



Standard Practice for Classifying Highway Vehicles from Known Axle Count and Spacing¹

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1. Scope

1.1 This practice covers the classification of highway vehicles into categories relating to axle or unit configuration.

1.2 Traditionally, observers have classified vehicles visually. Because of cost, safety considerations, and the need for nighttime classifications, visual classification has become impractical. This practice classifies vehicles by methods other than visual observation, on the basis of axle count and spacing.

1.3 This practice defines a method that, when applied to a vehicle's known axle count and spacings, generates an axle configuration code and a modifier code. The axle configuration code describes the arrangement of axles, axle groups, and body units on the vehicle. The modifier code defines the vehicle's approximate load-carrying capacity.

1.4 This practice also defines procedures for optionally computing two- and six-digit codes that the Federal Highway Administration (FHWA) and states have used to classify vehicles from the axle configuration code and modifier code.

1.5 This practice does not address specific methods for measuring axle count and spacing, but rather the interpretation of such measurements obtained by unspecified automated equipment.

1.6 The degree of agreement between vehicle classifications determined by this practice and visual classifications depends on the accuracy of measured axle count and spacings and on interactions between selected classification parameters and the vehicle mix to which the classification is applied. These effects are complex and have not yet been quantified.

1.7 This practice applies only to vehicles that travel public highways.

1.8 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with this practice.

1.9 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appro-*

priate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 Miscellaneous Documents:

Traffic Monitoring Guide, October 1992, FHWA-PL92-017²
A Vehicle Data Acquisition System, 1988, Idaho Transportation Department³

Vehicle Identification Algorithm, 1990, Idaho Transportation Department³

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *axle configuration code, n*—alphanumeric code, up to nine characters long, defining the number and type of units in a vehicle, number of axle groups in each unit, and number of axles in each axle group.

3.1.2 *axle count, n*—the total number of a vehicle's axles in contact with the pavement.

3.1.3 *axle group, n*—one or more adjacent axles, usually sharing a common connection to the body of a vehicle, which jointly support a portion of the vehicle's weight.

3.1.4 *axle spacing, n*—for each axle, the horizontal distance between the center of that axle and that of the preceding axle; the axle spacing for the vehicle's front axle is assumed to be zero.

3.1.5 *classification, n*—see *vehicle classification*.

3.1.6 *commercial vehicle, n*—a vehicle with heavy-duty chassis and suspension designed for commercial freight haulage.

3.1.7 *dolly, n*—an assembly equipped with a hitch and one or more axles, typically used to support the forward end of a semitrailer.

3.1.8 *full trailer, n*—a freight trailer supported at both ends by attached axles.

3.1.9 *group delta, n*—the maximum allowable difference between axle spacings within an axle group and the average axle spacing within the group.

3.1.10 *group limit, n*—the maximum axle spacing permitted for axles within an axle group.

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² Available from U.S. Department of Transportation, Federal Highway Administration, Office of Highway Information Management, Washington, DC 20590.

³ Available from Idaho Transportation Department, 3311 W. State St., P.O. Box 7129, Boise, ID 83707.

3.1.11 *group spacing, n*—for each axle group, the horizontal distance between the midpoint of that axle group and the preceding axle group; the group spacing of the vehicle's front axle group is assumed to be zero.

3.1.12 *modifier code, n*—a one-character code appended to the axle configuration code to define the approximate load-carrying capacity of the vehicle.

3.1.13 *recreational vehicle, n*—a vehicle with light- or medium-duty chassis and suspension designed for recreational living or hauling.

3.1.14 *semitrailer, n*—a freight trailer supported at its forward end by a truck tractor or another trailer and at its rearward end by attached axles.

3.1.15 *tractor, n*—a powered unit capable of propelling itself and towing other (unpowered) units on a highway.

3.1.16 *unit, n*—an individual, detachable assembly of chassis, body, and axles comprising part of a complete vehicle; units include tractors, full trailers, and semitrailers.

3.1.17 *utility trailer, n*—a full trailer, typically used for light-duty hauling and towed by passenger vehicles or light trucks.

3.1.18 *vehicle, n*—an assembly of one or more units coupled together for travel on a highway; vehicles include one powered unit and may include one or more unpowered full trailer or semitrailer units.

3.1.19 *vehicle classification, n*—the process of characterizing vehicles by axle or unit configuration.

4. Summary of Practices

4.1 This practice classifies individual vehicles with known axle counts and spacings, via the seven-step process given in Table 1.

4.1.1 The vehicle's axle count and spacings are obtained by unspecified means.

4.1.2 Axles are aggregated into axle groups on the basis of axle spacing rules. Group spacing and the number of axles in each group are determined.

4.1.3 Axle groups are aggregated into units on the basis of group spacing rules. The type of each unit—tractor, full trailer, or semitrailer—is also determined.

4.1.4 An axle configuration code is assigned on the basis of the number and type of units, number of axle groups, and number and spacing of axles in each axle group. Letters in the code designate the number of axles in the units' forward axle group. Numbers designate the number of axles in other axle groups. Asterisks designate a semitrailer's forward end, which is not supported by an axle group.

4.1.5 A one-digit modifier code is assigned to distinguish between passenger vehicles and trucks with similar axle configuration codes.

4.1.6 Optionally, a two-digit, thirteen-category vehicle classification code required by the FHWA may be computed from the axle configuration code and modifier.

4.1.7 Optionally, a six-digit vehicle classification code formerly required by the FHWA may be computed from the axle configuration code and modifier.

5. Significance and Use

5.1 Classification is typically used to characterize the composition of vehicular traffic streams and to monitor trends in vehicle configuration. Classification information may be used to estimate fuel consumption and pavement loading, to design highway pavements, geometrics and signals, and to apportion highway user costs.

5.2 The procedure described in this practice produces an axle configuration code and modifier code that are applicable to both existing and new vehicle types. The codes do not depend on fixed definitions of vehicle categories.

TABLE 1 Seven-Step Classification Practice

Step	Quantity Determined				
1	Axle number	1 2	1 2 3	1 2 3	1 2 3 4
	Axle spacing (m)	0.0 2.8	0.0 2.8 3.0	0.0 5.4 1.3	0.0 4.1 1.3 1.3
2	Group number	1 2	1 2 3	1 2	1 2
	Group spacing (m)	0.0 2.8	0.0 2.8 3.0	0.0 6.0	0.0 5.4
	Group axle count	1 1	1 1 1	1 2	1 3
3	Unit number	1	1 2	1	1
	Unit type	T	T S	T	T
4	Axle configuration code	A 1	A 1 * 1	A 2	A 3
5	Modifier code	3	3	7	7
6	FHWA 2-digit code	02	02	06	07
7	FHWA 6-digit code	040000	040900	230000	240000

Step	Quantity Determined		
1	Axle number	1 2 3 4 5	1 2 3 4 5 6 7 8 9
	Axle spacing (m)	0.0 5.1 1.2 8.2 1.2	0.0 5.1 1.2 8.2 1.2 4.5 1.3 6.0 1.2
2	Group number	1 2 3	1 2 3 4 5
	Group spacing (m)	0.0 5.7 9.4	0.0 5.7 9.4 5.7 7.2
	Group axle count	1 2 2	1 2 2 2 2
3	Unit number	1 2	1 2 3
	Unit type	T S	T S F
4	Axle configuration code	A 2 * 2	A 2 * 2 B 2
5	Modifier code	9	9
6	FHWA 2-digit code	9	13
7	FHWA 6-digit code	332000	532400

5.3 The axle configuration code defined in this practice contains sufficient information on the vehicle to permit reclassification into other common classification methods.

5.4 This practice may be used in conjunction with other traffic data collection procedures, including in-motion vehicle weighing.

6. Procedure

6.1 *Obtain Axle Count and Spacings*—Obtain the axle count and axle spacings for one complete vehicle. Spacing shall be accurate to ± 150 mm (± 0.5 ft).

6.2 *Aggregate Axles Into Axle Groups*—Identify groups of adjacent, uniformly spaced axles on the basis of defined values for group limit and group delta (Table 2) and the vehicle's axle spacings.

6.2.1 *First Axle*—Assign the vehicle's front axle to the first axle group.

6.2.2 *Subsequent Axles*—Sequentially assign each of the vehicle's remaining axles to existing or new axle groups.

6.2.2.1 *Add to Previous Axle Group*—Add the axle to the previous axle group if its axle spacing does not exceed the group limit and if (1) its axle spacing does not differ from the average axle spacing within the previous axle group by more than the group delta, or (2) the previous axle group contains only one other axle.

6.2.2.2 *Begin New Axle Group*—Assign the axle to a new axle group if its axle spacing (1) exceeds the group limit or (2) exceeds the average axle spacing within the previous axle group by more than the group delta.

6.2.2.3 *Split Previous Axle Group*—Group the axle with the last axle of the previous axle group if (1) its axle spacing does not exceed the group limit and (2) the average axle spacing within the previous group exceeds its axle spacing by more than the group delta. Remove the previous axle from the previous axle group.

6.2.2.4 Repeat the steps given in 6.2.2.1-6.2.2.3 until all axles are assigned to a group.

6.2.3 *Incorrectly Grouped Front Axles*—Separate the first axle group if it is composed of two axles, unless the second axle group is composed of similarly spaced axles. This will separate the first two axles of small vehicles such as automobiles and motorcycles but maintain the grouping of dual steering axles on heavy vehicles.

6.2.4 *Group Spacings and Axle Counts*—As groups are developed, compute and retain the group spacings and number of axles in each group.

6.3 *Assign Axle Groups to Units:*

6.3.1 *Tractor Unit*—Combine the first two axle groups into the first unit, which is assumed to be a tractor.

6.3.2 *Trailer Units*—Combine the remaining axle groups, if any exist, into trailer units. Distinguish semitrailers and full trailers according to the following rules:

6.3.2.1 *Full Trailers*—If two or more axle groups remain to be assigned to a unit, assign the next two groups to a full trailer

if either of the following is true: (1) the group spacing of the first remaining axle group does not exceed the group spacing of the second remaining axle group; or (2) exactly two groups remain and the group spacing of the second remaining group is too great to represent a dolly or two single-axle groups on a semitrailer.

6.3.2.2 *Semitrailers*—If only one axle group remains to be assigned to a unit, assign that axle group to a semitrailer. Assign the next two axle groups to a semitrailer if more than one axle group remains, the group spacing of the first remaining axle group exceeds the group spacing of the second, and both axle groups are single axles spaced too closely to represent a dolly or full trailer (Table 3). Assign the next axle group to a semitrailer unit if more than one axle group remains, the group spacing of the first remaining axle group exceeds the group spacing of the second, and the groups do not represent a full trailer or a two-axle semitrailer.

6.3.2.3 Repeat the steps given in 6.3.2.1 and 6.3.2.2 until all axle groups are assigned to a unit.

6.3.3 *Unit Type and Group Count*—As units are developed, compute and retain the total number of units, number of axle groups belonging to each unit, and each unit's type (tractor, semitrailer, or full trailer).

6.4 *Assign Axle Configuration Code*—Assign the axle configuration code designating the number and type of units as well as the number of groups and axles in each group.

6.4.1 *First Group in Each Unit*—If the unit is a tractor or full trailer, add a character representing the number of axles in the unit's first axle group (A = 1, B = 2, and so on). If the unit is a semitrailer, add an asterisk (*), indicating the beginning of another unit, but no axles at the point of connection.

6.4.2 *Subsequent Groups in Each Unit*—For each subsequent axle group in the unit, add the numerical character representing the number of axles in the axle group (1 = 1, 2 = 2, and so on).

6.4.3 Repeat the steps given in 6.4.1 and 6.4.2 until characters have been assigned for all units in the vehicle.

6.5 *Assign Modifier Code*—To refine the vehicle's classification, assign a numerical code (Table 4) distinguishing the major categories of passenger vehicles and trucks.

6.5.1 *Characteristic Axle Spacings*—Use the criteria of axle count, axle spacings within axle groups, and spacings between certain axle groups to identify various commercial and non-commercial vehicle types.

6.5.1.1 *Commercial and Recreational Vehicle Axle Spacings*—Determine the number of axle spacings typical of commercial vehicles and the number of axle spacings typical of recreational vehicles for each unit in the vehicle and for the entire vehicle. Consider only axle spacings within axle groups, not spacings between axles in different axle groups. Typically, grouped axles on recreational vehicles are spaced less than 1.1-m (3.5-ft) apart.

6.5.1.2 *Typical Axle Spacings*—Also, base assignment of the modifier code on known axle spacings typical of certain vehicle types (Table 5).

TABLE 2 Group Limit and Group Delta

Parameter	Value, (m)	Value, (ft)
Group limit	2.4	8.0
Group delta	0.6	2.0

TABLE 3 Dolly Length Limit

Parameter	Value, (m)	Value, (ft)
Maximum dolly length	3.6	11.9

TABLE 4 Modifier Codes

Code	Vehicle Resembles
1	motorcycles
2	compact cars
3	standard cars and small pickups
4	pickups and large cars
5	recreational and other large 2-axle vehicles
6	buses
7	3-axle commercial vehicles
8	reserved for future use
9	tractor-trailer combinations

TABLE 5 Axle Spacings for Certain Vehicle Types

Parameter	Value, (m)	Value, (ft)
Maximum motorcycle axle spacing	1.8	6.0
Maximum compact car axle spacing	2.6	8.5
Maximum standard car axle spacing	2.9	9.4
Maximum large car and pickup axle spacing	4.3	14.0
Maximum large two-axle, 6-tire vehicle axle spacing	6.1	20.0
Maximum axle spacing between tractor rear axle and utility trailer front axle	6.1	20.0
Maximum spacing for axles in recreational vehicle axle groups	1.1	3.5

6.5.2 *Two-Axle Tractors*—If the tractor unit of the vehicle has two axles, determine the modifier code on the basis of the number of units and number of groups on trailer units:

6.5.2.1 *Single-Unit Vehicles*—If only one unit exists, determine a noncommercial code according to 6.5.4.

6.5.2.2 *Two-Unit Vehicles*—If any of the trailer unit's axle groups are characteristic of recreational vehicles or the trailer's first two axles are spaced closely, determine a noncommercial code according to 6.5.4. For all other two-unit vehicles, assign a code of 9.

6.5.2.3 *Three-or-More-Unit Vehicles*—If any unit has any axle spacing typical of recreational vehicles but none typical of commercial vehicles, determine a noncommercial code according to 6.5.4. Assign a code of 9 to all other vehicles with three or more units.

6.5.3 *Three-or-More-Axle Tractors*—If the tractor unit of the vehicle has more than two axles, determine the code on the basis of the number of units and number of groups on trailer units:

6.5.3.1 *Single-Unit Vehicles*—If the vehicle has no axle spacings typical of commercial vehicles but some typical of recreational vehicles, assign a code of 5. If the vehicle has any axle spacings typical of commercial vehicles, assign a code of 7 unless the first axle group contains one axle, the second group contains two axles, and the spacing between the first and second axles exceeds the maximum for two-axle truck; in that case, assign a code of 6 to designate a bus.

6.5.3.2 *Two-Unit Vehicles*—If the trailer has only one axle group and the tractor has any axle spacings typical of commercial vehicles, assign a code of 7 if the trailer has axle spacings typical of recreational vehicles or a utility trailer; otherwise, assign a code of 9. If the trailer has one axle group but the tractor has axle spacings typical of recreational vehicles, assign a code of 5 if there are no axle spacings typical of commercial vehicles anywhere on the vehicle; otherwise, assign a code of 9. If the trailer has more than one group and the tractor has any axle spacings typical of commercial vehicles, assign a code of 9. If the trailer has more than one

group and the tractor has axle spacings typical of recreational vehicles, assign a code of 5.

6.5.3.3 *Three-or-More-Unit Vehicles*—If the vehicle has no axle spacings typical of commercial vehicles, but has some axle spacings typical of recreational vehicles, assign a non-commercial code according to 6.5.4. Otherwise, assign a code of 9.

6.5.4 *Noncommercial Vehicles*—Assign a modifier code on the basis of the spacing between the first and second axles.

6.5.4.1 *Motorcycles*—If the spacing does not exceed the defined maximum length for motorcycles, assign a code of 1.

6.5.4.2 *Compact Cars*—Otherwise, if the spacing does not exceed the maximum length for the compact cars, assign a code of 2.

6.5.4.3 *Standard Cars*—Otherwise, if the spacing does not exceed the maximum length for standard automobiles, assign a code of 3.

6.5.4.4 *Large Cars or Pickups*—Otherwise, if the spacing does not exceed the maximum length for large cars and pickups, assign a code of 4.

6.5.4.5 *Two-Axle, Six-Tire Vehicles*—Otherwise, if the spacing does not exceed the maximum length for two-axle, six-tire vehicles, assign a code of 5.

6.5.4.6 *Buses*—Otherwise, assign a code of 6.

6.6 *Assign a Two-Digit Classification Code*—Optionally, compute the two-digit code used by the FHWA for vehicle classification purposes. The thirteen codes and their meanings are given in Table 6. For generality, derive the two-digit code from the axle configuration code and modifier code. This method permits the two-digit code to be computed from previously recorded axle configuration and modifier codes.

6.6.1 *Number of Units*—Compute the total number of units for the vehicle as the total number of non-numeric characters in the axle configuration code.

6.6.2 *Total Number of Axles*—Compute the total number of axles for the vehicle as the sum of the values of numeric characters (1 = 1, 2 = 2, and so on) and non-numeric characters (A = 1, B = 2, and so on).

6.6.3 *Two-Digit Code*—On the basis of the number of units and the vehicle description given by the modifier code, assign the two-digit code:

6.6.3.1 *Category 1*—If the modifier code is 1, designating a motorcycle, assign a two-digit code of 01.

6.6.3.2 *Category 2*—If the modifier code is 2 or 3, designating a compact or standard automobile, assign a two-digit code of 02.

TABLE 6 Two-Digit FHWA Vehicle Classification Codes

Code	Vehicle Description
01	motorcycles
02	passenger cars
03	other 2-axle, 4-tire, single-unit vehicles
04	buses
05	2-axle, 6-tire, single-unit trucks
06	3-axle, single-unit trucks
07	4-or-more-axle, single-unit trucks
08	4-or-less-axle, single-trailer trucks
09	5-axle, single-trailer trucks
10	6-or-more-axle, single-trailer trucks
11	5-or-less axle, multi-trailer trucks
12	6-axle, multi-trailer trucks
13	7-or more axle, multi-trailer trucks

6.6.3.3 *Category 3*—If the modifier code is 4, designating a large car or pickup, assign a two-digit code of 03.

6.6.3.4 *Category 4*—If the modifier code is 6, designating a bus, assign a two-digit code of 04.

6.6.3.5 *Category 5*—If the modifier code does not equal 1, 2, 3, 4, or 6, and the total number of axles is two, assign a two-digit code of 05 to designate a two-axle, six-tire, single-unit truck.

6.6.3.6 *Category 6*—If the total number of axles is three and the modifier code is 7, assign a two-digit code of 06 to designate a single unit truck with three axles.

6.6.3.7 *Category 7*—If the total number of axles exceeds three and the total number of units is one, assign a two-digit code of 07 to designate a single-unit truck with four-or-more axles.

6.6.3.8 *Category 8*—If the number of axles is four or less, and the number of units equals two, assign a two-digit code of 08 to designate a truck with a single trailer and four axles or less.

6.6.3.9 *Category 9*—If the number of axles is five and the number of units equals two, assign a two-digit code of 09 to designate a truck with a single trailer and exactly five axles.

6.6.3.10 *Category 10*—If the number of axles is six or more, and the number of units equals two, assign a two-digit code of 10 to designate a truck with a single trailer and six axles or more.

6.6.3.11 *Category 11*—If the number of axles does not exceed five and the number of units exceeds two, assign a two-digit code of 11 to designate a truck with multiple trailers and five axles or less.

6.6.3.12 *Category 12*, If the number of axles is six and the number of units exceeds two, assign a two-digit code of 12 to designate a truck with multiple trailers and exactly six axles.

6.6.3.13 *Category 13*—If the number of axles is seven or more and the number of units exceeds two, assign a two-digit code of 13 to designate a truck with multiple trailers and seven axles or more.

6.6.3.14 *Unclassified*—Assign a two digit code of 00 to any vehicle not classified in 6.6.3.1 through 6.6.3.13.

6.7 *Assign a Six-Digit Classification Code*—Optionally, compute the six-digit code formerly used by the FHWA for vehicle classification purposes. For generality, derive the six-digit code from the axle configuration code and modifier

code. This method permits the six-digit code to be computed from previously recorded axle configuration and modifier codes.

6.7.1 *Number of Units*—Compute the total number of units for the vehicle as the total number of non-numeric characters in the axle configuration code.

6.7.2 *Total Number of Axles*—Compute the total number of axles for the vehicle as the sum of the values of numeric characters (1 = 1, 2 = 2, and so on) and non-numeric characters (A = 1, B = 2, and so on).

6.7.3 *Number of Axles in Each Unit*—For each unit in the vehicle, compute the unit's number of axles as the sum of the values of numeric characters (1 = 1, 2 = 2, and so on) and non-numeric characters (A = 1, B = 2, and so on). Include only those characters that correspond to each individual unit.

6.7.4 *Commercial Vehicles*—If the modifier code is 5, 7, or 9, indicating that the vehicle is a commercial vehicle, construct the six-digit code as follows:

6.7.4.1 *First Digit*—If the second unit—that is, the unit immediately following the tractor—is a full trailer (represented in the axle configuration code by a letter), compute the first digit of the six-digit code as two times the total number of units in the vehicle. If the second unit is a semitrailer (represented in the axle configuration code by an asterisk), compute the first digit as one less than two times the total number of units.

6.7.4.2 *Second Through Sixth Digits*—Set the remaining digits of the six-digit code equal to the number of axles in each unit. Use only as many digits as there are units; set remaining digits equal to zero.

6.7.5 *Noncommercial Vehicles*—If the vehicle is not a commercial vehicle, assign six-digit codes as defined in Table 7. If more than one unit exists, set the fourth digit in the six-digit code to 9, indicating the presence of a trailer.

7. Keywords

7.1 axles; classification; vehicles

TABLE 7 Six-Digit FHWA Vehicle Classification Codes for Non-Commercial Vehicles^A

Modifier Code	Six-Digit Code
1	030000
2	050000
3	040000
4	200000
6	190000

^AAdd 900 to code if trailer present.

APPENDIX

(Nonmandatory Information)

X1. FORTRAN 77 SOURCE CODE FOR CLASSIFYING HIGHWAY VEHICLES FROM KNOWN AXLE COUNT AND SPACING

X1.1 Explanation

X1.1.1 *Purpose*—The source code given in Figs. X1.1-X1.14 is presented to illustrate application of the procedure described in this practice. It includes subroutines that apply the practice and an interactive main program that allows users to

supply axle count and spacings and test the practice. The subroutines, or their equivalent in other computer languages, could be used in traffic data collection equipment or analysis software.

X1.1.2 *Language*—The code is written in ANSI Fortran 77.

 E 1572

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1  C-----
2  C Main program E1742881 accepts the operator's definition of vehicles'
3  C axle count and spacing, then calls a subroutine (VCLASS) to determine
4  C the axle configuration code and modifier code defined in the procedure
5  C described by this practice. Finally, E1742881 calls function subprograms
6  C to generate 2- and 6-digit vehicle classification codes historically
7  C used by the Federal Highway Administration.
8  C
9      PROGRAM E1742881
10 C
11 C     Allocate number of axles and up to 16 axle spacings
12 C     INTEGER NAXLE
13 C     REAL ASPACE(16)
14 C
15 C     Allocate classification codes
16 C     CHARACTER ACODE*9,MCODE*1,FHWA06*6,FHWA13*2
17 C
18 C     Display program title
19 C     WRITE(*,1)
20 1   FORMAT(23(/),' New Standard for Classification of',
21 *' Highway Vehicles by Axle Count and Spacing'/
22 *' ASTM E17.42.88.1      Revised 01/30/92')
23 C
24 C     Loop on vehicles
25 C     DO 9 IVHCL=1,10000
26 C
27 C         Read # of axles, blank means quit
28 C         WRITE(*,2)
29 2   FORMAT('0# of axles? '\)
30 C         READ(*,3)NAXLE
31 3   FORMAT(I2)
32 C         IF(NAXLE.LE.0)GO TO 10
33 C
34 C         Read axle spacings
35 C         ASPACE(1)=0.
36 C         DO 6 IAXLE=2,NAXLE
37 C             WRITE(*,4) IAXLE-1,IAXLE
38 4   FORMAT(' Axle'I2-'I2' spacing (ft)? '\)
39 C             READ(*,5)ASPACE(IAXLE)
40 5   FORMAT(F5.0)
41 6   CONTINUE
42 C
43 C         Classify vehicle by axle configuration code and modifier)
44 C         CALL VCLASS(NAXLE,ASPACE,ACODE,MCODE)
45 C         WRITE(*,7)ACODE,MCODE
46 7   FORMAT(' Axle Configuration Code-Modifier='A9'-'A1)
47 C
48 C         Get and display FHWA 13-category and 6-character codes
49 C         WRITE(*,8)FHWA13(ACODE,MCODE),FHWA06(ACODE,MCODE)
50 8   FORMAT(' FHWA Codes='A2','A6)
51 C
52 C         Next vehicle
53 9   CONTINUE
54 C
55 C     Done
56 10  STOP
57 C     END
58
59 C-----
60 C Subroutine VCLASS calls subroutine GROUPS to combine axles into axle
61 C groups, then calls subroutine UNITS to combine groups into vehicle
62 C units. VCLASS also calls subroutines ACCODE and MODIFY to compute the
63 C axle configuration code and modifier code.

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FIG. X1.1 Source Code Listing

and has been tested using Microsoft Fortran Version 5.1 on IBM PC-compatible personal computers. The code should function for other Fortran 77 compilers and computer systems with slight or no modification.

X1.2 Source Code Listing

X1.2.1 See Fig. X1.1 for the source code listing.