.10 | 1.05 | 0.92 |
| September | 0.82 | 1.13 | 1.10 | 0.92 | 0.91 | 1.08 | 0.88 | 0.98 | 0.98 | 0.49 |
| October | 0.84 | 1.00 | 1.05 | 1.09 | 0.93 | 1.12 | 1.54 | 1.11 | 1.08 | 1.06 |
| November | 0.84 | 0.91 | 1.04 | 1.22 | 0.82 | 1.09 | 0.84 | 1.02 | 1.05 | 0.99 |
| December | 0.72 | 0.78 | 0.93 | 0.66 | 0.71 | 0.00 | 0.86 | 0.92 | 0.97 | 1.20 |

Table 54. Monthly distribution factors, Site 185-0227 SB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.85 | 0.88 | 0.98 | 0.87 | 1.08 | 1.09 | 1.01 | 0.97 | 0.97 | 1.58 |
| February | 0.87 | 0.81 | 0.89 | 0.77 | 0.88 | 1.01 | 0.96 | 0.97 | 0.95 | 0.62 |
| March | 1.32 | 1.01 | 1.01 | 0.90 | 1.04 | 1.07 | 1.35 | 1.01 | 1.01 | 1.23 |
| April | 0.96 | 0.95 | 0.92 | 0.93 | 0.84 | 1.08 | 0.97 | 0.97 | 0.99 | 0.69 |
| May | 0.93 | 0.97 | 0.95 | 1.00 | 0.86 | 1.08 | 1.07 | 0.99 | 1.01 | 0.89 |
| June | 0.97 | 1.06 | 0.90 | 1.30 | 0.93 | 1.10 | 0.94 | 1.02 | 1.02 | 0.96 |
| July | 1.02 | 1.02 | 0.89 | 1.44 | 0.91 | 1.06 | 0.92 | 0.98 | 0.99 | 0.82 |
| August | 0.85 | 1.15 | 1.03 | 0.97 | 0.90 | 1.13 | 0.94 | 1.10 | 1.06 | 0.89 |
| September | 0.94 | 1.21 | 1.07 | 0.97 | 0.97 | 1.08 | 0.84 | 0.97 | 0.96 | 1.30 |
| October | 1.09 | 1.00 | 1.11 | 0.97 | 1.20 | 1.15 | 0.98 | 1.08 | 1.04 | 0.75 |
| November | 1.06 | 0.94 | 1.05 | 0.87 | 1.18 | 1.09 | 0.94 | 1.00 | 1.03 | 1.10 |
| December | 1.08 | 0.93 | 1.14 | 0.97 | 1.15 | 0.00 | 1.01 | 0.93 | 0.97 | 1.17 |

Table 55. Monthly distribution factors, Site 285-0243 NB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.99 | 0.74 | 0.93 | 0.59 | 1.25 | 1.09 | 0.85 | 0.97 | 1.00 | 0.37 |
| February | 1.03 | 0.73 | 0.87 | 1.28 | 1.27 | 1.05 | 0.81 | 1.01 | 0.96 | 0.63 |
| March | 0.50 | 0.39 | 0.45 | 1.57 | 0.63 | 0.48 | 0.39 | 0.45 | 0.47 | 0.52 |
| April | 0.94 | 1.09 | 1.16 | 0.59 | 1.09 | 1.06 | 1.04 | 1.03 | 1.03 | 1.05 |
| May | 1.01 | 1.22 | 1.21 | 0.98 | 1.03 | 1.06 | 1.32 | 0.99 | 1.05 | 1.31 |
| June | 1.28 | 1.14 | 1.18 | 0.59 | 1.04 | 1.06 | 1.31 | 0.99 | 1.07 | 1.21 |
| July | 1.13 | 1.13 | 1.02 | 1.57 | 1.06 | 1.07 | 1.41 | 1.10 | 1.13 | 1.26 |
| August | 1.02 | 1.11 | 1.04 | 1.38 | 1.01 | 1.08 | 1.46 | 1.20 | 1.11 | 1.78 |
| September | 1.00 | 1.05 | 1.15 | 0.69 | 0.96 | 1.03 | 1.19 | 1.07 | 1.02 | 1.78 |
| October | 1.07 | 1.15 | 1.06 | 0.98 | 1.00 | 1.08 | 0.88 | 1.13 | 1.06 | 0.84 |
| November | 1.12 | 1.15 | 0.98 | 1.18 | 0.88 | 0.99 | 0.68 | 1.04 | 0.99 | 0.79 |
| December | 0.90 | 1.09 | 0.95 | 0.59 | 0.79 | 0.94 | 0.65 | 1.01 | 1.12 | 0.47 |

Table 56. Monthly distribution factors, Site 285-0243 SB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 1.46 | 0.88 | 0.95 | 1.23 | 1.36 | 1.05 | 0.98 | 0.89 | 0.94 | 1.07 |
| February | 0.60 | 0.87 | 0.97 | 1.56 | 1.33 | 1.00 | 1.17 | 0.97 | 1.02 | 0.90 |
| March | 0.35 | 0.51 | 0.46 | 1.73 | 0.69 | 0.46 | 0.59 | 0.48 | 0.47 | 0.63 |
| April | 0.99 | 1.02 | 1.01 | 1.07 | 1.09 | 1.09 | 1.17 | 1.03 | 0.98 | 1.16 |
| May | 1.09 | 1.15 | 1.08 | 0.49 | 1.06 | 1.16 | 1.04 | 1.09 | 1.06 | 0.99 |
| June | 1.55 | 1.10 | 1.04 | 0.16 | 0.98 | 1.13 | 0.95 | 1.05 | 1.08 | 0.72 |
| July | 1.20 | 1.05 | 1.02 | 1.23 | 0.95 | 1.08 | 1.32 | 1.05 | 1.20 | 1.16 |
| August | 1.17 | 1.09 | 1.19 | 1.23 | 1.00 | 1.09 | 1.13 | 1.19 | 1.10 | 1.25 |
| September | 0.96 | 1.02 | 1.12 | 0.90 | 0.96 | 1.01 | 0.81 | 1.05 | 1.00 | 1.07 |
| October | 0.93 | 1.15 | 1.08 | 0.74 | 1.01 | 1.05 | 1.13 | 1.11 | 1.02 | 1.07 |
| November | 0.99 | 1.11 | 1.06 | 1.07 | 0.85 | 0.97 | 0.86 | 1.07 | 1.03 | 1.25 |
| December | 0.71 | 1.07 | 1.00 | 0.58 | 0.73 | 0.91 | 0.85 | 1.01 | 1.11 | 0.72 |

Table 57. Monthly distribution factors, Site 021-w334 NB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|-------|-------|-------|-------|-------|-------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.779 | 0.986 | 0.952 | 1.224 | 0.796 | 1.048 | 0.960 | 0.86 | 0.91 | 0.86 |
| February | 0.815 | 0.942 | 0.980 | 0.979 | 0.867 | 0.997 | 0.935 | 0.78 | 0.88 | 0.29 |
| March | 1.176 | 1.024 | 1.010 | 1.387 | 1.151 | 1.041 | 0.753 | 0.85 | 0.90 | 1.43 |
| April | 0.879 | 1.091 | 1.166 | 2.040 | 1.234 | 1.093 | 0.740 | 1.00 | 0.99 | 0.57 |
| May | 0.976 | 1.039 | 1.036 | 1.469 | 1.069 | 1.082 | 0.772 | 1.03 | 0.79 | 1.71 |
| June | 1.127 | 0.928 | 0.965 | 0.489 | 1.181 | 1.139 | 0.740 | 1.40 | 1.05 | 0.29 |
| July | 1.132 | 0.923 | 0.989 | 0.653 | 1.135 | 1.100 | 0.916 | 1.20 | 1.10 | 0.86 |
| August | 1.043 | 1.073 | 1.037 | 1.224 | 1.012 | 1.104 | 1.243 | 1.08 | 1.09 | 1.14 |
| September | 0.987 | 1.024 | 1.068 | 0.653 | 0.940 | 1.056 | 1.149 | 0.96 | 1.05 | 0.57 |
| October | 1.033 | 1.038 | 1.056 | 0.816 | 0.961 | 1.204 | 1.230 | 0.97 | 1.10 | 1.71 |
| November | 1.091 | 0.970 | 0.946 | 0.408 | 0.889 | 1.132 | 1.425 | 0.96 | 1.09 | 0.86 |
| December | 0.956 | 0.957 | 0.788 | 0.653 | 0.759 | 0.000 | 1.130 | 0.91 | 1.05 | 1.71 |

Table 58. Monthly distribution factors, Site 021-w334 SB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.71 | 1.02 | 0.95 | 1.16 | 0.87 | 1.06 | 1.16 | 0.98 | 0.95 | 0.89 |
| February | 0.76 | 0.95 | 0.89 | 1.23 | 0.85 | 1.00 | 1.02 | 1.01 | 0.88 | 0.22 |
| March | 1.04 | 0.95 | 0.92 | 0.87 | 0.91 | 1.02 | 0.91 | 1.03 | 0.87 | 0.67 |
| April | 0.79 | 1.07 | 1.06 | 1.23 | 0.89 | 1.08 | 0.84 | 0.97 | 1.06 | 0.89 |
| May | 0.89 | 1.04 | 1.05 | 1.01 | 0.92 | 1.14 | 0.78 | 0.82 | 0.89 | 1.11 |
| June | 0.92 | 0.88 | 0.93 | 0.87 | 0.96 | 1.11 | 0.75 | 0.84 | 1.10 | 0.44 |
| July | 0.97 | 0.82 | 0.99 | 0.87 | 0.96 | 1.07 | 1.04 | 1.03 | 1.06 | 1.11 |
| August | 0.97 | 1.11 | 1.00 | 1.60 | 0.95 | 1.11 | 1.16 | 0.96 | 1.02 | 1.56 |
| September | 0.97 | 1.01 | 1.09 | 0.94 | 1.02 | 1.01 | 1.00 | 1.08 | 1.00 | 1.11 |
| October | 1.29 | 1.11 | 1.14 | 1.01 | 1.32 | 1.24 | 1.41 | 1.34 | 1.19 | 2.22 |
| November | 1.36 | 1.01 | 0.98 | 0.58 | 1.23 | 1.12 | 0.99 | 1.18 | 1.00 | 1.56 |
| December | 1.28 | 0.98 | 0.94 | 0.58 | 1.07 | 0.00 | 0.90 | 0.76 | 0.97 | 0.22 |

Table 59. Monthly distribution factors, Site 127-0312 NB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.89 | 0.89 | 1.00 | 1.04 | 0.85 | 1.19 | 1.27 | 1.06 | 1.07 | 0.55 |
| February | 1.00 | 0.95 | 0.98 | 0.73 | 0.97 | 1.12 | 1.11 | 1.02 | 1.05 | 0.32 |
| March | 1.65 | 1.20 | 1.17 | 1.36 | 1.71 | 1.18 | 1.22 | 1.12 | 1.14 | 0.77 |
| April | 1.80 | 1.23 | 1.20 | 1.41 | 1.89 | 1.23 | 1.23 | 1.06 | 1.14 | 0.79 |
| May | 1.19 | 1.17 | 1.04 | 0.73 | 1.30 | 1.22 | 1.10 | 1.08 | 1.10 | 0.67 |
| June | 1.26 | 1.16 | 0.97 | 0.41 | 1.12 | 1.13 | 1.11 | 1.08 | 1.08 | 0.51 |
| July | 1.13 | 1.09 | 0.96 | 1.62 | 1.01 | 1.13 | 1.12 | 1.01 | 1.09 | 3.03 |
| August | 0.88 | 1.19 | 1.02 | 0.99 | 0.97 | 1.21 | 1.02 | 1.16 | 1.17 | 0.53 |
| September | 0.59 | 0.96 | 1.00 | 0.94 | 0.60 | 0.88 | 0.69 | 0.81 | 0.77 | 0.43 |
| October | 0.44 | 0.73 | 0.91 | 0.94 | 0.55 | 0.84 | 0.82 | 0.95 | 0.81 | 1.89 |
| November | 0.58 | 0.70 | 0.97 | 0.78 | 0.51 | 0.81 | 0.61 | 0.86 | 0.85 | 0.24 |
| December | 0.53 | 0.67 | 0.73 | 0.99 | 0.46 | 0.00 | 0.64 | 0.79 | 0.73 | 2.27 |

Table 60. Monthly distribution factors, Site 127-0312 SB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 1.08 | 0.98 | 1.01 | 1.02 | 1.34 | 1.15 | 0.73 | 0.79 | 0.80 | 0.48 |
| February | 1.01 | 0.94 | 0.89 | 0.91 | 1.00 | 1.03 | 0.86 | 0.96 | 1.00 | 0.59 |
| March | 1.23 | 1.11 | 1.12 | 0.98 | 1.16 | 1.35 | 1.30 | 1.38 | 1.34 | 0.72 |
| April | 1.16 | 1.04 | 1.09 | 1.10 | 0.96 | 1.19 | 1.21 | 1.10 | 1.18 | 0.96 |
| May | 0.81 | 0.92 | 0.93 | 0.91 | 0.78 | 1.08 | 1.13 | 0.93 | 0.97 | 0.72 |
| June | 0.88 | 0.98 | 0.92 | 0.83 | 0.83 | 1.03 | 1.00 | 0.94 | 0.90 | 0.86 |
| July | 0.99 | 0.97 | 0.82 | 0.94 | 0.75 | 0.93 | 0.81 | 0.88 | 0.88 | 0.59 |
| August | 0.80 | 1.09 | 0.94 | 1.36 | 0.83 | 1.09 | 1.00 | 1.10 | 1.06 | 3.80 |
| September | 0.80 | 1.00 | 1.09 | 0.83 | 0.81 | 1.01 | 1.01 | 0.88 | 0.92 | 0.99 |
| October | 0.96 | 0.93 | 1.06 | 0.79 | 1.13 | 0.92 | 0.99 | 0.90 | 0.95 | 1.12 |
| November | 1.20 | 1.05 | 1.22 | 1.32 | 1.40 | 1.19 | 1.20 | 1.23 | 1.20 | 0.67 |
| December | 1.03 | 0.93 | 0.84 | 0.94 | 0.94 | 0.00 | 0.71 | 0.90 | 0.80 | 0.51 |

Table 61. Monthly distribution factors, Site 051-0387 NB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.80 | 1.04 | 1.02 | 0.88 | 0.84 | 1.23 | 1.00 | 1.06 | 1.13 | 0.79 |
| February | 0.97 | 1.01 | 0.98 | 0.71 | 0.94 | 1.16 | 0.98 | 0.99 | 1.11 | 0.86 |
| March | 1.29 | 1.21 | 1.22 | 0.90 | 1.68 | 1.25 | 1.13 | 1.04 | 1.23 | 1.03 |
| April | 1.41 | 0.95 | 1.18 | 1.45 | 1.73 | 0.69 | 0.83 | 0.84 | 0.69 | 0.70 |
| May | 1.02 | 0.95 | 1.03 | 1.67 | 1.07 | 0.96 | 2.74 | 0.95 | 0.93 | 4.07 |
| June | 1.14 | 0.99 | 0.88 | 0.91 | 0.96 | 0.93 | 1.25 | 1.03 | 0.98 | 1.83 |
| July | 1.03 | 0.98 | 0.91 | 0.91 | 0.91 | 0.86 | 0.71 | 1.00 | 0.91 | 0.49 |
| August | 0.89 | 1.01 | 0.95 | 1.12 | 0.85 | 0.98 | 0.72 | 1.13 | 1.02 | 0.56 |
| September | 0.84 | 1.06 | 0.91 | 0.85 | 0.70 | 0.91 | 0.62 | 0.87 | 0.85 | 0.42 |
| October | 0.85 | 1.04 | 1.11 | 0.96 | 0.86 | 1.10 | 0.85 | 1.13 | 1.09 | 0.65 |
| November | 0.90 | 0.89 | 0.95 | 1.05 | 0.77 | 0.98 | 0.61 | 1.03 | 1.11 | 0.28 |
| December | 0.87 | 0.86 | 0.86 | 0.60 | 0.69 | 0.96 | 0.56 | 0.93 | 0.94 | 0.33 |

Table 62. Monthly distribution factors, Site 051-0387 SB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 1.00 | 1.08 | 1.05 | 0.69 | 1.14 | 1.13 | 1.21 | 1.07 | 1.06 | 0.72 |
| February | 0.98 | 1.02 | 1.95 | 0.64 | 0.95 | 1.07 | 1.08 | 1.00 | 1.05 | 0.81 |
| March | 1.13 | 1.06 | 0.98 | 0.75 | 0.84 | 1.17 | 1.08 | 1.06 | 1.15 | 0.73 |
| April | 0.83 | 0.91 | 0.94 | 2.66 | 0.96 | 0.82 | 2.54 | 0.77 | 0.78 | 5.08 |
| May | 2.74 | 0.92 | 0.76 | 0.96 | 0.88 | 1.06 | 0.88 | 1.01 | 0.97 | 0.65 |
| June | 1.25 | 1.01 | 0.72 | 0.59 | 0.92 | 1.07 | 0.85 | 1.08 | 1.07 | 0.74 |
| July | 0.71 | 1.02 | 0.77 | 1.17 | 0.89 | 1.05 | 0.78 | 1.05 | 1.09 | 0.54 |
| August | 0.72 | 1.15 | 0.82 | 1.06 | 0.88 | 1.13 | 0.80 | 1.16 | 1.15 | 0.70 |
| September | 0.62 | 1.00 | 0.87 | 0.88 | 0.83 | 0.92 | 0.68 | 0.90 | 0.91 | 0.61 |
| October | 0.85 | 1.00 | 1.12 | 1.17 | 1.31 | 0.88 | 0.81 | 1.06 | 1.03 | 0.63 |
| November | 0.61 | 0.95 | 1.07 | 0.85 | 1.28 | 0.86 | 0.69 | 0.98 | 0.93 | 0.45 |
| December | 0.56 | 0.88 | 0.94 | 0.59 | 1.13 | 0.84 | 0.60 | 0.86 | 0.80 | 0.35 |

Table 63. Monthly distribution factors, Site 217-0218 EB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.11 | 1.05 | 0.68 | 0.43 | 1.35 | 0.95 | 0.79 | 0.87 | 0.95 | 0.62 |
| February | 0.11 | 1.01 | 0.65 | 0.42 | 1.54 | 0.85 | 0.70 | 0.85 | 0.97 | 0.24 |
| March | 0.13 | 1.00 | 0.57 | 0.29 | 2.32 | 0.69 | 0.54 | 0.87 | 0.89 | 0.42 |
| April | 1.17 | 1.02 | 1.22 | 4.96 | 1.00 | 1.01 | 1.55 | 0.93 | 0.96 | 8.62 |
| May | 1.51 | 0.73 | 1.03 | 0.75 | 1.01 | 1.11 | 1.12 | 1.09 | 1.06 | 0.26 |
| June | 1.48 | 0.76 | 0.98 | 0.43 | 0.98 | 1.07 | 1.02 | 1.07 | 1.05 | 0.30 |
| July | 1.45 | 0.71 | 1.10 | 0.80 | 0.97 | 1.06 | 1.12 | 1.03 | 1.06 | 0.21 |
| August | 1.51 | 0.79 | 1.18 | 0.80 | 1.01 | 1.14 | 1.19 | 1.16 | 1.19 | 0.22 |
| September | 1.38 | 1.10 | 1.10 | 0.85 | 0.47 | 1.03 | 1.05 | 0.99 | 0.99 | 0.23 |
| October | 1.47 | 1.19 | 1.26 | 0.98 | 0.44 | 1.09 | 1.07 | 1.13 | 1.09 | 0.38 |
| November | 1.39 | 1.06 | 1.07 | 0.74 | 0.38 | 1.02 | 0.96 | 1.04 | 0.94 | 0.29 |
| December | 0.29 | 1.58 | 1.17 | 0.55 | 0.51 | 0.96 | 0.89 | 0.97 | 0.86 | 0.20 |

Table 64. Monthly distribution factors, Site 217-0218 WB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 1.21 | 1.74 | 1.98 | 4.62 | 2.88 | 2.48 | 3.91 | 2.77 | 2.65 | 3.46 |
| February | 1.24 | 1.70 | 1.77 | 2.18 | 3.04 | 2.15 | 1.96 | 2.89 | 2.77 | 2.22 |
| March | 1.45 | 1.64 | 1.69 | 3.06 | 3.16 | 1.84 | 2.35 | 2.79 | 2.39 | 3.18 |
| April | 1.06 | 0.64 | 0.71 | 0.11 | 0.27 | 0.65 | 0.35 | 0.41 | 0.44 | 0.39 |
| May | 0.91 | 0.66 | 0.67 | 0.23 | 0.30 | 0.63 | 0.51 | 0.41 | 0.46 | 0.48 |
| June | 1.01 | 0.66 | 0.66 | 0.08 | 0.28 | 0.61 | 0.44 | 0.48 | 0.56 | 0.46 |
| July | 0.90 | 0.61 | 0.70 | 0.11 | 0.30 | 0.60 | 0.38 | 0.41 | 0.47 | 0.18 |
| August | 0.76 | 0.66 | 0.82 | 0.15 | 0.47 | 0.68 | 0.48 | 0.47 | 0.59 | 0.18 |
| September | 0.88 | 0.59 | 0.70 | 0.19 | 0.44 | 0.60 | 0.44 | 0.36 | 0.41 | 0.32 |
| October | 0.90 | 0.67 | 0.80 | 0.54 | 0.43 | 0.66 | 0.48 | 0.35 | 0.49 | 0.55 |
| November | 0.83 | 0.58 | 0.78 | 0.42 | 0.31 | 0.55 | 0.40 | 0.33 | 0.38 | 0.21 |
| December | 0.86 | 1.86 | 0.74 | 0.31 | 0.12 | 0.54 | 0.28 | 0.32 | 0.39 | 0.37 |

Table 65. Monthly distribution factors, Site 051-0368 EB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.71 | 1.05 | 1.27 | 2.00 | 0.83 | 1.01 | 1.13 | 0.95 | 0.85 | 0.67 |
| February | 0.79 | 0.87 | 1.06 | 0.00 | 1.03 | 0.70 | 1.07 | 0.92 | 0.90 | 0.96 |
| March | 1.23 | 0.83 | 1.20 | 2.00 | 0.78 | 1.03 | 1.80 | 1.02 | 1.10 | 0.94 |
| April | 1.33 | 1.13 | 1.31 | 2.00 | 0.98 | 1.18 | 0.85 | 1.06 | 0.97 | 0.99 |
| May | 1.37 | 0.98 | 1.58 | 1.00 | 0.88 | 1.18 | 1.15 | 1.01 | 1.04 | 0.89 |
| June | 0.87 | 0.57 | 0.65 | 1.00 | 0.20 | 0.73 | 0.59 | 1.07 | 0.98 | 1.06 |
| July | 1.12 | 0.50 | 0.63 | 0.00 | 0.69 | 0.50 | 1.46 | 0.97 | 0.99 | 0.96 |
| August | 0.74 | 1.20 | 1.18 | 2.00 | 1.08 | 1.18 | 1.80 | 1.08 | 1.04 | 1.01 |
| September | 1.04 | 1.31 | 0.89 | 0.00 | 1.37 | 1.01 | 0.28 | 0.90 | 0.86 | 0.84 |
| October | 1.31 | 1.35 | 0.87 | 1.00 | 1.42 | 1.39 | 0.85 | 1.09 | 1.10 | 1.14 |
| November | 0.87 | 1.31 | 0.63 | 0.00 | 1.42 | 1.24 | 0.59 | 1.01 | 1.07 | 1.21 |
| December | 0.61 | 0.91 | 0.72 | 1.00 | 1.32 | 0.86 | 0.42 | 0.93 | 1.10 | 1.31 |

Table 66. Monthly distribution factors, Site 051-0368 WB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.64 | 1.45 | 2.02 | 0.00 | 1.21 | 1.10 | 1.20 | 0.89 | 0.79 | 0.61 |
| February | 0.75 | 0.87 | 1.01 | 0.00 | 0.70 | 0.85 | 1.56 | 0.79 | 0.70 | 0.50 |
| March | 1.27 | 0.72 | 1.45 | 0.00 | 0.77 | 0.73 | 1.44 | 0.99 | 0.95 | 1.25 |
| April | 1.25 | 0.87 | 1.16 | 0.00 | 0.57 | 1.22 | 1.44 | 1.24 | 0.82 | 0.74 |
| May | 1.30 | 0.72 | 1.01 | 0.00 | 0.26 | 0.79 | 1.32 | 1.13 | 1.30 | 0.70 |
| June | 0.91 | 1.01 | 1.01 | 0.00 | 1.15 | 1.16 | 0.72 | 1.01 | 1.04 | 0.92 |
| July | 1.07 | 0.58 | 0.72 | 6.00 | 0.77 | 0.61 | 1.56 | 1.29 | 1.14 | 0.61 |
| August | 0.77 | 1.45 | 0.58 | 0.00 | 0.89 | 0.67 | 1.56 | 1.25 | 1.11 | 1.11 |
| September | 1.06 | 1.16 | 0.87 | 0.00 | 1.02 | 1.46 | 0.36 | 0.97 | 0.79 | 1.53 |
| October | 1.37 | 1.01 | 0.43 | 6.00 | 1.40 | 1.46 | 0.48 | 1.12 | 1.01 | 1.18 |
| November | 0.97 | 1.30 | 1.01 | 0.00 | 1.66 | 0.55 | 0.00 | 0.67 | 1.30 | 1.38 |
| December | 0.63 | 0.87 | 0.72 | 0.00 | 1.60 | 1.40 | 0.36 | 0.64 | 1.04 | 1.46 |

Table 67. Monthly distribution factors, Site 143-0126 EB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 1.22 | 1.44 | 1.58 | 1.42 | 1.41 | 1.70 | 1.71 | 1.66 | 1.61 | 1.35 |
| February | 1.13 | 1.21 | 1.27 | 1.22 | 1.18 | 1.28 | 1.23 | 1.25 | 1.29 | 1.71 |
| March | 1.68 | 1.66 | 1.68 | 0.58 | 1.61 | 1.84 | 2.18 | 1.81 | 1.91 | 0.93 |
| April | 2.00 | 1.73 | 1.70 | 0.90 | 1.75 | 1.79 | 1.93 | 1.79 | 1.74 | 1.14 |
| May | 1.74 | 1.73 | 1.63 | 0.90 | 1.69 | 1.66 | 1.61 | 1.78 | 1.78 | 1.00 |
| June | 1.65 | 1.75 | 1.55 | 0.80 | 1.61 | 1.82 | 1.60 | 1.77 | 1.75 | 1.85 |
| July | 1.35 | 1.35 | 1.29 | 1.38 | 1.35 | 1.19 | 1.04 | 1.24 | 1.23 | 1.21 |
| August | 0.57 | 0.60 | 0.69 | 1.25 | 0.85 | 0.41 | 0.36 | 0.38 | 0.34 | 0.78 |
| September | 0.29 | 0.28 | 0.33 | 1.35 | 0.36 | 0.14 | 0.14 | 0.13 | 0.15 | 0.71 |
| October | 0.33 | 0.20 | 0.19 | 1.99 | 0.16 | 0.13 | 0.14 | 0.11 | 0.14 | 1.21 |
| November | 0.03 | 0.05 | 0.08 | 0.19 | 0.04 | 0.04 | 0.05 | 0.06 | 0.05 | 0.11 |
| December | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 68. Monthly distribution factors, Site 143-0126 WB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.90 | 1.00 | 1.11 | 0.98 | 0.93 | 1.18 | 1.22 | 1.11 | 1.12 | 0.93 |
| February | 0.99 | 1.01 | 1.03 | 1.14 | 0.95 | 1.13 | 1.16 | 1.08 | 1.07 | 0.90 |
| March | 1.23 | 1.11 | 1.13 | 1.23 | 1.11 | 1.09 | 1.18 | 1.10 | 1.12 | 1.37 |
| April | 1.37 | 1.15 | 1.15 | 1.44 | 1.24 | 1.06 | 1.14 | 1.08 | 1.03 | 1.10 |
| May | 1.16 | 1.15 | 1.13 | 0.93 | 1.21 | 1.05 | 1.03 | 1.08 | 1.05 | 1.47 |
| June | 1.15 | 1.23 | 1.11 | 1.14 | 1.21 | 1.07 | 1.12 | 1.07 | 1.03 | 0.90 |
| July | 1.08 | 1.17 | 1.10 | 0.59 | 1.15 | 1.04 | 0.96 | 1.04 | 1.05 | 0.87 |
| August | 1.03 | 1.20 | 1.17 | 0.85 | 1.23 | 1.11 | 0.96 | 1.15 | 1.15 | 1.43 |
| September | 0.91 | 0.99 | 0.98 | 1.14 | 0.98 | 1.05 | 0.99 | 0.99 | 0.99 | 1.10 |
| October | 1.12 | 0.93 | 0.99 | 1.27 | 0.93 | 0.99 | 0.97 | 1.07 | 1.11 | 1.07 |
| November | 0.85 | 0.83 | 0.90 | 1.06 | 0.84 | 0.98 | 0.98 | 0.99 | 1.01 | 0.80 |
| December | 0.21 | 0.22 | 0.21 | 0.21 | 0.21 | 0.24 | 0.28 | 0.25 | 0.27 | 0.07 |

Table 69. Monthly distribution factors, Site 245-0218 EB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.87 | 0.96 | 0.95 | 0.80 | 0.83 | 1.03 | 0.20 | 0.78 | 0.81 | 0.38 |
| February | 0.81 | 0.90 | 0.86 | 0.82 | 0.79 | 0.95 | 0.18 | 0.75 | 0.79 | 0.20 |
| March | 1.20 | 1.01 | 0.98 | 1.39 | 1.05 | 1.02 | 0.17 | 0.82 | 0.92 | 0.30 |
| April | 1.14 | 0.99 | 0.96 | 1.14 | 1.05 | 1.02 | 0.73 | 0.96 | 0.96 | 0.22 |
| May | 1.06 | 1.05 | 1.04 | 1.17 | 1.16 | 1.07 | 1.33 | 1.10 | 1.11 | 0.13 |
| June | 1.02 | 1.00 | 1.03 | 1.18 | 1.06 | 1.03 | 1.22 | 1.14 | 1.17 | 0.20 |
| July | 0.92 | 1.01 | 1.14 | 0.88 | 1.15 | 1.02 | 1.28 | 1.05 | 1.12 | 0.11 |
| August | 0.94 | 1.04 | 1.10 | 1.70 | 1.11 | 1.03 | 1.27 | 1.19 | 1.23 | 0.10 |
| September | 1.09 | 1.01 | 1.13 | 0.80 | 1.06 | 0.97 | 1.33 | 1.00 | 1.01 | 0.06 |
| October | 1.03 | 1.07 | 1.10 | 0.95 | 1.02 | 1.01 | 1.24 | 1.20 | 1.09 | 0.09 |
| November | 1.05 | 0.95 | 0.89 | 0.57 | 0.90 | 0.91 | 1.76 | 1.03 | 0.91 | 7.33 |
| December | 0.86 | 0.99 | 0.83 | 0.61 | 0.82 | 0.94 | 1.29 | 0.99 | 0.88 | 2.87 |

Table 70. Monthly distribution factors, Site 245-0218 WB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.92 | 0.99 | 1.16 | 0.49 | 1.04 | 0.48 | 0.27 | 0.29 | 0.28 | 0.10 |
| February | 0.94 | 1.00 | 1.18 | 0.71 | 0.95 | 0.95 | 0.42 | 0.72 | 0.82 | 0.08 |
| March | 1.34 | 1.09 | 1.26 | 1.48 | 0.98 | 1.40 | 0.67 | 1.17 | 1.31 | 0.06 |
| April | 1.27 | 1.09 | 1.22 | 0.87 | 1.08 | 1.19 | 0.58 | 1.17 | 1.20 | 0.20 |
| May | 0.95 | 1.08 | 1.14 | 1.02 | 1.30 | 0.84 | 0.97 | 1.13 | 1.10 | 1.04 |
| June | 1.08 | 1.14 | 1.10 | 0.92 | 1.29 | 0.92 | 1.20 | 1.11 | 1.09 | 1.66 |
| July | 0.99 | 1.06 | 1.02 | 1.00 | 1.28 | 0.65 | 1.98 | 0.88 | 0.94 | 3.91 |
| August | 1.01 | 1.15 | 1.05 | 1.14 | 1.22 | 0.90 | 1.32 | 1.12 | 1.17 | 0.95 |
| September | 1.19 | 0.89 | 0.78 | 0.87 | 0.93 | 0.85 | 1.31 | 1.03 | 0.93 | 1.03 |
| October | 0.83 | 0.87 | 0.74 | 1.19 | 0.73 | 1.29 | 1.91 | 1.15 | 1.14 | 2.17 |
| November | 0.81 | 0.83 | 0.70 | 0.95 | 0.63 | 1.31 | 0.88 | 1.13 | 1.05 | 0.76 |
| December | 0.67 | 0.82 | 0.66 | 1.36 | 0.56 | 1.22 | 0.49 | 1.10 | 0.97 | 0.05 |

Table 71. Monthly distribution factors, Site 175-0247 EB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.46 | 1.05 | 1.02 | 0.66 | 0.95 | 1.12 | 0.98 | 1.00 | 1.02 | 0.96 |
| February | 0.57 | 1.03 | 1.00 | 0.45 | 1.01 | 1.06 | 0.85 | 1.00 | 0.96 | 0.65 |
| March | 0.50 | 0.78 | 0.65 | 0.53 | 0.81 | 0.75 | 0.63 | 0.72 | 0.82 | 0.43 |
| April | 0.58 | 1.20 | 1.45 | 2.29 | 0.91 | 0.96 | 1.65 | 0.79 | 0.95 | 3.51 |
| May | 0.66 | 1.18 | 1.10 | 0.71 | 1.61 | 0.97 | 1.12 | 0.98 | 1.02 | 1.41 |
| June | 0.62 | 1.11 | 0.92 | 0.37 | 1.26 | 1.01 | 0.94 | 1.08 | 1.07 | 0.68 |
| July | 0.52 | 1.08 | 1.01 | 0.55 | 1.13 | 1.04 | 0.94 | 1.07 | 1.00 | 0.53 |
| August | 0.94 | 1.15 | 1.01 | 1.05 | 0.95 | 1.09 | 0.93 | 1.21 | 1.10 | 0.51 |
| September | 2.13 | 0.91 | 0.97 | 3.08 | 0.72 | 0.92 | 0.81 | 0.94 | 0.93 | 0.76 |
| October | 2.14 | 0.78 | 0.96 | 0.79 | 1.04 | 1.11 | 1.09 | 1.16 | 1.02 | 1.26 |
| November | 2.00 | 0.75 | 0.91 | 0.68 | 0.86 | 0.99 | 1.00 | 1.10 | 1.05 | 0.59 |
| December | 0.88 | 0.99 | 1.01 | 0.84 | 0.76 | 0.99 | 1.06 | 0.96 | 1.06 | 0.72 |

Table 72. Monthly distribution factors, Site 175-0247 WB.

| Month | Truck Classification | | | | | | | | | |
|-----------|----------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | 0.60 | 0.90 | 0.94 | 0.76 | 0.70 | 1.36 | 1.30 | 1.13 | 1.29 | 1.70 |
| February | 0.74 | 0.90 | 0.86 | 0.87 | 0.77 | 1.27 | 1.15 | 1.10 | 1.19 | 1.15 |
| March | 0.66 | 0.68 | 0.65 | 0.68 | 0.62 | 0.89 | 0.81 | 0.79 | 0.95 | 0.79 |
| April | 0.76 | 1.36 | 1.30 | 0.79 | 0.62 | 1.16 | 1.24 | 1.08 | 1.20 | 1.70 |
| May | 0.95 | 1.29 | 1.13 | 1.35 | 1.23 | 1.06 | 1.17 | 1.13 | 1.20 | 0.89 |
| June | 0.91 | 1.15 | 1.13 | 1.19 | 1.26 | 0.92 | 0.98 | 1.07 | 1.02 | 0.89 |
| July | 0.66 | 0.95 | 1.02 | 0.89 | 1.26 | 0.70 | 0.75 | 0.87 | 0.68 | 0.85 |
| August | 0.55 | 0.85 | 0.94 | 1.11 | 1.28 | 0.57 | 0.57 | 0.72 | 0.53 | 0.66 |
| September | 0.96 | 0.68 | 0.62 | 1.79 | 1.10 | 0.49 | 0.49 | 0.59 | 0.45 | 0.32 |
| October | 2.21 | 1.12 | 1.18 | 0.95 | 1.42 | 1.25 | 1.18 | 1.32 | 1.14 | 1.00 |
| November | 2.10 | 1.00 | 1.15 | 0.76 | 1.03 | 1.16 | 1.11 | 1.16 | 1.19 | 0.96 |
| December | 0.90 | 1.12 | 1.08 | 0.87 | 0.73 | 1.18 | 1.24 | 1.05 | 1.16 | 1.09 |

HOURLY DISTRIBUTION FACTORS

Table 73. Hourly distribution factors, Site 185-0227 NB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 1.795 | 12:00 p.m. – 1:00 p.m. | 7.528 |
| 1:00 a.m. – 2:00 a.m. | 1.466 | 1:00 p.m. – 2:00 p.m. | 7.337 |
| 2:00 a.m. – 3:00 a.m. | 1.297 | 2:00 p.m. – 3:00 p.m. | 7.274 |
| 3:00 a.m. – 4:00 a.m. | 1.209 | 3:00 p.m. – 4:00 p.m. | 6.799 |
| 4:00 a.m. – 5:00 a.m. | 1.284 | 4:00 p.m. – 5:00 p.m. | 6.506 |
| 5:00 a.m. – 6:00 a.m. | 1.615 | 5:00 p.m. – 6:00 p.m. | 6.255 |
| 6:00 a.m. – 7:00 a.m. | 2.385 | 6:00 p.m. – 7:00 p.m. | 5.293 |
| 7:00 a.m. – 8:00 a.m. | 3.376 | 7:00 p.m. – 8:00 p.m. | 4.399 |
| 8:00 a.m. – 9:00 a.m. | 4.178 | 8:00 p.m. – 9:00 p.m. | 3.593 |
| 9:00 a.m. – 10:00 a.m. | 5.254 | 9:00 p.m. – 10:00 p.m. | 2.972 |
| 10:00 a.m. – 11:00 a.m. | 6.301 | 10:00 p.m. – 11:00 p.m. | 2.545 |
| 11:00 a.m. – 12:00 p.m. | 7.167 | 11:00 p.m. – 12:00 a.m. | 2.158 |

Table 74. Hourly distribution factors, Site 185-0227 SB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 1.676 | 12:00 p.m. – 1:00 p.m. | 6.445 |
| 1:00 a.m. – 2:00 a.m. | 1.497 | 1:00 p.m. – 2:00 p.m. | 7.185 |
| 2:00 a.m. – 3:00 a.m. | 1.533 | 2:00 p.m. – 3:00 p.m. | 7.524 |
| 3:00 a.m. – 4:00 a.m. | 1.582 | 3:00 p.m. – 4:00 p.m. | 7.3005 |
| 4:00 a.m. – 5:00 a.m. | 1.705 | 4:00 p.m. – 5:00 p.m. | 6.780 |
| 5:00 a.m. – 6:00 a.m. | 1.876 | 5:00 p.m. – 6:00 p.m. | 6.409 |
| 6:00 a.m. – 7:00 a.m. | 2.310 | 6:00 p.m. – 7:00 p.m. | 5.527 |
| 7:00 a.m. – 8:00 a.m. | 3.102 | 7:00 p.m. – 8:00 p.m. | 4.556 |
| 8:00 a.m. – 9:00 a.m. | 4.061 | 8:00 p.m. – 9:00 p.m. | 3.682 |
| 9:00 a.m. – 10:00 a.m. | 5.197 | 9:00 p.m. – 10:00 p.m. | 3.232 |
| 10:00 a.m. – 11:00 a.m. | 5.872 | 10:00 p.m. – 11:00 p.m. | 2.778 |
| 11:00 a.m. – 12:00 p.m. | 6.065 | 11:00 p.m. – 12:00 a.m. | 2.094 |

Table 75. Hourly distribution factors, Site 285-0243 NB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 0.790 | 12:00 p.m. – 1:00 p.m. | 6.946 |
| 1:00 a.m. – 2:00 a.m. | 0.567 | 1:00 p.m. – 2:00 p.m. | 7.414 |
| 2:00 a.m. – 3:00 a.m. | 0.538 | 2:00 p.m. – 3:00 p.m. | 7.649 |
| 3:00 a.m. – 4:00 a.m. | 0.637 | 3:00 p.m. – 4:00 p.m. | 7.784 |
| 4:00 a.m. – 5:00 a.m. | 1.111 | 4:00 p.m. – 5:00 p.m. | 7.980 |
| 5:00 a.m. – 6:00 a.m. | 2.146 | 5:00 p.m. – 6:00 p.m. | 7.705 |
| 6:00 a.m. – 7:00 a.m. | 2.515 | 6:00 p.m. – 7:00 p.m. | 6.287 |
| 7:00 a.m. – 8:00 a.m. | 3.277 | 7:00 p.m. – 8:00 p.m. | 4.707 |
| 8:00 a.m. – 9:00 a.m. | 4.605 | 8:00 p.m. – 9:00 p.m. | 3.475 |
| 9:00 a.m. – 10:00 a.m. | 5.484 | 9:00 p.m. – 10:00 p.m. | 2.709 |
| 10:00 a.m. – 11:00 a.m. | 5.881 | 10:00 p.m. – 11:00 p.m. | 2.077 |
| 11:00 a.m. – 12:00 p.m. | 6.372 | 11:00 p.m. – 12:00 a.m. | 1.330 |

Table 76. Hourly distribution factors, Site 285-0243 SB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 1.322 | 12:00 p.m. – 1:00 p.m. | 6.416 |
| 1:00 a.m. – 2:00 a.m. | 0.933 | 1:00 p.m. – 2:00 p.m. | 6.563 |
| 2:00 a.m. – 3:00 a.m. | 0.836 | 2:00 p.m. – 3:00 p.m. | 6.985 |
| 3:00 a.m. – 4:00 a.m. | 0.672 | 3:00 p.m. – 4:00 p.m. | 7.335 |
| 4:00 a.m. – 5:00 a.m. | 0.711 | 4:00 p.m. – 5:00 p.m. | 7.986 |
| 5:00 a.m. – 6:00 a.m. | 1.277 | 5:00 p.m. – 6:00 p.m. | 7.570 |
| 6:00 a.m. – 7:00 a.m. | 2.510 | 6:00 p.m. – 7:00 p.m. | 6.272 |
| 7:00 a.m. – 8:00 a.m. | 3.666 | 7:00 p.m. – 8:00 p.m. | 5.254 |
| 8:00 a.m. – 9:00 a.m. | 4.506 | 8:00 p.m. – 9:00 p.m. | 4.455 |
| 9:00 a.m. – 10:00 a.m. | 4.930 | 9:00 p.m. – 10:00 p.m. | 3.497 |
| 10:00 a.m. – 11:00 a.m. | 5.592 | 10:00 p.m. – 11:00 p.m. | 2.576 |
| 11:00 a.m. – 12:00 p.m. | 6.254 | 11:00 p.m. – 12:00 a.m. | 1.872 |

Table 77. Hourly distribution factors, Site 021-w334 NB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 0.980 | 12:00 p.m. – 1:00 p.m. | 6.068 |
| 1:00 a.m. – 2:00 a.m. | 0.671 | 1:00 p.m. – 2:00 p.m. | 6.298 |
| 2:00 a.m. – 3:00 a.m. | 0.636 | 2:00 p.m. – 3:00 p.m. | 6.347 |
| 3:00 a.m. – 4:00 a.m. | 0.771 | 3:00 p.m. – 4:00 p.m. | 6.470 |
| 4:00 a.m. – 5:00 a.m. | 1.089 | 4:00 p.m. – 5:00 p.m. | 6.526 |
| 5:00 a.m. – 6:00 a.m. | 1.932 | 5:00 p.m. – 6:00 p.m. | 6.458 |
| 6:00 a.m. – 7:00 a.m. | 4.788 | 6:00 p.m. – 7:00 p.m. | 6.109 |
| 7:00 a.m. – 8:00 a.m. | 6.964 | 7:00 p.m. – 8:00 p.m. | 4.256 |
| 8:00 a.m. – 9:00 a.m. | 6.989 | 8:00 p.m. – 9:00 p.m. | 3.422 |
| 9:00 a.m. – 10:00 a.m. | 5.658 | 9:00 p.m. – 10:00 p.m. | 2.577 |
| 10:00 a.m. – 11:00 a.m. | 5.749 | 10:00 p.m. – 11:00 p.m. | 2.086 |
| 11:00 a.m. – 12:00 p.m. | 5.650 | 11:00 p.m. – 12:00 a.m. | 1.494 |

Table 78. Hourly distribution factors, Site 021-w334 SB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 1.079 | 12:00 p.m. – 1:00 p.m. | 5.940 |
| 1:00 a.m. – 2:00 a.m. | 0.776 | 1:00 p.m. – 2:00 p.m. | 6.057 |
| 2:00 a.m. – 3:00 a.m. | 0.731 | 2:00 p.m. – 3:00 p.m. | 6.483 |
| 3:00 a.m. – 4:00 a.m. | 0.659 | 3:00 p.m. – 4:00 p.m. | 7.789 |
| 4:00 a.m. – 5:00 a.m. | 0.904 | 4:00 p.m. – 5:00 p.m. | 8.659 |
| 5:00 a.m. – 6:00 a.m. | 1.732 | 5:00 p.m. – 6:00 p.m. | 10.397 |
| 6:00 a.m. – 7:00 a.m. | 2.592 | 6:00 p.m. – 7:00 p.m. | 6.589 |
| 7:00 a.m. – 8:00 a.m. | 4.431 | 7:00 p.m. – 8:00 p.m. | 5.076 |
| 8:00 a.m. – 9:00 a.m. | 4.401 | 8:00 p.m. – 9:00 p.m. | 3.864 |
| 9:00 a.m. – 10:00 a.m. | 4.633 | 9:00 p.m. – 10:00 p.m. | 2.925 |
| 10:00 a.m. – 11:00 a.m. | 4.985 | 10:00 p.m. – 11:00 p.m. | 2.090 |
| 11:00 a.m. – 12:00 p.m. | 5.539 | 11:00 p.m. – 12:00 a.m. | 1.659 |

Table 79. Hourly distribution factors, Site 127-0312 NB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 1.349 | 12:00 p.m. – 1:00 p.m. | 7.407 |
| 1:00 a.m. – 2:00 a.m. | 1.095 | 1:00 p.m. – 2:00 p.m. | 7.260 |
| 2:00 a.m. – 3:00 a.m. | 0.958 | 2:00 p.m. – 3:00 p.m. | 7.190 |
| 3:00 a.m. – 4:00 a.m. | 0.927 | 3:00 p.m. – 4:00 p.m. | 7.013 |
| 4:00 a.m. – 5:00 a.m. | 1.260 | 4:00 p.m. – 5:00 p.m. | 6.588 |
| 5:00 a.m. – 6:00 a.m. | 1.916 | 5:00 p.m. – 6:00 p.m. | 6.120 |
| 6:00 a.m. – 7:00 a.m. | 3.269 | 6:00 p.m. – 7:00 p.m. | 5.121 |
| 7:00 a.m. – 8:00 a.m. | 4.530 | 7:00 p.m. – 8:00 p.m. | 4.196 |
| 8:00 a.m. – 9:00 a.m. | 4.552 | 8:00 p.m. – 9:00 p.m. | 3.369 |
| 9:00 a.m. – 10:00 a.m. | 5.448 | 9:00 p.m. – 10:00 p.m. | 2.692 |
| 10:00 a.m. – 11:00 a.m. | 6.738 | 10:00 p.m. – 11:00 p.m. | 2.132 |
| 11:00 a.m. – 12:00 p.m. | 7.181 | 11:00 p.m. – 12:00 a.m. | 1.676 |

Table 80. Hourly distribution factors, Site 127-0312 SB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 1.116 | 12:00 p.m. – 1:00 p.m. | 7.368 |
| 1:00 a.m. – 2:00 a.m. | 0.885 | 1:00 p.m. – 2:00 p.m. | 7.666 |
| 2:00 a.m. – 3:00 a.m. | 0.793 | 2:00 p.m. – 3:00 p.m. | 7.859 |
| 3:00 a.m. – 4:00 a.m. | 0.855 | 3:00 p.m. – 4:00 p.m. | 7.806 |
| 4:00 a.m. – 5:00 a.m. | 1.009 | 4:00 p.m. – 5:00 p.m. | 7.744 |
| 5:00 a.m. – 6:00 a.m. | 1.561 | 5:00 p.m. – 6:00 p.m. | 6.776 |
| 6:00 a.m. – 7:00 a.m. | 2.175 | 6:00 p.m. – 7:00 p.m. | 5.322 |
| 7:00 a.m. – 8:00 a.m. | 3.356 | 7:00 p.m. – 8:00 p.m. | 4.277 |
| 8:00 a.m. – 9:00 a.m. | 4.336 | 8:00 p.m. – 9:00 p.m. | 3.287 |
| 9:00 a.m. – 10:00 a.m. | 5.657 | 9:00 p.m. – 10:00 p.m. | 2.594 |
| 10:00 a.m. – 11:00 a.m. | 6.755 | 10:00 p.m. – 11:00 p.m. | 1.986 |
| 11:00 a.m. – 12:00 p.m. | 7.343 | 11:00 p.m. – 12:00 a.m. | 1.462 |

Table 81. Hourly distribution factors, Site 051-0387 NB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|-----------------------|-------------------------|-----------------------|
| 12:00 a.m. – 1:00 a.m. | 1.324 | 12:00 p.m. – 1:00 p.m. | 6.951 |
| 1:00 a.m. – 2:00 a.m. | 0.986 | 1:00 p.m. – 2:00 p.m. | 7.112 |
| 2:00 a.m. – 3:00 a.m. | 0.914 | 2:00 p.m. – 3:00 p.m. | 7.245 |
| 3:00 a.m. – 4:00 a.m. | 0.921 | 3:00 p.m. – 4:00 p.m. | 7.163 |
| 4:00 a.m. – 5:00 a.m. | 1.190 | 4:00 p.m. – 5:00 p.m. | 6.877 |
| 5:00 a.m. – 6:00 a.m. | 2.023 | 5:00 p.m. – 6:00 p.m. | 6.041 |
| 6:00 a.m. – 7:00 a.m. | 3.786 | 6:00 p.m. – 7:00 p.m. | 5.203 |
| 7:00 a.m. – 8:00 a.m. | 4.869 | 7:00 p.m. – 8:00 p.m. | 4.026 |
| 8:00 a.m. – 9:00 a.m. | 5.189 | 8:00 p.m. – 9:00 p.m. | 3.189 |
| 9:00 a.m. – 10:00 a.m. | 5.444 | 9:00 p.m. – 10:00 p.m. | 2.701 |
| 10:00 a.m. – 11:00 a.m. | 6.148 | 10:00 p.m. – 11:00 p.m. | 2.159 |
| 11:00 a.m. – 12:00 p.m. | 6.782 | 11:00 p.m. – 12:00 a.m. | 1.749 |

Table 82. Hourly distribution factors, Site 051-0387 SB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|-----------------------|-------------------------|-----------------------|
| 12:00 a.m. – 1:00 a.m. | 1.218 | 12:00 p.m. – 1:00 p.m. | 6.985 |
| 1:00 a.m. – 2:00 a.m. | 0.973 | 1:00 p.m. – 2:00 p.m. | 7.054 |
| 2:00 a.m. – 3:00 a.m. | 0.909 | 2:00 p.m. – 3:00 p.m. | 6.965 |
| 3:00 a.m. – 4:00 a.m. | 0.993 | 3:00 p.m. – 4:00 p.m. | 6.989 |
| 4:00 a.m. – 5:00 a.m. | 1.319 | 4:00 p.m. – 5:00 p.m. | 7.416 |
| 5:00 a.m. – 6:00 a.m. | 1.795 | 5:00 p.m. – 6:00 p.m. | 7.612 |
| 6:00 a.m. – 7:00 a.m. | 2.649 | 6:00 p.m. – 7:00 p.m. | 5.810 |
| 7:00 a.m. – 8:00 a.m. | 3.653 | 7:00 p.m. – 8:00 p.m. | 4.412 |
| 8:00 a.m. – 9:00 a.m. | 4.521 | 8:00 p.m. – 9:00 p.m. | 3.516 |
| 9:00 a.m. – 10:00 a.m. | 5.364 | 9:00 p.m. – 10:00 p.m. | 2.804 |
| 10:00 a.m. – 11:00 a.m. | 6.352 | 10:00 p.m. – 11:00 p.m. | 2.237 |
| 11:00 a.m. – 12:00 p.m. | 6.777 | 11:00 p.m. – 12:00 a.m. | 1.666 |

Table 83. Hourly distribution factors, Site 217-0218 EB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|-----------------------|-------------------------|-----------------------|
| 12:00 a.m. – 1:00 a.m. | 1.08 | 12:00 p.m. – 1:00 p.m. | 6.15 |
| 1:00 a.m. – 2:00 a.m. | 0.81 | 1:00 p.m. – 2:00 p.m. | 6.42 |
| 2:00 a.m. – 3:00 a.m. | 0.72 | 2:00 p.m. – 3:00 p.m. | 6.64 |
| 3:00 a.m. – 4:00 a.m. | 0.81 | 3:00 p.m. – 4:00 p.m. | 6.92 |
| 4:00 a.m. – 5:00 a.m. | 1.38 | 4:00 p.m. – 5:00 p.m. | 7.28 |
| 5:00 a.m. – 6:00 a.m. | 3.38 | 5:00 p.m. – 6:00 p.m. | 7.36 |
| 6:00 a.m. – 7:00 a.m. | 4.42 | 6:00 p.m. – 7:00 p.m. | 5.75 |
| 7:00 a.m. – 8:00 a.m. | 4.72 | 7:00 p.m. – 8:00 p.m. | 4.60 |
| 8:00 a.m. – 9:00 a.m. | 4.69 | 8:00 p.m. – 9:00 p.m. | 3.68 |
| 9:00 a.m. – 10:00 a.m. | 5.00 | 9:00 p.m. – 10:00 p.m. | 2.99 |
| 10:00 a.m. – 11:00 a.m. | 5.55 | 10:00 p.m. – 11:00 p.m. | 2.13 |
| 11:00 a.m. – 12:00 p.m. | 5.98 | 11:00 p.m. – 12:00 a.m. | 1.57 |

Table 84. Hourly distribution factors, Site 217-0218 WB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|-----------------------|-------------------------|-----------------------|
| 12:00 a.m. – 1:00 a.m. | 0.66 | 12:00 p.m. – 1:00 p.m. | 6.45 |
| 1:00 a.m. – 2:00 a.m. | 0.38 | 1:00 p.m. – 2:00 p.m. | 6.79 |
| 2:00 a.m. – 3:00 a.m. | 0.30 | 2:00 p.m. – 3:00 p.m. | 8.12 |
| 3:00 a.m. – 4:00 a.m. | 0.36 | 3:00 p.m. – 4:00 p.m. | 8.15 |
| 4:00 a.m. – 5:00 a.m. | 0.91 | 4:00 p.m. – 5:00 p.m. | 8.67 |
| 5:00 a.m. – 6:00 a.m. | 2.71 | 5:00 p.m. – 6:00 p.m. | 8.54 |
| 6:00 a.m. – 7:00 a.m. | 3.59 | 6:00 p.m. – 7:00 p.m. | 6.49 |
| 7:00 a.m. – 8:00 a.m. | 4.62 | 7:00 p.m. – 8:00 p.m. | 4.85 |
| 8:00 a.m. – 9:00 a.m. | 4.21 | 8:00 p.m. – 9:00 p.m. | 3.56 |
| 9:00 a.m. – 10:00 a.m. | 4.44 | 9:00 p.m. – 10:00 p.m. | 2.38 |
| 10:00 a.m. – 11:00 a.m. | 5.10 | 10:00 p.m. – 11:00 p.m. | 1.71 |
| 11:00 a.m. – 12:00 p.m. | 5.90 | 11:00 p.m. – 12:00 a.m. | 1.09 |

Table 85. Hourly distribution factors, Site 051-0368 EB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|-----------------------|-------------------------|-----------------------|
| 12:00 a.m. – 1:00 a.m. | 0.95 | 12:00 p.m. – 1:00 p.m. | 5.65 |
| 1:00 a.m. – 2:00 a.m. | 0.57 | 1:00 p.m. – 2:00 p.m. | 5.86 |
| 2:00 a.m. – 3:00 a.m. | 0.48 | 2:00 p.m. – 3:00 p.m. | 6.25 |
| 3:00 a.m. – 4:00 a.m. | 0.49 | 3:00 p.m. – 4:00 p.m. | 6.08 |
| 4:00 a.m. – 5:00 a.m. | 1.02 | 4:00 p.m. – 5:00 p.m. | 6.30 |
| 5:00 a.m. – 6:00 a.m. | 3.05 | 5:00 p.m. – 6:00 p.m. | 6.47 |
| 6:00 a.m. – 7:00 a.m. | 6.62 | 6:00 p.m. – 7:00 p.m. | 5.33 |
| 7:00 a.m. – 8:00 a.m. | 7.78 | 7:00 p.m. – 8:00 p.m. | 3.80 |
| 8:00 a.m. – 9:00 a.m. | 7.14 | 8:00 p.m. – 9:00 p.m. | 2.81 |
| 9:00 a.m. – 10:00 a.m. | 6.18 | 9:00 p.m. – 10:00 p.m. | 2.31 |
| 10:00 a.m. – 11:00 a.m. | 5.86 | 10:00 p.m. – 11:00 p.m. | 1.91 |
| 11:00 a.m. – 12:00 p.m. | 5.63 | 11:00 p.m. – 12:00 a.m. | 1.45 |

Table 86. Hourly distribution factors, Site 051-0368 WB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|-----------------------|-------------------------|-----------------------|
| 12:00 a.m. – 1:00 a.m. | 0.68 | 12:00 p.m. – 1:00 p.m. | 6.13 |
| 1:00 a.m. – 2:00 a.m. | 0.43 | 1:00 p.m. – 2:00 p.m. | 6.34 |
| 2:00 a.m. – 3:00 a.m. | 0.32 | 2:00 p.m. – 3:00 p.m. | 7.29 |
| 3:00 a.m. – 4:00 a.m. | 0.45 | 3:00 p.m. – 4:00 p.m. | 9.35 |
| 4:00 a.m. – 5:00 a.m. | 0.60 | 4:00 p.m. – 5:00 p.m. | 9.31 |
| 5:00 a.m. – 6:00 a.m. | 1.47 | 5:00 p.m. – 6:00 p.m. | 8.60 |
| 6:00 a.m. – 7:00 a.m. | 2.87 | 6:00 p.m. – 7:00 p.m. | 7.09 |
| 7:00 a.m. – 8:00 a.m. | 4.91 | 7:00 p.m. – 8:00 p.m. | 5.17 |
| 8:00 a.m. – 9:00 a.m. | 4.82 | 8:00 p.m. – 9:00 p.m. | 3.60 |
| 9:00 a.m. – 10:00 a.m. | 4.34 | 9:00 p.m. – 10:00 p.m. | 2.61 |
| 10:00 a.m. – 11:00 a.m. | 4.97 | 10:00 p.m. – 11:00 p.m. | 1.80 |
| 11:00 a.m. – 12:00 p.m. | 5.61 | 11:00 p.m. – 12:00 a.m. | 1.25 |

Table 87. Hourly distribution factors, Site 143-0126 EB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|-----------------------|-------------------------|-----------------------|
| 12:00 a.m. – 1:00 a.m. | 1.71 | 12:00 p.m. – 1:00 p.m. | 6.57 |
| 1:00 a.m. – 2:00 a.m. | 1.32 | 1:00 p.m. – 2:00 p.m. | 6.66 |
| 2:00 a.m. – 3:00 a.m. | 1.19 | 2:00 p.m. – 3:00 p.m. | 6.97 |
| 3:00 a.m. – 4:00 a.m. | 1.19 | 3:00 p.m. – 4:00 p.m. | 6.98 |
| 4:00 a.m. – 5:00 a.m. | 1.46 | 4:00 p.m. – 5:00 p.m. | 7.10 |
| 5:00 a.m. – 6:00 a.m. | 1.98 | 5:00 p.m. – 6:00 p.m. | 7.12 |
| 6:00 a.m. – 7:00 a.m. | 2.38 | 6:00 p.m. – 7:00 p.m. | 6.67 |
| 7:00 a.m. – 8:00 a.m. | 2.72 | 7:00 p.m. – 8:00 p.m. | 5.76 |
| 8:00 a.m. – 9:00 a.m. | 3.18 | 8:00 p.m. – 9:00 p.m. | 4.70 |
| 9:00 a.m. – 10:00 a.m. | 4.07 | 9:00 p.m. – 10:00 p.m. | 3.61 |
| 10:00 a.m. – 11:00 a.m. | 5.39 | 10:00 p.m. – 11:00 p.m. | 2.71 |
| 11:00 a.m. – 12:00 p.m. | 6.32 | 11:00 p.m. – 12:00 a.m. | 2.24 |

Table 88. Hourly distribution factors, Site 143-0126 WB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|-----------------------|-------------------------|-----------------------|
| 12:00 a.m. – 1:00 a.m. | 1.81 | 12:00 p.m. – 1:00 p.m. | 6.51 |
| 1:00 a.m. – 2:00 a.m. | 1.50 | 1:00 p.m. – 2:00 p.m. | 6.41 |
| 2:00 a.m. – 3:00 a.m. | 1.30 | 2:00 p.m. – 3:00 p.m. | 6.87 |
| 3:00 a.m. – 4:00 a.m. | 1.23 | 3:00 p.m. – 4:00 p.m. | 6.85 |
| 4:00 a.m. – 5:00 a.m. | 1.48 | 4:00 p.m. – 5:00 p.m. | 6.80 |
| 5:00 a.m. – 6:00 a.m. | 2.15 | 5:00 p.m. – 6:00 p.m. | 6.02 |
| 6:00 a.m. – 7:00 a.m. | 2.95 | 6:00 p.m. – 7:00 p.m. | 5.26 |
| 7:00 a.m. – 8:00 a.m. | 3.58 | 7:00 p.m. – 8:00 p.m. | 5.04 |
| 8:00 a.m. – 9:00 a.m. | 3.94 | 8:00 p.m. – 9:00 p.m. | 4.22 |
| 9:00 a.m. – 10:00 a.m. | 4.76 | 9:00 p.m. – 10:00 p.m. | 3.67 |
| 10:00 a.m. – 11:00 a.m. | 5.88 | 10:00 p.m. – 11:00 p.m. | 2.86 |
| 11:00 a.m. – 12:00 p.m. | 6.53 | 11:00 p.m. – 12:00 a.m. | 2.39 |

Table 89. Hourly distribution factors, Site 245-0218 EB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|-----------------------|-------------------------|-----------------------|
| 12:00 a.m. – 1:00 a.m. | 1.13 | 12:00 p.m. – 1:00 p.m. | 6.14 |
| 1:00 a.m. – 2:00 a.m. | 0.78 | 1:00 p.m. – 2:00 p.m. | 6.53 |
| 2:00 a.m. – 3:00 a.m. | 0.69 | 2:00 p.m. – 3:00 p.m. | 6.91 |
| 3:00 a.m. – 4:00 a.m. | 0.73 | 3:00 p.m. – 4:00 p.m. | 7.27 |
| 4:00 a.m. – 5:00 a.m. | 0.90 | 4:00 p.m. – 5:00 p.m. | 7.82 |
| 5:00 a.m. – 6:00 a.m. | 1.84 | 5:00 p.m. – 6:00 p.m. | 8.47 |
| 6:00 a.m. – 7:00 a.m. | 3.36 | 6:00 p.m. – 7:00 p.m. | 6.43 |
| 7:00 a.m. – 8:00 a.m. | 4.56 | 7:00 p.m. – 8:00 p.m. | 5.24 |
| 8:00 a.m. – 9:00 a.m. | 4.75 | 8:00 p.m. – 9:00 p.m. | 4.42 |
| 9:00 a.m. – 10:00 a.m. | 4.47 | 9:00 p.m. – 10:00 p.m. | 3.32 |
| 10:00 a.m. – 11:00 a.m. | 4.89 | 10:00 p.m. – 11:00 p.m. | 2.30 |
| 11:00 a.m. – 12:00 p.m. | 5.42 | 11:00 p.m. – 12:00 a.m. | 1.67 |

Table 90. Hourly distribution factors, Site 245-0218 WB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 0.87 | 12:00 p.m. – 1:00 p.m. | 6.24 |
| 1:00 a.m. – 2:00 a.m. | 0.63 | 1:00 p.m. – 2:00 p.m. | 6.29 |
| 2:00 a.m. – 3:00 a.m. | 0.54 | 2:00 p.m. – 3:00 p.m. | 6.36 |
| 3:00 a.m. – 4:00 a.m. | 0.61 | 3:00 p.m. – 4:00 p.m. | 7.05 |
| 4:00 a.m. – 5:00 a.m. | 0.84 | 4:00 p.m. – 5:00 p.m. | 7.32 |
| 5:00 a.m. – 6:00 a.m. | 1.68 | 5:00 p.m. – 6:00 p.m. | 7.76 |
| 6:00 a.m. – 7:00 a.m. | 3.63 | 6:00 p.m. – 7:00 p.m. | 6.45 |
| 7:00 a.m. – 8:00 a.m. | 6.93 | 7:00 p.m. – 8:00 p.m. | 5.01 |
| 8:00 a.m. – 9:00 a.m. | 6.20 | 8:00 p.m. – 9:00 p.m. | 3.42 |
| 9:00 a.m. – 10:00 a.m. | 5.24 | 9:00 p.m. – 10:00 p.m. | 2.61 |
| 10:00 a.m. – 11:00 a.m. | 5.43 | 10:00 p.m. – 11:00 p.m. | 1.90 |
| 11:00 a.m. – 12:00 p.m. | 5.69 | 11:00 p.m. – 12:00 a.m. | 1.30 |

Table 91. Hourly distribution factors, Site 175-0247 EB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 1.35 | 12:00 p.m. – 1:00 p.m. | 7.16 |
| 1:00 a.m. – 2:00 a.m. | 1.02 | 1:00 p.m. – 2:00 p.m. | 7.11 |
| 2:00 a.m. – 3:00 a.m. | 0.92 | 2:00 p.m. – 3:00 p.m. | 7.05 |
| 3:00 a.m. – 4:00 a.m. | 1.12 | 3:00 p.m. – 4:00 p.m. | 7.17 |
| 4:00 a.m. – 5:00 a.m. | 1.32 | 4:00 p.m. – 5:00 p.m. | 7.18 |
| 5:00 a.m. – 6:00 a.m. | 1.87 | 5:00 p.m. – 6:00 p.m. | 6.58 |
| 6:00 a.m. – 7:00 a.m. | 2.95 | 6:00 p.m. – 7:00 p.m. | 5.58 |
| 7:00 a.m. – 8:00 a.m. | 4.46 | 7:00 p.m. – 8:00 p.m. | 4.62 |
| 8:00 a.m. – 9:00 a.m. | 4.51 | 8:00 p.m. – 9:00 p.m. | 3.91 |
| 9:00 a.m. – 10:00 a.m. | 4.91 | 9:00 p.m. – 10:00 p.m. | 2.92 |
| 10:00 a.m. – 11:00 a.m. | 5.61 | 10:00 p.m. – 11:00 p.m. | 2.46 |
| 11:00 a.m. – 12:00 p.m. | 6.38 | 11:00 p.m. – 12:00 a.m. | 1.86 |

Table 92. Hourly distribution factors, Site 175-0247 WB.

| Time Period | Distribution, percent | Time Period | Distribution, percent |
|-------------------------|------------------------------|-------------------------|------------------------------|
| 12:00 a.m. – 1:00 a.m. | 0.92 | 12:00 p.m. – 1:00 p.m. | 7.53 |
| 1:00 a.m. – 2:00 a.m. | 0.69 | 1:00 p.m. – 2:00 p.m. | 7.86 |
| 2:00 a.m. – 3:00 a.m. | 0.77 | 2:00 p.m. – 3:00 p.m. | 7.49 |
| 3:00 a.m. – 4:00 a.m. | 0.99 | 3:00 p.m. – 4:00 p.m. | 7.51 |
| 4:00 a.m. – 5:00 a.m. | 1.49 | 4:00 p.m. – 5:00 p.m. | 7.32 |
| 5:00 a.m. – 6:00 a.m. | 2.33 | 5:00 p.m. – 6:00 p.m. | 6.77 |
| 6:00 a.m. – 7:00 a.m. | 3.07 | 6:00 p.m. – 7:00 p.m. | 5.51 |
| 7:00 a.m. – 8:00 a.m. | 3.81 | 7:00 p.m. – 8:00 p.m. | 4.49 |
| 8:00 a.m. – 9:00 a.m. | 4.31 | 8:00 p.m. – 9:00 p.m. | 3.45 |
| 9:00 a.m. – 10:00 a.m. | 5.08 | 9:00 p.m. – 10:00 p.m. | 2.60 |
| 10:00 a.m. – 11:00 a.m. | 6.08 | 10:00 p.m. – 11:00 p.m. | 1.78 |
| 11:00 a.m. – 12:00 p.m. | 6.92 | 11:00 p.m. – 12:00 a.m. | 1.24 |

NORMALIZED AXLE LOAD SPECTRA – SINGLE AXLES

Table 93. Single-axle load distribution factors, Site 185-0227 NB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 5.57 | 12.53 | 1.40 | 1.10 | 16.92 | 2.19 | 2.50 | 2.71 | 2.99 | 5.62 |
| 4000 | 11.60 | 13.75 | 3.32 | 1.10 | 21.70 | 3.57 | 5.44 | 4.72 | 5.75 | 5.00 |
| 5000 | 6.20 | 9.64 | 4.97 | 2.21 | 13.86 | 6.34 | 11.63 | 11.92 | 12.09 | 3.75 |
| 6000 | 7.01 | 9.86 | 5.92 | 2.76 | 8.87 | 6.64 | 9.84 | 13.72 | 16.96 | 5.00 |
| 7000 | 8.06 | 10.52 | 6.39 | 2.21 | 6.71 | 6.16 | 8.27 | 6.44 | 12.02 | 6.25 |
| 8000 | 9.84 | 9.35 | 7.45 | 5.52 | 6.08 | 6.20 | 14.08 | 10.89 | 9.08 | 7.50 |
| 9000 | 10.12 | 7.65 | 12.40 | 7.73 | 7.21 | 13.12 | 14.89 | 15.78 | 7.87 | 12.50 |
| 10,000 | 8.91 | 6.47 | 26.84 | 7.18 | 5.82 | 32.60 | 15.50 | 8.59 | 7.73 | 16.88 |
| 11,000 | 7.35 | 5.48 | 15.76 | 6.35 | 3.45 | 17.90 | 9.18 | 5.66 | 7.62 | 8.75 |
| 12,000 | 6.37 | 3.77 | 4.97 | 4.14 | 2.16 | 2.19 | 4.00 | 4.55 | 7.02 | 6.88 |
| 13,000 | 5.47 | 2.92 | 3.48 | 7.18 | 1.73 | 0.68 | 2.23 | 4.07 | 5.40 | 15.00 |
| 14,000 | 3.85 | 2.38 | 2.53 | 9.67 | 1.37 | 0.59 | 0.96 | 3.31 | 3.03 | 3.12 |
| 15,000 | 2.55 | 1.73 | 1.72 | 12.43 | 1.07 | 0.78 | 0.57 | 2.63 | 1.42 | 1.88 |
| 16,000 | 2.23 | 1.29 | 1.39 | 14.92 | 0.90 | 0.69 | 0.63 | 1.91 | 0.65 | 0.00 |
| 17,000 | 1.60 | 0.88 | 0.77 | 5.80 | 0.69 | 0.25 | 0.13 | 1.31 | 0.25 | 0.62 |
| 18,000 | 1.23 | 0.66 | 0.34 | 3.04 | 0.57 | 0.06 | 0.09 | 0.87 | 0.10 | 0.62 |
| 19,000 | 0.87 | 0.52 | 0.15 | 2.21 | 0.42 | 0.02 | 0.01 | 0.52 | 0.03 | 0.00 |
| 20,000 | 0.51 | 0.31 | 0.09 | 1.10 | 0.27 | 0.00 | 0.04 | 0.26 | 0.01 | 0.62 |
| 21,000 | 0.26 | 0.17 | 0.05 | 0.28 | 0.13 | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 |
| 22,000 | 0.17 | 0.09 | 0.03 | 1.66 | 0.07 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
| 23,000 | 0.06 | 0.04 | 0.02 | 0.83 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 24,000 | 0.02 | 0.01 | 0.00 | 0.28 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25,000 | 0.00 | 0.01 | 0.00 | 0.28 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 94. Single-axle load distribution factors, Site 185-0227 SB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 2.42 | 4.68 | 0.21 | 1.12 | 14.05 | 0.19 | 0.38 | 0.05 | 0.03 | 8.13 |
| 4000 | 11.96 | 6.79 | 0.30 | 0.00 | 21.66 | 0.51 | 0.63 | 0.16 | 0.30 | 12.44 |
| 5000 | 4.43 | 4.98 | 0.61 | 0.28 | 13.71 | 1.04 | 1.36 | 0.52 | 1.02 | 3.35 |
| 6000 | 5.68 | 6.90 | 0.53 | 0.56 | 7.80 | 1.11 | 4.96 | 1.13 | 2.79 | 7.18 |
| 7000 | 6.22 | 12.48 | 1.04 | 1.40 | 6.00 | 1.28 | 4.93 | 2.03 | 4.85 | 9.09 |
| 8000 | 8.06 | 12.40 | 3.34 | 1.96 | 4.42 | 2.10 | 6.18 | 4.30 | 6.40 | 7.18 |
| 9000 | 8.73 | 11.14 | 9.54 | 3.07 | 6.56 | 6.44 | 14.05 | 12.82 | 9.64 | 14.35 |
| 10,000 | 8.96 | 9.43 | 26.29 | 1.12 | 7.19 | 25.34 | 24.29 | 19.16 | 13.46 | 12.92 |
| 11,000 | 6.72 | 7.60 | 31.13 | 4.75 | 5.12 | 45.77 | 23.61 | 11.54 | 16.72 | 11.48 |
| 12,000 | 6.59 | 5.92 | 7.57 | 4.47 | 2.28 | 9.71 | 10.02 | 9.62 | 17.46 | 5.26 |
| 13,000 | 7.31 | 4.88 | 4.96 | 7.26 | 2.23 | 1.27 | 4.60 | 9.08 | 13.71 | 5.26 |
| 14,000 | 6.49 | 3.63 | 4.22 | 8.10 | 2.12 | 1.10 | 1.93 | 7.84 | 7.19 | 0.96 |
| 15,000 | 4.75 | 2.95 | 3.11 | 11.73 | 1.71 | 1.55 | 1.69 | 6.60 | 3.29 | 1.44 |
| 16,000 | 3.50 | 2.26 | 2.76 | 16.20 | 1.43 | 1.68 | 0.87 | 5.42 | 1.75 | 0.48 |
| 17,000 | 2.68 | 1.50 | 2.26 | 16.76 | 1.06 | 0.65 | 0.38 | 4.16 | 0.81 | 0.00 |
| 18,000 | 2.08 | 1.03 | 1.10 | 11.73 | 0.86 | 0.18 | 0.08 | 2.88 | 0.37 | 0.48 |
| 19,000 | 1.74 | 0.67 | 0.63 | 5.31 | 0.81 | 0.05 | 0.03 | 1.67 | 0.15 | 0.00 |
| 20,000 | 0.81 | 0.37 | 0.32 | 1.40 | 0.51 | 0.01 | 0.00 | 0.69 | 0.03 | 0.00 |
| 21,000 | 0.37 | 0.15 | 0.08 | 1.68 | 0.24 | 0.00 | 0.00 | 0.23 | 0.01 | 0.00 |
| 22,000 | 0.23 | 0.10 | 0.00 | 0.84 | 0.12 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 |
| 23,000 | 0.08 | 0.06 | 0.00 | 0.28 | 0.05 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 24,000 | 0.05 | 0.03 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25,000 | 0.03 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26,000 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 95. Single-axle load distribution factors, Site 285-0243 NB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 0.93 | 4.25 | 0.10 | 0.00 | 12.28 | 0.97 | 0.00 | 0.68 | 0.25 | 0.00 |
| 4000 | 4.88 | 9.15 | 0.28 | 0.00 | 17.09 | 2.09 | 0.26 | 2.27 | 0.75 | 13.21 |
| 5000 | 6.53 | 8.95 | 0.86 | 1.85 | 16.55 | 2.79 | 1.43 | 4.86 | 3.21 | 9.43 |
| 6000 | 5.56 | 10.04 | 2.39 | 0.00 | 10.94 | 3.47 | 3.39 | 10.81 | 6.31 | 13.21 |
| 7000 | 6.38 | 10.12 | 4.87 | 0.00 | 6.27 | 4.58 | 4.95 | 11.38 | 6.63 | 2.83 |
| 8000 | 6.14 | 11.48 | 4.62 | 3.70 | 5.77 | 4.02 | 10.68 | 10.86 | 9.01 | 5.66 |
| 9000 | 6.02 | 9.77 | 7.87 | 3.70 | 6.53 | 9.62 | 19.92 | 12.33 | 11.86 | 16.04 |
| 10,000 | 6.92 | 7.63 | 14.59 | 1.85 | 4.89 | 19.16 | 20.18 | 9.10 | 14.97 | 5.66 |
| 11,000 | 7.74 | 6.36 | 15.18 | 7.41 | 5.63 | 20.31 | 13.80 | 10.16 | 16.26 | 17.92 |
| 12,000 | 6.12 | 5.56 | 10.66 | 0.00 | 4.04 | 10.08 | 9.38 | 7.86 | 11.56 | 10.38 |
| 13,000 | 6.79 | 4.18 | 14.91 | 3.70 | 2.25 | 10.92 | 5.60 | 4.63 | 7.23 | 2.83 |
| 14,000 | 6.91 | 3.08 | 10.26 | 9.26 | 1.61 | 7.60 | 4.43 | 3.73 | 5.07 | 1.89 |
| 15,000 | 4.93 | 1.96 | 3.91 | 9.26 | 1.20 | 2.42 | 3.91 | 3.12 | 3.27 | 0.00 |
| 16,000 | 4.68 | 1.55 | 2.12 | 14.81 | 1.02 | 1.21 | 1.17 | 2.33 | 1.92 | 0.00 |
| 17,000 | 5.30 | 1.25 | 1.62 | 7.41 | 0.79 | 0.52 | 0.39 | 1.77 | 1.06 | 0.94 |
| 18,000 | 4.48 | 1.08 | 1.28 | 9.26 | 0.66 | 0.16 | 0.26 | 1.36 | 0.45 | 0.00 |
| 19,000 | 3.19 | 0.88 | 1.17 | 1.85 | 0.60 | 0.05 | 0.26 | 1.01 | 0.14 | 0.00 |
| 20,000 | 1.81 | 0.64 | 0.80 | 5.56 | 0.48 | 0.02 | 0.00 | 0.61 | 0.02 | 0.00 |
| 21,000 | 1.44 | 0.50 | 0.63 | 1.85 | 0.35 | 0.00 | 0.00 | 0.43 | 0.02 | 0.00 |
| 22,000 | 1.14 | 0.41 | 0.48 | 7.41 | 0.25 | 0.00 | 0.00 | 0.25 | 0.00 | 0.00 |
| 23,000 | 0.78 | 0.31 | 0.44 | 7.41 | 0.21 | 0.00 | 0.00 | 0.20 | 0.00 | 0.00 |
| 24,000 | 0.42 | 0.35 | 0.38 | 3.70 | 0.18 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 |
| 25,000 | 0.24 | 0.22 | 0.31 | 0.00 | 0.11 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 |
| 26,000 | 0.22 | 0.13 | 0.18 | 0.00 | 0.09 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 |
| 27,000 | 0.04 | 0.07 | 0.06 | 0.00 | 0.07 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 28,000 | 0.09 | 0.04 | 0.02 | 0.00 | 0.05 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 29,000 | 0.09 | 0.02 | 0.02 | 0.00 | 0.04 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 30,000 | 0.04 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 31,000 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 96. Single-axle load distribution factors, Site 285-0243 SB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 3.38 | 3.71 | 0.10 | 1.41 | 14.78 | 1.38 | 0.33 | 0.17 | 0.25 | 0.00 |
| 4000 | 5.34 | 5.60 | 0.28 | 2.82 | 20.05 | 2.48 | 0.33 | 0.78 | 0.75 | 4.88 |
| 5000 | 2.81 | 8.08 | 0.68 | 1.41 | 11.89 | 2.18 | 0.50 | 3.14 | 3.21 | 2.44 |
| 6000 | 4.17 | 11.56 | 2.34 | 1.41 | 7.58 | 2.10 | 1.66 | 3.63 | 6.31 | 7.32 |
| 7000 | 4.87 | 14.23 | 5.78 | 0.00 | 7.53 | 4.86 | 7.13 | 4.83 | 6.63 | 4.88 |
| 8000 | 7.41 | 12.69 | 11.47 | 2.82 | 8.89 | 11.51 | 15.26 | 9.05 | 9.01 | 4.88 |
| 9000 | 8.81 | 10.65 | 18.41 | 1.41 | 8.79 | 19.88 | 22.06 | 13.19 | 11.86 | 9.76 |
| 10,000 | 9.88 | 9.21 | 22.56 | 1.41 | 5.95 | 24.53 | 26.37 | 13.12 | 14.97 | 26.83 |
| 11,000 | 9.05 | 7.04 | 16.07 | 5.63 | 3.69 | 19.05 | 13.93 | 9.83 | 16.26 | 4.88 |
| 12,000 | 8.73 | 4.93 | 6.98 | 7.04 | 2.49 | 6.16 | 7.46 | 9.12 | 11.56 | 31.71 |
| 13,000 | 9.94 | 3.66 | 3.77 | 8.45 | 2.23 | 1.70 | 2.65 | 8.48 | 7.23 | 0.00 |
| 14,000 | 10.88 | 2.56 | 2.69 | 8.45 | 1.81 | 1.54 | 1.66 | 7.14 | 5.07 | 2.44 |
| 15,000 | 6.30 | 1.98 | 2.43 | 7.04 | 1.23 | 1.37 | 0.17 | 5.85 | 3.27 | 0.00 |
| 16,000 | 3.17 | 1.47 | 2.34 | 21.13 | 0.94 | 0.83 | 0.33 | 4.67 | 1.92 | 0.00 |
| 17,000 | 2.36 | 1.01 | 1.60 | 11.27 | 0.72 | 0.29 | 0.00 | 3.42 | 1.06 | 0.00 |
| 18,000 | 1.42 | 0.74 | 1.19 | 9.86 | 0.53 | 0.09 | 0.17 | 2.11 | 0.45 | 0.00 |
| 19,000 | 0.74 | 0.41 | 0.82 | 7.04 | 0.47 | 0.03 | 0.00 | 1.01 | 0.14 | 0.00 |
| 20,000 | 0.340 | 0.21 | 0.30 | 1.41 | 0.19 | 0.01 | 0.00 | 0.36 | 0.02 | 0.00 |
| 21,000 | 0.10 | 0.13 | 0.14 | 0.00 | 0.11 | 0.00 | 0.00 | 0.07 | 0.02 | 0.00 |
| 22,000 | 0.08 | 0.05 | 0.03 | 0.00 | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 23,000 | 0.04 | 0.03 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 24,000 | 0.02 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25,000 | 0.0 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26,000 | 0.0 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.0 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.0 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 97. Single-axle load distribution factors, Site 021-w334 NB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 4.75 | 6.13 | 0.67 | 0.00 | 15.08 | 2.24 | 0.49 | 11.99 | 7.96 | 0.00 |
| 4000 | 9.80 | 9.12 | 1.65 | 1.38 | 16.23 | 2.49 | 1.96 | 14.31 | 10.74 | 5.26 |
| 5000 | 10.91 | 11.72 | 3.34 | 0.00 | 12.96 | 3.73 | 3.27 | 15.33 | 12.94 | 10.53 |
| 6000 | 10.33 | 11.63 | 5.81 | 3.45 | 9.88 | 6.20 | 8.45 | 12.16 | 10.90 | 10.53 |
| 7000 | 8.99 | 10.99 | 8.67 | 2.07 | 8.50 | 9.62 | 12.37 | 10.44 | 8.54 | 0.00 |
| 8000 | 8.32 | 9.91 | 10.68 | 6.90 | 7.46 | 12.81 | 15.53 | 9.06 | 7.92 | 5.26 |
| 9000 | 7.41 | 8.17 | 11.55 | 4.14 | 6.36 | 13.49 | 13.02 | 6.98 | 7.95 | 31.58 |
| 10,000 | 6.72 | 6.82 | 11.40 | 3.45 | 5.31 | 13.03 | 12.37 | 5.21 | 6.74 | 5.26 |
| 11,000 | 6.23 | 5.68 | 11.71 | 8.28 | 4.45 | 12.11 | 9.16 | 3.89 | 6.56 | 5.26 |
| 12,000 | 5.26 | 4.43 | 9.33 | 10.34 | 3.46 | 9.32 | 7.14 | 2.92 | 5.53 | 5.26 |
| 13,000 | 4.42 | 3.41 | 7.56 | 11.03 | 2.53 | 6.65 | 5.23 | 2.21 | 4.12 | 5.26 |
| 14,000 | 3.57 | 2.58 | 5.79 | 8.97 | 1.62 | 4.25 | 4.14 | 1.32 | 3.23 | 10.53 |
| 15,000 | 2.97 | 1.83 | 3.67 | 6.90 | 1.29 | 2.35 | 2.34 | 1.27 | 2.63 | 5.26 |
| 16,000 | 2.43 | 1.58 | 2.21 | 7.59 | 1.00 | 0.97 | 2.56 | 0.86 | 1.73 | 0.00 |
| 17,000 | 2.01 | 1.21 | 1.46 | 3.45 | 0.80 | 0.39 | 1.09 | 0.65 | 1.03 | 0.00 |
| 18,000 | 1.49 | 0.99 | 1.13 | 3.45 | 0.60 | 0.18 | 0.60 | 0.43 | 0.75 | 0.00 |
| 19,000 | 1.17 | 0.83 | 1.12 | 4.83 | 0.53 | 0.09 | 0.27 | 0.36 | 0.39 | 0.00 |
| 20,000 | 0.87 | 0.65 | 0.72 | 2.76 | 0.40 | 0.04 | 0.00 | 0.21 | 0.17 | 0.00 |
| 21,000 | 0.70 | 0.56 | 0.62 | 2.76 | 0.32 | 0.01 | 0.00 | 0.16 | 0.09 | 0.00 |
| 22,000 | 0.61 | 0.52 | 0.38 | 0.69 | 0.33 | 0.01 | 0.00 | 0.12 | 0.04 | 0.00 |
| 23,000 | 0.28 | 0.39 | 0.25 | 1.38 | 0.26 | 0.00 | 0.00 | 0.06 | 0.02 | 0.00 |
| 24,000 | 0.17 | 0.27 | 0.13 | 4.83 | 0.17 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 |
| 25,000 | 0.15 | 0.18 | 0.07 | 0.69 | 0.14 | 0.00 | 0.00 | 0.02 | 0.01 | 0.00 |
| 26,000 | 0.10 | 0.11 | 0.03 | 0.69 | 0.09 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 27,000 | 0.11 | 0.11 | 0.03 | 0.00 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.03 | 0.03 | 0.01 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.01 | 0.04 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.02 | 0.02 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.01 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.0 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.0 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 98. Single-axle load distribution factors, Site 021-w334 SB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 6.23 | 6.55 | 0.26 | 0.00 | 16.25 | 2.23 | 0.28 | 2.44 | 3.36 | 8.62 |
| 4000 | 14.39 | 9.97 | 0.69 | 0.62 | 18.64 | 2.35 | 0.77 | 7.63 | 10.10 | 8.62 |
| 5000 | 11.74 | 13.49 | 1.77 | 1.85 | 12.85 | 2.44 | 1.95 | 8.22 | 19.29 | 8.62 |
| 6000 | 10.81 | 15.40 | 3.54 | 0.00 | 9.49 | 4.42 | 6.72 | 8.66 | 16.14 | 8.62 |
| 7000 | 9.04 | 13.12 | 8.51 | 1.85 | 8.71 | 9.48 | 17.43 | 15.58 | 12.29 | 20.69 |
| 8000 | 9.58 | 11.05 | 16.22 | 3.09 | 9.71 | 18.66 | 26.55 | 19.75 | 15.59 | 15.52 |
| 9000 | 10.43 | 8.80 | 21.24 | 4.32 | 7.25 | 24.21 | 22.48 | 12.45 | 12.61 | 10.34 |
| 10,000 | 6.66 | 6.36 | 18.09 | 9.88 | 4.42 | 20.97 | 14.16 | 7.57 | 6.36 | 12.07 |
| 11,000 | 5.79 | 4.16 | 9.40 | 15.43 | 2.99 | 9.27 | 5.53 | 5.43 | 2.28 | 1.72 |
| 12,000 | 5.12 | 3.06 | 5.46 | 8.02 | 2.42 | 2.41 | 2.47 | 3.93 | 1.15 | 3.45 |
| 13,000 | 3.53 | 2.30 | 5.10 | 9.88 | 1.90 | 1.43 | 1.04 | 2.58 | 0.33 | 0.00 |
| 14,000 | 2.33 | 1.68 | 3.94 | 13.58 | 1.60 | 0.97 | 0.42 | 2.20 | 0.24 | 1.72 |
| 15,000 | 1.58 | 1.43 | 2.48 | 19.75 | 1.26 | 0.57 | 0.21 | 1.79 | 0.10 | 0.00 |
| 16,000 | 1.18 | 1.06 | 1.55 | 6.17 | 0.95 | 0.30 | 0.00 | 1.02 | 0.09 | 0.00 |
| 17,000 | 0.82 | 0.64 | 0.82 | 4.32 | 0.65 | 0.15 | 0.00 | 0.47 | 0.01 | 0.00 |
| 18,000 | 0.36 | 0.37 | 0.52 | 0.62 | 0.42 | 0.06 | 0.00 | 0.18 | 0.03 | 0.00 |
| 19,000 | 0.19 | 0.27 | 0.29 | 0.00 | 0.18 | 0.04 | 0.00 | 0.04 | 0.00 | 0.00 |
| 20,000 | 0.10 | 0.14 | 0.08 | 0.00 | 0.10 | 0.01 | 0.00 | 0.02 | 0.01 | 0.00 |
| 21,000 | 0.01 | 0.07 | 0.03 | 0.62 | 0.07 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22,000 | 0.01 | 0.05 | 0.01 | 0.00 | 0.05 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 23,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 99. Single-axle load distribution factors, Site 127-0312 NB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 2.93 | 6.62 | 0.27 | 0.90 | 14.91 | 0.95 | 0.55 | 0.36 | 0.42 | 2.44 |
| 4000 | 14.39 | 10.20 | 0.73 | 0.90 | 20.41 | 2.33 | 1.84 | 1.54 | 1.92 | 3.88 |
| 5000 | 4.05 | 10.72 | 1.35 | 1.35 | 16.75 | 3.83 | 2.68 | 5.91 | 6.59 | 5.03 |
| 6000 | 3.03 | 10.54 | 2.88 | 1.35 | 9.68 | 3.57 | 3.29 | 12.07 | 14.35 | 4.17 |
| 7000 | 5.32 | 11.94 | 4.87 | 0.00 | 7.43 | 5.03 | 6.42 | 6.51 | 11.21 | 4.45 |
| 8000 | 8.53 | 10.31 | 8.18 | 3.60 | 6.24 | 7.52 | 10.28 | 8.12 | 8.13 | 8.76 |
| 9000 | 10.86 | 8.25 | 14.93 | 4.95 | 6.17 | 13.05 | 16.26 | 14.72 | 9.16 | 8.05 |
| 10,000 | 11.41 | 7.16 | 24.42 | 6.76 | 4.90 | 25.71 | 23.02 | 14.54 | 10.13 | 22.56 |
| 11,000 | 8.74 | 6.10 | 22.71 | 10.81 | 3.32 | 26.76 | 20.65 | 8.74 | 10.45 | 16.95 |
| 12,000 | 7.53 | 4.79 | 7.23 | 8.11 | 2.18 | 6.19 | 7.94 | 6.47 | 9.36 | 11.49 |
| 13,000 | 6.57 | 3.86 | 3.91 | 9.91 | 1.81 | 1.32 | 3.28 | 5.60 | 8.26 | 8.05 |
| 14,000 | 4.45 | 2.82 | 2.89 | 12.16 | 1.44 | 0.97 | 2.15 | 4.58 | 5.11 | 2.73 |
| 15,000 | 2.76 | 2.05 | 1.97 | 8.56 | 1.17 | 1.08 | 0.98 | 3.71 | 2.65 | 0.72 |
| 16,000 | 2.07 | 1.48 | 1.44 | 7.66 | 0.97 | 1.07 | 0.44 | 2.78 | 1.39 | 0.14 |
| 17,000 | 1.59 | 1.03 | 0.92 | 8.56 | 0.78 | 0.48 | 0.15 | 1.85 | 0.60 | 0.43 |
| 18,000 | 1.42 | 0.74 | 0.54 | 7.21 | 0.60 | 0.11 | 0.03 | 1.20 | 0.19 | 0.00 |
| 19,000 | 1.18 | 0.53 | 0.32 | 4.05 | 0.46 | 0.02 | 0.01 | 0.73 | 0.06 | 0.14 |
| 20,000 | 0.75 | 0.33 | 0.22 | 2.25 | 0.30 | 0.01 | 0.00 | 0.35 | 0.02 | 0.00 |
| 21,000 | 0.43 | 0.20 | 0.11 | 0.90 | 0.17 | 0.00 | 0.01 | 0.15 | 0.01 | 0.00 |
| 22,000 | 0.39 | 0.11 | 0.04 | 0.00 | 0.11 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 |
| 23,000 | 0.25 | 0.07 | 0.03 | 0.00 | 0.07 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 24,000 | 0.14 | 0.04 | 0.01 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25,000 | 0.17 | 0.03 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26,000 | 0.16 | 0.02 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.16 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.11 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.08 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.06 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 100. Single-axle load distribution factors, Site 127-0312 SB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 7.58 | 6.88 | 0.46 | 6.16 | 16.44 | 0.89 | 0.49 | 0.18 | 0.36 | 7.95 |
| 4000 | 16.88 | 11.73 | 1.11 | 2.90 | 19.73 | 1.51 | 1.65 | 0.69 | 1.55 | 12.77 |
| 5000 | 14.31 | 14.36 | 2.32 | 1.09 | 13.95 | 1.72 | 1.60 | 1.74 | 4.13 | 10.12 |
| 6000 | 8.13 | 12.81 | 4.61 | 1.45 | 9.77 | 3.21 | 4.26 | 3.80 | 7.05 | 6.99 |
| 7000 | 7.11 | 10.89 | 9.99 | 1.45 | 8.01 | 8.58 | 11.70 | 7.84 | 10.46 | 11.57 |
| 8000 | 6.75 | 9.69 | 16.26 | 3.99 | 7.04 | 17.42 | 19.20 | 12.95 | 14.02 | 15.18 |
| 9000 | 5.43 | 7.44 | 17.64 | 5.80 | 5.63 | 22.36 | 20.92 | 14.28 | 15.61 | 12.53 |
| 10,000 | 5.20 | 5.67 | 13.49 | 3.99 | 4.34 | 18.90 | 17.62 | 11.97 | 14.78 | 10.60 |
| 11,000 | 5.34 | 4.65 | 9.13 | 7.25 | 3.39 | 11.35 | 10.01 | 10.11 | 11.91 | 2.89 |
| 12,000 | 4.91 | 3.59 | 6.57 | 8.33 | 2.66 | 5.61 | 6.07 | 8.45 | 8.09 | 4.34 |
| 13,000 | 4.15 | 2.88 | 5.11 | 9.42 | 2.14 | 3.30 | 2.59 | 7.28 | 5.20 | 1.93 |
| 14,000 | 3.17 | 2.19 | 3.73 | 9.78 | 1.70 | 2.11 | 1.65 | 5.99 | 3.08 | 0.24 |
| 15,000 | 2.77 | 1.67 | 2.83 | 7.97 | 1.32 | 1.40 | 1.20 | 4.63 | 1.79 | 1.20 |
| 16,000 | 2.45 | 1.40 | 2.18 | 10.51 | 1.08 | 0.89 | 0.49 | 3.77 | 1.02 | 0.72 |
| 17,000 | 1.65 | 1.02 | 1.50 | 3.99 | 0.81 | 0.45 | 0.19 | 2.40 | 0.47 | 0.72 |
| 18,000 | 1.36 | 0.77 | 1.02 | 6.52 | 0.59 | 0.20 | 0.09 | 1.72 | 0.23 | 0.00 |
| 19,000 | 0.77 | 0.56 | 0.60 | 2.90 | 0.48 | 0.08 | 0.11 | 1.01 | 0.11 | 0.00 |
| 20,000 | 0.57 | 0.40 | 0.45 | 1.09 | 0.29 | 0.03 | 0.11 | 0.59 | 0.06 | 0.00 |
| 21,000 | 0.39 | 0.29 | 0.29 | 1.81 | 0.18 | 0.01 | 0.04 | 0.31 | 0.03 | 0.00 |
| 22,000 | 0.27 | 0.21 | 0.20 | 1.09 | 0.14 | 0.00 | 0.00 | 0.15 | 0.02 | 0.00 |
| 23,000 | 0.21 | 0.18 | 0.13 | 0.72 | 0.08 | 0.00 | 0.00 | 0.09 | 0.02 | 0.00 |
| 24,000 | 0.17 | 0.11 | 0.10 | 0.72 | 0.07 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 25,000 | 0.08 | 0.10 | 0.09 | 0.00 | 0.05 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
| 26,000 | 0.03 | 0.07 | 0.06 | 0.36 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.24 |
| 27,000 | 0.03 | 0.07 | 0.03 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.06 | 0.05 | 0.01 | 0.36 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.02 | 0.04 | 0.03 | 0.00 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.02 | 0.03 | 0.02 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.02 | 0.03 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 101. Single-axle load distribution factors, Site 051-0387 NB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 3.65 | 4.27 | 0.11 | 0.33 | 15.16 | 0.81 | 0.60 | 0.32 | 0.26 | 5.94 |
| 4000 | 7.63 | 5.66 | 0.28 | 0.50 | 18.85 | 1.54 | 1.13 | 2.75 | 1.87 | 8.90 |
| 5000 | 9.62 | 7.92 | 0.74 | 2.00 | 15.96 | 1.99 | 1.71 | 3.91 | 4.52 | 6.39 |
| 6000 | 7.85 | 9.26 | 1.88 | 2.00 | 10.31 | 2.32 | 5.57 | 8.20 | 8.01 | 9.93 |
| 7000 | 7.09 | 10.95 | 5.10 | 3.33 | 7.41 | 5.90 | 15.80 | 11.10 | 10.69 | 23.63 |
| 8000 | 7.48 | 10.79 | 8.78 | 3.66 | 5.58 | 13.49 | 16.79 | 9.33 | 11.43 | 15.64 |
| 9000 | 6.72 | 9.28 | 8.15 | 4.49 | 4.85 | 10.04 | 8.54 | 11.45 | 12.16 | 5.71 |
| 10,000 | 6.68 | 8.25 | 12.25 | 4.16 | 4.38 | 13.25 | 10.55 | 12.18 | 11.85 | 4.79 |
| 11,000 | 6.86 | 7.14 | 15.16 | 6.32 | 3.77 | 18.83 | 12.10 | 9.66 | 11.46 | 6.74 |
| 12,000 | 6.60 | 5.95 | 12.14 | 8.82 | 2.97 | 12.20 | 9.20 | 8.02 | 9.95 | 5.82 |
| 13,000 | 6.26 | 4.95 | 10.04 | 9.32 | 2.36 | 8.34 | 7.16 | 6.34 | 7.91 | 4.22 |
| 14,000 | 4.67 | 3.79 | 7.43 | 9.32 | 1.82 | 5.55 | 4.64 | 4.89 | 4.84 | 1.03 |
| 15,000 | 3.85 | 2.77 | 4.76 | 8.82 | 1.35 | 3.10 | 2.88 | 3.72 | 2.69 | 0.46 |
| 16,000 | 3.43 | 2.34 | 3.63 | 5.66 | 1.08 | 1.85 | 1.53 | 2.81 | 1.28 | 0.68 |
| 17,000 | 2.87 | 1.73 | 2.57 | 3.66 | 0.91 | 0.61 | 0.91 | 1.99 | 0.55 | 0.11 |
| 18,000 | 2.29 | 1.44 | 1.81 | 4.99 | 0.71 | 0.14 | 0.49 | 1.41 | 0.26 | 0.00 |
| 19,000 | 1.71 | 1.09 | 1.48 | 3.49 | 0.63 | 0.04 | 0.23 | 0.90 | 0.13 | 0.00 |
| 20,000 | 1.26 | 0.75 | 1.11 | 4.49 | 0.50 | 0.01 | 0.12 | 0.51 | 0.07 | 0.00 |
| 21,000 | 1.00 | 0.50 | 0.82 | 5.16 | 0.41 | 0.00 | 0.04 | 0.28 | 0.03 | 0.00 |
| 22,000 | 0.89 | 0.40 | 0.68 | 3.33 | 0.34 | 0.00 | 0.02 | 0.12 | 0.02 | 0.00 |
| 23,000 | 0.65 | 0.25 | 0.36 | 2.33 | 0.28 | 0.00 | 0.00 | 0.06 | 0.01 | 0.00 |
| 24,000 | 0.40 | 0.16 | 0.32 | 0.83 | 0.19 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 25,000 | 0.23 | 0.10 | 0.16 | 1.16 | 0.12 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 26,000 | 0.11 | 0.05 | 0.11 | 1.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.04 | 0.03 | 0.06 | 0.33 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.00 | 0.02 | 0.02 | 0.50 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.01 | 0.01 | 0.04 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 102. Single-axle load distribution factors, Site 051-0387 SB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 1.78 | 3.83 | 0.38 | 1.09 | 15.72 | 0.39 | 0.38 | 0.11 | 0.19 | 1.66 |
| 4000 | 11.06 | 6.52 | 0.88 | 0.55 | 21.65 | 1.06 | 1.90 | 0.34 | 0.67 | 2.73 |
| 5000 | 8.88 | 6.44 | 1.38 | 0.82 | 15.34 | 1.81 | 2.12 | 0.79 | 1.92 | 3.99 |
| 6000 | 6.40 | 8.37 | 1.15 | 0.82 | 8.39 | 1.75 | 1.08 | 2.31 | 6.62 | 8.18 |
| 7000 | 5.40 | 12.67 | 1.99 | 0.82 | 6.16 | 1.82 | 1.59 | 2.82 | 8.11 | 8.86 |
| 8000 | 7.32 | 12.25 | 4.48 | 2.46 | 5.30 | 3.09 | 5.14 | 4.14 | 7.04 | 14.51 |
| 9000 | 8.50 | 10.19 | 10.34 | 4.92 | 6.03 | 8.49 | 13.10 | 11.24 | 8.00 | 13.05 |
| 10,000 | 8.53 | 8.75 | 18.32 | 3.83 | 5.50 | 23.02 | 23.11 | 14.82 | 10.65 | 15.48 |
| 11,000 | 7.31 | 7.31 | 19.87 | 5.19 | 3.98 | 31.60 | 23.26 | 11.43 | 13.51 | 12.27 |
| 12,000 | 6.12 | 5.67 | 12.19 | 9.02 | 2.67 | 14.26 | 13.20 | 9.98 | 14.96 | 8.57 |
| 13,000 | 5.83 | 4.62 | 7.99 | 7.65 | 2.03 | 4.94 | 6.77 | 9.94 | 13.64 | 4.19 |
| 14,000 | 5.13 | 3.63 | 5.78 | 7.38 | 1.61 | 2.90 | 3.76 | 8.89 | 8.07 | 1.85 |
| 15,000 | 4.44 | 2.85 | 4.25 | 10.11 | 1.27 | 2.47 | 2.25 | 7.70 | 3.93 | 0.78 |
| 16,000 | 3.62 | 2.29 | 3.00 | 9.56 | 1.08 | 1.63 | 1.28 | 6.07 | 1.64 | 1.66 |
| 17,000 | 2.85 | 1.55 | 2.24 | 8.20 | 0.86 | 0.57 | 0.59 | 4.31 | 0.64 | 1.56 |
| 18,000 | 2.11 | 1.05 | 1.79 | 7.92 | 0.67 | 0.15 | 0.18 | 2.61 | 0.26 | 0.19 |
| 19,000 | 1.60 | 0.73 | 1.43 | 6.83 | 0.54 | 0.04 | 0.14 | 1.47 | 0.10 | 0.19 |
| 20,000 | 1.04 | 0.43 | 1.09 | 4.92 | 0.38 | 0.01 | 0.08 | 0.63 | 0.03 | 0.10 |
| 21,000 | 0.70 | 0.30 | 0.68 | 2.73 | 0.27 | 0.00 | 0.07 | 0.27 | 0.01 | 0.10 |
| 22,000 | 0.45 | 0.17 | 0.41 | 2.19 | 0.20 | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 |
| 23,000 | 0.32 | 0.10 | 0.18 | 1.91 | 0.13 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
| 24,000 | 0.17 | 0.07 | 0.07 | 0.55 | 0.08 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 25,000 | 0.15 | 0.03 | 0.04 | 0.27 | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 26,000 | 0.08 | 0.02 | 0.02 | 0.27 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.04 | 0.01 | 0.02 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 |
| 32,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 1.09 | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 |

Table 103. Single-axle load distribution factors, Site 217-0218 EB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 3.21 | 10.43 | 4.40 | 3.67 | 18.32 | 23.83 | 26.91 | 14.51 | 13.46 | 5.54 |
| 4000 | 4.19 | 14.76 | 7.25 | 7.33 | 19.79 | 8.74 | 10.72 | 9.96 | 13.92 | 6.64 |
| 5000 | 5.05 | 13.99 | 6.83 | 8.31 | 15.53 | 4.89 | 3.73 | 8.01 | 6.11 | 2.82 |
| 6000 | 7.27 | 12.45 | 5.72 | 17.11 | 11.04 | 4.55 | 4.85 | 7.62 | 5.38 | 4.23 |
| 7000 | 10.12 | 9.95 | 5.23 | 3.42 | 5.96 | 5.72 | 3.69 | 3.41 | 6.05 | 5.49 |
| 8000 | 10.48 | 8.57 | 3.98 | 1.96 | 4.46 | 2.05 | 2.88 | 3.59 | 6.17 | 4.44 |
| 9000 | 9.67 | 6.52 | 6.97 | 1.47 | 5.18 | 4.63 | 6.82 | 8.00 | 5.71 | 2.77 |
| 10,000 | 9.37 | 4.62 | 10.14 | 1.47 | 4.43 | 10.58 | 10.07 | 9.39 | 6.78 | 2.51 |
| 11,000 | 8.56 | 3.86 | 12.02 | 3.91 | 3.47 | 15.03 | 10.49 | 6.26 | 9.60 | 4.44 |
| 12,000 | 6.74 | 3.14 | 6.96 | 2.44 | 2.94 | 5.66 | 6.26 | 6.16 | 9.32 | 10.61 |
| 13,000 | 6.05 | 2.34 | 7.09 | 4.65 | 2.60 | 3.74 | 4.64 | 6.24 | 7.79 | 10.92 |
| 14,000 | 4.92 | 1.70 | 7.29 | 4.65 | 1.77 | 5.13 | 4.62 | 5.39 | 4.78 | 16.20 |
| 15,000 | 3.72 | 1.43 | 5.21 | 5.38 | 1.32 | 3.86 | 3.09 | 4.37 | 2.77 | 12.28 |
| 16,000 | 3.03 | 1.34 | 2.89 | 3.91 | 0.93 | 1.20 | 0.66 | 3.29 | 1.48 | 5.54 |
| 17,000 | 2.18 | 1.29 | 2.13 | 6.60 | 0.64 | 0.27 | 0.34 | 2.09 | 0.52 | 1.52 |
| 18,000 | 1.63 | 0.89 | 1.47 | 8.80 | 0.45 | 0.08 | 0.16 | 1.03 | 0.13 | 0.84 |
| 19,000 | 1.19 | 0.61 | 1.10 | 6.36 | 0.36 | 0.03 | 0.05 | 0.38 | 0.03 | 0.99 |
| 20,000 | 0.82 | 0.47 | 0.86 | 1.71 | 0.26 | 0.01 | 0.03 | 0.15 | 0.00 | 0.31 |
| 21,000 | 0.66 | 0.41 | 0.70 | 2.20 | 0.20 | 0.00 | 0.00 | 0.08 | 0.00 | 0.73 |
| 22,000 | 0.42 | 0.35 | 0.66 | 0.98 | 0.15 | 0.00 | 0.00 | 0.05 | 0.00 | 0.16 |
| 23,000 | 0.27 | 0.36 | 0.53 | 1.22 | 0.10 | 0.00 | 0.00 | 0.01 | 0.00 | 0.05 |
| 24,000 | 0.15 | 0.21 | 0.32 | 1.96 | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.10 |
| 25,000 | 0.11 | 0.17 | 0.16 | 0.49 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 |
| 26,000 | 0.05 | 0.09 | 0.06 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.47 |
| 27,000 | 0.07 | 0.03 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 |
| 28,000 | 0.03 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.31 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 104. Single-axle load distribution factors, Site 217-0218 WB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 3.21 | 10.43 | 4.40 | 3.67 | 18.32 | 1.50 | 26.91 | 14.51 | 13.46 | 5.54 |
| 4000 | 4.19 | 14.76 | 7.25 | 7.33 | 19.79 | 2.88 | 10.72 | 9.96 | 13.92 | 6.64 |
| 5000 | 5.05 | 13.99 | 6.83 | 8.31 | 15.53 | 5.68 | 3.73 | 8.01 | 6.11 | 2.82 |
| 6000 | 7.27 | 12.45 | 5.72 | 17.11 | 11.04 | 8.89 | 4.85 | 7.62 | 5.38 | 4.23 |
| 7000 | 10.12 | 9.95 | 5.23 | 3.42 | 5.96 | 9.33 | 3.69 | 3.41 | 6.05 | 5.49 |
| 8000 | 10.48 | 8.57 | 3.98 | 1.96 | 4.46 | 11.89 | 2.88 | 3.59 | 6.17 | 4.44 |
| 9000 | 9.67 | 6.52 | 6.97 | 1.47 | 5.18 | 12.30 | 6.82 | 8.00 | 5.71 | 2.77 |
| 10,000 | 9.37 | 4.62 | 10.14 | 1.47 | 4.43 | 12.91 | 10.07 | 9.39 | 6.78 | 2.51 |
| 11,000 | 8.56 | 3.86 | 12.02 | 3.91 | 3.47 | 9.70 | 10.49 | 6.26 | 9.60 | 4.44 |
| 12,000 | 6.74 | 3.14 | 6.96 | 2.44 | 2.94 | 8.73 | 6.26 | 6.16 | 9.32 | 10.61 |
| 13,000 | 6.05 | 2.34 | 7.09 | 4.65 | 2.60 | 5.28 | 4.64 | 6.24 | 7.79 | 10.92 |
| 14,000 | 4.92 | 1.70 | 7.29 | 4.65 | 1.77 | 3.94 | 4.62 | 5.39 | 4.78 | 16.20 |
| 15,000 | 3.72 | 1.43 | 5.21 | 5.38 | 1.32 | 2.44 | 3.09 | 4.37 | 2.77 | 12.28 |
| 16,000 | 3.03 | 1.34 | 2.89 | 3.91 | 0.93 | 2.03 | 0.66 | 3.29 | 1.48 | 5.54 |
| 17,000 | 2.18 | 1.29 | 2.13 | 6.60 | 0.64 | 1.01 | 0.34 | 2.09 | 0.52 | 1.52 |
| 18,000 | 1.63 | 0.89 | 1.47 | 8.80 | 0.45 | 0.89 | 0.16 | 1.03 | 0.13 | 0.84 |
| 19,000 | 1.19 | 0.61 | 1.10 | 6.36 | 0.36 | 0.28 | 0.05 | 0.38 | 0.03 | 0.99 |
| 20,000 | 0.82 | 0.47 | 0.86 | 1.71 | 0.26 | 0.20 | 0.03 | 0.15 | 0.00 | 0.31 |
| 21,000 | 0.66 | 0.41 | 0.70 | 2.20 | 0.20 | 0.12 | 0.00 | 0.08 | 0.00 | 0.73 |
| 22,000 | 0.42 | 0.35 | 0.66 | 0.98 | 0.15 | 0.00 | 0.00 | 0.05 | 0.00 | 0.16 |
| 23,000 | 0.27 | 0.36 | 0.53 | 1.22 | 0.10 | 0.00 | 0.00 | 0.01 | 0.00 | 0.05 |
| 24,000 | 0.15 | 0.21 | 0.32 | 1.96 | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.10 |
| 25,000 | 0.11 | 0.17 | 0.16 | 0.49 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 |
| 26,000 | 0.05 | 0.09 | 0.06 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.47 |
| 27,000 | 0.07 | 0.03 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 |
| 28,000 | 0.03 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.31 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 105. Single-axle load distribution factors, Site 051-0368 EB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 0.33 | 1.62 | 0.00 | 7.14 | 24.22 | 2.63 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4000 | 1.40 | 3.88 | 0.00 | 7.14 | 6.95 | 4.83 | 0.00 | 0.60 | 5.13 | 0.00 |
| 5000 | 3.66 | 6.50 | 0.00 | 0.00 | 8.74 | 5.15 | 0.24 | 4.48 | 7.69 | 0.00 |
| 6000 | 7.72 | 9.30 | 0.72 | 0.00 | 2.91 | 2.10 | 0.95 | 8.36 | 25.64 | 0.00 |
| 7000 | 16.77 | 15.43 | 1.43 | 14.29 | 7.17 | 1.89 | 1.19 | 5.07 | 15.38 | 0.00 |
| 8000 | 13.64 | 13.00 | 4.65 | 0.00 | 7.40 | 5.88 | 1.90 | 5.37 | 7.69 | 0.00 |
| 9000 | 8.06 | 8.84 | 9.30 | 0.00 | 8.97 | 13.66 | 8.57 | 12.24 | 5.13 | 0.00 |
| 10,000 | 7.50 | 6.50 | 16.82 | 7.14 | 8.74 | 25.63 | 17.38 | 18.21 | 5.13 | 50.00 |
| 11,000 | 7.39 | 7.94 | 18.43 | 14.29 | 5.61 | 22.58 | 25.95 | 8.66 | 5.13 | 25.00 |
| 12,000 | 7.06 | 4.42 | 15.38 | 0.00 | 2.02 | 7.35 | 21.67 | 8.96 | 10.26 | 25.00 |
| 13,000 | 8.69 | 5.60 | 10.73 | 0.00 | 3.14 | 2.21 | 9.76 | 5.97 | 5.13 | 0.00 |
| 14,000 | 5.70 | 4.87 | 7.69 | 7.14 | 2.47 | 1.05 | 5.00 | 6.87 | 0.00 | 0.00 |
| 15,000 | 5.08 | 3.25 | 5.37 | 0.00 | 2.02 | 1.47 | 3.57 | 3.88 | 5.13 | 0.00 |
| 16,000 | 3.00 | 1.99 | 2.50 | 7.14 | 2.02 | 1.58 | 2.62 | 3.28 | 2.56 | 0.00 |
| 17,000 | 1.42 | 1.53 | 1.25 | 0.00 | 2.02 | 0.95 | 0.95 | 3.88 | 0.00 | 0.00 |
| 18,000 | 0.90 | 2.17 | 1.25 | 7.14 | 2.02 | 0.84 | 0.24 | 2.69 | 0.00 | 0.00 |
| 19,000 | 0.70 | 1.26 | 1.25 | 7.14 | 0.67 | 0.21 | 0.00 | 1.19 | 0.00 | 0.00 |
| 20,000 | 0.33 | 0.54 | 0.54 | 14.29 | 0.67 | 0.00 | 0.00 | 0.30 | 0.00 | 0.00 |
| 21,000 | 0.26 | 0.54 | 0.54 | 7.14 | 0.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22,000 | 0.13 | 0.27 | 0.36 | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23,000 | 0.09 | 0.09 | 0.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24,000 | 0.04 | 0.27 | 0.36 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25,000 | 0.04 | 0.00 | 0.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26,000 | 0.03 | 0.09 | 0.00 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.01 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.01 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 106. Single-axle load distribution factors, Site 051-0368 WB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 0.00 | 0.61 | 0.00 | 0.00 | 44.07 | 0.84 | 0.00 | 9.09 | 0.00 | 70.27 |
| 4000 | 0.28 | 0.00 | 0.00 | 0.00 | 31.23 | 2.11 | 0.00 | 0.00 | 11.11 | 2.70 |
| 5000 | 0.39 | 8.54 | 0.00 | 0.00 | 13.44 | 2.11 | 2.00 | 0.00 | 77.78 | 18.92 |
| 6000 | 0.76 | 20.73 | 2.41 | 0.00 | 4.15 | 0.42 | 0.00 | 0.00 | 11.11 | 0.00 |
| 7000 | 2.05 | 32.93 | 2.41 | 0.00 | 1.78 | 2.11 | 2.00 | 9.09 | 0.00 | 0.00 |
| 8000 | 5.62 | 26.22 | 21.69 | 0.00 | 1.58 | 10.55 | 8.00 | 18.18 | 0.00 | 0.00 |
| 9000 | 9.25 | 4.88 | 28.92 | 0.00 | 0.79 | 26.58 | 20.00 | 36.36 | 0.00 | 2.70 |
| 10,000 | 10.72 | 3.05 | 26.51 | 0.00 | 2.17 | 32.91 | 31.00 | 18.18 | 0.00 | 5.41 |
| 11,000 | 9.80 | 1.83 | 14.46 | 50.00 | 0.40 | 18.14 | 29.00 | 9.09 | 0.00 | 0.00 |
| 12,000 | 7.21 | 0.61 | 3.61 | 50.00 | 0.40 | 3.80 | 7.00 | 0.00 | 0.00 | 0.00 |
| 13,000 | 6.25 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| 14,000 | 6.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15,000 | 5.37 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16,000 | 4.89 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17,000 | 5.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18,000 | 5.49 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19,000 | 4.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.42 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20,000 | 4.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21,000 | 2.79 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22,000 | 2.37 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23,000 | 2.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24,000 | 1.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25,000 | 0.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26,000 | 0.37 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 107. Single-axle load distribution factors, Site 143-0126 EB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 3.72 | 5.03 | 0.87 | 7.67 | 8.94 | 1.50 | 0.35 | 0.30 | 0.62 | 13.18 |
| 4000 | 5.81 | 8.15 | 1.41 | 11.08 | 12.04 | 2.88 | 0.41 | 1.31 | 2.73 | 16.40 |
| 5000 | 5.13 | 10.15 | 1.94 | 7.67 | 11.63 | 5.68 | 0.97 | 4.12 | 8.44 | 11.90 |
| 6000 | 4.59 | 11.70 | 2.86 | 5.11 | 9.04 | 8.89 | 1.19 | 3.71 | 8.86 | 11.58 |
| 7000 | 4.74 | 11.19 | 5.86 | 5.97 | 9.07 | 9.33 | 4.55 | 5.37 | 7.53 | 7.40 |
| 8000 | 5.74 | 9.89 | 11.10 | 6.82 | 10.36 | 11.89 | 11.62 | 10.82 | 9.25 | 7.07 |
| 9000 | 6.86 | 8.44 | 16.55 | 6.53 | 9.21 | 12.30 | 22.67 | 14.43 | 11.25 | 8.68 |
| 10,000 | 6.77 | 6.95 | 17.66 | 4.26 | 6.89 | 12.91 | 23.33 | 12.52 | 13.28 | 5.14 |
| 11,000 | 6.45 | 5.55 | 11.56 | 3.41 | 5.40 | 9.70 | 14.54 | 10.05 | 13.66 | 8.04 |
| 12,000 | 6.90 | 3.95 | 6.35 | 4.55 | 3.89 | 8.73 | 8.89 | 8.07 | 10.54 | 7.07 |
| 13,000 | 7.79 | 3.30 | 4.29 | 5.11 | 2.94 | 5.28 | 4.40 | 7.26 | 6.69 | 0.64 |
| 14,000 | 7.60 | 2.82 | 3.57 | 5.68 | 2.24 | 3.94 | 2.61 | 6.10 | 3.38 | 0.96 |
| 15,000 | 5.61 | 2.45 | 3.00 | 4.83 | 1.88 | 2.44 | 1.35 | 5.10 | 1.93 | 0.32 |
| 16,000 | 4.45 | 2.10 | 2.51 | 5.97 | 1.56 | 2.03 | 1.00 | 4.11 | 0.98 | 0.32 |
| 17,000 | 3.67 | 1.77 | 2.15 | 5.11 | 1.28 | 1.01 | 0.66 | 2.92 | 0.50 | 0.64 |
| 18,000 | 3.10 | 1.56 | 1.75 | 2.84 | 1.03 | 0.89 | 0.41 | 1.83 | 0.21 | 0.32 |
| 19,000 | 2.65 | 1.27 | 1.51 | 2.84 | 0.77 | 0.28 | 0.35 | 1.09 | 0.11 | 0.00 |
| 20,000 | 2.10 | 0.99 | 1.33 | 1.14 | 0.56 | 0.20 | 0.19 | 0.51 | 0.04 | 0.00 |
| 21,000 | 1.42 | 0.76 | 1.00 | 1.42 | 0.39 | 0.12 | 0.22 | 0.22 | 0.01 | 0.00 |
| 22,000 | 1.28 | 0.54 | 0.81 | 0.57 | 0.27 | 0.00 | 0.19 | 0.10 | 0.00 | 0.00 |
| 23,000 | 0.99 | 0.41 | 0.64 | 0.28 | 0.19 | 0.00 | 0.13 | 0.03 | 0.00 | 0.00 |
| 24,000 | 0.82 | 0.31 | 0.46 | 0.28 | 0.13 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 25,000 | 0.71 | 0.22 | 0.30 | 0.57 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26,000 | 0.40 | 0.16 | 0.21 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.24 | 0.11 | 0.12 | 0.28 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.10 | 0.06 | 0.06 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.13 | 0.05 | 0.04 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.32 |
| 30,000 | 0.06 | 0.04 | 0.04 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.04 | 0.02 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.03 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.03 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 108. Single-axle load distribution factors, Site 143-0126 WB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 0.31 | 1.74 | 0.16 | 1.34 | 7.81 | 1.50 | 0.10 | 0.63 | 0.98 | 8.27 |
| 4000 | 1.23 | 4.46 | 0.56 | 1.34 | 12.49 | 2.88 | 0.23 | 1.80 | 2.89 | 8.01 |
| 5000 | 3.72 | 7.64 | 1.80 | 2.34 | 16.90 | 5.68 | 1.44 | 4.30 | 7.11 | 12.92 |
| 6000 | 5.55 | 12.72 | 4.07 | 3.34 | 16.52 | 8.89 | 3.81 | 8.24 | 13.07 | 10.34 |
| 7000 | 6.66 | 17.73 | 5.45 | 2.34 | 11.78 | 9.33 | 5.35 | 13.35 | 22.19 | 4.91 |
| 8000 | 9.83 | 18.36 | 9.56 | 3.34 | 9.32 | 11.89 | 8.48 | 17.72 | 26.87 | 4.91 |
| 9000 | 11.84 | 13.84 | 18.10 | 8.70 | 9.37 | 12.30 | 18.03 | 20.85 | 16.62 | 17.31 |
| 10,000 | 16.03 | 9.11 | 25.14 | 15.72 | 7.40 | 12.91 | 26.98 | 19.11 | 6.67 | 19.12 |
| 11,000 | 17.74 | 5.35 | 16.13 | 21.40 | 4.20 | 9.70 | 19.44 | 9.77 | 2.05 | 10.08 |
| 12,000 | 10.96 | 2.59 | 8.17 | 17.73 | 1.47 | 8.73 | 9.95 | 2.65 | 0.61 | 3.36 |
| 13,000 | 5.20 | 1.38 | 3.25 | 12.04 | 0.64 | 5.28 | 3.65 | 0.59 | 0.36 | 0.26 |
| 14,000 | 2.01 | 0.85 | 1.51 | 3.34 | 0.42 | 3.94 | 1.04 | 0.27 | 0.28 | 0.26 |
| 15,000 | 1.12 | 0.67 | 1.03 | 3.01 | 0.33 | 2.44 | 0.39 | 0.23 | 0.18 | 0.26 |
| 16,000 | 0.90 | 0.60 | 1.02 | 0.67 | 0.27 | 2.03 | 0.36 | 0.17 | 0.08 | 0.00 |
| 17,000 | 0.92 | 0.47 | 0.95 | 0.67 | 0.24 | 1.01 | 0.29 | 0.12 | 0.03 | 0.00 |
| 18,000 | 0.77 | 0.45 | 0.76 | 0.33 | 0.18 | 0.89 | 0.19 | 0.08 | 0.01 | 0.00 |
| 19,000 | 0.74 | 0.34 | 0.66 | 1.00 | 0.15 | 0.28 | 0.14 | 0.06 | 0.00 | 0.00 |
| 20,000 | 0.72 | 0.32 | 0.51 | 0.00 | 0.10 | 0.20 | 0.01 | 0.03 | 0.00 | 0.00 |
| 21,000 | 0.88 | 0.26 | 0.41 | 0.00 | 0.10 | 0.12 | 0.07 | 0.02 | 0.00 | 0.00 |
| 22,000 | 0.67 | 0.22 | 0.31 | 0.33 | 0.07 | 0.00 | 0.03 | 0.01 | 0.00 | 0.00 |
| 23,000 | 0.66 | 0.21 | 0.20 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24,000 | 0.53 | 0.17 | 0.12 | 0.33 | 0.04 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| 25,000 | 0.37 | 0.12 | 0.05 | 0.67 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26,000 | 0.17 | 0.09 | 0.03 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.10 | 0.07 | 0.03 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.10 | 0.07 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.08 | 0.05 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.05 | 0.03 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.05 | 0.03 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.02 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.03 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 109. Single-axle load distribution factors, Site 245-0218 EB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|------|------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 1.49 | 8.61 | 0.97 | 0.53 | 17.24 | 2.16 | 1.50 | 3.90 | 6.46 | 5.73 |
| 4000 | 3.73 | 12.28 | 2.20 | 0.81 | 20.20 | 3.66 | 2.88 | 5.81 | 8.20 | 7.48 |
| 5000 | 5.12 | 12.94 | 4.48 | 1.98 | 16.18 | 6.56 | 5.68 | 8.05 | 9.75 | 9.97 |
| 6000 | 5.92 | 12.15 | 6.11 | 3.66 | 10.54 | 8.13 | 8.89 | 8.78 | 10.93 | 6.74 |
| 7000 | 7.76 | 10.59 | 7.07 | 4.72 | 7.80 | 9.08 | 9.33 | 9.73 | 11.40 | 8.36 |
| 8000 | 8.35 | 8.94 | 8.69 | 5.47 | 5.97 | 10.91 | 11.89 | 10.77 | 10.80 | 10.18 |
| 9000 | 8.66 | 7.18 | 9.03 | 5.28 | 4.84 | 12.05 | 12.30 | 10.16 | 9.40 | 8.49 |
| 10,000 | 10.31 | 5.73 | 8.82 | 6.20 | 3.92 | 12.22 | 12.91 | 9.04 | 8.69 | 8.42 |
| 11,000 | 10.29 | 4.88 | 8.19 | 6.84 | 3.20 | 11.37 | 9.70 | 7.78 | 6.90 | 8.83 |
| 12,000 | 8.73 | 3.91 | 7.50 | 6.53 | 2.37 | 8.67 | 8.73 | 6.38 | 5.48 | 6.27 |
| 13,000 | 7.60 | 3.08 | 6.39 | 6.98 | 1.87 | 5.90 | 5.28 | 5.19 | 4.58 | 4.38 |
| 14,000 | 5.73 | 2.28 | 6.04 | 7.40 | 1.47 | 3.61 | 3.94 | 4.26 | 2.97 | 5.53 |
| 15,000 | 4.86 | 1.85 | 4.86 | 7.12 | 1.23 | 2.32 | 2.44 | 3.15 | 1.76 | 2.36 |
| 16,000 | 4.11 | 1.34 | 4.18 | 6.00 | 0.92 | 1.56 | 2.03 | 2.57 | 1.19 | 1.55 |
| 17,000 | 2.50 | 1.03 | 3.49 | 6.23 | 0.64 | 0.94 | 1.01 | 1.65 | 0.66 | 0.81 |
| 18,000 | 1.77 | 0.78 | 2.79 | 5.95 | 0.49 | 0.52 | 0.89 | 1.07 | 0.38 | 0.81 |
| 19,000 | 1.13 | 0.62 | 2.33 | 4.80 | 0.31 | 0.24 | 0.28 | 0.70 | 0.24 | 1.89 |
| 20,000 | 0.73 | 0.48 | 1.80 | 4.08 | 0.21 | 0.06 | 0.20 | 0.48 | 0.11 | 0.34 |
| 21,000 | 0.38 | 0.37 | 1.48 | 2.82 | 0.17 | 0.01 | 0.12 | 0.23 | 0.04 | 0.88 |
| 22,000 | 0.28 | 0.24 | 1.11 | 2.71 | 0.13 | 0.01 | 0.00 | 0.16 | 0.04 | 0.07 |
| 23,000 | 0.17 | 0.19 | 0.83 | 1.54 | 0.08 | 0.00 | 0.00 | 0.06 | 0.01 | 0.40 |
| 24,000 | 0.09 | 0.14 | 0.61 | 0.87 | 0.06 | 0.00 | 0.00 | 0.03 | 0.01 | 0.54 |
| 25,000 | 0.09 | 0.12 | 0.44 | 0.67 | 0.04 | 0.00 | 0.00 | 0.03 | 0.01 | 0.00 |
| 26,000 | 0.05 | 0.08 | 0.24 | 0.36 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 27,000 | 0.02 | 0.04 | 0.17 | 0.11 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.02 | 0.04 | 0.10 | 0.14 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.00 | 0.04 | 0.05 | 0.06 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.02 | 0.03 | 0.02 | 0.06 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.00 | 0.01 | 0.00 | 0.06 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.00 | 0.01 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.02 | 0.01 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 110. Single-axle load distribution factors, Site 245-0218 WB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 1.49 | 3.13 | 0.09 | 0.29 | 8.39 | 2.16 | 0.24 | 0.18 | 0.39 | 0.38 |
| 4000 | 3.73 | 5.70 | 0.92 | 0.19 | 13.28 | 3.66 | 1.98 | 0.53 | 0.60 | 1.10 |
| 5000 | 5.12 | 5.51 | 1.34 | 0.38 | 13.32 | 6.56 | 2.07 | 0.69 | 1.22 | 1.63 |
| 6000 | 5.92 | 6.42 | 0.94 | 1.72 | 9.23 | 8.13 | 1.56 | 1.30 | 3.06 | 3.73 |
| 7000 | 7.76 | 8.54 | 1.61 | 1.24 | 8.61 | 9.08 | 2.34 | 5.07 | 10.50 | 11.26 |
| 8000 | 8.35 | 7.68 | 4.58 | 1.82 | 8.76 | 10.91 | 6.80 | 10.37 | 14.48 | 16.75 |
| 9000 | 8.66 | 6.38 | 9.12 | 1.82 | 8.16 | 12.05 | 17.97 | 13.35 | 10.19 | 24.56 |
| 10,000 | 10.31 | 6.52 | 12.28 | 3.92 | 6.59 | 12.22 | 27.74 | 11.51 | 10.05 | 21.29 |
| 11,000 | 10.29 | 6.34 | 9.62 | 6.32 | 5.05 | 11.37 | 18.87 | 9.31 | 12.06 | 11.74 |
| 12,000 | 8.73 | 5.28 | 5.83 | 8.61 | 3.71 | 8.67 | 8.87 | 9.03 | 11.96 | 5.11 |
| 13,000 | 7.60 | 4.39 | 4.76 | 8.42 | 3.07 | 5.90 | 4.22 | 9.12 | 9.93 | 1.28 |
| 14,000 | 5.73 | 3.72 | 3.96 | 12.25 | 2.40 | 3.61 | 2.43 | 8.14 | 7.05 | 0.41 |
| 15,000 | 4.86 | 3.26 | 3.40 | 11.20 | 1.91 | 2.32 | 1.56 | 7.05 | 4.54 | 0.20 |
| 16,000 | 4.11 | 2.97 | 3.28 | 9.38 | 1.51 | 1.56 | 0.93 | 5.61 | 2.39 | 0.18 |
| 17,000 | 2.50 | 2.59 | 2.87 | 10.62 | 1.09 | 0.94 | 0.90 | 4.00 | 1.04 | 0.26 |
| 18,000 | 1.77 | 2.30 | 2.91 | 7.46 | 0.89 | 0.52 | 0.60 | 2.45 | 0.39 | 0.05 |
| 19,000 | 1.13 | 2.13 | 2.93 | 7.08 | 0.73 | 0.24 | 0.36 | 1.32 | 0.11 | 0.03 |
| 20,000 | 0.73 | 1.92 | 2.68 | 2.87 | 0.60 | 0.06 | 0.24 | 0.57 | 0.02 | 0.03 |
| 21,000 | 0.38 | 1.70 | 2.72 | 1.91 | 0.52 | 0.01 | 0.18 | 0.22 | 0.01 | 0.00 |
| 22,000 | 0.28 | 1.58 | 2.74 | 1.15 | 0.44 | 0.01 | 0.06 | 0.11 | 0.01 | 0.03 |
| 23,000 | 0.17 | 1.41 | 2.70 | 0.29 | 0.36 | 0.00 | 0.03 | 0.04 | 0.00 | 0.00 |
| 24,000 | 0.09 | 1.25 | 2.58 | 0.57 | 0.29 | 0.00 | 0.06 | 0.01 | 0.00 | 0.00 |
| 25,000 | 0.09 | 1.20 | 2.65 | 0.29 | 0.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26,000 | 0.05 | 1.11 | 2.36 | 0.19 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.02 | 1.07 | 2.31 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.02 | 0.95 | 2.10 | 0.00 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.00 | 0.88 | 1.79 | 0.00 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.02 | 0.79 | 1.52 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.00 | 0.65 | 1.07 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.00 | 0.54 | 0.87 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.02 | 0.49 | 0.61 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.00 | 0.38 | 0.43 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.02 | 0.31 | 0.21 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.24 | 0.15 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.21 | 0.06 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.18 | 0.02 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.02 | 0.15 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.14 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 111. Single-axle load distribution factors, Site 175-0247 EB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 1.63 | 6.62 | 5.44 | 28.63 | 12.46 | 1.85 | 0.75 | 2.12 | 3.48 | 3.03 |
| 4000 | 4.57 | 8.26 | 2.33 | 1.76 | 14.92 | 3.47 | 1.37 | 2.91 | 7.56 | 5.47 |
| 5000 | 7.70 | 9.63 | 2.74 | 0.00 | 11.85 | 3.78 | 2.45 | 5.56 | 15.28 | 6.82 |
| 6000 | 9.77 | 11.84 | 3.40 | 1.76 | 7.39 | 2.98 | 2.85 | 6.99 | 17.21 | 6.40 |
| 7000 | 10.11 | 12.23 | 5.36 | 3.52 | 6.33 | 4.85 | 6.51 | 7.38 | 11.16 | 18.01 |
| 8000 | 10.00 | 10.93 | 11.92 | 2.20 | 7.65 | 12.41 | 16.70 | 9.67 | 7.12 | 20.45 |
| 9000 | 8.61 | 8.76 | 19.39 | 3.52 | 8.28 | 21.45 | 25.31 | 11.82 | 7.20 | 13.55 |
| 10,000 | 8.24 | 7.31 | 18.44 | 3.96 | 7.13 | 21.49 | 20.71 | 10.69 | 7.90 | 8.08 |
| 11,000 | 7.51 | 5.95 | 12.13 | 5.29 | 5.70 | 13.34 | 11.47 | 9.71 | 7.27 | 6.23 |
| 12,000 | 6.50 | 4.43 | 8.49 | 3.52 | 3.49 | 7.61 | 7.19 | 7.78 | 5.91 | 4.38 |
| 13,000 | 6.14 | 3.54 | 4.02 | 5.29 | 2.38 | 3.73 | 3.07 | 6.58 | 4.11 | 3.87 |
| 14,000 | 4.72 | 2.85 | 1.98 | 6.61 | 1.82 | 1.35 | 0.85 | 5.40 | 2.59 | 1.35 |
| 15,000 | 3.59 | 1.96 | 1.15 | 5.73 | 1.52 | 0.72 | 0.36 | 4.23 | 1.44 | 1.60 |
| 16,000 | 3.04 | 1.59 | 1.03 | 6.17 | 1.35 | 0.47 | 0.23 | 3.31 | 0.91 | 0.76 |
| 17,000 | 2.16 | 1.10 | 0.74 | 5.73 | 1.15 | 0.26 | 0.10 | 2.27 | 0.43 | 0.00 |
| 18,000 | 1.68 | 0.85 | 0.42 | 3.96 | 1.08 | 0.13 | 0.04 | 1.41 | 0.26 | 0.00 |
| 19,000 | 1.14 | 0.63 | 0.30 | 3.96 | 0.96 | 0.06 | 0.02 | 0.95 | 0.09 | 0.00 |
| 20,000 | 0.91 | 0.43 | 0.26 | 3.08 | 0.84 | 0.02 | 0.02 | 0.60 | 0.04 | 0.00 |
| 21,000 | 0.64 | 0.35 | 0.20 | 0.88 | 0.76 | 0.01 | 0.01 | 0.32 | 0.02 | 0.00 |
| 22,000 | 0.43 | 0.22 | 0.09 | 1.76 | 0.72 | 0.00 | 0.00 | 0.19 | 0.01 | 0.00 |
| 23,000 | 0.30 | 0.18 | 0.06 | 2.20 | 0.59 | 0.00 | 0.00 | 0.07 | 0.01 | 0.00 |
| 24,000 | 0.20 | 0.12 | 0.07 | 0.00 | 0.46 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
| 25,000 | 0.09 | 0.08 | 0.00 | 0.00 | 0.36 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 26,000 | 0.06 | 0.06 | 0.01 | 0.00 | 0.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27,000 | 0.09 | 0.03 | 0.00 | 0.00 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28,000 | 0.07 | 0.02 | 0.00 | 0.44 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29,000 | 0.03 | 0.01 | 0.00 | 0.00 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.05 | 0.01 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.02 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 112. Single-axle load distribution factors, Site 175-0247 WB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 3000 | 1.40 | 5.33 | 2.23 | 3.70 | 11.38 | 1.57 | 2.10 | 1.55 | 2.28 | 4.84 |
| 4000 | 2.91 | 8.87 | 2.55 | 3.17 | 12.51 | 2.21 | 2.88 | 3.54 | 5.70 | 5.65 |
| 5000 | 4.53 | 12.60 | 2.84 | 3.70 | 13.22 | 3.44 | 4.65 | 5.80 | 7.73 | 8.06 |
| 6000 | 5.60 | 13.09 | 3.74 | 2.65 | 11.49 | 5.28 | 8.74 | 7.44 | 9.51 | 3.23 |
| 7000 | 6.95 | 12.09 | 6.95 | 4.23 | 10.10 | 9.15 | 14.12 | 9.76 | 11.53 | 8.87 |
| 8000 | 8.74 | 10.72 | 10.15 | 2.12 | 8.13 | 13.37 | 17.90 | 11.29 | 13.93 | 16.13 |
| 9000 | 9.68 | 9.09 | 10.01 | 3.70 | 6.17 | 12.61 | 15.24 | 9.31 | 12.10 | 12.90 |
| 10,000 | 9.27 | 6.91 | 8.87 | 4.76 | 5.28 | 10.80 | 10.48 | 8.27 | 9.85 | 6.45 |
| 11,000 | 8.02 | 5.20 | 9.42 | 4.76 | 4.81 | 10.07 | 7.52 | 8.65 | 8.18 | 5.65 |
| 12,000 | 6.70 | 4.08 | 9.42 | 7.94 | 4.31 | 9.26 | 4.94 | 8.18 | 6.66 | 4.84 |
| 13,000 | 6.09 | 3.21 | 9.82 | 5.82 | 3.65 | 8.15 | 4.00 | 7.53 | 5.30 | 7.26 |
| 14,000 | 5.61 | 2.25 | 8.47 | 6.35 | 2.65 | 6.30 | 3.18 | 5.58 | 3.10 | 4.03 |
| 15,000 | 5.05 | 1.74 | 6.44 | 5.82 | 1.66 | 4.29 | 2.19 | 4.01 | 2.16 | 5.65 |
| 16,000 | 3.84 | 1.37 | 4.41 | 5.29 | 1.02 | 2.38 | 1.26 | 2.93 | 1.11 | 3.23 |
| 17,000 | 3.33 | 0.96 | 2.00 | 6.88 | 0.72 | 0.85 | 0.53 | 2.07 | 0.47 | 1.61 |
| 18,000 | 2.71 | 0.65 | 0.92 | 7.41 | 0.56 | 0.20 | 0.16 | 1.42 | 0.23 | 1.61 |
| 19,000 | 2.23 | 0.45 | 0.48 | 4.23 | 0.46 | 0.05 | 0.07 | 0.93 | 0.08 | 0.00 |
| 20,000 | 1.74 | 0.31 | 0.38 | 4.23 | 0.40 | 0.01 | 0.01 | 0.61 | 0.02 | 0.00 |
| 21,000 | 1.29 | 0.32 | 0.21 | 5.29 | 0.37 | 0.00 | 0.03 | 0.45 | 0.03 | 0.00 |
| 22,000 | 1.11 | 0.20 | 0.19 | 2.12 | 0.25 | 0.00 | 0.00 | 0.27 | 0.01 | 0.00 |
| 23,000 | 0.71 | 0.12 | 0.16 | 1.59 | 0.23 | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 |
| 24,000 | 0.64 | 0.13 | 0.09 | 1.59 | 0.16 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 |
| 25,000 | 0.63 | 0.08 | 0.09 | 0.53 | 0.12 | 0.00 | 0.00 | 0.08 | 0.00 | 0.00 |
| 26,000 | 0.38 | 0.06 | 0.07 | 1.06 | 0.09 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 |
| 27,000 | 0.26 | 0.06 | 0.04 | 0.00 | 0.07 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 28,000 | 0.23 | 0.03 | 0.02 | 0.53 | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 29,000 | 0.12 | 0.02 | 0.02 | 0.53 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30,000 | 0.06 | 0.03 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31,000 | 0.07 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32,000 | 0.06 | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34,000 | 0.03 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35,000 | 0.02 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 41,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

NORMALIZED AXLE LOAD SPECTRA – TANDEM AXLES

Table 113. Tandem-axle load distribution factors, Site 185-0227 NB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.38 | 0.00 | 15.63 | 1.16 | 14.14 | 5.23 | 1.43 | 40.00 | 2.59 | 4.95 |
| 8000 | 0.96 | 0.00 | 39.11 | 2.60 | 14.13 | 9.38 | 2.13 | 0.00 | 6.25 | 17.12 |
| 10,000 | 1.47 | 0.00 | 10.29 | 3.90 | 17.84 | 14.58 | 5.54 | 0.00 | 11.70 | 12.61 |
| 12,000 | 2.33 | 0.00 | 3.76 | 6.21 | 15.96 | 15.80 | 8.87 | 0.00 | 21.33 | 8.56 |
| 14,000 | 4.17 | 0.00 | 3.60 | 8.38 | 11.26 | 9.94 | 12.93 | 0.00 | 10.33 | 7.66 |
| 16,000 | 7.17 | 0.00 | 3.54 | 9.97 | 10.02 | 5.94 | 14.06 | 0.00 | 13.26 | 5.41 |
| 18,000 | 9.88 | 0.00 | 2.92 | 6.50 | 6.97 | 4.84 | 10.72 | 0.00 | 18.45 | 7.21 |
| 20,000 | 10.69 | 0.00 | 2.77 | 5.78 | 3.59 | 4.23 | 9.91 | 40.00 | 10.31 | 2.70 |
| 22,000 | 9.49 | 0.00 | 3.22 | 7.95 | 2.72 | 3.82 | 11.13 | 20.00 | 4.15 | 3.60 |
| 24,000 | 8.78 | 0.00 | 4.14 | 8.82 | 1.61 | 3.51 | 8.28 | 0.00 | 1.36 | 2.25 |
| 26,000 | 9.82 | 0.00 | 2.71 | 9.54 | 0.81 | 3.56 | 5.32 | 0.00 | 0.24 | 4.95 |
| 28,000 | 11.90 | 0.00 | 1.81 | 9.54 | 0.41 | 4.59 | 3.72 | 0.00 | 0.02 | 1.80 |
| 30,000 | 11.63 | 0.00 | 1.67 | 5.49 | 0.22 | 6.78 | 2.78 | 0.00 | 0.00 | 1.35 |
| 32,000 | 7.08 | 0.00 | 1.27 | 4.77 | 0.15 | 5.86 | 1.68 | 0.00 | 0.00 | 1.80 |
| 34,000 | 3.00 | 0.00 | 0.89 | 4.48 | 0.08 | 1.63 | 0.72 | 0.00 | 0.00 | 4.05 |
| 36,000 | 0.91 | 0.00 | 0.81 | 3.03 | 0.04 | 0.23 | 0.40 | 0.00 | 0.00 | 7.21 |
| 38,000 | 0.25 | 0.00 | 0.71 | 1.30 | 0.02 | 0.05 | 0.27 | 0.00 | 0.00 | 4.95 |
| 40,000 | 0.08 | 0.00 | 0.59 | 0.58 | 0.02 | 0.01 | 0.08 | 0.00 | 0.00 | 0.45 |
| 42,000 | 0.01 | 0.00 | 0.24 | 0.00 | 0.01 | 0.00 | 0.03 | 0.00 | 0.00 | 0.90 |
| 44,000 | 0.00 | 0.00 | 0.17 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.45 |
| 46,000 | 0.01 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.01 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 114. Tandem-axle load distribution factors, Site 185-0227 SB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.06 | 0.00 | 11.57 | 1.04 | 6.82 | 0.61 | 0.62 | 37.50 | 0.00 | 17.57 |
| 8000 | 2.12 | 0.00 | 45.75 | 0.60 | 6.85 | 1.65 | 0.83 | 0.00 | 0.14 | 12.55 |
| 10,000 | 2.53 | 0.00 | 4.01 | 1.64 | 13.72 | 3.76 | 3.30 | 12.50 | 0.66 | 6.69 |
| 12,000 | 0.70 | 0.00 | 2.45 | 1.19 | 14.73 | 4.95 | 5.65 | 0.00 | 2.65 | 5.44 |
| 14,000 | 0.37 | 0.00 | 3.58 | 1.79 | 13.60 | 5.59 | 7.65 | 0.00 | 8.45 | 10.88 |
| 16,000 | 0.84 | 0.00 | 2.76 | 3.42 | 13.33 | 6.93 | 11.17 | 12.50 | 25.33 | 12.13 |
| 18,000 | 1.89 | 0.00 | 2.52 | 7.44 | 10.98 | 7.71 | 11.29 | 12.50 | 34.38 | 9.21 |
| 20,000 | 2.18 | 0.00 | 2.97 | 8.18 | 7.19 | 7.11 | 8.52 | 12.50 | 17.78 | 5.86 |
| 22,000 | 6.02 | 0.00 | 4.20 | 8.33 | 4.26 | 7.05 | 9.16 | 0.00 | 7.38 | 5.02 |
| 24,000 | 8.89 | 0.00 | 5.33 | 14.29 | 2.80 | 7.11 | 10.68 | 0.00 | 2.60 | 3.77 |
| 26,000 | 10.15 | 0.00 | 3.46 | 10.57 | 2.37 | 7.50 | 10.86 | 0.00 | 0.56 | 1.26 |
| 28,000 | 16.16 | 0.00 | 2.45 | 8.93 | 1.89 | 9.27 | 8.27 | 0.00 | 0.06 | 1.67 |
| 30,000 | 23.21 | 0.00 | 2.36 | 9.38 | 0.86 | 13.72 | 6.05 | 12.50 | 0.00 | 1.26 |
| 32,000 | 16.20 | 0.00 | 1.81 | 9.82 | 0.30 | 12.83 | 3.61 | 0.00 | 0.00 | 2.09 |
| 34,000 | 6.45 | 0.00 | 1.56 | 6.99 | 0.15 | 3.31 | 1.27 | 0.00 | 0.00 | 2.51 |
| 36,000 | 1.38 | 0.00 | 1.35 | 4.46 | 0.09 | 0.70 | 0.65 | 0.00 | 0.00 | 0.84 |
| 38,000 | 0.72 | 0.00 | 1.05 | 1.19 | 0.02 | 0.16 | 0.37 | 0.00 | 0.00 | 1.26 |
| 40,000 | 0.14 | 0.00 | 0.56 | 0.15 | 0.02 | 0.03 | 0.06 | 0.00 | 0.00 | 0.00 |
| 42,000 | 0.00 | 0.00 | 0.17 | 0.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 44,000 | 0.00 | 0.00 | 0.07 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.00 | 0.00 | 0.03 | 0.15 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 115. Tandem-axle load distribution factors, Site 285-0243 NB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.32 | 0.00 | 10.42 | 0.00 | 10.78 | 3.73 | 0.77 | 0.00 | 4.71 | 20.95 |
| 8000 | 0.72 | 0.00 | 24.37 | 0.00 | 13.26 | 7.31 | 1.16 | 0.00 | 8.70 | 1.90 |
| 10,000 | 1.29 | 0.00 | 15.75 | 2.78 | 13.24 | 11.11 | 3.10 | 0.82 | 13.63 | 3.81 |
| 12,000 | 0.61 | 0.00 | 5.12 | 2.78 | 17.28 | 13.05 | 5.03 | 4.10 | 22.03 | 12.38 |
| 14,000 | 0.61 | 0.00 | 5.47 | 4.63 | 14.57 | 11.45 | 6.58 | 7.38 | 19.79 | 4.76 |
| 16,000 | 0.83 | 0.00 | 5.95 | 2.78 | 10.93 | 8.27 | 11.04 | 18.85 | 9.84 | 8.57 |
| 18,000 | 2.34 | 0.00 | 4.90 | 5.56 | 6.49 | 6.52 | 14.13 | 13.11 | 7.77 | 7.62 |
| 20,000 | 2.80 | 0.00 | 3.86 | 4.63 | 3.70 | 5.57 | 11.33 | 15.57 | 4.88 | 6.67 |
| 22,000 | 2.95 | 0.00 | 3.43 | 9.26 | 2.67 | 5.28 | 12.00 | 13.93 | 4.01 | 4.76 |
| 24,000 | 5.50 | 0.00 | 2.84 | 7.41 | 1.99 | 4.15 | 9.58 | 7.38 | 2.64 | 5.71 |
| 26,000 | 8.52 | 0.00 | 2.44 | 8.33 | 1.21 | 3.99 | 8.71 | 5.74 | 1.12 | 8.57 |
| 28,000 | 9.09 | 0.00 | 2.69 | 3.70 | 1.04 | 5.01 | 8.03 | 3.28 | 0.42 | 4.76 |
| 30,000 | 11.39 | 0.00 | 2.55 | 8.33 | 0.90 | 6.78 | 4.65 | 2.46 | 0.27 | 0.00 |
| 32,000 | 10.32 | 0.00 | 2.26 | 7.41 | 0.50 | 5.24 | 2.42 | 4.10 | 0.15 | 0.00 |
| 34,000 | 7.58 | 0.00 | 1.67 | 8.33 | 0.40 | 1.79 | 1.06 | 2.46 | 0.02 | 0.00 |
| 36,000 | 7.91 | 0.00 | 1.46 | 3.70 | 0.37 | 0.52 | 0.10 | 0.00 | 0.00 | 0.95 |
| 38,000 | 8.38 | 0.00 | 1.19 | 2.78 | 0.36 | 0.16 | 0.10 | 0.82 | 0.00 | 1.90 |
| 40,000 | 8.34 | 0.00 | 0.80 | 5.56 | 0.13 | 0.04 | 0.00 | 0.00 | 0.00 | 3.81 |
| 42,000 | 5.68 | 0.00 | 0.79 | 2.78 | 0.09 | 0.01 | 0.10 | 0.00 | 0.00 | 1.90 |
| 44,000 | 3.77 | 0.00 | 0.55 | 2.78 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.95 |
| 46,000 | 0.93 | 0.00 | 0.48 | 3.70 | 0.03 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 |
| 48,000 | 0.11 | 0.00 | 0.39 | 0.93 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.00 | 0.00 | 0.18 | 0.93 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.02 | 0.93 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 116. Tandem-axle load distribution factors, Site 285-0243 SB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.30 | 0.00 | 27.03 | 0.00 | 8.28 | 4.16 | 1.81 | 0.00 | 0.41 | 24.49 |
| 8000 | 0.90 | 0.00 | 19.77 | 4.50 | 12.02 | 9.15 | 4.00 | 14.29 | 1.27 | 2.04 |
| 10,000 | 0.36 | 0.00 | 7.99 | 3.60 | 16.77 | 12.94 | 6.32 | 0.00 | 4.22 | 6.12 |
| 12,000 | 0.24 | 0.00 | 5.37 | 4.50 | 19.39 | 11.12 | 6.58 | 0.00 | 10.21 | 12.24 |
| 14,000 | 0.15 | 0.00 | 4.44 | 3.60 | 15.11 | 8.19 | 10.58 | 0.00 | 16.25 | 4.08 |
| 16,000 | 0.87 | 0.00 | 4.25 | 3.60 | 10.57 | 6.76 | 12.77 | 0.00 | 25.72 | 10.20 |
| 18,000 | 3.19 | 0.00 | 4.12 | 8.11 | 6.72 | 5.98 | 9.03 | 28.57 | 19.79 | 8.16 |
| 20,000 | 6.13 | 0.00 | 4.37 | 5.41 | 4.19 | 5.73 | 8.26 | 0.00 | 12.16 | 4.08 |
| 22,000 | 8.54 | 0.00 | 4.46 | 11.71 | 2.61 | 6.05 | 9.81 | 28.57 | 6.66 | 10.20 |
| 24,000 | 13.17 | 0.00 | 3.68 | 2.70 | 1.52 | 5.33 | 8.39 | 0.00 | 2.36 | 6.12 |
| 26,000 | 18.85 | 0.00 | 3.10 | 8.11 | 0.92 | 6.00 | 8.52 | 0.00 | 0.76 | 0.00 |
| 28,000 | 17.95 | 0.00 | 2.66 | 9.91 | 0.62 | 7.29 | 7.23 | 14.29 | 0.16 | 0.00 |
| 30,000 | 13.65 | 0.00 | 2.34 | 9.01 | 0.43 | 6.50 | 3.48 | 0.00 | 0.03 | 2.04 |
| 32,000 | 6.76 | 0.00 | 1.91 | 5.41 | 0.29 | 3.41 | 2.06 | 14.29 | 0.00 | 2.04 |
| 34,000 | 3.13 | 0.00 | 1.31 | 6.31 | 0.17 | 1.01 | 0.77 | 0.00 | 0.00 | 4.08 |
| 36,000 | 2.68 | 0.00 | 1.11 | 2.70 | 0.10 | 0.30 | 0.26 | 0.00 | 0.00 | 2.04 |
| 38,000 | 1.59 | 0.00 | 0.81 | 4.50 | 0.11 | 0.07 | 0.13 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.93 | 0.00 | 0.42 | 5.41 | 0.08 | 0.01 | 0.00 | 0.00 | 0.00 | 2.04 |
| 42,000 | 0.48 | 0.00 | 0.32 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 44,000 | 0.06 | 0.00 | 0.21 | 0.90 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.03 | 0.00 | 0.11 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 0.00 | 0.00 | 0.07 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.03 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 117. Tandem-axle load distribution factors, Site 021-w334 NB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 2.45 | 0.00 | 22.01 | 1.43 | 18.88 | 15.30 | 6.85 | 10.00 | 10.26 | 14.89 |
| 8000 | 1.04 | 0.00 | 11.75 | 0.72 | 20.00 | 16.61 | 7.37 | 50.00 | 13.80 | 4.26 |
| 10,000 | 2.08 | 0.00 | 10.09 | 0.36 | 16.78 | 12.72 | 9.21 | 0.00 | 14.53 | 0.00 |
| 12,000 | 2.59 | 0.00 | 8.47 | 1.43 | 12.81 | 7.95 | 11.57 | 0.00 | 14.64 | 0.00 |
| 14,000 | 4.45 | 0.00 | 6.94 | 2.51 | 9.17 | 4.98 | 11.57 | 0.00 | 14.02 | 2.13 |
| 16,000 | 5.04 | 0.00 | 5.49 | 1.79 | 6.34 | 4.22 | 10.25 | 0.00 | 11.87 | 6.38 |
| 18,000 | 6.67 | 0.00 | 4.60 | 8.96 | 4.29 | 4.13 | 9.84 | 10.00 | 9.96 | 2.13 |
| 20,000 | 8.82 | 0.00 | 4.34 | 5.02 | 3.36 | 4.39 | 8.98 | 10.00 | 7.02 | 0.00 |
| 22,000 | 10.08 | 0.00 | 3.73 | 8.24 | 2.42 | 4.67 | 7.20 | 0.00 | 2.67 | 2.13 |
| 24,000 | 10.60 | 0.00 | 3.14 | 7.89 | 1.72 | 4.91 | 5.70 | 10.00 | 1.03 | 4.26 |
| 26,000 | 9.79 | 0.00 | 2.45 | 11.47 | 1.29 | 4.93 | 3.80 | 0.00 | 0.14 | 4.26 |
| 28,000 | 10.45 | 0.00 | 2.34 | 8.96 | 0.77 | 4.61 | 2.94 | 0.00 | 0.05 | 2.13 |
| 30,000 | 6.82 | 0.00 | 2.05 | 8.96 | 0.46 | 4.27 | 2.36 | 0.00 | 0.00 | 10.64 |
| 32,000 | 7.86 | 0.00 | 1.92 | 8.60 | 0.41 | 3.06 | 1.04 | 0.00 | 0.00 | 6.38 |
| 34,000 | 4.60 | 0.00 | 1.65 | 8.60 | 0.37 | 1.82 | 0.81 | 0.00 | 0.00 | 2.13 |
| 36,000 | 3.04 | 0.00 | 1.50 | 3.58 | 0.24 | 0.88 | 0.29 | 0.00 | 0.00 | 4.26 |
| 38,000 | 1.33 | 0.00 | 1.20 | 2.87 | 0.13 | 0.33 | 0.06 | 10.00 | 0.00 | 4.26 |
| 40,000 | 1.41 | 0.00 | 1.19 | 5.38 | 0.13 | 0.14 | 0.06 | 0.00 | 0.00 | 4.26 |
| 42,000 | 0.52 | 0.00 | 0.91 | 2.51 | 0.15 | 0.05 | 0.06 | 0.00 | 0.00 | 8.51 |
| 44,000 | 0.22 | 0.00 | 0.91 | 0.72 | 0.10 | 0.02 | 0.06 | 0.00 | 0.00 | 6.38 |
| 46,000 | 0.00 | 0.00 | 0.82 | 0.00 | 0.05 | 0.01 | 0.00 | 0.00 | 0.00 | 4.26 |
| 48,000 | 0.07 | 0.00 | 0.66 | 0.00 | 0.05 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.07 | 0.00 | 0.51 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 4.26 |
| 52,000 | 0.00 | 0.00 | 0.43 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.27 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 2.13 |
| 58,000 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 118. Tandem-axle load distribution factors, Site 021-w334 SB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 4.01 | 0.00 | 32.48 | 0.32 | 14.40 | 7.34 | 0.88 | 10.00 | 1.34 | 20.34 |
| 8000 | 1.95 | 0.00 | 6.79 | 0.65 | 18.18 | 10.84 | 1.98 | 2.86 | 13.04 | 10.17 |
| 10,000 | 0.82 | 0.00 | 8.43 | 1.29 | 21.36 | 10.30 | 3.43 | 4.29 | 18.02 | 16.95 |
| 12,000 | 3.91 | 0.00 | 7.14 | 1.29 | 18.94 | 7.13 | 4.31 | 10.00 | 33.98 | 15.25 |
| 14,000 | 2.98 | 0.00 | 7.16 | 1.29 | 11.29 | 5.94 | 7.24 | 8.57 | 24.65 | 10.17 |
| 16,000 | 5.66 | 0.00 | 6.06 | 3.56 | 6.73 | 5.74 | 9.15 | 7.14 | 5.56 | 1.69 |
| 18,000 | 6.07 | 0.00 | 4.55 | 6.47 | 3.58 | 5.89 | 15.08 | 8.57 | 2.38 | 5.08 |
| 20,000 | 12.24 | 0.00 | 4.17 | 4.53 | 1.84 | 6.46 | 18.23 | 10.00 | 0.94 | 1.69 |
| 22,000 | 19.75 | 0.00 | 3.66 | 11.33 | 1.15 | 7.54 | 14.20 | 10.00 | 0.09 | 0.00 |
| 24,000 | 19.55 | 0.00 | 3.10 | 13.92 | 0.77 | 8.66 | 9.08 | 2.86 | 0.00 | 1.69 |
| 26,000 | 13.17 | 0.00 | 2.41 | 22.33 | 0.32 | 8.95 | 7.10 | 17.14 | 0.00 | 1.69 |
| 28,000 | 5.45 | 0.00 | 1.95 | 17.80 | 0.27 | 7.60 | 4.45 | 4.29 | 0.00 | 0.00 |
| 30,000 | 2.47 | 0.00 | 1.69 | 9.39 | 0.14 | 4.54 | 2.86 | 1.43 | 0.00 | 6.78 |
| 32,000 | 1.34 | 0.00 | 1.50 | 2.91 | 0.19 | 1.97 | 1.24 | 1.43 | 0.00 | 5.08 |
| 34,000 | 0.62 | 0.00 | 1.60 | 1.62 | 0.16 | 0.71 | 0.57 | 0.00 | 0.00 | 1.69 |
| 36,000 | 0.00 | 0.00 | 1.71 | 0.32 | 0.17 | 0.25 | 0.14 | 0.00 | 0.00 | 1.69 |
| 38,000 | 0.00 | 0.00 | 1.74 | 0.32 | 0.19 | 0.09 | 0.04 | 0.00 | 0.00 | 0.00 |
| 40,000 | 0.00 | 0.00 | 1.42 | 0.65 | 0.22 | 0.03 | 0.04 | 0.00 | 0.00 | 0.00 |
| 42,000 | 0.00 | 0.00 | 0.99 | 0.00 | 0.06 | 0.02 | 0.00 | 1.43 | 0.00 | 0.00 |
| 44,000 | 0.00 | 0.00 | 0.70 | 0.00 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.00 | 0.00 | 0.26 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.00 | 0.00 | 0.06 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 119. Tandem-axle load distribution factors, Site 127-0312 NB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.10 | 0.00 | 10.79 | 2.22 | 10.50 | 2.27 | 0.73 | 10.00 | 0.15 | 5.25 |
| 8000 | 0.26 | 0.00 | 29.16 | 3.21 | 9.50 | 5.91 | 3.49 | 50.00 | 1.33 | 15.75 |
| 10,000 | 0.44 | 0.00 | 11.90 | 3.46 | 14.44 | 12.86 | 11.33 | 0.00 | 9.83 | 29.75 |
| 12,000 | 0.56 | 0.00 | 9.83 | 3.46 | 16.91 | 16.47 | 13.20 | 0.00 | 14.98 | 9.80 |
| 14,000 | 0.66 | 0.00 | 6.74 | 4.94 | 15.75 | 9.51 | 11.75 | 0.00 | 9.08 | 8.40 |
| 16,000 | 1.10 | 0.00 | 4.28 | 4.44 | 12.46 | 5.67 | 11.71 | 0.00 | 17.40 | 6.30 |
| 18,000 | 1.73 | 0.00 | 3.33 | 8.15 | 7.76 | 4.75 | 11.45 | 10.00 | 23.55 | 4.67 |
| 20,000 | 3.20 | 0.00 | 3.21 | 9.88 | 4.65 | 4.43 | 7.96 | 10.00 | 14.60 | 5.95 |
| 22,000 | 7.01 | 0.00 | 3.54 | 10.62 | 2.88 | 4.48 | 6.04 | 0.00 | 6.64 | 3.38 |
| 24,000 | 12.73 | 0.00 | 4.10 | 10.86 | 2.10 | 4.63 | 5.87 | 10.00 | 1.90 | 1.87 |
| 26,000 | 18.01 | 0.00 | 3.29 | 8.89 | 1.32 | 5.11 | 5.32 | 0.00 | 0.47 | 2.92 |
| 28,000 | 20.40 | 0.00 | 2.22 | 6.91 | 0.67 | 6.11 | 4.43 | 0.00 | 0.05 | 1.05 |
| 30,000 | 17.62 | 0.00 | 2.32 | 7.65 | 0.40 | 7.82 | 3.21 | 0.00 | 0.02 | 1.40 |
| 32,000 | 10.08 | 0.00 | 2.00 | 5.43 | 0.27 | 7.17 | 2.02 | 0.00 | 0.00 | 1.75 |
| 34,000 | 4.32 | 0.00 | 1.19 | 4.20 | 0.14 | 2.36 | 1.05 | 0.00 | 0.00 | 1.17 |
| 36,000 | 1.28 | 0.00 | 0.74 | 2.47 | 0.09 | 0.40 | 0.27 | 0.00 | 0.00 | 0.23 |
| 38,000 | 0.33 | 0.00 | 0.47 | 0.99 | 0.07 | 0.07 | 0.13 | 10.00 | 0.00 | 0.23 |
| 40,000 | 0.09 | 0.00 | 0.35 | 0.74 | 0.04 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 |
| 42,000 | 0.04 | 0.00 | 0.22 | 0.74 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.12 |
| 44,000 | 0.01 | 0.00 | 0.12 | 0.49 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.03 | 0.00 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 0.01 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.00 | 0.00 | 0.03 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 120. Tandem-axle load distribution factors, Site 127-0312 SB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|------|------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.53 | 0.00 | 30.63 | 3.10 | 12.07 | 2.44 | 2.59 | 10.00 | 0.19 | 4.72 |
| 8000 | 0.44 | 0.00 | 14.10 | 3.34 | 13.26 | 5.11 | 6.03 | 2.86 | 1.91 | 9.45 |
| 10,000 | 0.34 | 0.00 | 7.49 | 2.39 | 15.86 | 7.25 | 6.71 | 4.29 | 5.79 | 17.86 |
| 12,000 | 0.28 | 0.00 | 5.90 | 4.30 | 14.98 | 8.22 | 7.85 | 10.00 | 13.63 | 20.12 |
| 14,000 | 0.22 | 0.00 | 4.62 | 3.82 | 11.78 | 8.34 | 8.61 | 8.57 | 23.95 | 16.22 |
| 16,000 | 0.84 | 0.00 | 4.13 | 8.59 | 8.74 | 8.38 | 9.18 | 7.14 | 23.90 | 10.47 |
| 18,000 | 2.75 | 0.00 | 4.33 | 9.31 | 6.11 | 8.01 | 8.72 | 8.57 | 15.81 | 5.54 |
| 20,000 | 5.50 | 0.00 | 4.75 | 10.02 | 4.30 | 7.82 | 8.70 | 10.00 | 8.63 | 1.85 |
| 22,000 | 10.03 | 0.00 | 4.57 | 11.93 | 3.27 | 8.11 | 8.81 | 10.00 | 4.05 | 2.26 |
| 24,000 | 12.41 | 0.00 | 4.03 | 10.50 | 2.59 | 8.75 | 8.72 | 2.86 | 1.50 | 2.26 |
| 26,000 | 15.66 | 0.00 | 3.54 | 7.16 | 2.09 | 9.02 | 7.96 | 17.14 | 0.47 | 1.85 |
| 28,000 | 14.31 | 0.00 | 2.91 | 6.92 | 1.73 | 7.79 | 6.18 | 4.29 | 0.15 | 1.64 |
| 30,000 | 12.47 | 0.00 | 2.34 | 5.73 | 1.20 | 5.60 | 5.28 | 1.43 | 0.03 | 1.23 |
| 32,000 | 7.66 | 0.00 | 1.66 | 3.58 | 0.78 | 3.12 | 2.85 | 1.43 | 0.01 | 1.85 |
| 34,000 | 6.09 | 0.00 | 1.33 | 3.34 | 0.50 | 1.35 | 1.01 | 0.00 | 0.00 | 1.03 |
| 36,000 | 3.38 | 0.00 | 0.99 | 1.91 | 0.32 | 0.47 | 0.57 | 0.00 | 0.00 | 0.62 |
| 38,000 | 2.66 | 0.00 | 0.72 | 0.72 | 0.16 | 0.14 | 0.18 | 0.00 | 0.00 | 0.41 |
| 40,000 | 1.72 | 0.00 | 0.54 | 1.19 | 0.14 | 0.04 | 0.04 | 0.00 | 0.00 | 0.41 |
| 42,000 | 1.00 | 0.00 | 0.38 | 0.72 | 0.05 | 0.01 | 0.00 | 1.43 | 0.00 | 0.21 |
| 44,000 | 0.53 | 0.00 | 0.31 | 0.48 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.41 | 0.00 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| 48,000 | 0.34 | 0.00 | 0.13 | 0.48 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.09 | 0.00 | 0.15 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.28 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.06 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.03 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 121. Tandem-axle load distribution factors, Site 051-0387 NB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|------|-------|------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.38 | 0.00 | 11.11 | 0.53 | 8.49 | 2.00 | 1.96 | 0.87 | 0.16 | 4.22 |
| 8000 | 1.16 | 0.00 | 16.29 | 2.30 | 9.91 | 5.16 | 4.54 | 0.87 | 1.90 | 10.61 |
| 10,000 | 1.63 | 0.00 | 10.06 | 2.30 | 12.16 | 8.24 | 8.23 | 2.17 | 5.39 | 21.22 |
| 12,000 | 1.10 | 0.00 | 7.02 | 3.81 | 14.55 | 9.67 | 9.80 | 4.78 | 13.09 | 13.06 |
| 14,000 | 1.01 | 0.00 | 5.44 | 5.04 | 14.16 | 9.51 | 9.39 | 10.87 | 14.62 | 8.03 |
| 16,000 | 1.70 | 0.00 | 5.36 | 8.58 | 12.45 | 8.51 | 9.73 | 14.78 | 17.91 | 5.03 |
| 18,000 | 2.62 | 0.00 | 5.01 | 7.79 | 9.14 | 7.70 | 10.20 | 16.52 | 19.68 | 4.35 |
| 20,000 | 4.05 | 0.00 | 4.86 | 8.50 | 6.41 | 7.39 | 10.87 | 7.83 | 14.91 | 7.48 |
| 22,000 | 5.43 | 0.00 | 4.64 | 9.47 | 4.25 | 8.58 | 12.30 | 6.96 | 8.52 | 15.78 |
| 24,000 | 6.77 | 0.00 | 4.43 | 9.20 | 2.88 | 7.79 | 8.45 | 5.65 | 2.87 | 8.03 |
| 26,000 | 9.16 | 0.00 | 4.07 | 8.32 | 1.95 | 6.05 | 5.63 | 7.39 | 0.75 | 0.95 |
| 28,000 | 12.21 | 0.00 | 4.20 | 5.49 | 1.27 | 5.76 | 3.94 | 7.83 | 0.17 | 0.54 |
| 30,000 | 12.49 | 0.00 | 4.28 | 6.19 | 0.84 | 6.39 | 2.48 | 6.96 | 0.02 | 0.14 |
| 32,000 | 11.75 | 0.00 | 3.34 | 5.22 | 0.57 | 4.83 | 1.35 | 4.35 | 0.00 | 0.14 |
| 34,000 | 10.97 | 0.00 | 2.76 | 4.69 | 0.38 | 1.77 | 0.53 | 2.17 | 0.00 | 0.27 |
| 36,000 | 8.93 | 0.00 | 2.47 | 4.34 | 0.21 | 0.49 | 0.27 | 0.00 | 0.00 | 0.14 |
| 38,000 | 5.36 | 0.00 | 1.72 | 2.92 | 0.18 | 0.13 | 0.12 | 0.00 | 0.00 | 0.00 |
| 40,000 | 1.98 | 0.00 | 1.08 | 2.04 | 0.08 | 0.03 | 0.12 | 0.00 | 0.00 | 0.00 |
| 42,000 | 0.80 | 0.00 | 0.63 | 1.06 | 0.05 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 |
| 44,000 | 0.38 | 0.00 | 0.45 | 1.24 | 0.04 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.07 | 0.00 | 0.31 | 0.44 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 0.04 | 0.00 | 0.18 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.00 | 0.00 | 0.13 | 0.27 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.00 | 0.00 | 0.08 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.04 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 122. Tandem-axle load distribution factors, Site 051-0387 SB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.03 | 0.00 | 5.67 | 1.22 | 9.19 | 0.90 | 0.93 | 2.41 | 0.19 | 3.44 |
| 8000 | 0.81 | 0.00 | 27.16 | 2.43 | 8.70 | 2.67 | 2.55 | 4.82 | 0.51 | 7.58 |
| 10,000 | 1.63 | 0.00 | 10.59 | 2.13 | 11.67 | 5.54 | 8.75 | 7.23 | 3.50 | 8.76 |
| 12,000 | 0.61 | 0.00 | 5.69 | 3.95 | 16.95 | 7.95 | 8.78 | 2.41 | 10.32 | 11.91 |
| 14,000 | 0.26 | 0.00 | 4.71 | 3.50 | 15.71 | 8.41 | 10.01 | 4.82 | 6.50 | 16.93 |
| 16,000 | 0.46 | 0.00 | 5.17 | 4.41 | 12.15 | 8.10 | 9.28 | 8.43 | 14.17 | 18.80 |
| 18,000 | 0.66 | 0.00 | 4.79 | 7.90 | 8.70 | 8.08 | 10.70 | 14.46 | 26.10 | 10.24 |
| 20,000 | 1.64 | 0.00 | 5.03 | 6.69 | 5.93 | 7.26 | 8.84 | 12.05 | 23.85 | 5.51 |
| 22,000 | 3.69 | 0.00 | 5.66 | 10.33 | 3.91 | 6.68 | 7.97 | 10.84 | 10.87 | 3.44 |
| 24,000 | 7.96 | 0.00 | 5.61 | 10.03 | 2.52 | 6.47 | 8.05 | 7.23 | 3.16 | 4.43 |
| 26,000 | 13.24 | 0.00 | 4.77 | 8.81 | 1.64 | 6.98 | 8.11 | 8.43 | 0.66 | 0.79 |
| 28,000 | 17.00 | 0.00 | 3.77 | 8.51 | 1.01 | 8.68 | 7.68 | 7.23 | 0.15 | 3.15 |
| 30,000 | 17.38 | 0.00 | 3.01 | 6.69 | 0.61 | 11.03 | 4.38 | 4.82 | 0.02 | 0.89 |
| 32,000 | 12.98 | 0.00 | 2.40 | 7.14 | 0.46 | 8.02 | 2.20 | 1.20 | 0.00 | 0.20 |
| 34,000 | 8.97 | 0.00 | 1.95 | 4.56 | 0.27 | 2.55 | 0.87 | 0.00 | 0.00 | 0.30 |
| 36,000 | 5.26 | 0.00 | 1.47 | 5.32 | 0.22 | 0.53 | 0.43 | 0.00 | 0.00 | 1.18 |
| 38,000 | 3.59 | 0.00 | 0.99 | 3.65 | 0.13 | 0.11 | 0.27 | 0.00 | 0.00 | 0.69 |
| 40,000 | 1.83 | 0.00 | 0.65 | 0.91 | 0.10 | 0.02 | 0.09 | 0.00 | 0.00 | 1.08 |
| 42,000 | 1.23 | 0.00 | 0.44 | 0.76 | 0.04 | 0.00 | 0.09 | 2.41 | 0.00 | 0.49 |
| 44,000 | 0.58 | 0.00 | 0.22 | 0.76 | 0.04 | 0.00 | 0.01 | 0.00 | 0.00 | 0.20 |
| 46,000 | 0.16 | 0.00 | 0.13 | 0.15 | 0.02 | 0.00 | 0.00 | 1.20 | 0.00 | 0.00 |
| 48,000 | 0.01 | 0.00 | 0.07 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.00 | 0.00 | 0.02 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 123. Tandem-axle load distribution factors, Site 217-0218 EB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 7.46 | 0.00 | 11.67 | 7.95 | 15.74 | 9.74 | 9.01 | 17.65 | 24.09 | 17.48 |
| 8000 | 9.18 | 0.00 | 23.15 | 11.49 | 10.59 | 9.93 | 10.71 | 5.88 | 4.21 | 12.25 |
| 10,000 | 13.67 | 0.00 | 15.07 | 11.05 | 11.78 | 16.41 | 17.74 | 5.88 | 5.10 | 14.26 |
| 12,000 | 5.93 | 0.00 | 8.61 | 9.43 | 13.32 | 9.69 | 11.88 | 23.53 | 5.55 | 10.39 |
| 14,000 | 3.19 | 0.00 | 7.09 | 2.65 | 13.58 | 7.13 | 8.88 | 0.00 | 5.82 | 10.24 |
| 16,000 | 2.76 | 0.00 | 4.17 | 3.68 | 11.23 | 6.19 | 5.71 | 0.00 | 12.98 | 9.60 |
| 18,000 | 3.89 | 0.00 | 3.10 | 3.39 | 7.18 | 5.63 | 5.62 | 5.88 | 19.21 | 6.81 |
| 20,000 | 4.47 | 0.00 | 3.18 | 4.42 | 5.49 | 5.71 | 4.93 | 5.88 | 12.60 | 4.94 |
| 22,000 | 4.56 | 0.00 | 2.67 | 3.83 | 3.96 | 4.37 | 4.67 | 5.88 | 7.26 | 4.73 |
| 24,000 | 4.58 | 0.00 | 2.00 | 5.01 | 2.73 | 3.74 | 5.89 | 0.00 | 2.66 | 2.58 |
| 26,000 | 6.28 | 0.00 | 2.35 | 4.86 | 1.48 | 4.14 | 5.54 | 5.88 | 0.37 | 1.65 |
| 28,000 | 7.67 | 0.00 | 2.58 | 6.92 | 1.04 | 6.07 | 4.47 | 0.00 | 0.10 | 1.36 |
| 30,000 | 6.52 | 0.00 | 2.15 | 4.86 | 0.60 | 7.11 | 3.30 | 5.88 | 0.03 | 1.79 |
| 32,000 | 4.90 | 0.00 | 1.77 | 6.19 | 0.34 | 2.99 | 1.06 | 11.76 | 0.00 | 0.43 |
| 34,000 | 3.82 | 0.00 | 1.14 | 5.45 | 0.23 | 0.85 | 0.41 | 0.00 | 0.00 | 1.00 |
| 36,000 | 3.65 | 0.00 | 1.20 | 2.80 | 0.15 | 0.24 | 0.11 | 5.88 | 0.00 | 0.07 |
| 38,000 | 3.28 | 0.00 | 1.52 | 2.06 | 0.20 | 0.06 | 0.04 | 0.00 | 0.00 | 0.07 |
| 40,000 | 2.13 | 0.00 | 1.69 | 0.88 | 0.29 | 0.01 | 0.06 | 0.00 | 0.00 | 0.14 |
| 42,000 | 1.07 | 0.00 | 1.16 | 1.47 | 0.05 | 0.00 | 0.00 | 0.00 | 0.01 | 0.07 |
| 44,000 | 0.48 | 0.00 | 0.67 | 0.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.22 | 0.00 | 0.39 | 0.74 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 |
| 48,000 | 0.10 | 0.00 | 0.54 | 0.15 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.12 | 0.00 | 0.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.06 | 0.00 | 0.77 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.02 | 0.00 | 0.41 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 |
| 56,000 | 0.00 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 124. Tandem-axle load distribution factors, Site 217-0218 WB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 7.46 | 0.00 | 11.67 | 7.95 | 15.74 | 9.74 | 9.01 | 17.65 | 24.09 | 17.48 |
| 8000 | 9.18 | 0.00 | 23.15 | 11.49 | 10.59 | 9.93 | 10.71 | 5.88 | 4.21 | 12.25 |
| 10,000 | 13.67 | 0.00 | 15.07 | 11.05 | 11.78 | 16.41 | 17.74 | 5.88 | 5.10 | 14.26 |
| 12,000 | 5.93 | 0.00 | 8.61 | 9.43 | 13.32 | 9.69 | 11.88 | 23.53 | 5.55 | 10.39 |
| 14,000 | 3.19 | 0.00 | 7.09 | 2.65 | 13.58 | 7.13 | 8.88 | 0.00 | 5.82 | 10.24 |
| 16,000 | 2.76 | 0.00 | 4.17 | 3.68 | 11.23 | 6.19 | 5.71 | 0.00 | 12.98 | 9.60 |
| 18,000 | 3.89 | 0.00 | 3.10 | 3.39 | 7.18 | 5.63 | 5.62 | 5.88 | 19.21 | 6.81 |
| 20,000 | 4.47 | 0.00 | 3.18 | 4.42 | 5.49 | 5.71 | 4.93 | 5.88 | 12.60 | 4.94 |
| 22,000 | 4.56 | 0.00 | 2.67 | 3.83 | 3.96 | 4.37 | 4.67 | 5.88 | 7.26 | 4.73 |
| 24,000 | 4.58 | 0.00 | 2.00 | 5.01 | 2.73 | 3.74 | 5.89 | 0.00 | 2.66 | 2.58 |
| 26,000 | 6.28 | 0.00 | 2.35 | 4.86 | 1.48 | 4.14 | 5.54 | 5.88 | 0.37 | 1.65 |
| 28,000 | 7.67 | 0.00 | 2.58 | 6.92 | 1.04 | 6.07 | 4.47 | 0.00 | 0.10 | 1.36 |
| 30,000 | 6.52 | 0.00 | 2.15 | 4.86 | 0.60 | 7.11 | 3.30 | 5.88 | 0.03 | 1.79 |
| 32,000 | 4.90 | 0.00 | 1.77 | 6.19 | 0.34 | 2.99 | 1.06 | 11.76 | 0.00 | 0.43 |
| 34,000 | 3.82 | 0.00 | 1.14 | 5.45 | 0.23 | 0.85 | 0.41 | 0.00 | 0.00 | 1.00 |
| 36,000 | 3.65 | 0.00 | 1.20 | 2.80 | 0.15 | 0.24 | 0.11 | 5.88 | 0.00 | 0.07 |
| 38,000 | 3.28 | 0.00 | 1.52 | 2.06 | 0.20 | 0.06 | 0.04 | 0.00 | 0.00 | 0.07 |
| 40,000 | 2.13 | 0.00 | 1.69 | 0.88 | 0.29 | 0.01 | 0.06 | 0.00 | 0.00 | 0.14 |
| 42,000 | 1.07 | 0.00 | 1.16 | 1.47 | 0.05 | 0.00 | 0.00 | 0.00 | 0.01 | 0.07 |
| 44,000 | 0.48 | 0.00 | 0.67 | 0.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.22 | 0.00 | 0.39 | 0.74 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 |
| 48,000 | 0.10 | 0.00 | 0.54 | 0.15 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.12 | 0.00 | 0.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.06 | 0.00 | 0.77 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.02 | 0.00 | 0.41 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 |
| 56,000 | 0.00 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 125. Tandem-axle load distribution factors, Site 051-0368 EB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.38 | 0.00 | 1.97 | 0.00 | 7.95 | 3.46 | 0.00 | 0.87 | 0.00 | 0.00 |
| 8000 | 1.16 | 0.00 | 9.68 | 0.00 | 2.27 | 7.77 | 0.24 | 0.87 | 0.00 | 5.88 |
| 10,000 | 1.63 | 0.00 | 2.15 | 4.55 | 11.36 | 9.71 | 0.24 | 2.17 | 7.69 | 41.18 |
| 12,000 | 1.10 | 0.00 | 7.35 | 0.00 | 14.77 | 12.93 | 0.71 | 4.78 | 15.38 | 35.29 |
| 14,000 | 1.01 | 0.00 | 8.78 | 0.00 | 17.05 | 13.05 | 3.10 | 10.87 | 15.38 | 0.00 |
| 16,000 | 1.70 | 0.00 | 3.05 | 4.55 | 15.91 | 4.19 | 10.95 | 14.78 | 15.38 | 5.88 |
| 18,000 | 2.62 | 0.00 | 4.66 | 9.09 | 12.50 | 3.28 | 29.52 | 16.52 | 23.08 | 0.00 |
| 20,000 | 4.05 | 0.00 | 7.35 | 4.55 | 9.09 | 3.22 | 28.33 | 7.83 | 0.00 | 5.88 |
| 22,000 | 5.43 | 0.00 | 3.58 | 13.64 | 2.27 | 4.49 | 10.48 | 6.96 | 7.69 | 0.00 |
| 24,000 | 6.77 | 0.00 | 5.73 | 9.09 | 4.55 | 3.70 | 5.00 | 5.65 | 7.69 | 0.00 |
| 26,000 | 9.16 | 0.00 | 5.56 | 4.55 | 0.00 | 4.86 | 3.57 | 7.39 | 7.69 | 0.00 |
| 28,000 | 12.21 | 0.00 | 8.78 | 4.55 | 1.14 | 5.59 | 2.14 | 7.83 | 0.00 | 0.00 |
| 30,000 | 12.49 | 0.00 | 6.81 | 4.55 | 0.00 | 8.99 | 3.57 | 6.96 | 0.00 | 5.88 |
| 32,000 | 11.75 | 0.00 | 7.89 | 13.64 | 1.14 | 7.41 | 1.43 | 4.35 | 0.00 | 0.00 |
| 34,000 | 10.97 | 0.00 | 3.94 | 13.64 | 0.00 | 4.01 | 0.24 | 2.17 | 0.00 | 0.00 |
| 36,000 | 8.93 | 0.00 | 2.15 | 4.55 | 0.00 | 2.49 | 0.48 | 0.00 | 0.00 | 0.00 |
| 38,000 | 5.36 | 0.00 | 2.87 | 0.00 | 0.00 | 0.49 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 1.98 | 0.00 | 1.79 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 |
| 42,000 | 0.80 | 0.00 | 1.61 | 4.55 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 |
| 44,000 | 0.38 | 0.00 | 1.25 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.07 | 0.00 | 1.08 | 4.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 0.04 | 0.00 | 0.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.00 | 0.00 | 0.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.00 | 0.00 | 0.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 126. Tandem-axle load distribution factors, Site 051-0368 WB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.03 | 0.00 | 1.20 | 0.00 | 7.69 | 0.46 | 0.00 | 2.41 | 0.00 | 4.55 |
| 8000 | 0.81 | 0.00 | 15.66 | 0.00 | 0.00 | 7.41 | 0.00 | 4.82 | 0.00 | 0.00 |
| 10,000 | 1.63 | 0.00 | 19.28 | 0.00 | 23.08 | 20.14 | 0.00 | 7.23 | 66.67 | 59.09 |
| 12,000 | 0.61 | 0.00 | 31.33 | 0.00 | 30.77 | 15.51 | 3.00 | 2.41 | 33.33 | 4.55 |
| 14,000 | 0.26 | 0.00 | 12.05 | 0.00 | 7.69 | 9.95 | 15.00 | 4.82 | 0.00 | 0.00 |
| 16,000 | 0.46 | 0.00 | 4.82 | 0.00 | 7.69 | 15.74 | 9.00 | 8.43 | 0.00 | 31.82 |
| 18,000 | 0.66 | 0.00 | 9.64 | 25.00 | 7.69 | 16.67 | 23.00 | 14.46 | 0.00 | 0.00 |
| 20,000 | 1.64 | 0.00 | 2.41 | 50.00 | 15.38 | 7.87 | 27.00 | 12.05 | 0.00 | 0.00 |
| 22,000 | 3.69 | 0.00 | 2.41 | 0.00 | 0.00 | 3.94 | 11.00 | 10.84 | 0.00 | 0.00 |
| 24,000 | 7.96 | 0.00 | 1.20 | 25.00 | 0.00 | 2.08 | 6.00 | 7.23 | 0.00 | 0.00 |
| 26,000 | 13.24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.23 | 4.00 | 8.43 | 0.00 | 0.00 |
| 28,000 | 17.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 7.23 | 0.00 | 0.00 |
| 30,000 | 17.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.82 | 0.00 | 0.00 |
| 32,000 | 12.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.20 | 0.00 | 0.00 |
| 34,000 | 8.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36,000 | 5.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38,000 | 3.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40,000 | 1.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 42,000 | 1.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.41 | 0.00 | 0.00 |
| 44,000 | 0.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.20 | 0.00 | 0.00 |
| 48,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 127. Tandem-axle load distribution factors, Site 143-0126 EB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.55 | 0.00 | 28.32 | 9.74 | 7.19 | 9.74 | 0.73 | 7.41 | 0.32 | 11.11 |
| 8000 | 0.45 | 0.00 | 12.98 | 9.74 | 12.25 | 9.93 | 3.30 | 7.41 | 3.28 | 14.73 |
| 10,000 | 0.50 | 0.00 | 5.04 | 4.67 | 16.81 | 16.41 | 6.32 | 11.11 | 9.28 | 11.84 |
| 12,000 | 0.46 | 0.00 | 6.45 | 7.30 | 14.32 | 9.69 | 6.10 | 7.41 | 7.90 | 15.46 |
| 14,000 | 0.45 | 0.00 | 6.24 | 5.07 | 11.47 | 7.13 | 8.58 | 11.11 | 18.46 | 21.50 |
| 16,000 | 0.52 | 0.00 | 4.76 | 6.90 | 8.28 | 6.19 | 9.41 | 29.63 | 28.52 | 7.49 |
| 18,000 | 0.50 | 0.00 | 4.87 | 4.87 | 6.13 | 5.63 | 8.29 | 18.52 | 18.36 | 3.62 |
| 20,000 | 1.28 | 0.00 | 4.46 | 5.07 | 5.11 | 5.71 | 7.75 | 0.00 | 8.17 | 1.93 |
| 22,000 | 3.35 | 0.00 | 4.76 | 5.48 | 4.51 | 4.37 | 8.23 | 0.00 | 3.59 | 2.17 |
| 24,000 | 7.60 | 0.00 | 4.28 | 8.11 | 3.30 | 3.74 | 10.58 | 3.70 | 1.48 | 0.48 |
| 26,000 | 13.52 | 0.00 | 3.50 | 5.27 | 2.88 | 4.14 | 11.31 | 0.00 | 0.45 | 1.69 |
| 28,000 | 18.08 | 0.00 | 2.92 | 8.92 | 2.42 | 6.07 | 8.58 | 0.00 | 0.15 | 1.69 |
| 30,000 | 15.37 | 0.00 | 2.92 | 4.67 | 1.94 | 7.11 | 5.69 | 0.00 | 0.03 | 0.48 |
| 32,000 | 8.15 | 0.00 | 2.28 | 3.65 | 1.26 | 2.99 | 3.11 | 0.00 | 0.00 | 0.97 |
| 34,000 | 4.57 | 0.00 | 1.81 | 3.85 | 0.89 | 0.85 | 1.14 | 0.00 | 0.00 | 1.45 |
| 36,000 | 3.50 | 0.00 | 1.29 | 1.62 | 0.56 | 0.24 | 0.44 | 3.70 | 0.00 | 1.21 |
| 38,000 | 2.94 | 0.00 | 0.90 | 1.22 | 0.34 | 0.06 | 0.16 | 0.00 | 0.00 | 0.97 |
| 40,000 | 3.26 | 0.00 | 0.66 | 0.41 | 0.18 | 0.01 | 0.16 | 0.00 | 0.00 | 0.72 |
| 42,000 | 3.55 | 0.00 | 0.46 | 0.61 | 0.07 | 0.00 | 0.10 | 0.00 | 0.00 | 0.24 |
| 44,000 | 3.46 | 0.00 | 0.47 | 0.20 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 2.85 | 0.00 | 0.20 | 0.61 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.24 |
| 48,000 | 2.19 | 0.00 | 0.19 | 0.41 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 1.43 | 0.00 | 0.12 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.82 | 0.00 | 0.06 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.52 | 0.00 | 0.03 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.11 | 0.00 | 0.02 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.02 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 128. Tandem-axle load distribution factors, Site 143-0126 WB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.27 | 0.00 | 21.21 | 0.71 | 10.32 | 9.74 | 0.39 | 50.00 | 0.24 | 9.36 |
| 8000 | 1.65 | 0.00 | 26.38 | 1.65 | 14.99 | 9.93 | 1.65 | 0.00 | 1.48 | 7.28 |
| 10,000 | 1.72 | 0.00 | 11.30 | 3.07 | 19.21 | 16.41 | 4.19 | 0.00 | 7.81 | 13.51 |
| 12,000 | 1.32 | 0.00 | 6.92 | 7.08 | 19.96 | 9.69 | 7.48 | 0.00 | 30.13 | 18.71 |
| 14,000 | 4.14 | 0.00 | 7.13 | 7.08 | 13.81 | 7.13 | 12.54 | 50.00 | 39.87 | 21.83 |
| 16,000 | 8.88 | 0.00 | 7.07 | 12.97 | 9.37 | 6.19 | 17.72 | 0.00 | 16.75 | 8.52 |
| 18,000 | 20.16 | 0.00 | 6.60 | 20.28 | 4.93 | 5.63 | 19.29 | 0.00 | 2.45 | 4.57 |
| 20,000 | 26.30 | 0.00 | 4.98 | 17.69 | 2.28 | 5.71 | 14.46 | 0.00 | 0.59 | 4.99 |
| 22,000 | 13.74 | 0.00 | 2.81 | 10.14 | 1.33 | 4.37 | 9.78 | 0.00 | 0.41 | 2.49 |
| 24,000 | 3.73 | 0.00 | 1.60 | 11.56 | 1.02 | 3.74 | 6.25 | 0.00 | 0.19 | 4.99 |
| 26,000 | 1.13 | 0.00 | 0.81 | 1.42 | 0.75 | 4.14 | 3.10 | 0.00 | 0.05 | 1.87 |
| 28,000 | 0.81 | 0.00 | 0.58 | 2.36 | 0.60 | 6.07 | 1.62 | 0.00 | 0.02 | 1.25 |
| 30,000 | 1.01 | 0.00 | 0.47 | 0.94 | 0.48 | 7.11 | 0.77 | 0.00 | 0.01 | 0.00 |
| 32,000 | 1.02 | 0.00 | 0.38 | 0.47 | 0.39 | 2.99 | 0.43 | 0.00 | 0.00 | 0.42 |
| 34,000 | 1.22 | 0.00 | 0.32 | 0.47 | 0.22 | 0.85 | 0.20 | 0.00 | 0.00 | 0.21 |
| 36,000 | 1.23 | 0.00 | 0.32 | 0.24 | 0.17 | 0.24 | 0.03 | 0.00 | 0.00 | 0.00 |
| 38,000 | 1.01 | 0.00 | 0.22 | 0.00 | 0.07 | 0.06 | 0.05 | 0.00 | 0.00 | 0.00 |
| 40,000 | 1.23 | 0.00 | 0.21 | 0.24 | 0.04 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 |
| 42,000 | 1.39 | 0.00 | 0.18 | 0.47 | 0.02 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 |
| 44,000 | 1.34 | 0.00 | 0.15 | 0.47 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 1.57 | 0.00 | 0.12 | 0.47 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 1.67 | 0.00 | 0.08 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 1.42 | 0.00 | 0.05 | 0.24 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 1.13 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.82 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.07 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 129. Tandem-axle load distribution factors, Site 245-0218 EB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|------|-------|------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.16 | 0.00 | 11.32 | 0.65 | 21.64 | 8.74 | 7.36 | 18.75 | 5.75 | 15.73 |
| 8000 | 0.32 | 0.00 | 9.18 | 1.09 | 17.94 | 9.60 | 9.23 | 6.25 | 15.82 | 10.93 |
| 10,000 | 0.96 | 0.00 | 7.46 | 2.22 | 15.02 | 9.11 | 9.86 | 6.25 | 19.71 | 11.28 |
| 12,000 | 2.11 | 0.00 | 5.72 | 3.03 | 12.52 | 8.19 | 10.11 | 0.00 | 17.12 | 8.65 |
| 14,000 | 4.57 | 0.00 | 6.16 | 3.77 | 9.40 | 7.22 | 8.38 | 6.25 | 14.84 | 10.23 |
| 16,000 | 7.70 | 0.00 | 6.62 | 4.36 | 6.70 | 6.47 | 8.84 | 6.25 | 11.72 | 7.95 |
| 18,000 | 11.03 | 0.00 | 5.45 | 5.11 | 4.43 | 6.28 | 8.29 | 6.25 | 7.48 | 5.94 |
| 20,000 | 14.32 | 0.00 | 4.32 | 5.19 | 3.46 | 6.66 | 7.62 | 0.00 | 4.70 | 5.59 |
| 22,000 | 15.73 | 0.00 | 4.23 | 6.80 | 2.40 | 7.69 | 7.58 | 0.00 | 1.89 | 5.68 |
| 24,000 | 12.98 | 0.00 | 4.01 | 7.28 | 1.95 | 8.17 | 6.60 | 0.00 | 0.59 | 4.37 |
| 26,000 | 9.94 | 0.00 | 4.21 | 7.75 | 1.29 | 7.46 | 5.54 | 0.00 | 0.25 | 4.02 |
| 28,000 | 6.43 | 0.00 | 4.25 | 7.63 | 0.93 | 5.95 | 4.57 | 0.00 | 0.03 | 2.62 |
| 30,000 | 4.28 | 0.00 | 3.56 | 7.60 | 0.65 | 4.22 | 2.88 | 0.00 | 0.03 | 2.45 |
| 32,000 | 3.04 | 0.00 | 3.29 | 6.92 | 0.42 | 2.41 | 1.48 | 0.00 | 0.02 | 1.31 |
| 34,000 | 2.05 | 0.00 | 3.14 | 5.93 | 0.31 | 1.12 | 1.06 | 25.00 | 0.02 | 2.01 |
| 36,000 | 1.73 | 0.00 | 2.70 | 5.40 | 0.31 | 0.46 | 0.34 | 0.00 | 0.00 | 0.44 |
| 38,000 | 1.15 | 0.00 | 2.69 | 4.61 | 0.16 | 0.16 | 0.17 | 0.00 | 0.02 | 0.35 |
| 40,000 | 0.93 | 0.00 | 2.31 | 3.81 | 0.17 | 0.06 | 0.04 | 0.00 | 0.00 | 0.17 |
| 42,000 | 0.29 | 0.00 | 1.81 | 3.08 | 0.13 | 0.02 | 0.04 | 0.00 | 0.00 | 0.26 |
| 44,000 | 0.16 | 0.00 | 1.78 | 2.79 | 0.06 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.03 | 0.00 | 1.49 | 2.31 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 0.03 | 0.00 | 1.25 | 1.45 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.03 | 0.00 | 1.09 | 0.77 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.03 | 0.00 | 0.77 | 0.29 | 0.01 | 0.00 | 0.00 | 25.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.57 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.34 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 130. Tandem-axle load distribution factors, Site 245-0218 WB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 0.00 | 0.00 | 1.02 | 0.17 | 5.62 | 8.74 | 0.45 | 0.00 | 5.75 | 0.57 |
| 8000 | 0.11 | 0.00 | 4.08 | 0.28 | 6.30 | 9.60 | 0.60 | 0.00 | 15.82 | 2.08 |
| 10,000 | 0.92 | 0.00 | 14.14 | 0.56 | 6.82 | 9.11 | 0.88 | 3.85 | 19.71 | 3.13 |
| 12,000 | 1.99 | 0.00 | 7.19 | 1.07 | 12.05 | 8.19 | 3.39 | 0.00 | 17.12 | 4.55 |
| 14,000 | 1.14 | 0.00 | 4.32 | 1.41 | 13.60 | 7.22 | 5.32 | 0.00 | 14.84 | 4.97 |
| 16,000 | 1.12 | 0.00 | 5.41 | 2.31 | 11.45 | 6.47 | 7.41 | 3.85 | 11.72 | 4.12 |
| 18,000 | 1.95 | 0.00 | 5.90 | 3.99 | 10.01 | 6.28 | 11.15 | 1.92 | 7.48 | 4.17 |
| 20,000 | 2.40 | 0.00 | 5.43 | 5.68 | 7.79 | 6.66 | 11.67 | 7.69 | 4.70 | 6.02 |
| 22,000 | 3.88 | 0.00 | 5.63 | 8.77 | 6.03 | 7.69 | 11.85 | 3.85 | 1.89 | 8.43 |
| 24,000 | 7.40 | 0.00 | 5.43 | 10.69 | 4.42 | 8.17 | 11.55 | 1.92 | 0.59 | 10.09 |
| 26,000 | 12.94 | 0.00 | 5.54 | 11.75 | 3.73 | 7.46 | 11.91 | 17.31 | 0.25 | 14.40 |
| 28,000 | 14.74 | 0.00 | 4.81 | 12.71 | 3.30 | 5.95 | 11.46 | 5.77 | 0.03 | 17.67 |
| 30,000 | 14.01 | 0.00 | 4.64 | 10.57 | 2.69 | 4.22 | 7.41 | 19.23 | 0.03 | 13.07 |
| 32,000 | 9.87 | 0.00 | 4.19 | 10.57 | 2.07 | 2.41 | 3.78 | 21.15 | 0.02 | 5.50 |
| 34,000 | 5.56 | 0.00 | 3.68 | 7.03 | 1.59 | 1.12 | 0.70 | 9.62 | 0.02 | 1.14 |
| 36,000 | 2.88 | 0.00 | 3.39 | 4.72 | 1.03 | 0.46 | 0.21 | 1.92 | 0.00 | 0.05 |
| 38,000 | 2.08 | 0.00 | 2.89 | 2.64 | 0.61 | 0.16 | 0.15 | 0.00 | 0.02 | 0.05 |
| 40,000 | 1.67 | 0.00 | 2.65 | 2.08 | 0.43 | 0.06 | 0.06 | 1.92 | 0.00 | 0.00 |
| 42,000 | 1.67 | 0.00 | 2.41 | 1.35 | 0.19 | 0.02 | 0.03 | 0.00 | 0.00 | 0.00 |
| 44,000 | 2.15 | 0.00 | 2.13 | 0.84 | 0.14 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 |
| 46,000 | 2.30 | 0.00 | 1.63 | 0.39 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 2.66 | 0.00 | 1.16 | 0.34 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 2.23 | 0.00 | 0.87 | 0.06 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 1.84 | 0.00 | 0.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 1.59 | 0.00 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.71 | 0.00 | 0.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.15 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.02 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 131. Tandem-axle load distribution factors, Site 175-0247 EB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 7.25 | 0.00 | 46.04 | 17.47 | 7.40 | 6.86 | 11.07 | 6.10 | 3.62 | 13.22 |
| 8000 | 5.84 | 0.00 | 21.67 | 3.49 | 11.26 | 14.29 | 26.23 | 8.13 | 12.03 | 10.73 |
| 10,000 | 1.83 | 0.00 | 5.42 | 3.49 | 14.60 | 16.43 | 23.79 | 8.13 | 21.34 | 18.97 |
| 12,000 | 2.85 | 0.00 | 4.00 | 4.57 | 11.21 | 12.15 | 12.60 | 10.16 | 15.20 | 15.33 |
| 14,000 | 2.29 | 0.00 | 3.43 | 5.38 | 8.84 | 7.10 | 5.70 | 12.60 | 13.39 | 14.56 |
| 16,000 | 2.60 | 0.00 | 2.87 | 4.57 | 8.00 | 5.08 | 3.33 | 12.20 | 14.18 | 7.47 |
| 18,000 | 3.13 | 0.00 | 2.88 | 4.30 | 6.78 | 4.36 | 2.91 | 8.94 | 10.82 | 5.36 |
| 20,000 | 4.12 | 0.00 | 2.31 | 6.99 | 5.25 | 3.92 | 2.73 | 8.54 | 5.65 | 3.83 |
| 22,000 | 5.67 | 0.00 | 2.10 | 5.65 | 4.04 | 3.85 | 2.78 | 5.28 | 2.71 | 3.64 |
| 24,000 | 10.13 | 0.00 | 1.86 | 6.99 | 2.97 | 4.33 | 2.81 | 2.85 | 0.87 | 2.11 |
| 26,000 | 12.84 | 0.00 | 1.41 | 6.45 | 2.95 | 5.29 | 2.16 | 5.69 | 0.15 | 0.96 |
| 28,000 | 13.05 | 0.00 | 1.20 | 6.18 | 2.95 | 5.72 | 1.80 | 2.44 | 0.02 | 0.57 |
| 30,000 | 11.79 | 0.00 | 0.98 | 5.38 | 3.23 | 4.87 | 1.19 | 0.81 | 0.00 | 0.57 |
| 32,000 | 6.72 | 0.00 | 0.94 | 6.45 | 2.99 | 3.20 | 0.52 | 1.63 | 0.00 | 0.96 |
| 34,000 | 4.26 | 0.00 | 0.66 | 3.23 | 2.37 | 1.61 | 0.25 | 2.03 | 0.02 | 0.57 |
| 36,000 | 2.50 | 0.00 | 0.50 | 3.49 | 1.91 | 0.67 | 0.06 | 2.03 | 0.00 | 0.19 |
| 38,000 | 1.58 | 0.00 | 0.42 | 3.49 | 1.32 | 0.22 | 0.03 | 1.22 | 0.00 | 0.57 |
| 40,000 | 0.63 | 0.00 | 0.37 | 0.54 | 0.72 | 0.06 | 0.01 | 0.41 | 0.00 | 0.38 |
| 42,000 | 0.21 | 0.00 | 0.26 | 0.54 | 0.45 | 0.01 | 0.03 | 0.41 | 0.00 | 0.00 |
| 44,000 | 0.32 | 0.00 | 0.19 | 0.81 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 0.14 | 0.00 | 0.16 | 0.00 | 0.19 | 0.00 | 0.00 | 0.41 | 0.00 | 0.00 |
| 48,000 | 0.11 | 0.00 | 0.12 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.07 | 0.00 | 0.09 | 0.27 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.04 | 0.00 | 0.07 | 0.27 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.00 | 0.00 | 0.04 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.04 | 0.00 | 0.02 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 132. Tandem-axle load distribution factors, Site 175-0247 WB.

| Mean Axle Load, lb | Vehicle Classification | | | | | | | | | |
|--------------------|------------------------|------|-------|------|-------|------|-------|-------|-------|-------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6000 | 1.30 | 0.00 | 19.26 | 2.97 | 8.46 | 3.56 | 1.46 | 0.00 | 1.80 | 15.42 |
| 8000 | 2.56 | 0.00 | 14.90 | 2.31 | 13.80 | 6.86 | 3.19 | 25.00 | 7.11 | 16.36 |
| 10,000 | 3.01 | 0.00 | 16.28 | 1.65 | 16.49 | 8.63 | 4.45 | 25.00 | 12.27 | 12.62 |
| 12,000 | 4.84 | 0.00 | 14.87 | 3.96 | 13.91 | 9.23 | 4.93 | 0.00 | 17.23 | 17.76 |
| 14,000 | 4.31 | 0.00 | 6.76 | 3.30 | 12.36 | 9.29 | 6.34 | 0.00 | 17.17 | 9.81 |
| 16,000 | 4.60 | 0.00 | 3.80 | 5.28 | 10.17 | 8.97 | 8.60 | 0.00 | 15.56 | 6.54 |
| 18,000 | 3.82 | 0.00 | 3.66 | 9.24 | 7.36 | 8.40 | 10.64 | 0.00 | 11.20 | 6.07 |
| 20,000 | 6.55 | 0.00 | 3.12 | 6.27 | 5.28 | 8.12 | 11.88 | 25.00 | 8.37 | 2.80 |
| 22,000 | 6.99 | 0.00 | 2.82 | 6.93 | 4.09 | 8.34 | 14.07 | 0.00 | 5.33 | 3.27 |
| 24,000 | 8.17 | 0.00 | 2.38 | 9.90 | 2.59 | 7.98 | 13.00 | 0.00 | 2.71 | 1.40 |
| 26,000 | 6.55 | 0.00 | 2.17 | 5.61 | 1.82 | 6.83 | 10.20 | 0.00 | 0.93 | 3.74 |
| 28,000 | 4.39 | 0.00 | 1.56 | 6.27 | 1.31 | 5.35 | 6.36 | 0.00 | 0.25 | 1.87 |
| 30,000 | 4.72 | 0.00 | 1.41 | 4.95 | 0.88 | 4.01 | 3.14 | 25.00 | 0.06 | 0.93 |
| 32,000 | 5.08 | 0.00 | 1.12 | 8.58 | 0.70 | 2.58 | 1.20 | 0.00 | 0.00 | 0.47 |
| 34,000 | 5.04 | 0.00 | 1.06 | 4.95 | 0.27 | 1.22 | 0.39 | 0.00 | 0.00 | 0.00 |
| 36,000 | 5.21 | 0.00 | 0.98 | 5.94 | 0.23 | 0.46 | 0.15 | 0.00 | 0.00 | 0.47 |
| 38,000 | 4.92 | 0.00 | 0.75 | 4.62 | 0.09 | 0.12 | 0.01 | 0.00 | 0.00 | 0.00 |
| 40,000 | 4.76 | 0.00 | 0.66 | 3.30 | 0.05 | 0.04 | 0.00 | 0.00 | 0.00 | 0.47 |
| 42,000 | 4.27 | 0.00 | 0.61 | 1.65 | 0.07 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 44,000 | 3.50 | 0.00 | 0.53 | 1.65 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46,000 | 2.40 | 0.00 | 0.46 | 0.33 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 48,000 | 1.75 | 0.00 | 0.31 | 0.33 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50,000 | 0.69 | 0.00 | 0.18 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 52,000 | 0.41 | 0.00 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 54,000 | 0.12 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 56,000 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58,000 | 0.04 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60,000 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 62,000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 64,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 66,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 68,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 72,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 74,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 76,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 78,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

APPENDIX D: ESAL FACTOR CALCULATION RESULTS

ESAL FACTORS FOR FLEXIBLE PAVEMENTS

Table 133 through table 142 represent the truck ESAL factors calculated for flexible pavements for each vehicle classification. Different structural numbers were considered. Then, the ESAL factors are the weighted averages based on their respective vehicle counts.

Table 133. Truck ESAL factors for flexible pavement, Site 185-0227.

| SN | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|----|---------------------------|--------------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | |
| 4 | Avg ESAL Factor | 0.60 | 0.26 | 0.34 | 1.11 | 0.30 | 0.80 | 0.54 | 1.20 | 0.69 | 0.35 |
| | No. of Vehicles | 23,540 | 85,094 | 42,454 | 351 | 185,019 | 1,818,047 | 6,085 | 103,794 | 67,587 | 149 |
| | Weighted Avg ESAL Factors | 0.34 | | | | | 0.77 | | | | |
| 6 | Avg ESAL Factor | 0.56 | 0.24 | 0.31 | 1.06 | 0.27 | 0.72 | 0.46 | 1.09 | 0.58 | 0.29 |
| | No. of Vehicles | 23,540 | 85,094 | 42,454 | 351 | 185,019 | 1,818,047 | 6,085 | 103,794 | 67,587 | 149 |
| | Weighted Avg ESAL Factors | 0.31 | | | | | 0.69 | | | | |
| 8 | Avg ESAL Factor | 0.55 | 0.23 | 0.30 | 1.05 | 0.26 | 0.70 | 0.44 | 1.07 | 0.55 | 0.28 |
| | No. of Vehicles | 23,540 | 85,094 | 42,454 | 351 | 185,019 | 1,818,047 | 6,085 | 103,794 | 67,587 | 149 |
| | Weighted Avg ESAL Factors | 0.30 | | | | | 0.67 | | | | |

Table 134. Truck ESAL factors for flexible pavement, Site 285-0243.

| SN | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----|---------------------------|--------------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 4 | Avg ESAL Factor | 0.80 | 0.29 | 0.43 | 1.38 | 0.28 | 0.71 | 0.54 | 1.14 | 0.60 | 0.72 | |
| | No. of Vehicles | 4,901 | 34,046 | 12,619 | 76 | 30,522 | 160,744 | 1,265 | 8,930 | 3,602 | 64 | |
| | Weighted Avg ESAL Factors | 51,642 | | | | | 205,127 | | | | | |
| | | 0.37 | | | | | 0.66 | | | | | |
| 6 | Avg ESAL Factor | 0.75 | 0.27 | 0.40 | 1.32 | 0.26 | 0.63 | 0.46 | 1.04 | 0.50 | 0.67 | |
| | No. of Vehicles | 4,901 | 34,046 | 12,619 | 76 | 30,522 | 160,744 | 1,265 | 8,930 | 3,602 | 64 | |
| | Weighted Avg ESAL Factors | 51,642 | | | | | 205,127 | | | | | |
| | | 0.35 | | | | | 0.59 | | | | | |
| 8 | Avg ESAL Factor | 0.74 | 0.26 | 0.40 | 1.31 | 0.25 | 0.61 | 0.44 | 1.02 | 0.48 | 0.66 | |
| | No. of Vehicles | 4,901 | 34,046 | 12,619 | 76 | 30,522 | 160,744 | 1,265 | 8,930 | 3,602 | 64 | |
| | Weighted Avg ESAL Factors | 51,642 | | | | | 205,127 | | | | | |
| | | 0.34 | | | | | 0.57 | | | | | |

Table 135. Truck ESAL factors for flexible pavement, Site 021-w334.

| SN | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----|---------------------------|--------------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 4 | Avg ESAL Factor | 0.42 | 0.30 | 0.48 | 1.19 | 0.32 | 0.53 | 0.51 | 0.44 | 0.41 | 0.98 | |
| | No. of Vehicles | 8,514 | 66,385 | 40,334 | 308 | 61,258 | 267,445 | 4,805 | 3,691 | 6,094 | 91 | |
| | Weighted Avg ESAL Factors | 115,541 | | | | | 343,384 | | | | | |
| | | 0.38 | | | | | 0.49 | | | | | |
| 6 | Avg ESAL Factor | 0.39 | 0.29 | 0.47 | 1.14 | 0.30 | 0.46 | 0.43 | 0.39 | 0.35 | 1.01 | |
| | No. of Vehicles | 8,514 | 66,385 | 40,334 | 308 | 61,258 | 267,445 | 4,805 | 3,691 | 6,094 | 91 | |
| | Weighted Avg ESAL Factors | 115,541 | | | | | 343,384 | | | | | |
| | | 0.36 | | | | | 0.43 | | | | | |
| 8 | Avg ESAL Factor | 0.39 | 0.29 | 0.48 | 1.14 | 0.31 | 0.45 | 0.41 | 0.38 | 0.34 | 1.06 | |
| | No. of Vehicles | 8,514 | 66,385 | 40,334 | 308 | 61,258 | 267,445 | 4,805 | 3,691 | 6,094 | 91 | |
| | Weighted Avg ESAL Factors | 115,541 | | | | | 343,384 | | | | | |
| | | 0.37 | | | | | 0.42 | | | | | |

Table 136. Truck ESAL factors for flexible pavement, Site 127-0312.

| SN | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----|---------------------------|--------------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 4 | Avg ESAL Factor | 0.71 | 0.31 | 0.37 | 1.27 | 0.27 | 0.69 | 0.43 | 1.09 | 0.64 | 0.30 | |
| | No. of Vehicles | 26,950 | 193,885 | 78,191 | 539 | 295,471 | 1,820,138 | 15,550 | 67,565 | 47,459 | 1032 | |
| | Weighted Avg ESAL Factors | 299,565 | | | | | 2,247,215 | | | | | |
| | | 0.36 | | | | | 0.65 | | | | | |
| 6 | Avg ESAL Factor | 0.68 | 0.29 | 0.34 | 1.16 | 0.25 | 0.62 | 0.36 | 0.99 | 0.54 | 0.25 | |
| | No. of Vehicles | 26,950 | 193,885 | 78,191 | 539 | 295,471 | 1,820,138 | 15,550 | 67,565 | 47,459 | 1032 | |
| | Weighted Avg ESAL Factors | 299,565 | | | | | 2,247,215 | | | | | |
| | | 0.34 | | | | | 0.58 | | | | | |
| 8 | Avg ESAL Factor | 0.69 | 0.30 | 0.33 | 1.23 | 0.25 | 0.60 | 0.35 | 0.97 | 0.51 | 0.25 | |
| | No. of Vehicles | 26,950 | 193,885 | 78,191 | 539 | 295,471 | 1,820,138 | 15,550 | 67,565 | 47,459 | 1032 | |
| | Weighted Avg ESAL Factors | 299,565 | | | | | 2,247,215 | | | | | |
| | | 0.34 | | | | | 0.56 | | | | | |

Table 137. Truck ESAL factors for flexible pavement, Site 051-0387.

| SN | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----|---------------------------|--------------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 4 | Avg ESAL Factor | 0.80 | 0.41 | 0.64 | 1.28 | 0.35 | 0.83 | 0.49 | 1.40 | 0.82 | 0.39 | |
| | No. of Vehicles | 38,199 | 161,528 | 87,551 | 968 | 301,067 | 1,572,630 | 20,217 | 63,243 | 47,557 | 1243 | |
| | Weighted Avg ESAL Factors | 288,246 | | | | | 2,005,957 | | | | | |
| | | 0.53 | | | | | 0.77 | | | | | |
| 6 | Avg ESAL Factor | 0.78 | 0.38 | 0.61 | 1.27 | 0.33 | 0.73 | 0.42 | 1.28 | 0.69 | 0.34 | |
| | No. of Vehicles | 38,199 | 161,528 | 87,551 | 968 | 301,067 | 1,572,630 | 20,217 | 63,243 | 47,557 | 1243 | |
| | Weighted Avg ESAL Factors | 288,246 | | | | | 2,005,957 | | | | | |
| | | 0.50 | | | | | 0.69 | | | | | |
| 8 | Avg ESAL Factor | 0.78 | 0.38 | 0.61 | 1.29 | 0.35 | 0.71 | 0.40 | 1.26 | 0.66 | 0.33 | |
| | No. of Vehicles | 38,199 | 161,528 | 87,551 | 968 | 301,067 | 1,572,630 | 20,217 | 63,243 | 47,557 | 1243 | |
| | Weighted Avg ESAL Factors | 288,246 | | | | | 2,005,957 | | | | | |
| | | 0.50 | | | | | 0.67 | | | | | |

Table 138. Truck ESAL factors for flexible pavement, Site 217-0218.

| SN | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----|---------------------------|--------------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|-------------|--|
| | | Single Unit Trucks | | | | Multi-Unit Trucks | | | | | | |
| 4 | Avg ESAL Factor | 0.62 | 0.49 | 0.70 | 1.74 | 0.35 | 0.92 | 0.67 | 1.38 | 0.83 | 0.59 | |
| | No. of Vehicles | 34,629 | 35,568 | 35,529 | 244 | 76,596 | 500,655 | 4,500 | 15,144 | 7,825 | 108 | |
| | Weighted Avg ESAL Factors | 105,970 | | | | 604,828 | | | | | | |
| | | 0.61 | | | | 0.86 | | | | | | |
| 6 | Avg ESAL Factor | 0.59 | 0.47 | 0.69 | 1.72 | 0.33 | 0.82 | 0.57 | 1.24 | 0.70 | 0.53 | |
| | No. of Vehicles | 34,629 | 35,568 | 35,529 | 244 | 76,596 | 500,655 | 4,500 | 15,144 | 7,825 | 108 | |
| | Weighted Avg ESAL Factors | 105,970 | | | | 604,828 | | | | | | |
| | | 0.59 | | | | 0.76 | | | | | | |
| 8 | Avg ESAL Factor | 0.59 | 0.47 | 0.70 | 1.74 | 0.33 | 0.79 | 0.55 | 1.21 | 0.66 | 0.51 | |
| | No. of Vehicles | 34,629 | 35,568 | 35,529 | 244 | 76,596 | 500,655 | 4,500 | 15,144 | 7,825 | 108 | |
| | Weighted Avg ESAL Factors | 105,970 | | | | 604,828 | | | | | | |
| | | 0.59 | | | | 0.74 | | | | | | |

Table 139. Truck ESAL factors for flexible pavement, Site 051-0368.

| SN | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----|---------------------------|--------------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|-------------|--|
| | | Single Unit Trucks | | | | Multi-Unit Trucks | | | | | | |
| 4 | Avg ESAL Factor | 0.88 | 0.47 | 1.00 | 1.23 | 0.33 | 0.74 | 0.54 | 1.24 | 0.61 | 0.28 | |
| | No. of Vehicles | 40,569 | 1,317 | 1,334 | 32 | 628 | 1,879 | 708 | 14,675 | 5,698 | 1266 | |
| | Weighted Avg ESAL Factors | 43,252 | | | | 24,854 | | | | | | |
| | | 0.87 | | | | 0.96 | | | | | | |
| 6 | Avg ESAL Factor | 0.88 | 0.45 | 1.00 | 1.20 | 0.32 | 0.66 | 0.46 | 1.15 | 0.51 | 0.24 | |
| | No. of Vehicles | 40,569 | 1,317 | 1,334 | 32 | 628 | 1,879 | 708 | 14,675 | 5,698 | 1266 | |
| | Weighted Avg ESAL Factors | 43,252 | | | | 24,854 | | | | | | |
| | | 0.87 | | | | 0.88 | | | | | | |
| 8 | Avg ESAL Factor | 0.92 | 0.47 | 1.03 | 1.20 | 0.34 | 0.64 | 0.44 | 1.13 | 0.49 | 0.23 | |
| | No. of Vehicles | 40,569 | 1,317 | 1,334 | 32 | 628 | 1,879 | 708 | 14,675 | 5,698 | 1266 | |
| | Weighted Avg ESAL Factors | 43,252 | | | | 24,854 | | | | | | |
| | | 0.91 | | | | 0.86 | | | | | | |

Table 140. Truck ESAL factors for flexible pavement, Site 143-0126.

| SN | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----|---------------------------|--------------------|---------|--------|------|---------|-------------------|--------|---------|--------|------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 4 | Avg ESAL Factor | 1.09 | 0.38 | 0.41 | 0.61 | 0.33 | 0.57 | 0.45 | 0.76 | 0.43 | 0.29 | |
| | No. of Vehicles | 21,327 | 120,989 | 59,655 | 641 | 211,269 | 2,232,380 | 10,619 | 118,998 | 79,642 | 687 | |
| | Weighted Avg ESAL Factors | 202,612 | | | | | 2,653,595 | | | | | |
| | | 0.46 | | | | | 0.55 | | | | | |
| 6 | Avg ESAL Factor | 1.11 | 0.37 | 0.39 | 0.58 | 0.30 | 0.50 | 0.38 | 0.67 | 0.35 | 0.25 | |
| | No. of Vehicles | 21,327 | 120,989 | 59,655 | 641 | 211,269 | 2,232,380 | 10,619 | 118,998 | 79,642 | 687 | |
| | Weighted Avg ESAL Factors | 202,612 | | | | | 2,653,595 | | | | | |
| | | 0.45 | | | | | 0.48 | | | | | |
| 8 | Avg ESAL Factor | 1.16 | 0.38 | 0.39 | 0.57 | 0.30 | 0.48 | 0.36 | 0.65 | 0.33 | 0.25 | |
| | No. of Vehicles | 21,327 | 120,989 | 59,655 | 641 | 211,269 | 2,232,380 | 10,619 | 118,998 | 79,642 | 687 | |
| | Weighted Avg ESAL Factors | 202,612 | | | | | 2,653,595 | | | | | |
| | | 0.47 | | | | | 0.47 | | | | | |

Table 141. Truck ESAL factors for flexible pavement, Site 245-0218.

| SN | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----|---------------------------|--------------------|---------|--------|-------|---------|-------------------|--------|--------|--------|------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 4 | Avg ESAL Factor | 1.97 | 1.60 | 1.80 | 1.51 | 0.66 | 0.92 | 0.57 | 1.23 | 0.67 | 0.55 | |
| | No. of Vehicles | 15,172 | 126,207 | 75,039 | 4,675 | 205,152 | 1,659,438 | 10,939 | 34,714 | 17,233 | 3667 | |
| | Weighted Avg ESAL Factors | 221,093 | | | | | 1,931,143 | | | | | |
| | | 1.69 | | | | | 0.89 | | | | | |
| 6 | Avg ESAL Factor | 2.06 | 1.70 | 1.93 | 1.48 | 0.66 | 0.82 | 0.50 | 1.13 | 0.57 | 0.48 | |
| | No. of Vehicles | 15,172 | 126,207 | 75,039 | 4,675 | 205,152 | 1,659,438 | 10,939 | 34,714 | 17,233 | 3667 | |
| | Weighted Avg ESAL Factors | 221,093 | | | | | 1,931,143 | | | | | |
| | | 1.80 | | | | | 0.80 | | | | | |
| 8 | Avg ESAL Factor | 2.33 | 1.97 | 2.11 | 1.49 | 0.72 | 0.79 | 0.48 | 1.11 | 0.55 | 0.46 | |
| | No. of Vehicles | 15,172 | 126,207 | 75,039 | 4,675 | 205,152 | 1,659,438 | 10,939 | 34,714 | 17,233 | 3667 | |
| | Weighted Avg ESAL Factors | 221,093 | | | | | 1,931,143 | | | | | |
| | | 2.04 | | | | | 0.79 | | | | | |

Table 142. Truck ESAL factors for flexible pavement, Site 175-0247.

| SN | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----|---------------------------|--------------------|--------|--------|------|--------|-------------------|--------|--------|--------|------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 4 | Avg ESAL Factor | 0.82 | 0.31 | 0.37 | 1.03 | 0.58 | 0.57 | 0.34 | 1.11 | 0.50 | 0.28 | |
| | No. of Vehicles | 17,288 | 42,236 | 42,620 | 432 | 84,259 | 836,594 | 23,643 | 13,879 | 11,720 | 637 | |
| | Weighted Avg ESAL Factors | 102,576 | | | | | 970,732 | | | | | |
| | | 0.42 | | | | | 0.57 | | | | | |
| 6 | Avg ESAL Factor | 0.82 | 0.29 | 0.35 | 1.02 | 0.57 | 0.50 | 0.28 | 1.03 | 0.42 | 0.24 | |
| | No. of Vehicles | 17,288 | 42,236 | 42,620 | 432 | 84,259 | 836,594 | 23,643 | 13,879 | 11,720 | 637 | |
| | Weighted Avg ESAL Factors | 102,576 | | | | | 970,732 | | | | | |
| | | 0.41 | | | | | 0.51 | | | | | |
| 8 | Avg ESAL Factor | 0.84 | 0.29 | 0.35 | 1.04 | 0.59 | 0.49 | 0.27 | 1.01 | 0.41 | 0.23 | |
| | No. of Vehicles | 17,288 | 42,236 | 42,620 | 432 | 84,259 | 836,594 | 23,643 | 13,879 | 11,720 | 637 | |
| | Weighted Avg ESAL Factors | 102,576 | | | | | 970,732 | | | | | |
| | | 0.41 | | | | | 0.50 | | | | | |

ESAL FACTORS FOR RIGID PAVEMENTS

Table 143 through table 151 represent the truck ESAL factors calculated for rigid pavements for each vehicle classification with different slab thicknesses. Similar to the flexible pavement design, ESAL factors are the weighted averages based on their respective vehicle counts.

Table 143. Truck ESAL factors for rigid pavement, Site 185-0227.

| Slab Thickness (in.) | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----------------------|---------------------------|--------------------|---------|--------|------|-------------------|-----------|--------|---------|---------|------|--|
| | | Single Unit Trucks | | | | Multi-Unit Trucks | | | | | | |
| 8 | Avg ESAL Factor | 0.68 | 0.25 | 0.43 | 1.56 | 0.27 | 1.14 | 0.82 | 1.07 | 0.64 | 0.87 | |
| | No. of Vehicles | 35,254 | 132,858 | 67,553 | 712 | 284,159 | 2,270,726 | 10,530 | 152,352 | 107,221 | 339 | |
| | Weighted Avg ESAL Factors | 236,377 | | | | 2,825,327 | | | | | | |
| | | 0.37 | | | | 1.03 | | | | | | |
| 10 | Avg ESAL Factor | 0.68 | 0.25 | 0.43 | 1.60 | 0.27 | 1.15 | 0.82 | 1.05 | 0.62 | 0.90 | |
| | No. of Vehicles | 35,254 | 132,858 | 67,553 | 712 | 284,159 | 2,270,726 | 10,530 | 152,352 | 107,221 | 339 | |
| | Weighted Avg ESAL Factors | 236,377 | | | | 2,825,327 | | | | | | |
| | | 0.37 | | | | 1.03 | | | | | | |
| 12 | Avg ESAL Factor | 0.68 | 0.25 | 0.44 | 1.61 | 0.27 | 1.15 | 0.82 | 1.05 | 0.61 | 0.91 | |
| | No. of Vehicles | 35,254 | 132,858 | 67,553 | 712 | 284,159 | 2,270,726 | 10,530 | 152,352 | 107,221 | 339 | |
| | Weighted Avg ESAL Factors | 236,377 | | | | 2,825,327 | | | | | | |
| | | 0.37 | | | | 1.04 | | | | | | |

Table 144. Truck ESAL factors for rigid pavement, Site 285-0243.

| Slab Thickness (in.) | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----------------------|---------------------------|--------------------|--------|--------|------|-------------------|---------|-------|--------|-------|------|--|
| | | Single Unit Trucks | | | | Multi-Unit Trucks | | | | | | |
| 8 | Avg ESAL Factor | 1.40 | 0.35 | 0.65 | 2.32 | 0.34 | 0.89 | 0.79 | 1.08 | 0.56 | 1.13 | |
| | No. of Vehicles | 10,179 | 78,515 | 28,097 | 147 | 70,805 | 326,789 | 2,268 | 19,404 | 7,813 | 116 | |
| | Weighted Avg ESAL Factors | 116,938 | | | | 427,195 | | | | | | |
| | | 0.52 | | | | 0.80 | | | | | | |
| 10 | Avg ESAL Factor | 1.45 | 0.35 | 0.67 | 2.43 | 0.35 | 0.89 | 0.79 | 1.07 | 0.55 | 1.16 | |
| | No. of Vehicles | 10,179 | 78,515 | 28,097 | 147 | 70,805 | 326,789 | 2,268 | 19,404 | 7,813 | 116 | |
| | Weighted Avg ESAL Factors | 116,938 | | | | 427,195 | | | | | | |
| | | 0.53 | | | | 0.80 | | | | | | |
| 12 | Avg ESAL Factor | 1.47 | 0.36 | 0.68 | 2.48 | 0.35 | 0.89 | 0.79 | 1.07 | 0.54 | 1.18 | |
| | No. of Vehicles | 10,179 | 78,515 | 28,097 | 147 | 70,805 | 326,789 | 2,268 | 19,404 | 7,813 | 116 | |
| | Weighted Avg ESAL Factors | 116,938 | | | | 427,195 | | | | | | |
| | | 0.53 | | | | 0.81 | | | | | | |

Table 145. Truck ESAL factors for rigid pavement, Site 021-w334.

| Slab Thickness (in.) | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----------------------|---------------------------|--------------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 8 | Avg ESAL Factor | 0.48 | 0.29 | 0.67 | 2.03 | 0.32 | 0.74 | 0.85 | 0.40 | 0.39 | 1.70 | |
| | No. of Vehicles | 8,514 | 66,385 | 40,334 | 308 | 61,258 | 267,445 | 4,805 | 3,691 | 6,094 | 91 | |
| | Weighted Avg ESAL Factors | 115,541 | | | | | 343,384 | | | | | |
| | | 0.44 | | | | | 0.66 | | | | | |
| 10 | Avg ESAL Factor | 0.48 | 0.29 | 0.70 | 2.13 | 0.33 | 0.74 | 0.85 | 0.39 | 0.38 | 1.84 | |
| | No. of Vehicles | 8,514 | 66,385 | 40,334 | 308 | 61,258 | 267,445 | 4,805 | 3,691 | 6,094 | 91 | |
| | Weighted Avg ESAL Factors | 115,541 | | | | | 343,384 | | | | | |
| | | 0.46 | | | | | 0.66 | | | | | |
| 12 | Avg ESAL Factor | 0.48 | 0.30 | 0.72 | 2.17 | 0.33 | 0.74 | 0.85 | 0.39 | 0.38 | 1.92 | |
| | No. of Vehicles | 8,514 | 66,385 | 40,334 | 308 | 61,258 | 267,445 | 4,805 | 3,691 | 6,094 | 91 | |
| | Weighted Avg ESAL Factors | 115,541 | | | | | 343,384 | | | | | |
| | | 0.46 | | | | | 0.66 | | | | | |

Table 146. Truck ESAL factors for rigid pavement, Site 127-0312.

| Slab Thickness (in.) | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----------------------|---------------------------|--------------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 8 | Avg ESAL Factor | 0.91 | 0.30 | 0.47 | 1.75 | 0.27 | 1.00 | 0.63 | 1.01 | 0.62 | 0.44 | |
| | No. of Vehicles | 26,950 | 193,885 | 78,191 | 539 | 295,471 | 1,820,138 | 15,550 | 67,565 | 47,459 | 1032 | |
| | Weighted Avg ESAL Factors | 299,565 | | | | | 2,247,215 | | | | | |
| | | 0.40 | | | | | 0.90 | | | | | |
| 10 | Avg ESAL Factor | 0.93 | 0.30 | 0.48 | 1.79 | 0.27 | 1.01 | 0.63 | 0.99 | 0.60 | 0.44 | |
| | No. of Vehicles | 26,950 | 193,885 | 78,191 | 539 | 295,471 | 1,820,138 | 15,550 | 67,565 | 47,459 | 1032 | |
| | Weighted Avg ESAL Factors | 299,565 | | | | | 2,247,215 | | | | | |
| | | 0.41 | | | | | 0.90 | | | | | |
| 12 | Avg ESAL Factor | 0.94 | 0.30 | 0.49 | 1.83 | 0.27 | 1.01 | 0.63 | 0.99 | 0.60 | 0.45 | |
| | No. of Vehicles | 26,950 | 193,885 | 78,191 | 539 | 295,471 | 1,820,138 | 15,550 | 67,565 | 47,459 | 1032 | |
| | Weighted Avg ESAL Factors | 299,565 | | | | | 2,247,215 | | | | | |
| | | 0.41 | | | | | 0.90 | | | | | |

Table 147. Truck ESAL factors for rigid pavement, Site 051-0387.

| Slab Thickness (in.) | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----------------------|---------------------------|--------------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|-------------|--|
| | | Single Unit Trucks | | | | Multi-Unit Trucks | | | | | | |
| 8 | Avg ESAL Factor | 1.00 | 0.39 | 0.83 | 1.93 | 0.35 | 1.17 | 0.70 | 1.30 | 0.79 | 0.60 | |
| | No. of Vehicles | 38,199 | 161,528 | 87,551 | 968 | 301,067 | 1,572,630 | 20,217 | 63,243 | 47,557 | 1243 | |
| | Weighted Avg ESAL Factors | 288,246 | | | | 2,005,957 | | | | | | |
| | | 0.61 | | | | 1.04 | | | | | | |
| 10 | Avg ESAL Factor | 1.03 | 0.39 | 0.85 | 2.02 | 0.36 | 1.18 | 0.69 | 1.29 | 0.77 | 0.60 | |
| | No. of Vehicles | 38,199 | 161,528 | 87,551 | 968 | 301,067 | 1,572,630 | 20,217 | 63,243 | 47,557 | 1243 | |
| | Weighted Avg ESAL Factors | 288,246 | | | | 2,005,957 | | | | | | |
| | | 0.62 | | | | 1.04 | | | | | | |
| 12 | Avg ESAL Factor | 1.04 | 0.39 | 0.86 | 2.05 | 0.36 | 1.18 | 0.69 | 1.28 | 0.76 | 0.60 | |
| | No. of Vehicles | 38,199 | 161,528 | 87,551 | 968 | 301,067 | 1,572,630 | 20,217 | 63,243 | 47,557 | 1243 | |
| | Weighted Avg ESAL Factors | 288,246 | | | | 2,005,957 | | | | | | |
| | | 0.62 | | | | 1.04 | | | | | | |

Table 148. Truck ESAL factors for rigid pavement, Site 217-0218.

| Slab Thickness (in.) | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----------------------|---------------------------|--------------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|-------------|--|
| | | Single Unit Trucks | | | | Multi-Unit Trucks | | | | | | |
| 8 | Avg ESAL Factor | 0.68 | 0.38 | 0.74 | 1.40 | 0.32 | 0.73 | 0.51 | 0.78 | 0.47 | 0.57 | |
| | No. of Vehicles | 50,352 | 63,669 | 66,576 | 712 | 123,357 | 1,061,965 | 11,434 | 31,962 | 16,067 | 1578 | |
| | Weighted Avg ESAL Factors | 181,309 | | | | 1,246,363 | | | | | | |
| | | 0.60 | | | | 0.68 | | | | | | |
| 10 | Avg ESAL Factor | 0.70 | 0.38 | 0.78 | 1.46 | 0.32 | 0.73 | 0.51 | 0.76 | 0.46 | 0.57 | |
| | No. of Vehicles | 50,352 | 63,669 | 66,576 | 712 | 123,357 | 1,061,965 | 11,434 | 31,962 | 16,067 | 1578 | |
| | Weighted Avg ESAL Factors | 181,309 | | | | 1,246,363 | | | | | | |
| | | 0.62 | | | | 0.68 | | | | | | |
| 12 | Avg ESAL Factor | 0.70 | 0.39 | 0.80 | 1.49 | 0.32 | 0.73 | 0.51 | 0.76 | 0.46 | 0.57 | |
| | No. of Vehicles | 50,352 | 63,669 | 66,576 | 712 | 123,357 | 1,061,965 | 11,434 | 31,962 | 16,067 | 1578 | |
| | Weighted Avg ESAL Factors | 181,309 | | | | 1,246,363 | | | | | | |
| | | 0.63 | | | | 0.69 | | | | | | |

Table 149. Truck ESAL factors for rigid pavement, Site 051-0368.

| Slab Thickness (in.) | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----------------------|---------------------------|--------------------|-------|-------|------|------|-------------------|------|--------|-------|------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 8 | Avg ESAL Factor | 1.01 | 0.46 | 1.47 | 2.11 | 0.35 | 1.04 | 0.74 | 1.16 | 0.59 | 0.41 | |
| | No. of Vehicles | 40,569 | 1,317 | 1,334 | 32 | 628 | 1,879 | 708 | 14,675 | 5,698 | 1266 | |
| | Weighted Avg ESAL Factors | 43,252 | | | | | 24,854 | | | | | |
| | | 1.01 | | | | | 0.95 | | | | | |
| 10 | Avg ESAL Factor | 1.05 | 0.47 | 1.55 | 2.23 | 0.36 | 1.05 | 0.73 | 1.15 | 0.58 | 0.41 | |
| | No. of Vehicles | 40,569 | 1,317 | 1,334 | 32 | 628 | 1,879 | 708 | 14,675 | 5,698 | 1266 | |
| | Weighted Avg ESAL Factors | 43,252 | | | | | 24,854 | | | | | |
| | | 1.05 | | | | | 0.94 | | | | | |
| 12 | Avg ESAL Factor | 1.07 | 0.48 | 1.61 | 2.28 | 0.37 | 1.05 | 0.73 | 1.15 | 0.58 | 0.41 | |
| | No. of Vehicles | 40,569 | 1,317 | 1,334 | 32 | 628 | 1,879 | 708 | 14,675 | 5,698 | 1266 | |
| | Weighted Avg ESAL Factors | 43,252 | | | | | 24,854 | | | | | |
| | | 1.07 | | | | | 0.94 | | | | | |

Table 150. Truck ESAL factors for rigid pavement, Site 143-0126.

| Slab Thickness (in.) | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----------------------|---------------------------|--------------------|---------|--------|------|---------|-------------------|--------|---------|--------|------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 8 | Avg ESAL Factor | 1.52 | 0.38 | 0.50 | 0.97 | 0.34 | 0.70 | 0.66 | 0.68 | 0.41 | 0.48 | |
| | No. of Vehicles | 21,327 | 120,989 | 59,655 | 641 | 211,269 | 3,874 | 10,619 | 118,998 | 79,642 | 687 | |
| | Weighted Avg ESAL Factors | 202,612 | | | | | 425,089 | | | | | |
| | | 0.54 | | | | | 0.46 | | | | | |
| 10 | Avg ESAL Factor | 1.62 | 0.38 | 0.52 | 1.00 | 0.34 | 0.70 | 0.66 | 0.67 | 0.40 | 0.48 | |
| | No. of Vehicles | 21,327 | 120,989 | 59,655 | 641 | 211,269 | 3,874 | 10,619 | 118,998 | 79,642 | 687 | |
| | Weighted Avg ESAL Factors | 202,612 | | | | | 425,089 | | | | | |
| | | 0.56 | | | | | 0.45 | | | | | |
| 12 | Avg ESAL Factor | 1.68 | 0.39 | 0.52 | 1.02 | 0.34 | 0.70 | 0.65 | 0.67 | 0.39 | 0.48 | |
| | No. of Vehicles | 21,327 | 120,989 | 59,655 | 641 | 211,269 | 3,874 | 10,619 | 118,998 | 79,642 | 687 | |
| | Weighted Avg ESAL Factors | 202,612 | | | | | 425,089 | | | | | |
| | | 0.57 | | | | | 0.45 | | | | | |

Table 151. Truck ESAL factors for rigid pavement, Site 175-0247.

| Slab Thickness (in.) | Vehicle Classes | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|----------------------|---------------------------|--------------------|--------|--------|------|--------|-------------------|--------|--------|--------|------|--|
| | | Single Unit Trucks | | | | | Multi-Unit Trucks | | | | | |
| 8 | Avg ESAL Factor | 0.98 | 0.30 | 0.47 | 1.59 | 0.65 | 0.80 | 0.51 | 1.04 | 0.48 | 0.40 | |
| | No. of Vehicles | 17,288 | 42,236 | 42,620 | 432 | 84,259 | 836,594 | 23,643 | 13,879 | 11,720 | 637 | |
| | Weighted Avg ESAL Factors | 102,576 | | | | | 970,732 | | | | | |
| | | 0.49 | | | | | 0.78 | | | | | |
| 10 | Avg ESAL Factor | 1.02 | 0.30 | 0.48 | 1.67 | 0.67 | 0.80 | 0.50 | 1.04 | 0.47 | 0.40 | |
| | No. of Vehicles | 17,288 | 42,236 | 42,620 | 432 | 84,259 | 836,594 | 23,643 | 13,879 | 11,720 | 637 | |
| | Weighted Avg ESAL Factors | 102,576 | | | | | 970,732 | | | | | |
| | | 0.50 | | | | | 0.78 | | | | | |
| 12 | Avg ESAL Factor | 1.04 | 0.30 | 0.49 | 1.70 | 0.68 | 0.80 | 0.50 | 1.03 | 0.47 | 0.40 | |
| | No. of Vehicles | 17,288 | 42,236 | 42,620 | 432 | 84,259 | 836,594 | 23,643 | 13,879 | 11,720 | 637 | |
| | Weighted Avg ESAL Factors | 102,576 | | | | | 970,732 | | | | | |
| | | 0.51 | | | | | 0.78 | | | | | |

TRUCK ESAL FACTORS COMPARISON RESULTS

The truck ESAL factors of VDOT, NCDOT, and GDOT for flexible pavement design are compared in figure 82. For comparison purposes, the ESAL factors from only interstate highways of VDOT and NCDOT have been considered. It is important to mention that the ESAL factors for the state of Georgia have been calculated twice: before and after applying the QC process. Figure 83 shows the same comparison for the purpose of rigid pavement design.

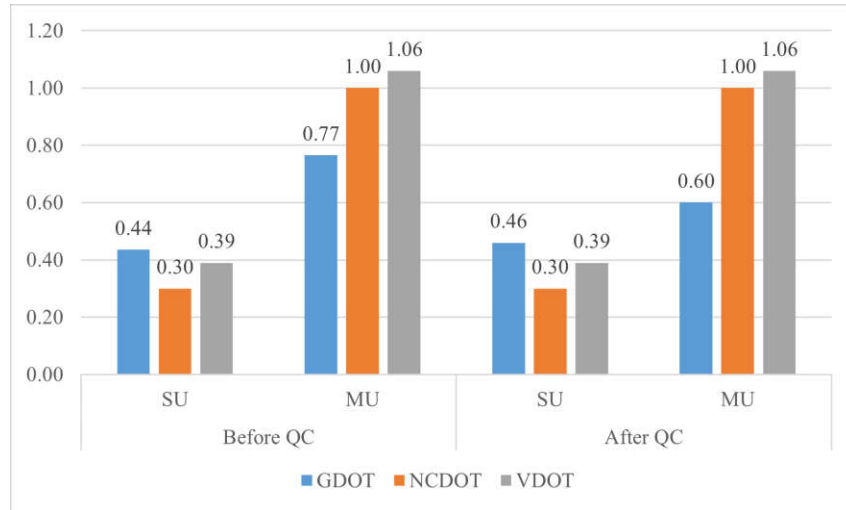


Figure 82. Bar graph. Comparison of truck ESAL factors for flexible pavement.

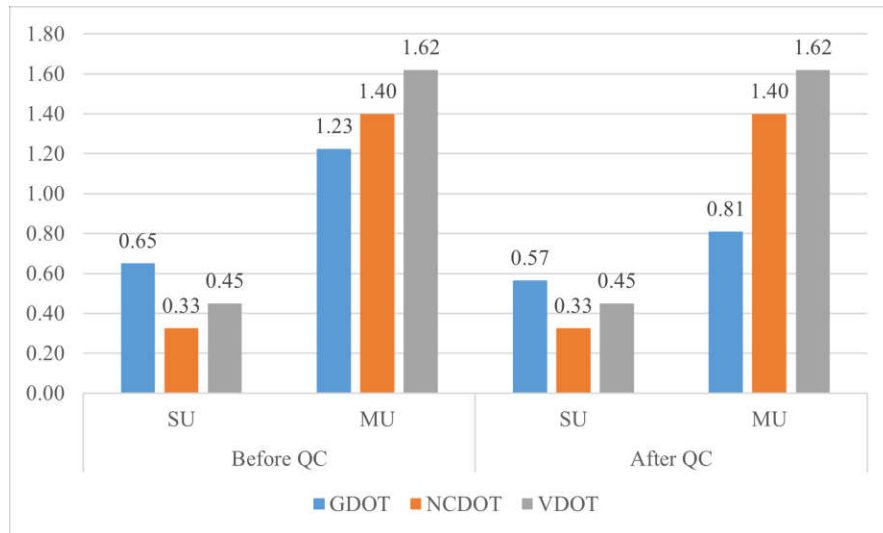


Figure 83. Bar graph. Comparison of truck ESAL factors for rigid pavement.

APPENDIX E: PROPOSED STANDARD OPERATING PROCEDURE (SOP)

Georgia Department of Transportation

Office of Materials and Testing

Proposed Standard Operating Procedure (SOP) – DRAFT

Development of Equivalent Single Axle Load (ESAL) Factor for Georgia Pavement Design

I. General

The purpose of this Standard Operating Procedure is to outline the methodology for calculating the truck ESAL factors for the state of Georgia using Weigh-in-Motion (WIM) data. Generally, there are 14 WIM stations on interstate highways throughout Georgia. However, only 10 WIM stations have available data. The formula used for ESAL calculations of either flexible or rigid pavement is based on the AASHTO 1993 Pavement Design Guide. In addition to the ESAL factors, the methodology for generating traffic input data for the AASHTOWare Pavement ME software has been presented. Prior to ESAL factors and PMED inputs calculation, quality control rules are applied to the raw WIM data to ensure data are good enough quality. QC checks, truck ESAL factors calculations, and generating PMED input data are all accomplished using codes developed in the Python programming language.

II. Data Collection

The first step in updating/generating truck ESAL factors is collecting data. WIM sensor installation, sensor calibration, and data collection are performed by the vendor.

A. WIM System Components

1. The sensor array, which is the combination of WIM sensors and loop detectors within a weighing lane, is installed.
2. Electronics measure and process sensor outputs providing vehicle records for display and storage.
3. Support devices transmit the collected data to a remote server.
4. Software installed in the WIM electronics processes sensor measurements, and analyzes, formats, and temporarily stores collected data.

III. Quality Control

Vendors have the responsibility of calibrating WIM sensors regularly to obtain high quality WIM data. However, missing and erroneous data are inevitable due to either system malfunctions or drivers' behavior. Below criteria can be applied to the available WIM data before new QC procedure is developed.

A. First Step Quality Control Checks

1. Any field with a null value will be removed.
2. Invalid hour will be removed.
3. Invalid month will be removed.
4. Invalid vehicle class code will be removed.
5. Invalid station ID will be removed.
6. Invalid direction for station will be removed.

7. Invalid lane number for station will be removed.
8. Invalid year will be removed.
9. Invalid day will be removed.
10. Hour without any weight records will be removed.
11. Axle count inconsistent with number of axle spacings will be removed.
12. Axle count inconsistent with number of axle weights will be removed.
13. Gross Vehicle Weight (GVW) inconsistent with sum of axle weights will be removed.
14. Axle weight that is out of acceptable range will be removed.
15. Axle spacing that is out of acceptable range will be removed.
16. Vehicle will be removed if sum of axle spacings exceeds maximum wheelbase. (This check is not applicable to vehicles classes 11 through 13.)
17. Unusual patterns of average Day of Week (DOW) volumes by month will be removed.
18. Unusual patterns of GVW plots by class by month will be removed.
19. Unusual patterns of class distribution by month will be removed.
20. Unusual patterns of class percent distribution will be removed.

B. Second Step Quality Control Checks

1. Days with having vehicles in class 14 will be removed.
2. Days with having vehicles in class 15 will be removed.
3. Data that do not provide a complete 24 hours of truck data will be removed.
4. Days with no truck data will be removed.
5. Data with no truck traffic in one lane for the day will be removed.
6. Any daily truck traffic volume that is substantially different from the previous year will be removed.

7. Days with no data will be removed.
8. Any day in which the class 9 average steer weight is outside the parameters will be removed.
9. Any day in which the class 9 average B–C axle spacing is outside the parameters will be removed.

IV. Truck ESAL Factors

Python codes have been developed and delivered to GDOT to generate truck ESAL factors for each WIM station.

1. First, read the dataset, which is a .csv file.
2. Select the considered vehicle class from the whole dataset.
3. Extract the axle weight list and change its format .
4. Extract the axle spacing list and change its format .
5. Based on the axle spacing list, determine the axle type and categorize them in different lists.
6. Assume terminal serviceability of 2.5 for WIM stations located in Georgia interstate highways.
7. Assume structural number for flexible pavement or slab thickness for rigid pavement design for the calculations.
8. Calculate LEFs for different axle types of individual vehicles and then append them in a list.
9. Sum the LEFs of individual vehicles to develop individual ESAL factors for all trucks.

10. Calculate the average ESAL factor for the considered vehicle class using the list created in the previous step.

This process is repeated for FHWA vehicle classes 4 through 13, separately.

V. AASHTOWare Pavement ME Traffic Inputs

Python codes were developed and delivered to generate traffic data as inputs to the Pavement ME software for WIM stations.

A. Vehicle Class Distribution (VCD)

VCD is defined as the truck percentage of each vehicle class within the Annual Average Daily Truck Traffic (AADTT).

1. Determine the total number of trucks counted within each hour of traffic data in the sample.
2. Calculate the AADTT for each vehicle class, separately.
3. Total the AADTT of all truck classes.
4. Calculate the percentage of each vehicle class within the AADTT.

The sum of the percent AADTT of all truck classes must equal 100.

B. Monthly Distribution Factor (MDF)

MDF is defined as the seasonal differences in AADTT by allocating a normalized weight factor to each month of the year.

1. Select the considered vehicle class from the whole dataset.
2. Determine the total number of the specified vehicle class.
3. Determine the total number of vehicles for each month of the year from January through December.

4. Obtain the MDF for each month by multiplying the number of vehicles within each month by 12 and dividing by the total number of vehicles in the year.

The sum of the MDF of each truck class within a year must equal 12.

C. Hourly Distribution Factor (HDF)

HDF is defined as the percentage of total trucks within each hour using data measured continuously over a 24-hour period.

1. Determine the total number of trucks counted within each hour of traffic data in the sample.
2. Average the number of trucks for each of the 24 hours of the day in the sample. For example, if the data include truck counts for the first hour of the day for 6 days, then total those 6 counts and divide by 6.
3. Total the 24-hourly averages from step 2.
4. Divide each of the 24-hourly averages from step 2 by the total from step 3 and multiply by 100.

The sum of the percent of daily truck traffic per time increment must add up to 100 percent.

D. Axles per Truck Class

This input represents the average number of axles for each truck class (class 4 to 13) for each axle group type (single, tandem, tridem, and quad).

1. Select the considered vehicle class from the whole dataset.
2. Determine the total number of the specified vehicle class .
3. Extract the axle spacing list and change its format .
4. Based on the axle spacing list, determine the axle types and categorize them in different lists.

5. Divide the number of specific axle type by the total number of vehicle class in step 2.

Axles per truck class is defined for each axle type within each vehicle class.

E. Normalized Axle Load Spectra (NALS)

NALS represents the percentage of the total axle applications for load intervals in a specific axle group type (single, tandem, tridem, and quad) and vehicle classes 4 through 13.

1. Select the considered vehicle class from the whole dataset.
2. Extract the axle weight list and change its format .
3. Extract the axle spacing list and change its format .
4. Based on the axle spacing list, determine the axle types and categorize them in different lists.
5. Determine the axle load bins for each axle group type. For example, single axle load bins are from 3,000 lb to 40,000 lb at 1,000-lb load intervals.
6. Read each axle within the list. Append the axle to the list that corresponds to the specific load bin.
7. Calculate the percentage of the total number of axle applications within each load range (load bin) for each axle type for each year of data (i.e., normalize the number of axle load applications within each truck class and axle type).

This process is repeated for FHWA each vehicle class 4 through 13, individually.

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