NORTH DAKOTA TRUCK SIZE AND WEIGHT EDUCATION PROGRAM

A COOPERATIVE PROJECT BETWEEN NORTH DAKOTA DEPARTMENT OF TRANSPORTATION, NORTH DAKOTA HIGHWAY PATROL, NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM AND UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

Introduction

- Trucks are the lifeblood of North Dakota businesses.
- Trucks are the first and last mode of transportation of many products moving into, out of, and within the state.
- Trucks damage the roadway.
  - Overloaded trucks decrease the useful life of pavements
  - Overloaded trucks increase costs for all taxpayer

Why a Size and Weight Education Program?

- All trucks, but especially, heavy or improperly loaded trucks damage roadways.
- Those operating trucks on our public roadways need to know the rules governing motor carrier size and weight.
- Knowledge of truck size and weight regulations encourages compliance and reduces damage to infrastructure.
- Knowledge of truck size and weight regulations reduces out of service issues and/or fines for the motor carrier and provides a safer environment for the motoring public.

Training Objective

- To encourage compliance with North Dakota Commercial Vehicle Size and Weight Laws through education.
- Help motor carriers reduce out of service and fines.
- Promote safety through compliance of truck size and weight laws.

North Dakota Facts

- North Dakota has more miles of road per capita than any other state in the nation
- There are approximately 166 miles of road for every 1,000 people
- A small population base has to support a large road network

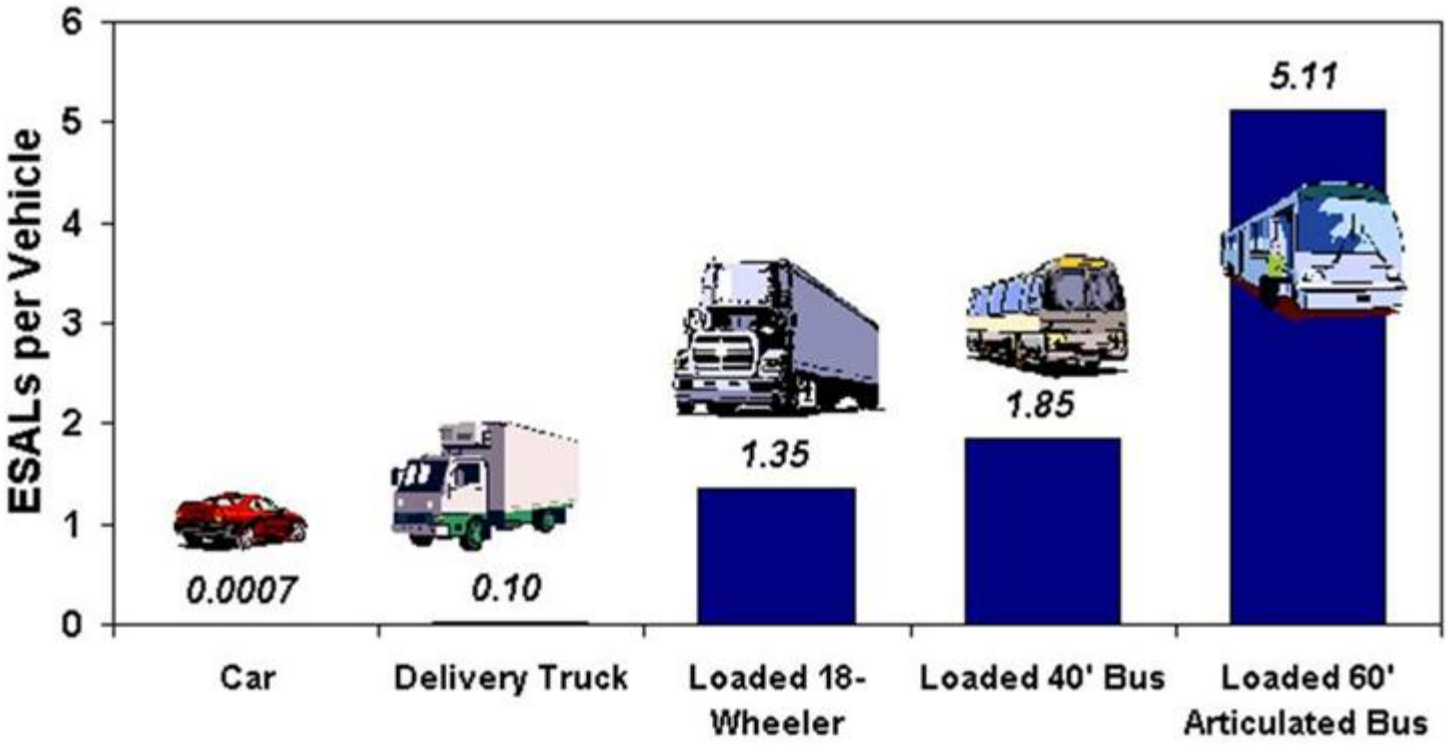
North Dakota Facts

- North Dakota has 7,385 miles of road on the State Highway System
- North Dakota has 2,727 miles of road on the National Highway System
- North Dakota has 571 miles of Interstate Highway

2010 Average Construction Cost

- Seal Coat $35,000/mile
- Thin lift overlay $140,000/mile
- 3” asphalt overlay $400,000/mile
- Asphalt surfacing $1,200,000/mile
  - Reconstruction, including subgrade repair and resurface
- Total Reconstruction $1,400,000/mile
  - Grading and asphalt surfacing
- Interstate concrete paving $2,800,000/mile
  - Two lanes in one direction

Relative Damage by Vehicle



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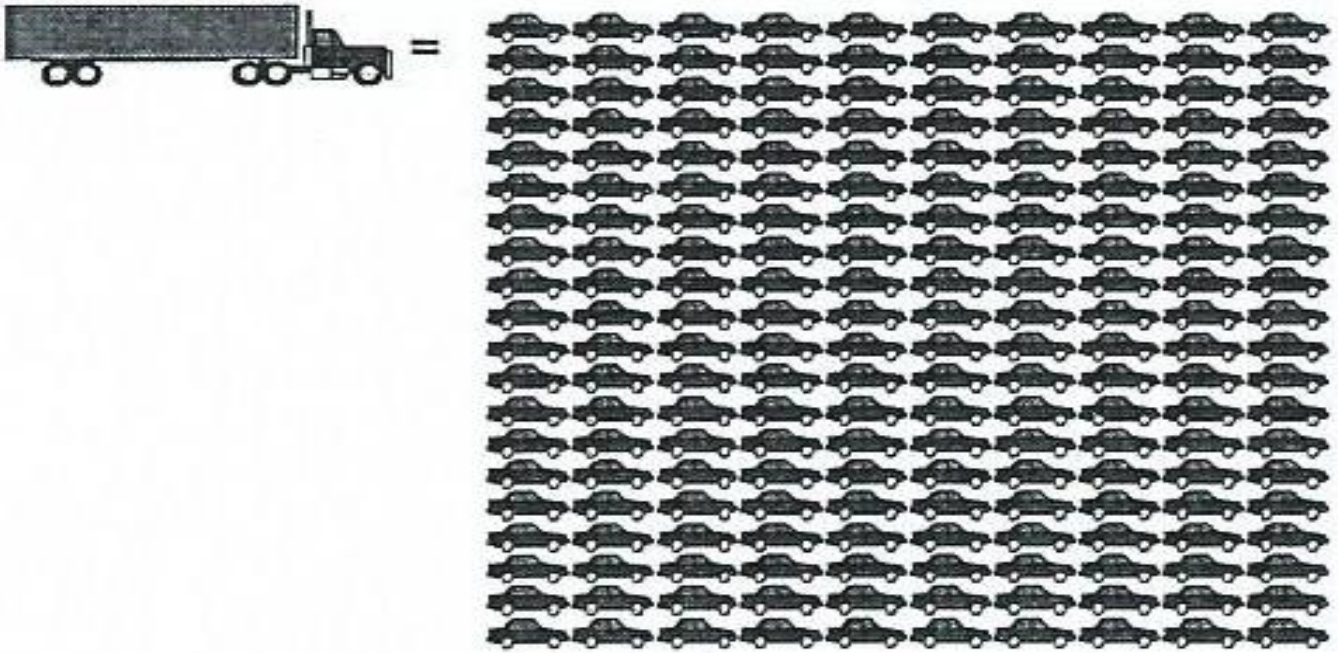
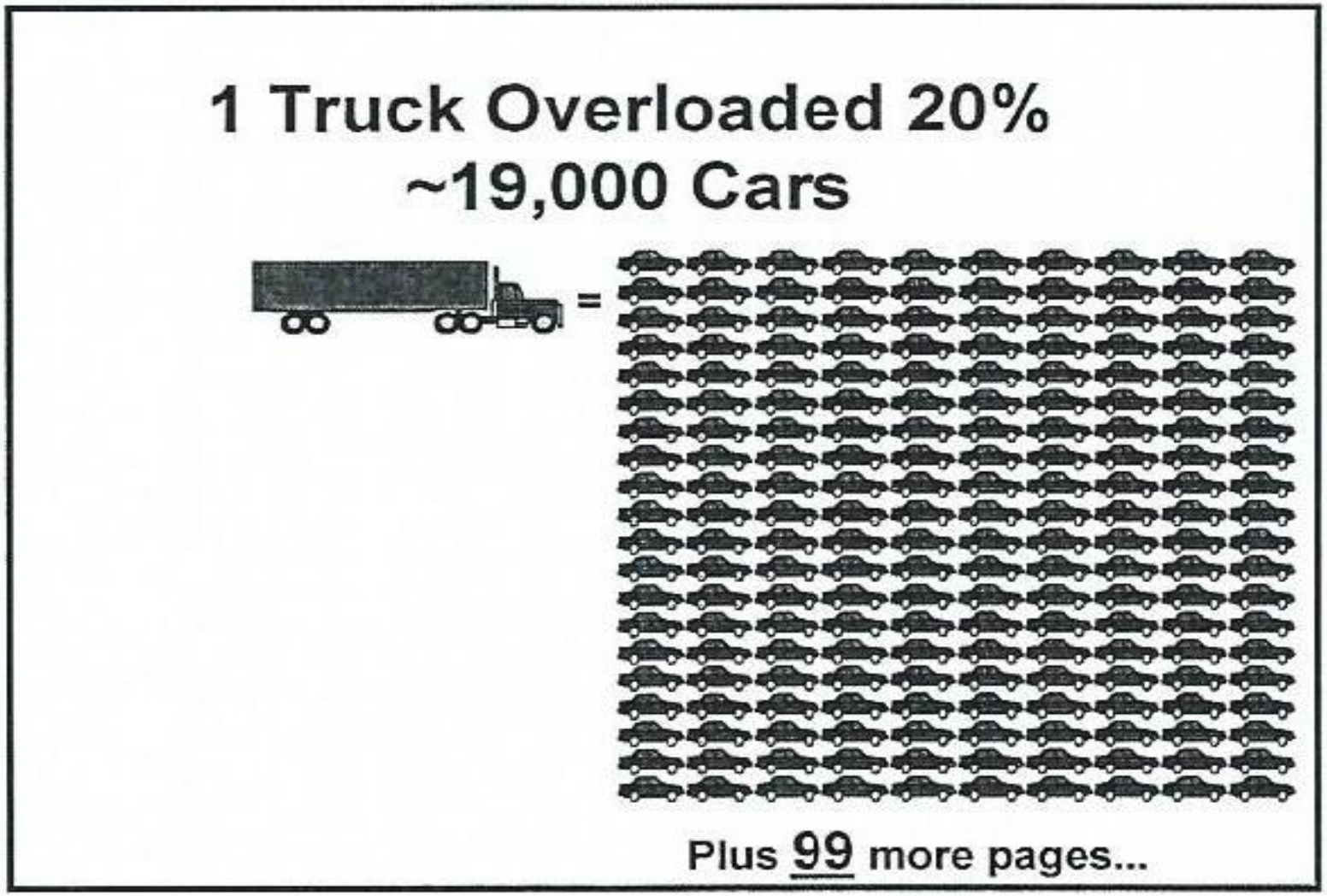
Relative Pavement Damage

- 1 Legal Truck
  - Does as much damage as 9,600 Cars
- 1 20% Overloaded Truck
  - Does as much damage as 19,000 Cars

1 Legal Truck ~ 9600 Cars



Source: Greg Hayes, Northland Community & Technical College



Source: Greg Hayes, Northland Community & Technical College

Why Truck Weight Limits Are Necessary?

- Safety
  - Trucks beyond legal weight limit
    - Longer braking time
    - Increased risk of tire blowout
    - Increased risk of rollover
- Cost
  - Millions of dollars of damage are done to ND highways due to overloaded trucks

Why Truck Weight Limits Are Necessary ??

- Preservation of the Road
  - The primary determinant of pavement wear severity is the load carried on axles
  - Cars do little damage
  - Weather or the freeze/thaw cycle cause damage
  - Overweight trucks do millions of dollars of damage yearly
  - Degradation of Highways
    - Depressed wheel tracks or rutting
    - Rough breaks or pavement fatigue

Reasons for Compliance

- Increasing truck traffic
  - Concerns of state, county, township
- Truck size and weight enforcement
  - Limit fines and out of service
- Weigh in motion technology
  - Better chance of being caught
- Cost to the public
  - Premature road failure
  - Safety

Trucker's Handbook
North Dakota Highway Patrol

- Contact Information
  - http://www.nd.gov/ndhp/sites.nd.gov.ndhp/files.docs/permits/Truckers_Handbook.pdf
  - Motor Carrier Division 701-328-2725
  - http://www.dot.nd.gov/business/motor-carrier.htm
  - Federal Motor Carrier Safety Administration (Bismarck) 701-250-4346
  - Road & Traveler Information 511 or 1-866-696-3511
  - Construction/Load Restrictions www.dot.nd.gov/travel/travel.htm
- Commercial Vehicle Operations
- Vehicle Size & Weight
- Permits
- Highway User Information

Practical Skills to be Acquired

- Participants will learn to properly access/measure legal loads size and weight
- Workshop will provide interactive skills building/applied decision making curriculum

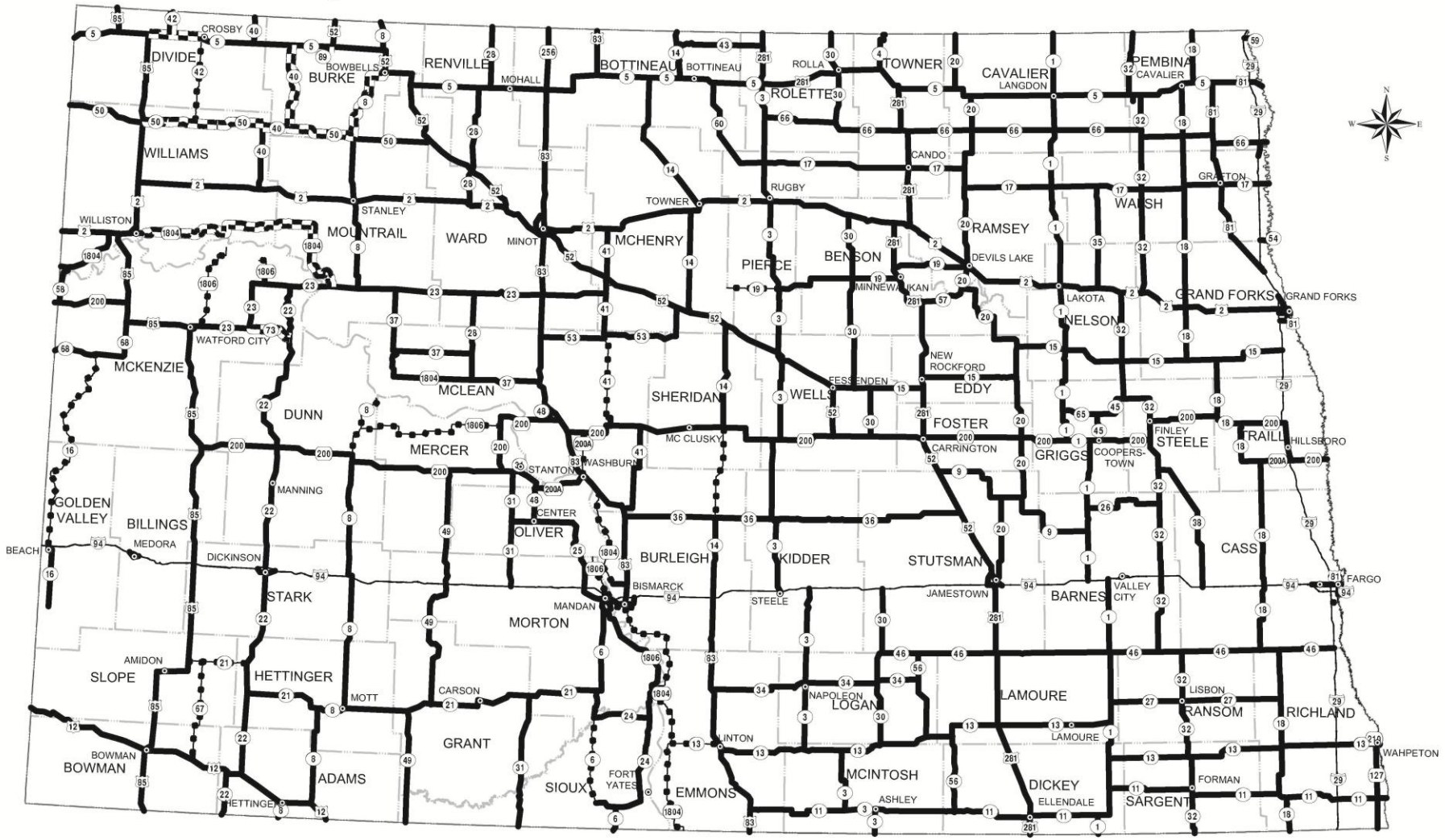
Discussion & Questions

39-12-07 Peace officers may weigh vehicle to determine load

- Every police officer including members of the state highway patrol, having reason to believe that the weight of a vehicle and load carried thereon is unlawful, may weigh such vehicle and load or have the same weighed either by means of portable or stationary scales, and for that purpose the officer may require the vehicle to be driven to the nearest scales. Such officer may require the driver of such vehicle immediately to unload such portion of the load as necessary to decrease the gross weight to the maximum allowed by the provisions of this chapter.

WEIGHT LIMITATIONS FOR VEHICLES ON NORTH DAKOTA STATE HIGHWAYS

CHECK www.dot.nd.gov/travel-info/ FOR UPDATED WEIGHT LIMITATIONS AND SPRING LOAD RESTRICTIONS



A ——— ROUTES WITH G.V.W. NOT TO EXCEED 105,500 LBS.

B • • • • • POSTED ROUTES WITH G.V.W. NOT TO EXCEED 80,000 LBS.

C ——— INTERSTATE ROUTES WITH G.V.W NOT TO EXCEED 80,000 LBS.

D ROUTES WITH ADDITIONAL POSTED WEIGHT LIMITS
check www.dot.nd.gov/travel-info/ for updated weight limitations and spring load restrictions.

The Gross Vehicle Weight (G.V.W.) for all vehicles and vehicle combinations is determined by the WEIGHT LIMITATION CHART, N.D.H.P. FORM 921

WEIGHT LIMITATIONS ARE SUBJECT TO CHANGE

APPROVED:

Francis D. Ziegler — **11/03/11**

NDDOT DIRECTOR — DATE

9-1 ANNEX D

Measures of Damage

- Load Equivalency Factors (LEFs) or
- Equivalent Single Axle Load (ESAL) factors
  - These factors relate various load factors to the standard 18,000 pound load.

- There are two standard U.S. ESAL equations (one each for flexible and rigid pavements) that are derived from AASHO Road Test results.

Damage Factors

- A single axle overloaded 20%, causes twice the damage of the 20,000 pound legal load
- A tandem axle overloaded 20%, causes 225% times the damage of the legal 34,000 pound tandem axle load

Damage Example

- Typical 5-axle semi at 80,000 pounds = 4.11 ESALs
- 5-axle semi loaded to 100,000 pounds = 12.194 ESALs
- 25% increase in weight results in an almost 300% increase in ESALs

Flexible Pavement Distress

Fatigue	Polished Aggregate
Bleeding	Potholes
Block Cracking	Raveling
Corrugation and shoving	**Rutting**
Depression	Slippage cracking
Joint reflection cracking	Stripping
Lane/shoulder drop-off	Transverse (thermal) cracking
Longitudinal cracking	Water bleeding & pumping
Patching	

Rutting

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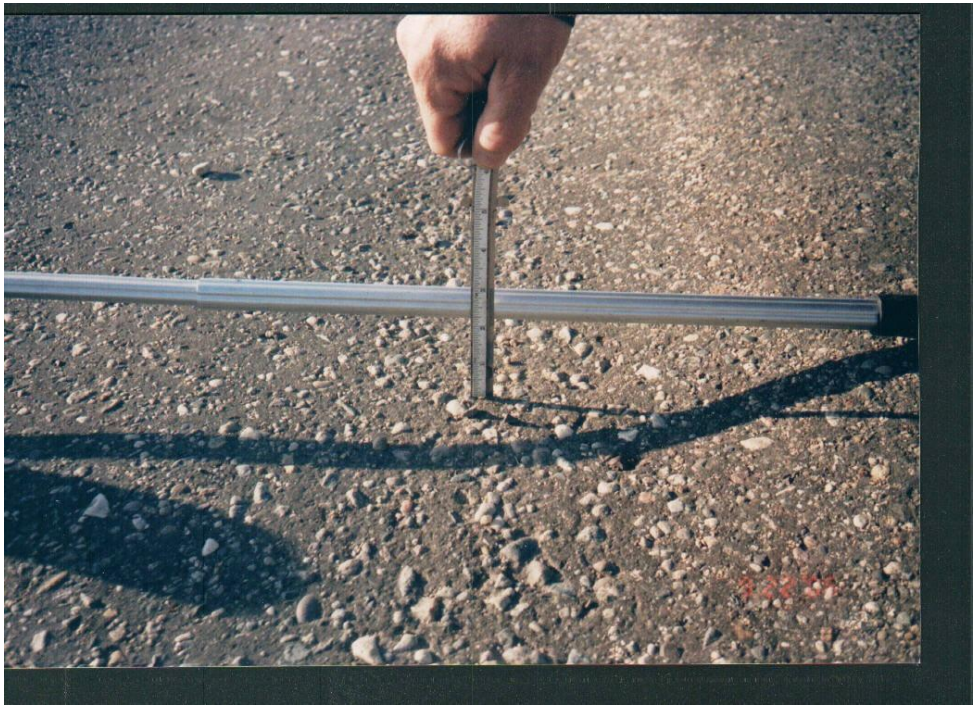
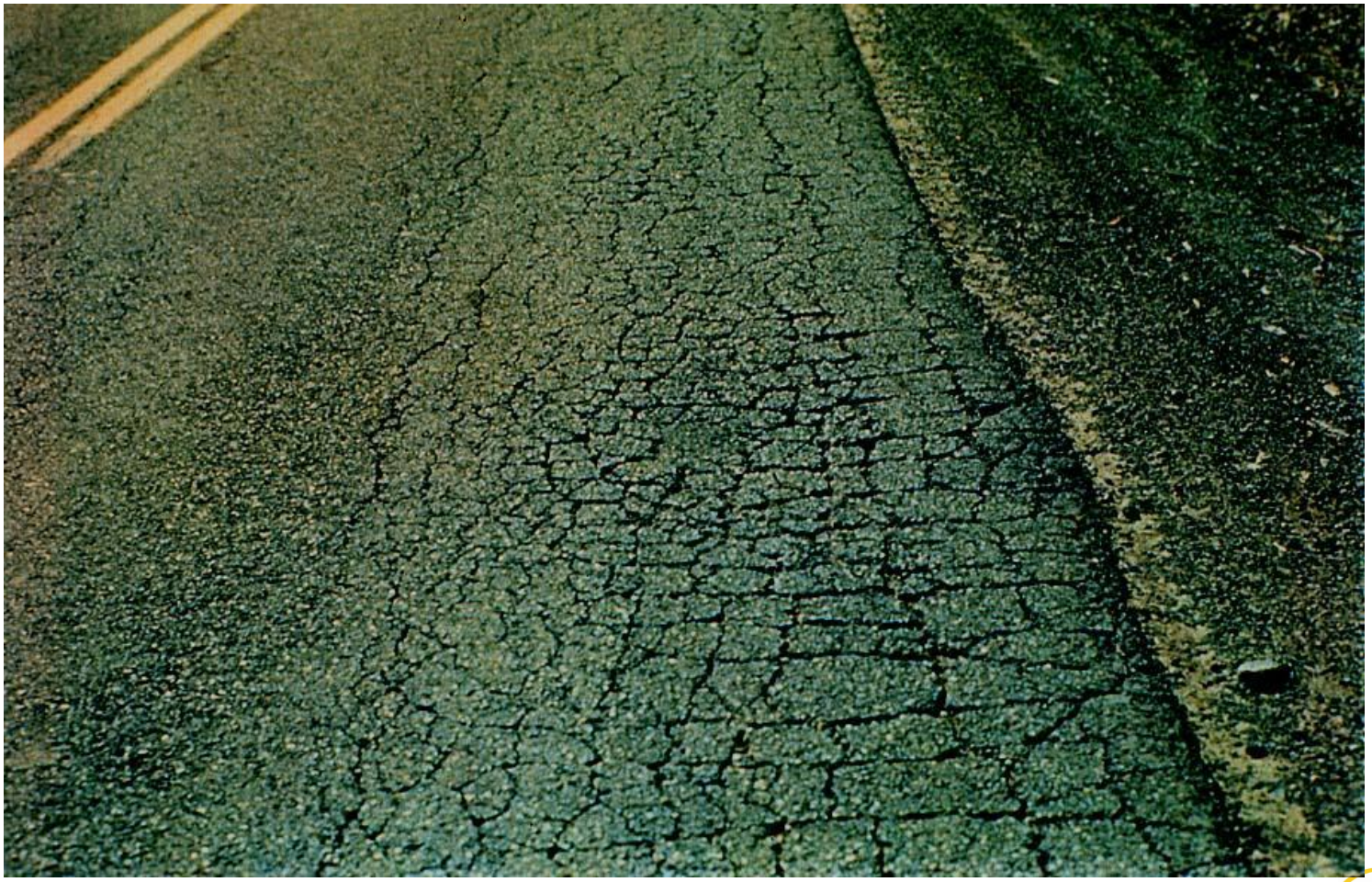
Effects of Heavy Vehicles



Pavement Fatigue

- The break-up of pavements is usually caused by fatigue.
- Fatigue or fatigue cracking is caused by many repeated loadings and the heavier the loads the fewer the number of repetitions required to reach the same condition of cracking.
- It is possible, especially for a thin pavement, for one very heavy load to break up the pavement in the two wheel paths.
- To account for the effect of different axle weights, the relative amount of fatigue for an axle at a given weight is compared to that of a standard weight axle.
- Historically this standard axle has been a single-axle with dual tires and an 18,000-pound load.

Fatigue (Alligator Cracking)



Steering Axle

Steering Axles

Axle Group

Axles spaced more than 40 inches apart and less than 8 feet are considered part of a group. Axles are measured from the center of one axle to the center of the next axle.

Single Axle

An axle that is spaced 8 feet or more from the center of another axle. Also, axles spaced 40 inches apart from the center of the axles or less are considered one axle.

Tandem Axle Group

Triple Axle Grouping

Quad Axle Group

Drive Axles

An axle or group of axles that provide the driving power to a vehicle.

Lift Axle

Non powered axle either located on its own or in front or behind another set of axles and can be lifted when not in use.

Lift Axle

Lift Axles

Lift Axle

North Dakota Century Code

- N.D.C.C. 39-12
- Defines Legal Loads

N.D.C.C 39-12

- **39-12-01. State and local authorities may classify highways as to weight and load capacities.**

  - The director, the board of county commissioners, and other appropriate bodies having control of roads, may classify public highways and roads under their respective jurisdictions and limitations as to the weight and load of vehicles thereon for such respective classifications must be enforced as provided in section 39-12-07.

39-12-05.3. Weight limitations for vehicles on highways other than the interstate system.

- **1.** A person may not operate on a highway that is not part of the interstate system any vehicle with a single axle that carries a gross weight in excess of twenty thousand pounds or a wheel load over ten thousand pounds. A wheel may not carry a gross weight over **five hundred fifty pounds for each inch of tire width**. Axles spaced forty inches apart or less are considered as one axle. On axles spaced over forty inches and under eight feet apart, **the axle load may not exceed nineteen thousand pounds per axle**, with a maximum of **thirty-four thousand pounds gross weight on a tandem axle** and a **maximum of forty-eight thousand pounds gross weight on any grouping of three or more axles**. The wheel load, in any instance, may not exceed one-half the allowable axle load. Spacing between axles is measured from axle center to axle center.

- **2.** Subject to the limitations imposed by subsection 1 on tires, wheel, and axle loads, a person **may not operate on a highway that is not part of the interstate system any vehicle the gross weight of which exceeds that determined by the formula.** Where W equals the maximum gross weight in pounds on any vehicle or combination of vehicles; L equals distance in feet between the two extreme axles of any vehicle or combination of vehicles; and N equals the number of axles of any vehicle or combination of vehicles under consideration. **The gross weight on state highways may not exceed one hundred five thousand five hundred pounds unless otherwise posted and on all other highways the gross weight may not exceed eighty thousand pounds unless designated by local authorities for highways under their jurisdiction for gross weights not to exceed one hundred five thousand five hundred pounds.**

39-12-05 Maximum weight limits for vehicles on the interstate system.

- Single axle **not to exceed** 20,000 lbs.
- Tandem axle **not to exceed** 34,000 lbs.
- Group of 3 or more axles **determined by weight formula**.
- Tires **not to exceed** more than 550 lbs per square inch
- Gross weight **not to exceed** 80,000 lbs on the interstate.

Legal Axle Weights in North Dakota

- Single axle 20,000 pounds
- Tandem axles 34,000 pounds
- Three or more axles 48,000
- Limited to 550 pounds per width of tire
- Axles 40 inches or less considered 1 axle
- Axles 40 inches and less than 8 feet = 19,000 pounds gross weight
- Axles spaced 8 feet or more are considered separate single axles.

Legal Truck Weights in North Dakota

- Maximum Weight Limits for Interstate Highway
  - Single axle not to exceed 20,000 pounds
  - Tandem axle not to exceed 34,000 pounds
  - Group of 3 or more axles determined by weight formula
  - Tire weight not to exceed more than 550 pounds per square inch
  - Gross vehicle weight not to exceed 80,000 pounds
  - Interior and Exterior Bridge
    - Determine GVW

Legal Truck Weights in North Dakota

- State Highways other than Interstate System
  - Single axle not to exceed 20,000 pounds
  - Tandem axle not to exceed 34,000 pounds
  - Group of 3 or more axles can not exceed 550 pounds per square inch and 19,000 pounds per axle and can not exceed 48,000 pounds for the group
  - Tire weight not to exceed more than 550 pounds per square inch
  - Gross vehicle weight not to exceed 105,500 pounds
  - Gross weight not to exceed 80,000 pounds on all other highways unless designated by local authorities
  - Exterior Bridge

Legal Axle Weights in North Dakota

- Single axle 20,000 pounds
- Tandem axles 34,000 pounds
- Three or more axles 48,000
- Limited to 550 pounds per width of tire
- Axles 40 inches or less considered 1 axle
- 2 Axles spaced 40 inches or more and less than 8 feet = 34,000 pounds gross weight
- Axles spaced 8 feet or more are considered separate single axles.

Federal Bridge Formula

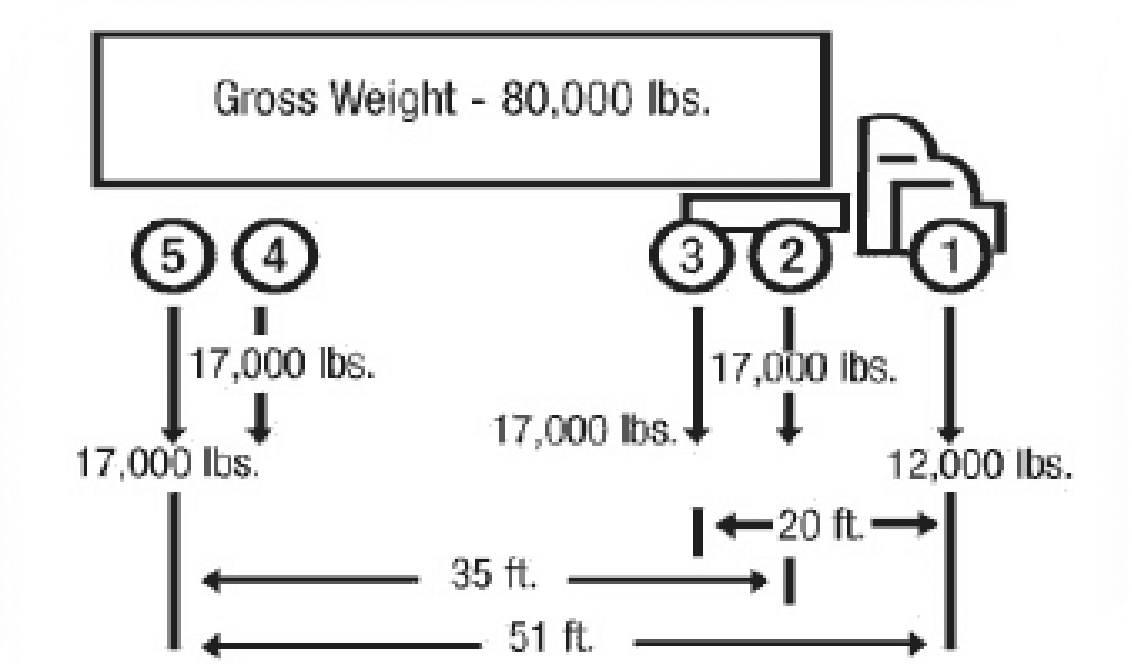
- No vehicle or combination of vehicles shall be moved or operated on any interstate highway when the gross weight on two or more consecutive axles exceeds the limitations prescribed by the following formula:
- $W = 500\left(\frac{LN}{N-1} + 12N + 36\right)$

- W = the maximum weight in pounds that can be carried on a group of two or more axles to the nearest 500 pounds (230 kg).
- L = spacing in feet between the outer axles of any two or more consecutive axles.
- N = number of axles being considered.

Bridge Formula

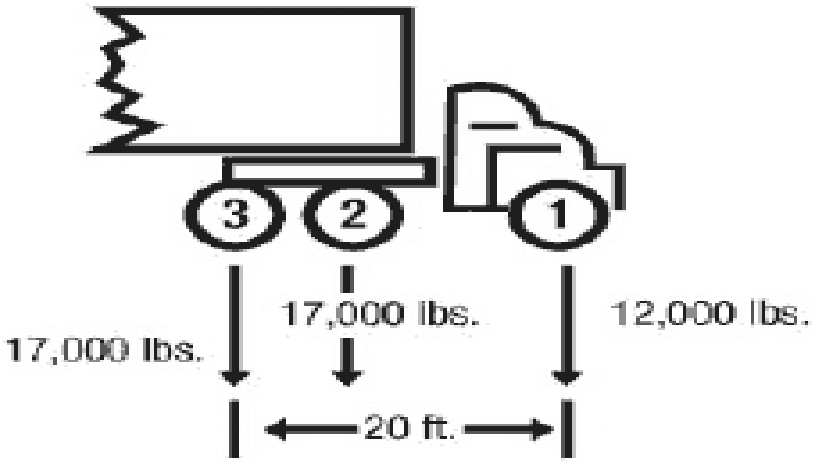
- Interstate
  - Interior and Exterior measurement
- Highways Other than Interstate
  - Exterior Bridge
  - Groupings of 3 axles or more not to exceed 48,000

Bridge Example

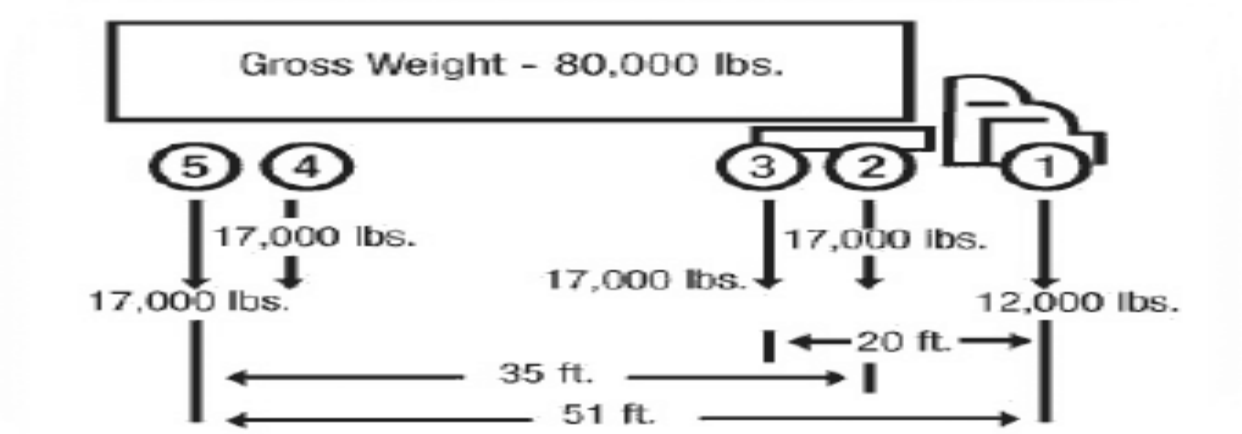


Interior Bridge Formula Calculation

- $W = 500\left(\frac{LN}{N-1} + 12N + 36\right)$
- =500*(20*3/3-1+12*3+36)
- =500*(30+36+36)
- =500*102
- =51,000



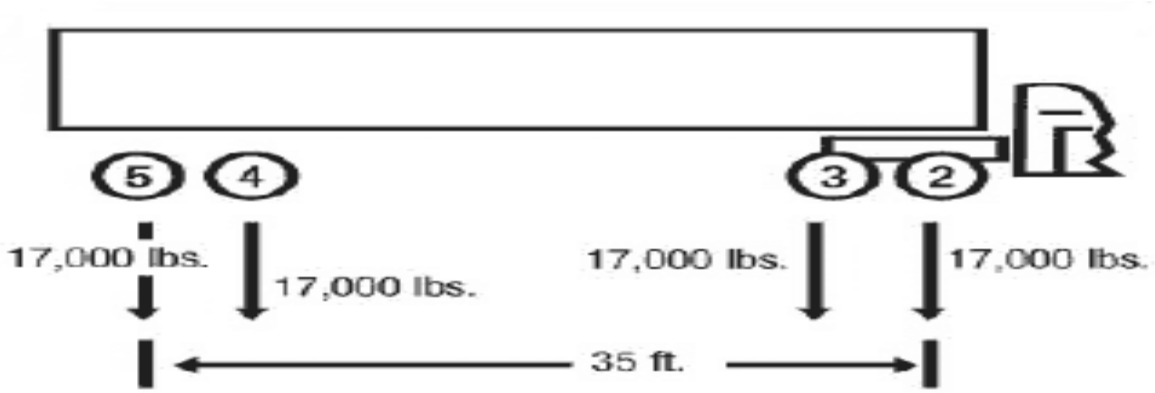
- **Check axles 1 through 3**
- Actual weight = 12,000 + 17,000 + 17,000 = 46,000 pounds.
- N = 3 axles
- L = 20 feet
- Maximum weight (W) = 51,000 pounds, which is more than the actual weight of 46,000 pounds. Thus, the Bridge Formula requirement is satisfied.
- This same number (51,000 pounds) could have been obtained from the Bridge Table by reading down the left side to L = 20 and across to the right where N = 3.



- **Now check axles 1 through 5**
- Actual weight = 12,000 + 17,000 + 17,000 + 17,000 + 17,000 = 80,000 pounds.
- Maximum weight (W) = 80,000 pounds (Bridge Table for "L" of 51 feet and "N" of 5 axles).
- Therefore, this axle spacing is satisfactory.

Exterior Bridge Formula Calculation

- $W = 500\left(\frac{LN}{N-1} + 12N + 36\right)$
- =500*(51*5/5-1+12*5+36)
- =500*(63.75+60+36)
- =500*159.75
- =79,875



- **Now check axles 2 through 5**
- Actual weight = 17,000 + 17,000 + 17,000 + 17,000 = 68,000 pounds.
- Maximum weight (W) = 65,500 pounds (Bridge Table for "L" of 35 feet and "N" of 4 axles).
- This is a violation because the actual weight exceeds the weight allowed by the Bridge Formula. To correct the situation, some load must be removed from the vehicle or the axle spacing (35 feet) must be increased.

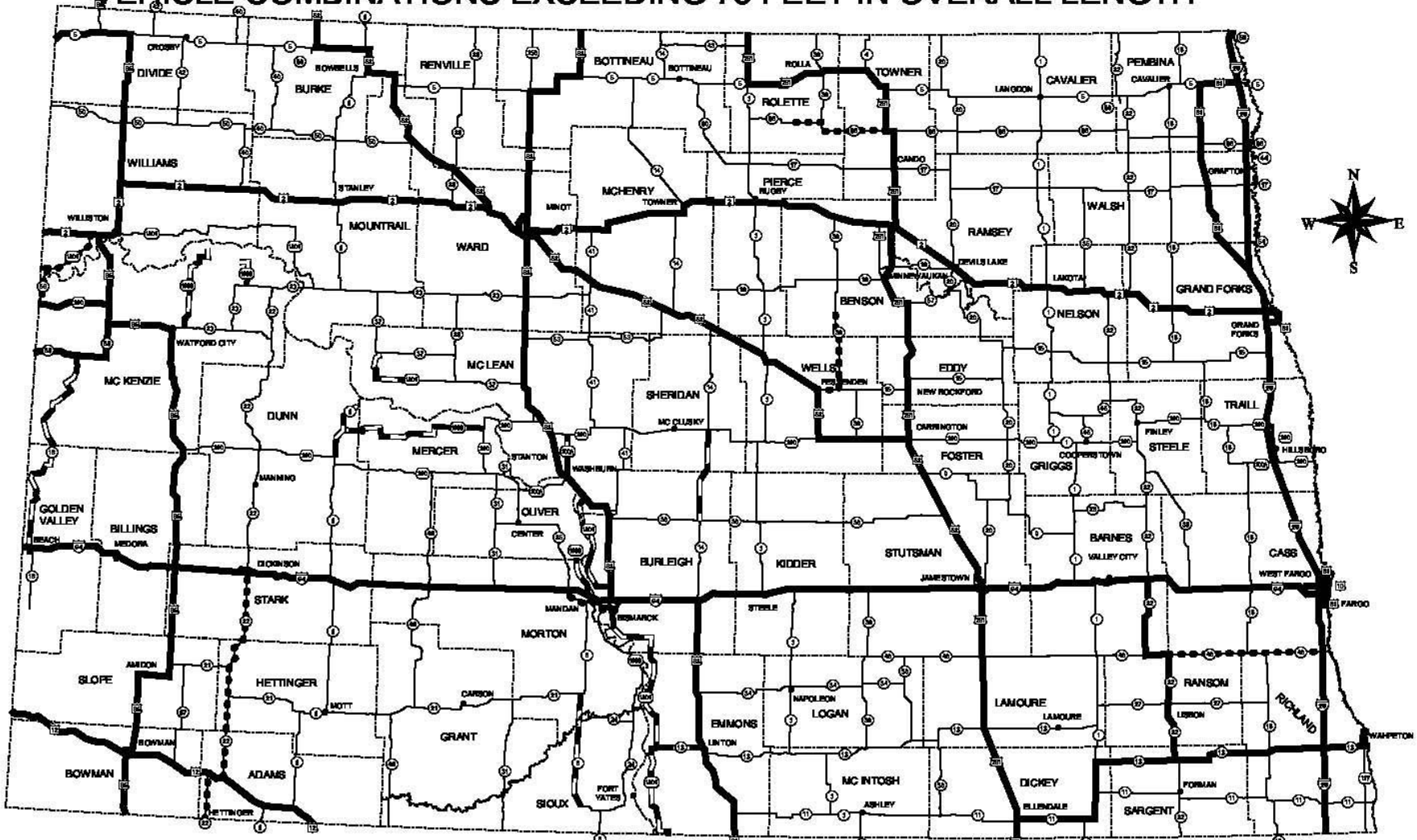
Bridge Formula

- Two or more consecutive axles may not exceed the weight computed by the bridge formula, even if the gross weight of the truck (or the weight on one axle) is below otherwise legal limits. Although this means that any two axles must comply with the formula, experience has shown that axles 1 through 3, 1 through 5, and 2 through 5 are critical and must be checked. This means that the axle group which comprises the entire truck (known as the "outer group") and the interior axle groups (known as the "tractor group" and "trailer group") must also comply with the bridge formula. If these combinations are found to be satisfactory, then all of the other axle groups on this type of vehicle will usually be satisfactory.

Exception to Bridge Formula and Table

- In addition to the grandfather rights notes on page 3, Federal law (23 U.S.C. 127) includes one other exception to the Bridge Formula and the Bridge Table—two consecutive sets of tandem axles may carry 34,000 pounds each if the overall distance between the first and last axles of these tandems is 36 feet or more. For example, a five-axle tractor-semitrailer combination may carry 34,000 pounds both on the tractor tandem (axles 2 and 3) and the trailer tandem (axles 4 and 5), provided axles 2 and 5 are spaced at least 36 feet apart. Without this exception, the Bridge Formula would allow an actual weight of only 66,000 to 67,500 pounds on tandems spaced 36 to 38 feet apart.

DESIGNATED NORTH DAKOTA STATE HIGHWAYS FOR VEHICLE COMBINATIONS EXCEEDING 75 FEET IN OVERALL LENGTH



Indicates highways posted where vehicle combinations may not exceed 75 ft. in overall length.

Indicates designated highways where vehicle combinations as provided for in Chapter 37-06-04, NDAC, may exceed 75 ft. but not exceed 95 ft. in overall length.

or Indudes designated highways where vehicle combinations as provided for in Chapter 37-06-04, NDAC, may exceed 75 ft. but not exceed 110 ft. in overal length.

Indicates the "national network" where the cargo carrying length shall not exceed 100 feet on a semitrailer and trailer, or semitrailer converted to a trailer by the use of a converter dolly and fifth wheel when the power unit is a truck-tractor.

Vehicle combinations authorized to exceed 75 ft. in overall length may travel a distance of 10 miles on state highways off the designated routes

APPROVED:

Francis A. Ziegler
NDDOT DIRECTOR

09/18/07
DATE

9-1 ANNEX B

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What do you need to know to determine legal weight ?

- Tire Width
- Number of tires per axle
- Number of axles
- Axle groupings
- Exterior bridge
- Road weight restrictions

Computed to nearest foot by the weight formula in Section 39-12-05 and Section 39-12-05.3 of the North Dakota Century Code.

$$W = 500\left(\frac{LN}{N-1} + 12N + 36\right)$$

W = Maximum weight in pounds on any group of two or more axles.
L = Distance in feet between extremes of any group of two or more consecutive axles.
N = Number of axles in group under consideration.

Distance in feet between the extremes of any groups of 2 or more consecutive axles	Maximum Load in Pounds Carried on any Group of 2 or More Consecutive Axles							
	2 Axles	3 Axles	4 Axles	5 Axles	6 Axles	7 Axles	8 Axles	9 Axles
4	34,000							
5	34,000							
6	34,000							
7	34,000	41,500						
8	38,000	42,000						
9	39,000	43,000						
10	40,000*	43,500						
11		44,500						
12		45,000	50,000					
13		46,000	50,500					
14		46,500	51,500					
15		47,500	52,000					
16		48,000	52,500	58,000				
17		49,000	53,500	58,500				
18		49,500	54,000	59,500				
19		50,500	54,500	60,000				
20		51,000	55,500	60,500	66,000			
21		52,000	56,000	61,000	66,500			
22		52,500	56,500	62,000	67,000			
23		53,500	57,500	62,500	68,000			
24		54,000	58,000	63,000	68,500	74,000		
25		55,000	58,500	63,500	69,000	74,500		
26		55,500	59,500	64,500	69,500	75,000		
27		56,500	60,000	65,000	70,000	76,000		
28		57,000	60,500	65,500	71,000	76,500	82,000	
29		58,000	61,500	66,000	71,500	77,000	82,500	
30		58,500	62,000	67,000	72,000	77,500	83,000	
31		59,500	62,500	67,500	72,500	78,000	84,000	
32		60,000*	63,500	68,000	73,000	78,500	84,500	90,000
33			64,000	68,500	74,000	79,500	85,000	90,500
34			64,500	69,500	74,500	80,000	85,500	91,000
35			65,500	70,000	75,000	80,500	86,000	91,500
36	Two consecutive sets of tandem axles may carry a gross load of 34,000 pounds each provided the overall distance between the first and last axles of such consecutive sets of tandem axles is 36 feet or more.		66,000	70,500	75,500	81,000	86,500	92,500
37			66,500	71,000	76,000	81,500	87,000	93,000
38			67,500	72,000	77,000	82,000	87,500	93,500
39			68,000	72,500	77,500	83,000	88,500	94,000
40			68,500	73,000	78,000	83,500	89,000	94,500
41			69,500	73,500	78,500	84,000	89,500	95,000
42			70,000	74,500	79,000	84,500	90,000	95,500
43			70,500	75,000	80,000	85,000	90,500	96,000
44			71,500	75,500	80,500	85,500	91,000	97,000
45			72,000	76,000	81,000	86,500	91,500	97,500
46			72,500	77,000	81,500	87,000	92,500	98,000
47			73,500	77,500	82,000	87,500	93,000	98,500
48			74,000	78,000	83,000	88,000	93,500	99,000
49			74,500	78,500	83,500	88,500	94,000	99,500
50			75,500	79,500	84,000	89,000	94,500	100,000
51			76,000	80,000	84,500	90,000	95,000	100,500
52			76,500	80,500	85,000	90,500	95,500	101,500
53			77,500	81,000	86,000	91,000	96,500	102,000
54			78,000	82,000	86,500	91,500	97,000	102,500
55			78,500	82,500	87,000	92,000	97,500	103,000
56	Gross weight limit on interstate. Gross weight limit on county and other local highways unless designated for more.		79,500	83,000	87,500	92,500	98,000	103,500
57			80,000*	83,500	88,000	93,500	98,500	104,000
58				84,500	89,000	94,000	99,000	104,500
59				85,000	89,500	94,500	99,500	105,000
60				85,500	90,000	95,000	100,500	105,500*
61				86,000	90,500	95,500	101,000	
62				87,000	91,000	96,000	101,500	
63				87,500	92,000	97,000	102,000	
64				88,000	92,500	97,500	102,500	
65				88,500	93,000	98,000	103,000	
66				89,500	93,500	98,500	103,500	
67				90,000	94,000	99,000	104,500	
68				90,500	95,000	99,500	105,000	
69				91,000	95,500	100,500	105,500*	
70				92,000	96,000	101,000		
71				92,500	96,500	101,500		
72				93,000	97,000	102,000		
73				93,500	98,000	102,500		
74				94,500	98,500	103,000		
75				95,000	99,000	104,000		
76				95,500	99,500	104,500		
77				96,000	100,000	105,000		
78				97,000	101,000	105,500*		
79				97,500	101,500			
80				98,000	102,000			
81				98,500	102,500			
82				99,500	103,000			
83				100,000*	104,000			
84					104,500	*Maximum Gross Weight		
85					105,000			
86					105,500*			

Note: On highways other than the Interstate System, only the exterior bridge measurement shall be used to determine the gross vehicle weight of a vehicle or combination of vehicles

NORTH DAKOTA AXLE WEIGHT LIMITATIONS

No single axle shall carry a gross weight in excess of 20,000 pounds. Axles spaced 40 inches or less apart are considered one axle. Axles spaced eight (8) feet apart or over are considered as individual axles. The gross weight of two individual axles may be restricted by the weight formula except that on highways other than the interstate, two axles spaced eight (8) feet apart or more may have a combined gross weight not to exceed 40,000 pounds. Spacing between axles shall be measured from axle center to axle center.

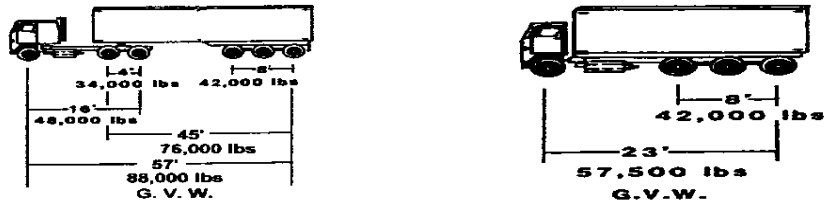
Axles spaced over 40 inches apart and less than eight (8) feet apart shall not carry a gross weight in excess of 19,000 pounds per axle. The gross weight on a tandem axle shall not exceed 34,000 pounds. The gross weight of three or more axles in a grouping is determined by the measurement between the extreme axle centers except that on highways other than the interstate, groupings of three or more axles may have a gross weight not to exceed 48,000 pounds.

The weight per inch width of tire shall not exceed 550 pounds. Metric tire sizes are converted to inches by dividing millimeters by 25.4. The width of tire for solid tires shall be the rim width. For pneumatic tires the width of tire shall be the manufacturer's width. The weight in pounds on any one wheel shall not exceed one-half the allowable axle weight. Dual tires are considered one (1) wheel.

Tire Width	Single Axle (2 Tires)	Single Axle (4 Tires)	Tandem Axle (4 Tires)	Tandem Axle (8 Tires)	Triple Axle (6 Tires)	Triple Axle (12 Tires)
7:00	7,700	15,400	15,400	30,800	23,100	Determined by Weight Formula
7:50	8,250	16,500	16,500	33,000	24,750	
8:00	8,800	17,600	17,600	34,000	26,400	
8:25	9,075	18,150	18,150	34,000	27,225	
9:00	9,900	19,800	19,800	34,000	29,700	
10:00	11,000	20,000	22,000	34,000	33,000	
11:00	12,100	20,000	24,200	34,000	Determined by Weight Formula	
12:00	13,200	20,000	26,400	34,000		
13:00	14,300	20,000	28,600	34,000		
14:00	15,400	20,000	30,800	34,000		
15:00	16,500	20,000	33,000	34,000		
16:50	18,150	20,000	34,000	34,000		
17:50	19,250	20,000	34,000	34,000		
18:00	19,800	20,000	34,000	34,000		

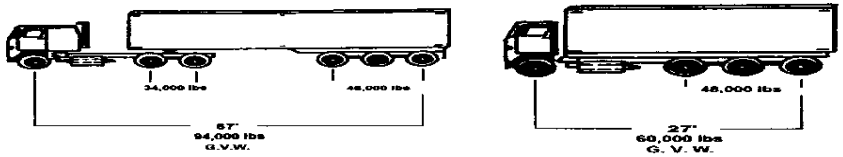
NOTE: Axle weights may be reduced during the spring breakup season or on otherwise posted highways. Axle weights may be reduced by Bridge Load Limitations Map.

Examples of Bridge Formula Application on the Interstate System



Note: On the Interstate System, the interior and exterior bridge measurement shall be used to determine the gross vehicle weight of a vehicle or combination of vehicles.

Examples of Bridge Formula Application on the State Highway System



Note: On highways other than the Interstate System, only the exterior bridge measurement shall be used to determine the gross vehicle weight of a vehicle or combination of vehicles. Groupings of three or more axles may have a gross weight not to exceed 48,000 pounds.
See Highway Patrol for additional information on 4-axle straight trucks.

Examples of Metric Tire Conversion

Metric Tire Size	Tire Width in Inches	Metric Tire Size	Tire Width in Inches
245/75R22.5	9.6 inches	315/75R22.5	12.4 inches
255/70R22.5	10.0 inches	385/65R22.5	15.2 inches
265/75R22.5	10.4 inches	425/65R22.5	16.7 inches
275/80R22.5	10.8 inches	445/65R22.5	17.5 inches
285/75R24.5	11.2 inches	455/65R22.5	17.9 inches
295/75R22.5	11.6 inches	465/65R22.5	18.3 inches

Tire Size and Dimensional Definitions

13 / 80 R 20
13 = Tire width (inches)
80 = Percent of tire width in comparison to height (not used as part of tire width)
R = Radial
20 = Rim diameter (inches)

13.8 R 20
13.8 = Tire width (inches)
R = Radial
20 = Rim diameter (inches)

Examples of Tire Width

We only care about the first number.

- Metric

- Standard (Inches)

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Examples of Metric Tire Conversion

North Dakota Highway Patrol

Metric Tire Size	Tire Width in Inches	Metric Tire Size	Tire Width in Inches
245/75R22.5	9.6 inches	315/75R22.5	12.4 inches
255/70R22.5	10.0 inches	385/65R22.5	15.1 inches
265/75R22.5	10.4 inches	425/65R22.5	16.7 inches
275/80R22.5	10.8 inches	445/65R22.5	17.5 inches
285/75R24.5	11.2 inches	455/65R22.5	17.9 inches
295/75R22.5	11.6 inches	465/65R22.5	18.3 inches

Metric Tire Conversion Formula

- P225/50R16
- Divide the first number of the tire metric measurements by 25.4.
- This will give you the tire's width in inches.
- For example, for a tire that is labeled "P225/50R16," divide 225 by 25.4 to get 8.86 inches.
- 8.86 multiplied by 550 pounds = 4873 pounds/tire

Axle Weights Based on Tire Width

North Dakota Highway Patrol

Tire Width	Single Axle (2 Tires)	Single Axle (4 Tires)	Tandem Axle (4 Tires)	Tandem Axle (8 Tires)	Triple Axle (6 Tires)	Triple Axle (12 Tires)
7:00	7,700	15,400	15,400	30,800	23,100	Determined by Weight Formula
7:50	8,250	16,500	16,500	33,000	24,750	
8:00	8,800	17,600	17,600	34,000	26,400	
8:25	9,075	18,150	18,150	34,000	27,225	
9:00	9,900	19,800	19,800	34,000	29,700	
10:00	11,000	20,000	22,000	34,000	33,000	
11:00	12,100	20,000	24,200	34,000	Determined by Weight Formula	
12:00	13,200	20,000	26,400	34,000		
13:00	14,300	20,000	28,600	34,000		
14:00	15,400	20,000	30,800	34,000		
15:00	16,500	20,000	33,000	34,000		
16:50	18,150	20,000	34,000	34,000		
17:50	19,250	20,000	34,000	34,000		
18:00	19,800	20,000	34,000	34,000		

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Legal Truck Size

- Legal Width
  - 8'6" On all highways
  - Exceptions
    - Construction and building contractors' equipment and vehicles used to move such equipment, which does not exceed ten feet in width when being moved by contractors or resident carriers. Night travel is allowed provided moving equipment is properly lighted.
    - Implements of husbandry being moved by resident farmers, ranchers, dealers, manufacturers, or government entities between sunrise and sunset. Night travel is allowed if implements are properly lighted and not being moved on the interstate system.
    - Hay in the stack being moved along the extreme right edge of a roadway between sunrise and sunset by someone other than a commercial mover. Commercial hay movers, over-width self-propelled fertilizer spreaders, over-width self-propelled agricultural chemical applicators, hay grinders, forage harvesters and grain cleaners if the owners have seasonal permits.

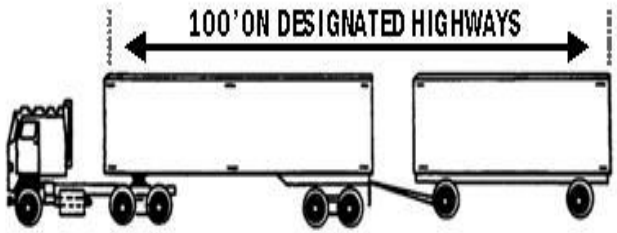
Legal Truck Size

Height

- 14 feet
- Implements of husbandry 15 feet 6 inches (not to exceed 60 miles and not on interstate)

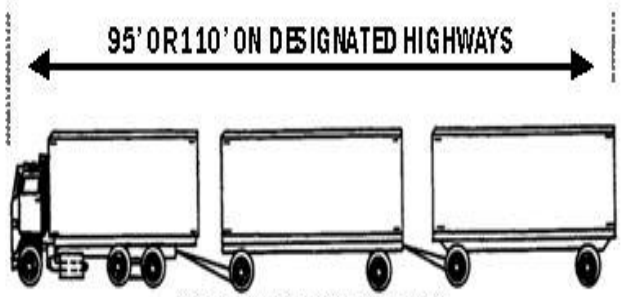
- Length
  - Single unit, two or more axles, 50 feet
  - Combination of two, three, four units – 75 feet on non-designated highways and 95 – 110 feet on four lane divided highways and highways designated by DOT

Legal Truck Size



TRUCK-TRACTOR, SEMI TRAILER AND TRAILER (A-TRAIN)

TRUCK-TRACTOR, SEMI TRAILER AND SEMI TRAILER (B-TRAIN)



TRUCK AND TWO TRAILERS

TRUCK-TRACTOR, SEMI TRAILER AND TWO TRAILERS OR TWO SEMI TRAILERS
(TRIPLE BOTTOM) CONVERTED TO TRAILERS WITH CONVERTER DOLLIES

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Legal Truck Size (continued)

- Length continued
  - Trailer length 53 feet; 60 feet for trailers and semi-trailers grandfathered July 1, 1987.
  - Exceptions:
    - Building moving equipment, emergency tow trucks, armed forces vehicles and equipment, structural material of telephone, power, and telegraph companies, truck mounted haystack moving equipment, truck-tractor semitrailer combination on interstate highway

Divisible/Non-divisible loads

- North Dakota Highway Patrol defines non-divisible as a load which “cannot be readily or reasonable dismantled and which is reduced to a minimum practical size and weight”.

Divisible/Non-divisible loads

- FHWA explains non-divisible "as any load or vehicle exceeding applicable length or weight limits which, if separated into smaller loads or vehicles would":
  - Compromise the intended use of the vehicle, i.e., make it unable to perform the function for which it was intended;
  - Destroy the value of the load or vehicle, i.e. make it unusable for its intended purpose; or
  - Require more than 8 work hours to dismantle using appropriate equipment. The applicant bears the burden of proof as to the number of work hours required to dismantle the load.

Divisible/Non-divisible loads

- Designated divisible load permits may be issued by the State based upon historic State "grandfather" provisions or congressional authorization for a state-specific commodity or route movement at a greater size or weight.
- State grandfathered rights regarding longer combination vehicles can be found in Appendix C to 23CFR Part 658-Trucks Over 80,000 Pounds on the Interstate System and Trucks Over STAA Lengths on the National Network.

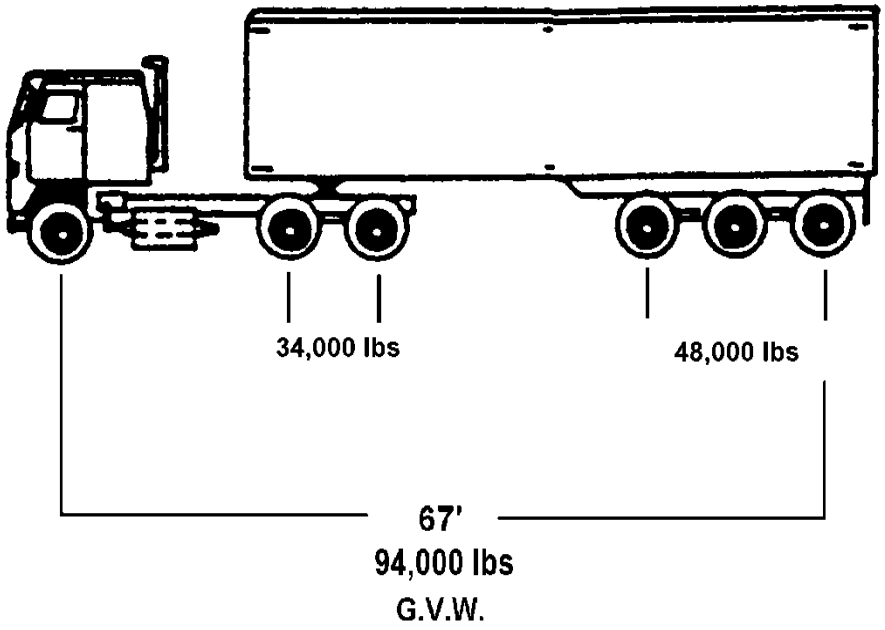
Legal Weight Exercise (State HighwaySystem)

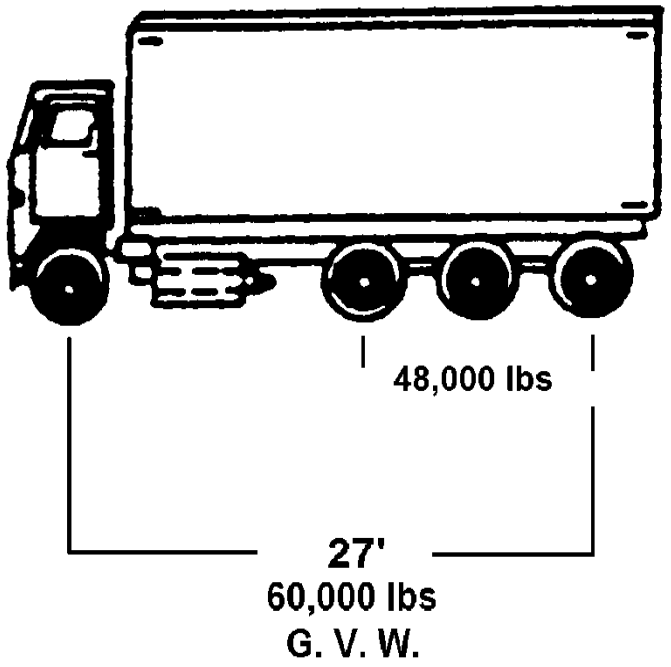
- Exterior bridge
- Number of axles
- Tire Width
- Number of Tires
- Manufacture axle limits

Roads Other Than Interstate

Exterior Bridge

Exterior bridge is measured from the center of the steering axle to the center of the very last axle.





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NORTH DAKOTA WEIGHT LIMITATIONS CHART

NORTH DAKOTA HIGHWAY PATROL – NDHP 921 (Rev. 08/06)

Computed to nearest foot by the weight formula in Section 39-12-05 and Section 39-12-05.3 of the North Dakota Century Code.

$$W = 500\left(\frac{LN}{N-1} + 12N + 36\right)$$

W = Maximum weight in pounds on any group of two or more axles.
L = Distance in feet between extremes of any group of two or more consecutive axles.
N = Number of axles in group under consideration.

Distance in feet between the extremes of any groups of 2 or more consecutive axles	Maximum Load in Pounds Carried on any Group of 2 or More Consecutive Axles							
	2 Axles	3 Axles	4 Axles	5 Axles	6 Axles	7 Axles	8 Axles	9 Axles
4	34,000							
5	34,000							
6	34,000							
7	34,000	34,000						
8	38,000	42,000						
9	39,000	43,000						
10	40,000*	43,500						
11		44,500						
12		45,000	50,000					
13		46,000	50,500					
14		46,500	51,500	57,000				
15		47,500	52,000	57,500				
16		48,000	52,500	58,000				
17		49,000	53,500	58,500				
18		49,500	54,000	59,500				
19		50,500	54,500	60,000				
20		51,000	55,500	60,500	66,000			
21		52,000	56,000	61,000	66,500			
22		52,500	56,500	62,000	67,000			
23		53,500	57,500	62,500	68,000			
24		54,000	58,000	63,000	68,500	74,000		
25		55,000	58,500	63,500	69,000	74,500		
26		55,500	59,500	64,500	69,500	75,000		
27		56,500	60,000	65,000	70,000	76,000		
28		57,000	60,500	65,500	71,000	76,500	82,000	
29		58,000	61,500	66,000	71,500	77,000	82,500	
30		58,500	62,000	67,000	72,000	77,500	83,000	
31		59,500	62,500	67,500	72,500	78,000	84,000	
32		60,000*	63,500	68,000	73,000	78,500	84,500	90,000
33			64,000	68,500	74,000	79,500	85,000	90,500
34			64,500	69,500	74,500	80,000	85,500	91,000

What can this truck legally weigh using the exterior bridge and number of axles.

Exterior Bridge = 60 feet

Axles = 6

NORTH DAKOTA WEIGHT LIMITATIONS CHART

NORTH DAKOTA HIGHWAY PATROL – NDHP 921 (Rev. 08/06)

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$$W = 500\left(\frac{LN}{N-1} + 12N + 36\right)$$

W = Maximum weight in pounds on any group of two or more axles.
L = Distance in feet between extremes of any group of two or more consecutive axles.
N = Number of axles in group under consideration.

Distance in feet between the extremes of any groups of 2 or more consecutive axles	Maximum Load in Pounds Carried on any Group of 2 or More Consecutive Axles							
	2 Axles	3 Axles	4 Axles	5 Axles	6 Axles	7 Axles	8 Axles	9 Axles
4	34,000							
5	34,000							
6	34,000							
7	34,000	34,000						
8	38,000	42,000						
9	39,000	43,000						
10	40,000*	43,500						
11		44,500						
12		45,000	50,000					
13		46,000	50,500					
14		46,500	51,500	57,000				
15		47,500	52,000	57,500				
16		48,000	52,500	58,000				
17		49,000	53,500	58,500				
18		49,500	54,000	59,500				
19		50,500	54,500	60,000				
20		51,000	55,500	60,500	66,000			
21		52,000	56,000	61,000	66,500			
22		52,500	56,500	62,000	67,000			
23		53,500	57,500	62,500	68,000			
24		54,000	58,000	63,000	68,500	74,000		
25		55,000	58,500	63,500	69,000	74,500		
26		55,500	59,500	64,500	69,500	75,000		
27		56,500	60,000	65,000	70,000	76,000		
28		57,000	60,500	65,500	71,000	76,500	82,000	
29		58,000	61,500	66,000	71,500	77,000	82,500	
30		58,500	62,000	67,000	72,000	77,500	83,000	
31		59,500	62,500	67,500	72,500	78,000	84,000	
32		60,000*	63,500	68,000	73,000	78,500	84,500	90,000
33			64,000	68,500	74,000	79,500	85,000	90,500
34			64,500	69,500	74,500	80,000	85,500	91,000
35			65,500	70,000	75,000	80,500	86,000	91,500
36	Two consecutive sets of tandem axles may carry a		66,000	70,500	75,500	81,000	86,500	92,500
37	gross load of 34,000 pounds each provided the		66,500	71,000	76,000	81,500	87,000	93,000
38	overall distance between the first and last axles of		67,500	72,000	77,000	82,000	87,500	93,500
39	such consecutive sets of tandem axles is 36 feet or		68,000	72,500	77,500	83,000	88,500	94,000
40	more.		68,500	73,000	78,000	83,500	89,000	94,500
41			69,500	73,500	78,500	84,000	89,500	95,000
42			70,000	74,500	79,000	84,500	90,000	95,500
43			70,500	75,000	80,000	85,000	90,500	96,000
44			71,500	75,500	80,500	85,500	91,000	97,000
45			72,000	76,000	81,000	86,500	91,500	97,500
46			72,500	77,000	81,500	87,000	92,500	98,000
47			73,500	77,500	82,000	87,500	93,000	98,500
48			74,000	78,000	83,000	88,000	93,500	99,000
49			74,500	78,500	83,500	88,500	94,000	99,500
50			75,500	79,500	84,000	89,000	94,500	100,000
51			76,000	80,000	84,500	90,000	95,000	100,500
52			76,500	80,500	85,000	90,500	95,500	101,500
53			77,500	81,000	86,000	91,000	96,500	102,000
54			78,000	82,000	86,500	91,500	97,000	102,500
55			78,500	82,500	87,000	92,000	97,500	103,000
56	Gross weight limit on interstate. Gross weight limit		79,500	83,000	87,500	92,500	98,000	103,500
57	on county and other local highways unless		80,000*	83,500	88,000	93,500	98,500	104,000
58	designated for more.			84,500	89,000	94,000	99,000	104,500
59				85,000	89,500	94,500	99,500	105,000
60				85,500	90,000	95,000	100,500	105,500*
61				86,000	90,500	95,500	101,000	
62				87,000	91,000	96,000	101,500	
63				87,500	92,000	97,000	102,000	
64				88,000	92,500	97,500	102,500	
65				88,500	93,000	98,000	103,000	

What can this truck weigh ?

Exterior Bridge = 53 feet

Axles = 5

NORTH DAKOTA WEIGHT LIMITATIONS CHART

NORTH DAKOTA HIGHWAY PATROL – NDHP 921 (Rev. 08/06)

Computed to nearest foot by the weight formula in Section 39-12-05 and Section 39-12-05.3 of the North Dakota Century Code.

$$W = 500\left(\frac{LN}{N-1} + 12N + 36\right)$$

W = Maximum weight in pounds on any group of two or more axles.
L = Distance in feet between extremes of any group of two or more consecutive axles.
N = Number of axles in group under consideration.

Distance in feet between the extremes of any groups of 2 or more consecutive axles	Maximum Load in Pounds Carried on any Group of 2 or More Consecutive Axles							
	2 Axles	3 Axles	4 Axles	5 Axles	6 Axles	7 Axles	8 Axles	9 Axles
4	34,000							
5	34,000							
6	34,000							
7	34,000	34,000						
8	38,000	42,000						
9	39,000	43,000						
10	40,000*	43,500						
11		44,500						
12		45,000	50,000					
13		46,000	50,500					
14		46,500	51,500	57,000				
15		47,500	52,000	57,500				
16		48,000	52,500	58,000				
17		49,000	53,500	58,500				
18		49,500	54,000	59,500				
19		50,500	54,500	60,000				
20		51,000	55,500	60,500	66,000			
21		52,000	56,000	61,000	66,500			
22		52,500	56,500	62,000	67,000			
23		53,500	57,500	62,500	68,000			
24		54,000	58,000	63,000	68,500	74,000		
25		55,000	58,500	63,500	69,000	74,500		
26		55,500	59,500	64,500	69,500	75,000		
27		56,500	60,000	65,000	70,000	76,000		
28		57,000	60,500	65,500	71,000	76,500	82,000	
29		58,000	61,500	66,000	71,500	77,000	82,500	
30		58,500	62,000	67,000	72,000	77,500	83,000	
31		59,500	62,500	67,500	72,500	78,000	84,000	
32		60,000*	63,500	68,000	73,000	78,500	84,500	90,000
33			64,000	68,500	74,000	79,500	85,000	90,500
34			64,500	69,500	74,500	80,000	85,500	91,000
35			65,500	70,000	75,000	80,500	86,000	91,500
36	Two consecutive sets of tandem axles may carry a		66,000	70,500	75,500	81,000	86,500	92,500
37	gross load of 34,000 pounds each provided the		66,500	71,000	76,000	81,500	87,000	93,000
38	overall distance between the first and last axles of		67,500	72,000	77,000	82,000	87,500	93,500
39	such consecutive sets of tandem axles is 36 feet or		68,000	72,500	77,500	83,000	88,500	94,000
40	more.		68,500	73,000	78,000	83,500	89,000	94,500
41			69,500	73,500	78,500	84,000	89,500	95,000
42			70,000	74,500	79,000	84,500	90,000	95,500
43			70,500	75,000	80,000	85,000	90,500	96,000
44			71,500	75,500	80,500	85,500	91,000	97,000
45			72,000	76,000	81,000	86,500	91,500	97,500
46			72,500	77,000	81,500	87,000	92,500	98,000
47			73,500	77,500	82,000	87,500	93,000	98,500
48			74,000	78,000	83,000	88,000	93,500	99,000
49			74,500	78,500	83,500	88,500	94,000	99,500
50			75,500	79,500	84,000	89,000	94,500	100,000
51			76,000	80,000	84,500	90,000	95,000	100,500
52			76,500	80,500	85,000	90,500	95,500	101,500
53			77,500	81,000	86,000	91,000	96,500	102,000
54			78,000	82,000	86,500	91,500	97,000	102,500
55			78,500	82,500	87,000	92,000	97,500	103,000
56	Gross weight limit on interstate. Gross weight limit		79,500	83,000	87,500	92,500	98,000	103,500
57	on county and other local highways unless		80,000*	83,500	88,000	93,500	98,500	104,000
58	designated for more.			84,500	89,000	94,000	99,000	104,500
59				85,000	89,500	94,500	99,500	105,000
60				85,500	90,000	95,000	100,500	105,500*

With an exterior bridge of 53 feet and a total of 5 axles this truck can not exceed 81,000 lbs

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
23 feet	3			
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	385		
2-3	8	11		

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
23 feet	3		53,500 lbs	
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	385		
2-3	8	11		

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
23 feet	3		53,500 lbs	
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	385	16,720 lbs	
2-3	8	11		

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
23 feet	3		53,500 lbs	
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	385	16,720 lbs	
2-3	8	11	34,000 lbs	

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
23 feet	3		53,500 lbs	53,400 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	385	16,720 lbs	14,000 lbs
2-3	8	11	34,000 lbs	39,400 lbs

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
23 feet	3		53,500 lbs	53,400 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	385	16,720 lbs	14,000 lbs
2-3	8	11	34,000 lbs	39,400 lbs

This truck is over by 5,400 lbs on axles 2-3.

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
53 feet	6			
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11		
2-3	8	11		
4-6	12	11		

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
53 feet	6		86,000 lbs	
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11		
2-3	8	11		
4-6	12	11		

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
53 feet	6		86,000 lbs	
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11	12,100 lbs	
2-3	8	11		
4-6	12	11		

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
53 feet	6		86,000 lbs	
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11	12,100 lbs	
2-3	8	11	34,000 lbs	
4-6	12	11		

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
53 feet	6		86,000 lbs	
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11	12,100 lbs	
2-3	8	11	34,000 lbs	
4-6	12	11	48,000 lbs	

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
53 feet	6		86,000 lbs	96,800 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11	12,100 lbs	10,900 lbs
2-3	8	11	34,000 lbs	34,600 lbs
4-6	12	11	48,000 lbs	51,300 lbs

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
53 feet	6		86,000 lbs	96,800 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11	12,100 lbs	10,900 lbs
2-3	8	11	34,000 lbs	34,600 lbs
4-6	12	11	48,000 lbs	51,300 lbs

96,800 lbs – 86,000 lbs = 10,800 lbs over on gross weight

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
53 feet	6		86,000 lbs	96,800 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11	12,100 lbs	10,900 lbs
2-3	8	11	34,000 lbs	34,600 lbs
4-6	12	11	48,000 lbs	51,300 lbs

96,800 lbs – 86,000 lbs = 10,800 lbs over on gross weight

Axles 2-3 34,600 lbs – 34,000 lbs = 600 lbs over

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
53 feet	6		86,000 lbs	96,800 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11	12,100 lbs	10,900 lbs
2-3	8	11	34,000 lbs	34,600 lbs
4-6	12	11	48,000 lbs	51,300 lbs

96,800 lbs – 86,000 lbs = 10,800 lbs over on gross weight

Axles 2-3 34,600 lbs – 34,000 lbs = 600 lbs over
Axles 4-6 51,300 lbs – 48,000 lbs = 3,300 lbs over

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
53 feet	6		86,000 lbs	96,800 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11	12,100 lbs	10,900 lbs
2-3	8	11	34,000 lbs	34,600 lbs
4-6	12	11	48,000 lbs	51,300 lbs

96,800 lbs – 86,000 lbs = 10,800 lbs over on gross weight

Axles 2-3 34,600 lbs – 34,000 lbs = 600 lbs over
Axles 4-6 51,300 lbs – 48,000 lbs = 3,300 lbs over

Total over on all axles = 3,900 lbs

The overload is determined on which is over the greatest. Is it over more on gross weight or on axle weights?

North Dakota Highway Patrol

N.D.C.C 39-12-17

Fine Schedule

Extraordinary Road Use Fee Schedule (39-12-17, NDCC)

Pounds	FEE
1 to 1,000	- $20
1,001 to 2,000	- $40
2,001 to 3,000	- $60
3,001 to 4,000	- $140
4,001 to 5,000	- $220
5,001 to 6,000	- $305
6,001 to 7,000	- $380
7,001 to 8,000	- $495
8,001 to 9,000	- $575
9,001 to 10,000	- $655
10,001 to 11,000	- $1,100
11,001 to 12,000	- $1,200
12,001 to 13,000	- $1,300
13,001 to 14,000	- $1,680
14,001 to 15,000	- $1,800
15,001 to 16,000	- $1,920
16,001 to 17,000	- $2,550
17,001 to 18,000	- $2,700
18,001 to 19,000	- $2,850
19,001 to 20,000	- $3,000
20,001 to 21,000	- $4,200
21,001 to 22,000	- $4,400
22,001 to 23,000	- $4,600
23,001 to 24,000	- $4,800
24,001 to 25,000	- $5,000
25,001 to 26,000	- $5,200
26,001 to 27,000	- $5,400
27,001 to 28,000	- $5,600
28,001 to 29,000	- $5,800
29,001 to 30,000	- $6,000

An additional charge of $200 for every 1,000-pound increase over 30,000 pounds consistent with the above formula.

Additional Comments

Exterior Bridge	Number of Axles	Exercise #1	Allowable Gross Weight	Actual Gross Weight
53 feet	5			80,400 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11		11,200 lbs
2-3	8	11		29,500 lbs
4	4	11		29,400 lbs
5	4	11		10,300 lbs

Exterior Bridge	Number of Axles	Exercise #2	Allowable Gross Weight	Actual Gross Weight
60 feet	6			103,300 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11		11,500 lbs
2-3	8	11		45,800 lbs
4-6	12	11		46,000 lbs

Exterior Bridge	Number of Axles	Exercise #3	Allowable Gross Weight	Actual Gross Weight
23 feet	4			74,500 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	385		22,900 lbs
2-4	12	11		51,600 lbs

Exterior Bridge	Number of Axles	Exercise #4	Allowable Gross Weight	Actual Gross Weight
25 feet	4			63,100 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	425		21,800 lbs
2	2	425		1,400 lbs
3-4	8	11		39,900 lbs

Exercise #5

Exterior Bridge	Number of Axles		Allowable Gross Weight	Actual Gross Weight
59 feet	5			119,150 lbs
Axles in Group	**Number of Tires**	**Tire Size**	**Allowable Axle Weight**	**Actual Axle Weight**
1	2	11		13,250 lbs
2-3	8	11		49,800 lbs
4	4	11		29,650 lbs
5	4	11		29,450 lbs

Seasonal Loads

- Spring Restrictions
  - Road Preservation
- Harvest 10% Overload
  - Expedite Harvest
- Winter
  - Economic
  - Frozen Road

Seasonal Loads

- Spring Load Restrictions
  - NDDOT initiates legal load restrictions to reduce damage to State roads when they are most vulnerable and lifts the restrictions once they determine the roads can carry legal loads without excessive damage to the roads.

Seasonal Load Restrictions

Class	Single Axle	Tandem Axle	3 or more Axle Groupings	Gross Vehicle Weight
Restricted by Legal Weights	20,000 lbs.	34,000 lbs.	17,000 lbs. per axle not to exceed 48,000 lbs. gross weight on **divisible** loads	105,500 lbs.
8-TON	16,000 lbs.	32,000 lbs.	14,000 lbs. per,axle not to exceed 42,000 lbs. gross weight on **divisible** loads	105,500 lbs.
7-TON	14,000 lbs.	28,000 lbs.	12,000 lbs. per axle not to exceed 36,000 lbs. gross weight on **divisible** loads	105,000 lbs.
6-TON	12,000 lbs.	24,000 lbs.	10,000 lbs. per axle not to exceed 30,000 lbs. gross weight on **divisible** loads	80,000 lbs.
5-TON	10,000 lbs.	20,000 lbs.	10,000 lbs. per axle not to exceed 30,000 lbs. gross weight on **divisible** loads	80,000 lbs.

Seasonal Loads

- Harvest 10% Overload
  - The director and local authorities may issue permits allowing a motor vehicle to exceed the weight limitations by 10 percent but not in excess of 105,500 pounds. Only for agricultural products for harvest to the point of the initial storage site.
  - And for the collection and transport of solid wastes during the period of July 15 to December 1.

Seasonal Loads

- 10% Overload
  - Also the general movement of products from December 1 to March 7.
  - Vehicles carrying potatoes and sugar beets also from July 15 to December 1.
  - The appropriate jurisdictional authority shall establish an appropriate fee for the permit and direct how they shall be issued.
  - The highway patrol shall issue the permits authorized by the director.

Permits

- "The highway patrol and local authorities in their respective jurisdictions, upon application and payment of the appropriate charges and for good cause shown, may issue a special written permit authorizing the applicant to operate or move a vehicle, mobile home, or modular unit of a size or weight exceeding the maximum specified by this chapter, upon a highway under the jurisdiction of the body granting the permit."

Permits

- Every permit may designate the route to be traversed and may contain any other restrictions or conditions deemed necessary by the body granting the permit.
- Every permit must be carried in the vehicle to which it refers and must be opened to inspection by any peace officer or agent of the superintendent of the highway patrol unless prior approval is obtained from the highway patrol.
- It is a violation for any person to violate any of the terms or conditions of the permit.
- The highway patrol and local authorities may adopt rules governing the movement of oversize and overweight vehicles.

Permits

- Types of Permits
  - E-permits
  - Receipt issued single trip permits
  - Self-issue permit

Permits Available Online

- Types of Permits: E-permits, receipt issued single trip permits, self-issue permit
  - Oversize/overweight permit
  - Trip Permit (in lieu of registration)
  - Fuel Permit
  - Interstate Permit
    - Permits are required for legal size divisible load vehicles exceeding the federal gross vehicle weight cap of 80,000 pounds for movement on the interstate highway system. The GVW shall not exceed 105,500 pounds.
  - Self-issue Interstate Permit
  - Custom Combine Permit – non-resident
  - Custom Combine Permit – resident
  - Harvest 10% Permit
  - Wintertime 10% Permit
  - Harvest/Winter Combination (Durational) 10% Permit
  - Longer Combination Vehicle (LCV) Permit
  - Seasonal Permit

Permits Available Online

Multi-trip Permit	Harvest 10% Permit
Trip Permit (in lieu of registration)	Wintertime 10% Permit
Oversize/Overweight Permit	Harvest/Winter Combination (Durational) 10% Permit
Fuel Permit	Longer Combination Vehicle (LCV) Permit
Interstate Permit Custom Combine – Nonresident	Mobile Home Single Trip Permit Special Mobile Equipment Single Trip Permit
Custom Combine Permit Resident	Work Over Rig Single Trip Permit

Permits Available Online

Seasonal Permit	Mobile Home ID Supplement
Over-width Permit	Oversize ID Supplement (includes special mobile equipment and workover rigs)
Bridge Length Permit	Self-issue Permit

Axle Weight Limits

- Maximum axle weights for tractor/truck combinations (with permit)
  - Single axle 24,000 #s
  - Tandem axle 45,000 #s
  - Triple axle 60,000 #s
  - Quad axle 68,000 #s

  - 150,000 pound GVW

Axle Weight Limits (vehicles and vehicle combinations with permit)

Tire Size	Single Axle 2 Tires	Single Axle 4 Tires	Tandem Axle 4 Tires	Tandem Axle 8 Tires	Triple Axle 12 Tires	Four Axles 16 Tires
8:25	9,900#	19,800#	19,800#	39,600#	54,450#	*68,000#
9:00	10,800#	21,600#	21,600#	43,200#	59,400#	*68,000#
10:00	12,000#	*24,000#	24,000#	*45,000 #	*60,000#	*68,000#
11:00	13,200#	*24,000#	26,000#	*45,000 #	*60,000#	*68,000#
12:00	14,400#	*24,000#	28,000#	*45,000 #	*60,000#	*68,000#
13:00	15,600#	*24,000#	31,200#	*45,000 #	*60,000#	*68,000#
14:00	16,800#	*24,000#	33,600#	*45,000 #	*60,000#	*68,000#
15:00	18,000#	*24,000#	36,000#	*45,000 #	*60,000#	*68,000#
16:50	19,800#	*24,000#	39,600#	*45,000 #	*60,000#	*68,000#
17:50	21,000#	*24,000#	42,000#	*45,000 #	*60,000#	*68,000#
18:00	21,600#	*24,000#	43,200#	*45,000 #	*60,000#	*68,000#

*Maximums includes all tolerances

Axle Weight Limits (vehicles and vehicle combinations with permit)

- Vehicles or vehicle combinations hauling non-divisible overweight loads cannot exceed the following maximum permit axle weights.
- Single and tandem axle weights may not exceed 600 pounds per inch of tire; groupings with three axles or more may not exceed 550 pounds per inch of tire. (Metric tire sizes are converted to inches by dividing millimeters by 25.4).