

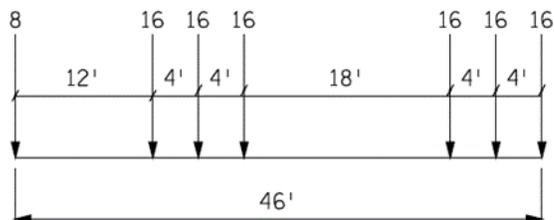
# A, B, C Permit Truck Classification Calculator

For bridge overweight permitting purposes, the A, B, C Permit Truck Classification calculator is a tool developed to determine the weight classification of an overweight vehicle. The calculator takes into account the overweight vehicle configurations (total axle weight, axle spacing and total gross vehicle weight) and in return classifies the truck as Legal, A, B, C or Above C. Legal trucks are vehicles that have a GVW of less than or equal to 80,000 lbs. and meet the Federal Bridge Formula B. Legal trucks do not require a permit. Above C trucks are vehicles that are outside the A, B, C truck classification parameters. In this case, bridges requested in this type of permit application would have to be analyzed for this specific vehicle. They require detailed and more extensive analysis, therefore it is recommended to have your local bridge consultant perform the load rating analysis of your bridge(s) for the Above C type vehicle.

**Background:** MnDOT has established a list of standard overweight permit vehicle configurations that envelope the majority of overweight permit vehicles in the state. These overweight configurations are classified as Class A, Class B or Class C. To help local agencies with the operation of their overweight permitting process, State Aid Bridge started evaluating local bridges that are in the Statewide SHV load rating contract for the A, B, C overweight permit vehicles. The diagrams below are the A, B, C truck models that were used in the load rating analysis.

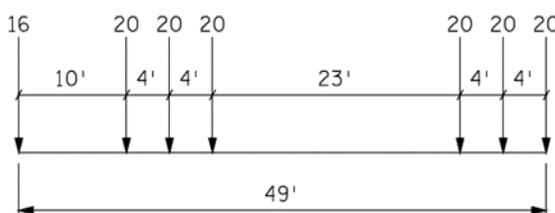
## Class A:

(GVW = 104 kips, L = 46 ft.)



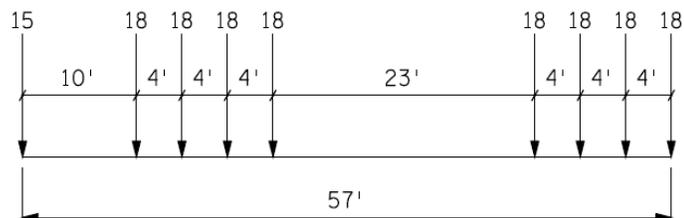
## Class B:

(GVW = 136 kips, L = 49 ft.)

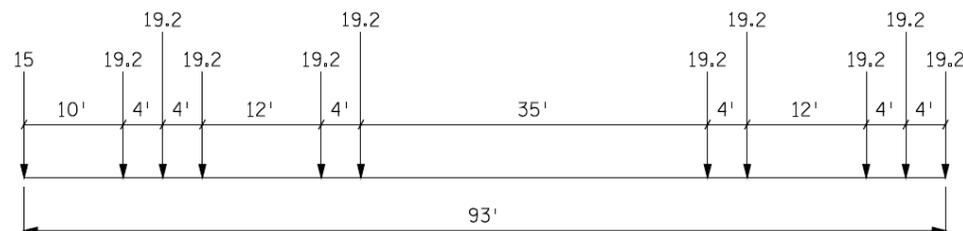


## Class C:

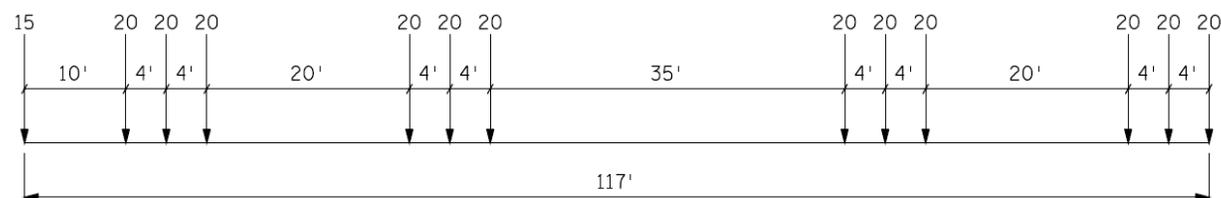
(GVW = 159 kips, L = 57 ft.)



(GVW = 207 kips, L = 93 ft.)



(GVW = 255 kips, L = 117 ft.)



## How to activate the program?

Whenever the A, B, C Truck calculator is activated, the user will encounter 3 warnings. The first is for Protected View, second is the Security Warning, and third is the Software Update warning.

The Excel document will open in Protected View. The user will need to press the “Enable Editing” button as shown in the image below to let the user edit the spreadsheet.



Next, since the excel file has macros to automate tasks, the yellow message bar appears with a shield icon and the “Enable Content” button. Click on the “Enable Content” button as shown on the image below.



Finally, the Software Update warning will show to inform user to always use the latest version of the program. Click the OK button as shown on the image below to start the program.



The following example shows how local agencies would issue an overweight permit to cross a local bridge using the A, B, C Permit Truck Classification Calculator method.

**EXAMPLE:** State Aid Bridge Excavating Inc. would like to cross Br 12345 to transport a crane. A copy of the permit application is attached, see page 5. The following steps will demonstrate how to evaluate the overweight permit request using the A, B, C Permit Truck Classification Calculator method.

1. First, the owner would need to determine whether the overweight vehicle is a legal A, B, C or Above C truck.
  - Enter the total weight of each axle in the Axle Weight boxes. The program will allow the user to enter an overweight vehicle with up to 13 axles and up to 20,000 lbs. per axle.
  - Enter the axle weight in decimal kips (1000 lbs.) for each axle.
  - Enter the distance in decimal feet between centers of each axles.
  - Click on the **Run** button,  to execute the program. The classification of the overweight vehicle in this example is Class B which is shown in the Truck box (see image below).

ABC\_Truck Calculator Final.xlsm - Excel

## A, B, C PERMIT TRUCK CLASSIFICATION CALCULATOR

Truck Name: SA AID BRIDGE EXCAVATING INC.      Date: 3/13/18 12:32 PM  
 Application No: #123456789      Ver. 1.1

**Truck Configuration:**

FRONT														
Axle No:	1	2	3	4	5	6	7	8						
Axle Weight (1000 lbs):	15.00	18.00	18.00	18.00	19.00	19.00	19.00	19.00						
Axle Spacing (feet):	← 15.92 ←		← 4.50 ←		← 4.58 ←		← 12.67 ←		← 4.58 ←		← 34.25 ←		← 4.58 ←	

REAR										
Axle No:	9	10	11	12	13					
Axle Weight (1000 lbs):	19.00	19.00								
Axle Spacing (feet):	← 14.17 ←		← 4.58 ←		←   ←		←   ←		←   ←	

**Critical Axle Groups:**

Controlling Axle Group	Weight [kips]	Length [feet]	ZCR
2 thru 6	92.00	26.33	0.916

All Axle Group	Weight [kips]	Length [feet]	ZCR
1 thru 10	183.00	99.83	0.80

**Results:**

Total Weight [kips] =	183.00
Total Length [feet] =	99.83
Total No. of Axles =	10
Truck ZCR =	0.916
Class =	Y

TRUCK

CLASS B

**Overweight Permit Restriction Description:**

**Truck Diagram:**

2. Next, obtain the permit code for the each bridge. Based on load rating analysis of the bridge, permit codes are assigned to each truck class and are recorded on the bottom of the front sheet of the bridge load rating form in the Overweight Permit Codes section (see image below). The overweight permit codes can also be found on the Minnesota Structure Inventory Report of the bridge and is located on the bottom right hand corner of the front sheet. The permit code for our overweight B truck example is 1 (see image below).

*Note: If a local bridge has not been evaluated for the A, B, C truck, it is highly recommended that the bridge owner hire a local consultant to perform the load rating analysis of the bridge. A new load rating form will need to be filled out and submitted to MnDOT.*

Summary of Rating and Load Posting Analysis						
<b>Load Posting</b>			Required <input type="checkbox"/> Not Required <input checked="" type="checkbox"/>		<b>Bridge Rating</b>	
Sign	TONS			Inventory	Operating	
R12-1a <input type="checkbox"/>				HS <input type="checkbox"/>	HS <input type="checkbox"/>	
R12-5A <input type="checkbox"/>				RF <input checked="" type="checkbox"/> 1.297	RF <input checked="" type="checkbox"/> 1.722	
R12-5 <input type="checkbox"/>	M3	M3S2	M3S3	<b>Overweight Permit Codes</b>		
R12-X11 <input type="checkbox"/>	45			A	1	B
R11-2a <input type="checkbox"/>	<b>BRIDGE CLOSED</b>			C	1	1

3. Determine the definition of the permit code. The definition of the code is located on the third sheet of the load rating form under Overweight Permit Restriction for Local Bridges (see image below). Since our overweight permit has a restriction code of 1, by definition, the bridge owner may allow the overweight truck to cross the bridge without any restrictions.

OVERWEIGHT PERMIT RESTRICTIONS FOR LOCAL BRIDGES					
Restriction Code	Restriction Description	Special/Single Permit	Annual/Routine Permit	Detailed Restriction Description	Bridge Check Operation
1	None	YES	YES	No Restriction to cross bridge	Normal
2	Straddle Two Lanes	YES	YES	Drive on the centerline between two lanes, in a manner that prevents any other vehicle from occupying a part of either lane on either side of the permit vehicle. Drive in the center of a single lane bridge.	The AASHTO "Single Lane" live load distribution is used. <i>This operation applies to all permit vehicles when performing LFR method or only to annual permit vehicles when performing LRFR method.</i>
3	Maximum speed of 10 mph	YES ①	YES ①	Drive at a speed of 10 mph or less	The impact factor is reduced from the AASHTO impact to 5%
X	DENIED	YES	YES	The overweight permit vehicle is <b>NOT ALLOWED</b> on this bridge	Used when requirements for restriction 1 thru 3 are not met

① Not allowed where there is a posted minimum speed.

*Note: Bridge check operation column is used by the load rating engineer when performing the load rating analysis.*

Print button  opens the print screen window and allows user to print and obtain a hard copy of the data.

Reset button  erases all previous input and results

Exit button  closes the application



**PERMIT #123456789**  
**Minnesota Department of Transportation**  
**Overweight / Overdimension**

Valid From:  
 Hours Of Move: **Not Limited, unless noted in Special Restrictions**

Issued to:

STATE AID BRIDGE EXCAVATING INC.

USDOT#: **#123456789**

Sent by:  
 State Fee is paid:

Transaction Fee:  
 Total Fee:

Authorization is hereby granted for movement on MnDOT Permit #123456789 subject to compliance with the Minnesota Traffic Regulation Act. Under the terms, conditions, and restrictions listed on the current MnDOT General Provisions and as follows:

Load:	CONSTRUCTION EQUIPMENT - CRANE		Weight	Axles						
Power Unit:	TRUCK-TRACTOR	MACK	License: YTC3381(MN)	23,500	4					
Trailer #1:	JEEP DOLLY	TRAILKING	License: 6305STP(MN)	7,500	2					
Trailer #2:	LOWBED SEMITRLR	TRAILKING	License: 2056CTD(MN)	31,200	4					
Overall Dimensions - Length:	106'-8"	Width: 12'0"	Height: 15'6"	Maximum Axle Width: 9'0"	10					
Overhang - Front:	0'0"	Rear: 0'0"	Right: 1'6"	Left: 1'6"	GVW: 183000					
Axle:	1	2	3	4	5	6	7	8	9	10
Weight:	15000	18000	18000	18000	19000	19000	19000	19000	19000	19000
Spacing:	15'-11"	4'-6"	4'-7"	12'-8"	4'-7"	34'-3"	4'-7"	14'-2"	4'-7"	
Tires:	2/315	4/11	4/11	4/275	4/275	4/275	4/275	4/275	4/275	4/275

From: \_\_\_\_\_ To: \_\_\_\_\_

Via Highways (Routes other than MN, US or interstate may require local permits):

Movement is not authorized when weather or road conditions are hazardous. Rear visibility required.

Special Restrictions

Valid for single trip only. At night required signs must be lighted or reflective and visible 15'-11" in at least 500 feet. Load and vehicle unit(s) must be outlined every 20 feet in lights. 15'-11"

SUMMER TRAVEL - No move Fridays from 2:00PM to 8:00PM and Sundays from 2:00PM to 8:00PM, when exceeding 9 feet wide

ATTN DRIVERS: Check www.511MN.org before moving. Road conditions and closures can change unexpectedly.

(S2) Flag (light at night) widest point(s) of load.

(S4) Flag (light at night) required every 20 feet along load/trailer combo.

(S5) OVERSIZE LOAD sign with flashing amber lights required front and rear. Signs must be reflective or lighted at night.

Roundabout 16ft wide 150ft length vehicles to or from Douglas CR87 and Douglas CR28 require district approval coordination UFN MB

Vehicle must be registered for enough weight to cover the Gross Vehicle Weight.  
 This permit does not supercede any road or bridge load posting.