

# ND Truck Weight Education



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# Legal Vehicle Weights



Axle  
Configuration

Bridge Length

Tire Width

# Legal Gross Vehicle Weight

## State Highway System

- 105,500 pounds
- Unless otherwise posted

## Local Road System

- 80,000 pounds
- Unless designated otherwise

## Interstate System

- 80,000 pounds
- With interstate permit, up to 105,500 pounds

# Axle Configuration

- Single Axle
  - Up to 20,000 pounds
    - Number of tires/axle



Two axles spaced at 8 feet or more, are each considered two "single" axle configurations

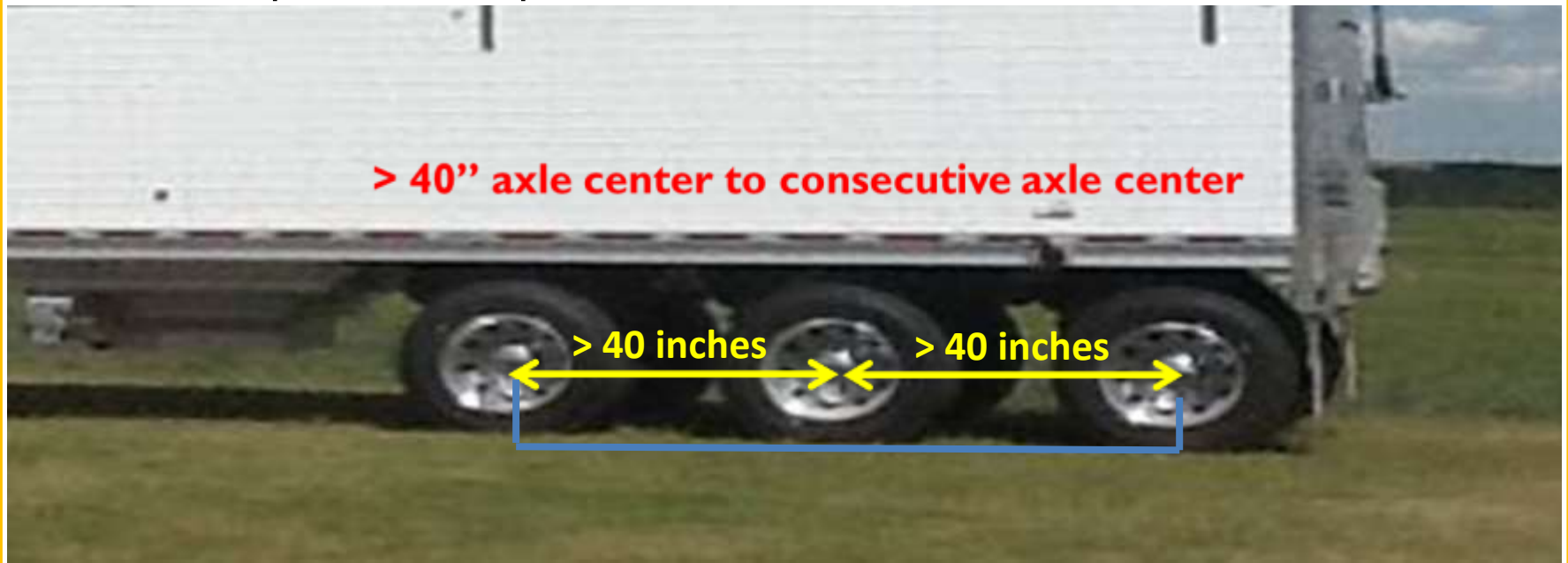
# Axle Configuration

- Tandem Axle
  - Up to 34,000 pounds
    - Up to 19,000 pounds/axle-state/local roads
    - Up to 17,000 pounds/axle-interstate system

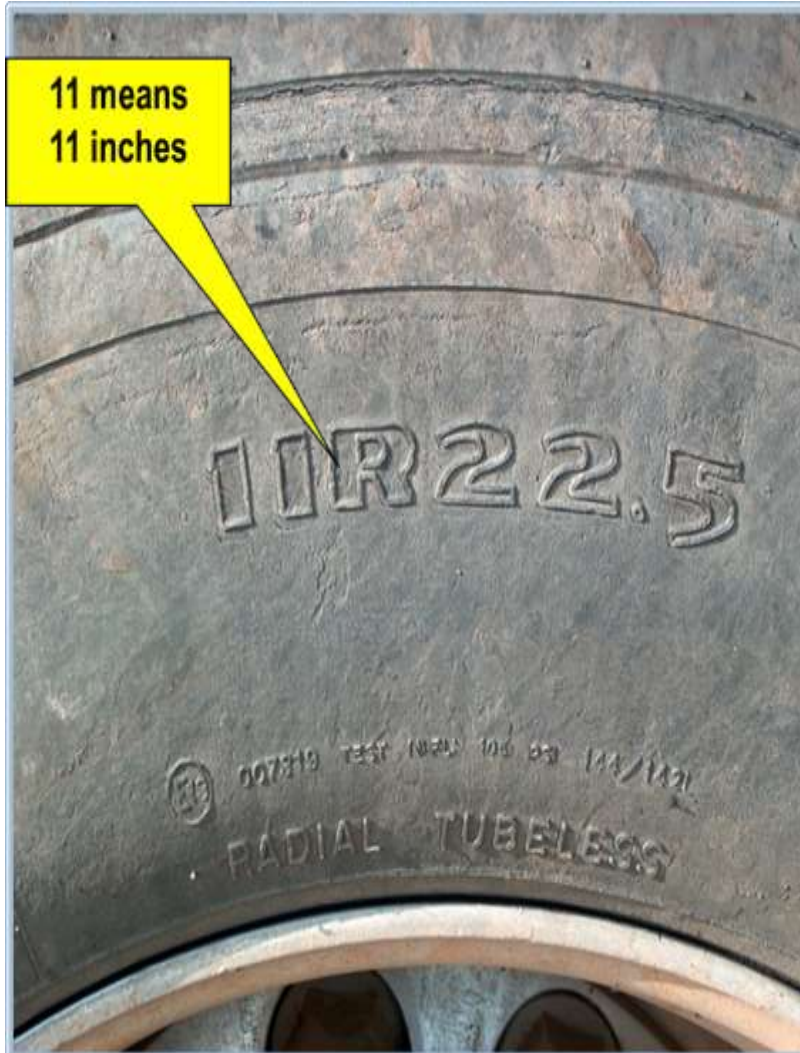


# Axle Configuration

- Group of 3 or more axles
  - Up to 48,000 pounds – state/local roads
    - Up to 19,000 pounds/axle
  - Determined by bridge length – interstate system
    - Up to 17,000 pounds/axle



# Tire Width – Linear and Metric



# Tire Width

- 550 pounds per inch of **tire width**
  - Number of tires per axle
- $550 \times 2 \text{ tires} \times 11'' \text{ tire width} = 12,100 \text{ pounds}$
- $550 \times 4 \text{ tires} \times 11'' \text{ tire width} = 20,000 \text{ pounds}$



# Exception

## Steering Axle

- Axle Rating
- Interstate System
- Up to 20,000 pounds

FRONT AXLE
008583
16,000 LBS
CAB
4V5JC2UF9YN868518
WG64
CAB PAINT
NAME WHITE
NO. 42074 S/W

# North Dakota Axle Weight Limitations - Tire Width

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.

# Bridge Length – Federal Bridge Formula

Measurement from  
axle center to axle  
center

Used to determine  
allowable gross weight  
on an axle group(s) and  
vehicle/vehicle  
combination

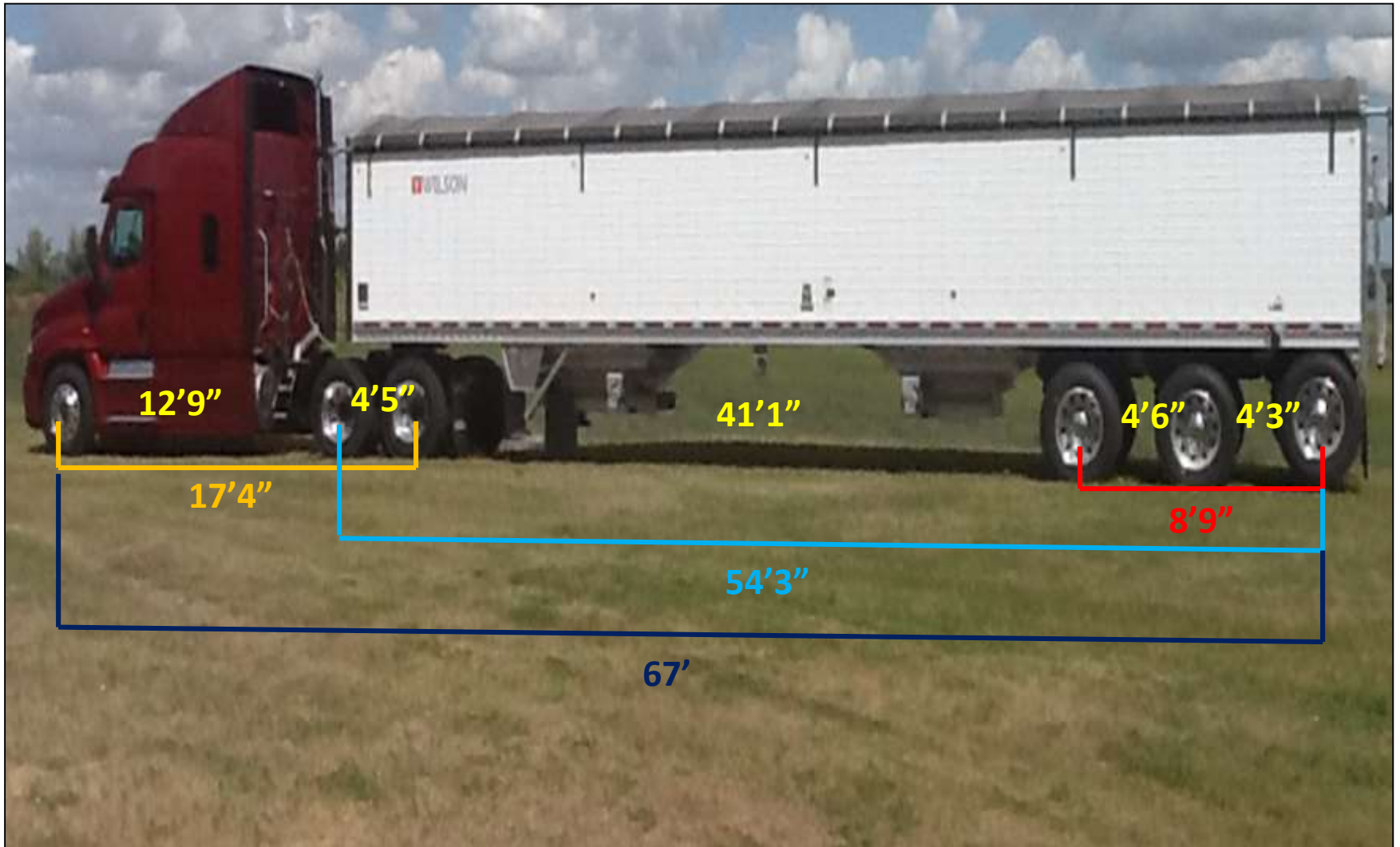
## On interstate system

- Interior and exterior bridge length are used to determine gross vehicle weight

## On state/local roads

- Exterior bridge length is used to determine gross vehicle weight

# Bridge Length – Interstate System



# Bridge Length – State/Local Roads





# NORTH DAKOTA WEIGHT LIMITATION S CHART

## NORTH DAKOTA HIGHWAY PATROL

1/2011

Computed to nearest 500 lbs by the weight formula in Section 39-12-05 and Section 39-12-05.2 of the North Dakota Century Code.  
 (V) V Maximum weight in pounds on any group of two or more axles.  
 (L) L Distance in feet between axles of any group of two or more consecutive axles.  
 (N) N Number of axles in group under the formula.

$$W = 500 \left( \frac{L^2}{N^3} + 12.37 + 36 \right)$$

Where: W = total weight in pounds of any group of 2 or more consecutive axles

	2 Axles	3 Axles	Maximum Axles in Future Series on any Group of 2 or More Consecutive Axles	2 Axles	3 Axles	4 Axles
4	\$4,000					
5	\$4,000					
6	\$4,000					
7	\$4,000	\$4,000				
8	\$8,000	\$2,000				
9	\$8,000	\$8,000				
10	\$2,000*	\$8,000				
11	\$4,000					
12	\$8,000	\$8,000				
13	\$8,000	\$8,000				
14	\$8,000	\$1,000	\$7,000			
15	\$7,000	\$2,000	\$7,000			
16	\$8,000	\$2,000	\$8,000			
17	\$2,000	\$8,000	\$8,000			
18	\$2,000	\$1,000	\$8,000			
19	\$8,000	\$4,000	\$8,000			
20	\$1,000	\$8,000	\$8,000	\$8,000		
21	\$2,000	\$8,000	\$1,000	\$8,000		
22	\$2,000	\$8,000	\$2,000	\$7,000		
23	\$8,000	\$7,000	\$2,000	\$8,000		
24	\$4,000	\$8,000	\$2,000	\$8,000	\$1,000	
25	\$8,000	\$8,000	\$8,000	\$2,000	\$1,000	
26	\$8,000	\$8,000	\$1,000	\$8,000	\$8,000	
27	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	
28	\$7,000	\$8,000	\$8,000	\$1,000	\$8,000	\$8,000
29	\$8,000	\$1,000	\$8,000	\$1,000	\$8,000	\$8,000
30	\$8,000	\$2,000	\$7,000	\$8,000	\$8,000	\$8,000
31	\$8,000	\$2,000	\$7,000	\$8,000	\$8,000	\$8,000
32	\$8,000*	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
33	\$1,000	\$8,000	\$8,000	\$1,000	\$8,000	\$8,000
34	\$1,000	\$1,000	\$8,000	\$1,000	\$8,000	\$1,000
35	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
36	The maximum gross weight of any vehicle may not exceed a gross load of \$1,000 per axle per wheel. The gross weight between the trailers on a semi-trailer may not exceed the trailer's gross weight or 33,000 lbs. (See 39-12-05.2.)		\$8,000	\$8,000	\$8,000	\$8,000
37			\$8,000	\$1,000	\$8,000	\$8,000
38			\$7,000	\$2,000	\$8,000	\$8,000
39			\$8,000	\$2,000	\$8,000	\$8,000
40	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
41	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
42	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
43	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
44	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
45	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
46	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
47	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
48	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
49	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
50	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
51	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
52	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
53	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
54	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
55	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
56	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
57	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
58	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
59	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
60	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
61	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
62	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
63	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
64	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
65	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
66	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
67	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
68	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
69	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
70	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
71	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
72	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
73	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
74	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
75	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
76	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
77	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
78	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
79	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
80	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
81	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
82	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
83	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
84	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
85	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
86	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000

Note: On highways other than the Interstate System, only the wheel-to-ridge measurement shall be used to determine the gross vehicle weight for vehicle or combination of vehicles.

# Elements – Axle/Gross Weights

State/Federal Law

Axle Configuration

- Number of Tires/Axle

Tire Width

- Steering axle rating, interstate

Bridge Length

- Distance axle center to consecutive axle center

# Manual Process

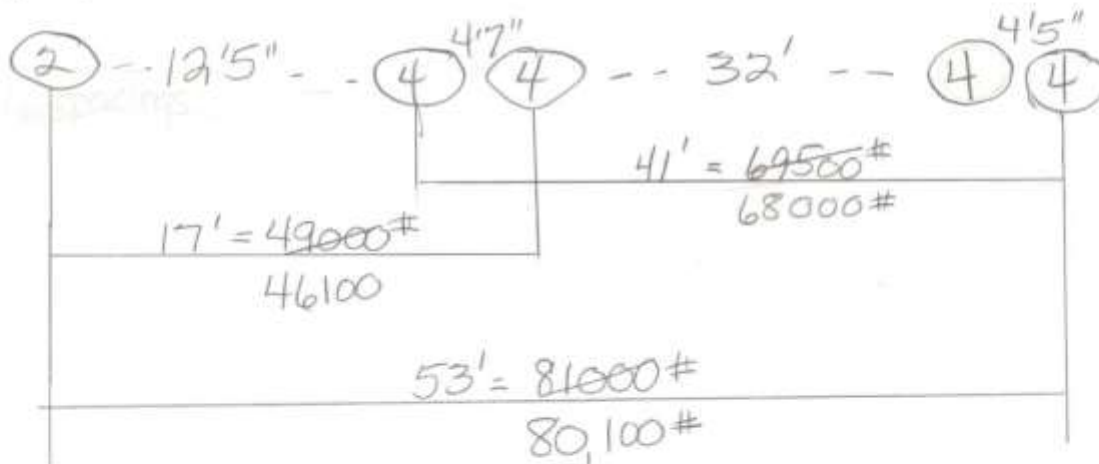
Axle wgt: 12100#

34000#

34000#

tire width: 11" →

axle config.  
# of tires  
axle spacings



Bridge length



# http://dotsc.ugpti.ndsu.nodak.edu/TWC/ ND Truck Weight Calculator

## ND Truck Weight Calculation Results

----- 9/24/2015 -----

### Given Information for Weight Calculator Truck Info

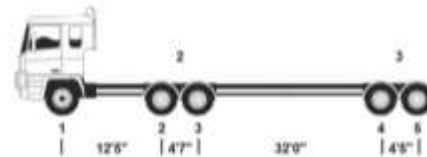
Highway Type	Interstate Highway
Axle Count	5

Unit Name	AGC
Serial No. (VIN)	HGA222333444
Year/Make	2015 Ford
Customer or Company Name	ND AGC

### Axle Details - Weights

<b>Legal GVW - Interstate:</b>	<b>80,100 lbs.</b>
The maximum legal gross vehicle weight for this vehicle/vehicle combination.	
Maximum gross weight legal on axle #2 through the rearmost trailer axle shall not exceed 68,000 lbs.	
Weight (per bridge length chart):	61,000 lbs.

Truck image with the Axle Group Number above axle group and Axle Number below each axle.  
Distances (the linear measurement from axle center to consecutive axle center) are shown below the axle numbers of the truck image.  
A black-centered wheel denotes two tires per axle and a white-centered wheel denotes four tires per axle.



### Axle Group Weights

Axle Group Number	Axle Number(s) in Group	Legal Axle Group Weight
1	1	12,100
2	2 - 3	34,000
3	4 - 5	34,000

# QUESTIONS?



ND Local Technical Assistance Program  
[Leanna.emmer@ndsu.edu](mailto:Leanna.emmer@ndsu.edu)  
(701)328-9855