

Gravel Roads

Sargent County Township Meeting

December 2, 2015

Dale Heglund, PE/PLS, NDLTAP Director

North Dakota Local Technical Assistance Program

Sargent County
- North Dakota -

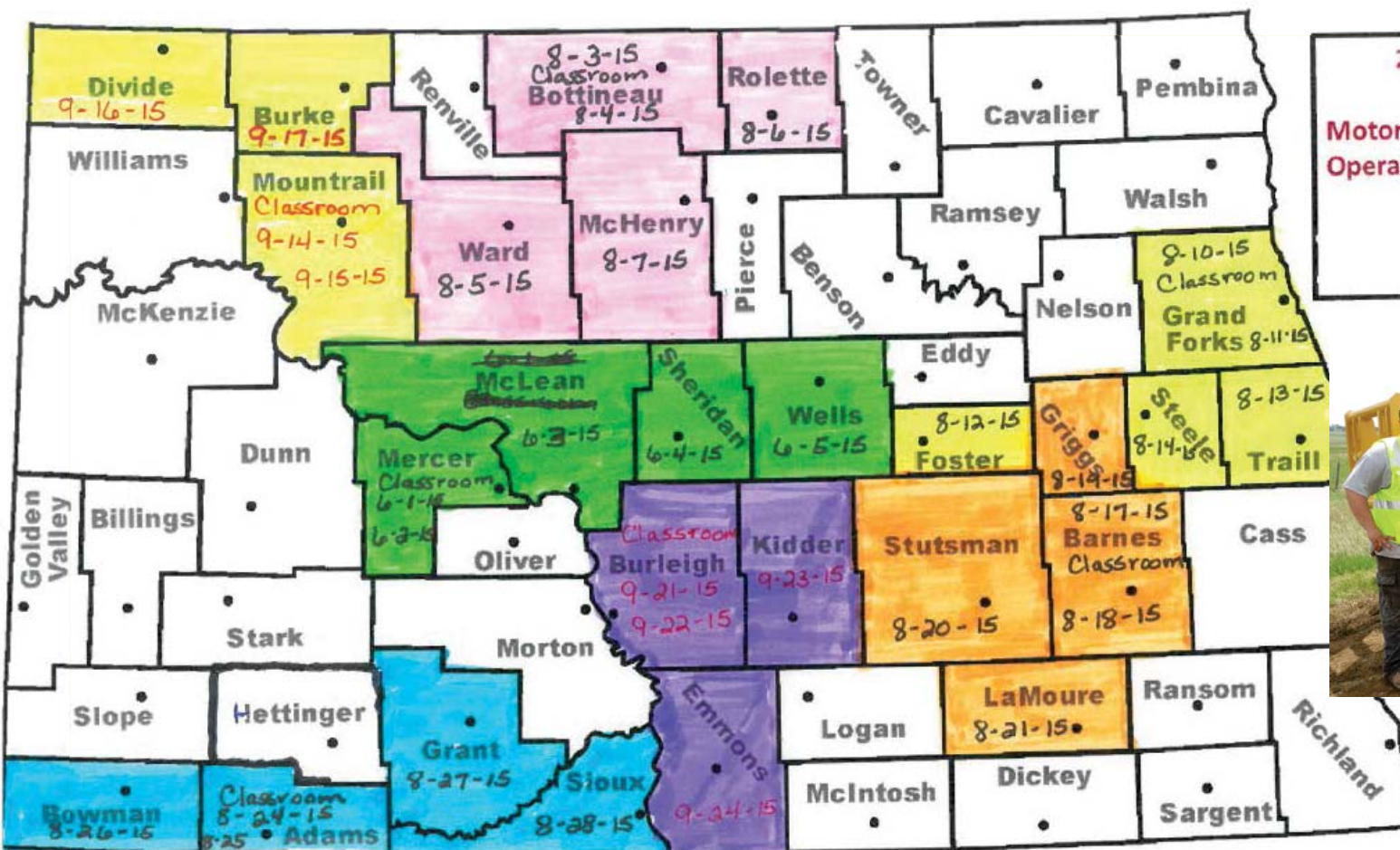


North Dakota Township
Officers Association



NDSU UPPER GREAT PLAINS
TRANSPORTATION INSTITUTE

- ☒ Motor Grader Training
- ☒ Gravel Roadway Design
- ☒ PI
- ☒ Pretend Blading
- ☒ Technology Transfer



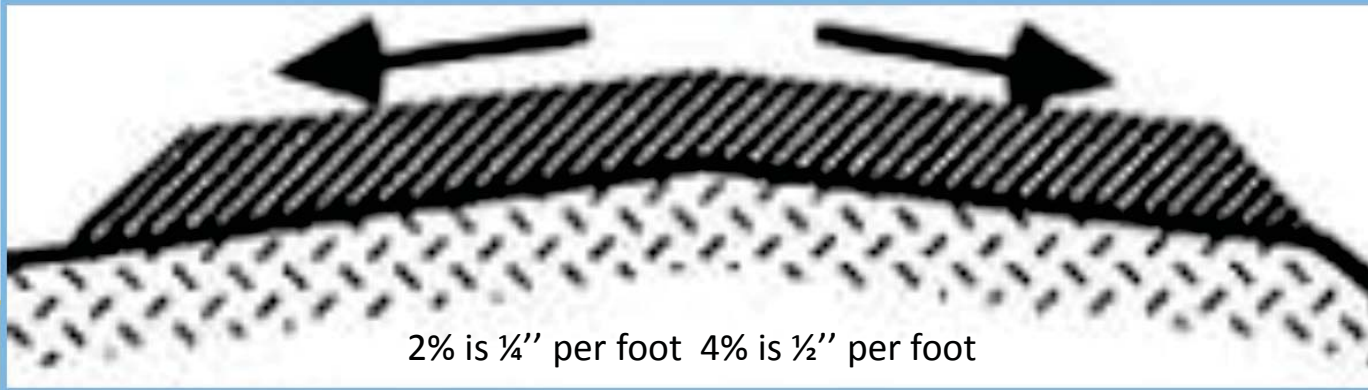
2015
Motor-grader
Operator (MGO)



2% for future pave 4% for unpaved



Gravel at or near 4%



2% is 1/4" per foot 4% is 1/2" per foot





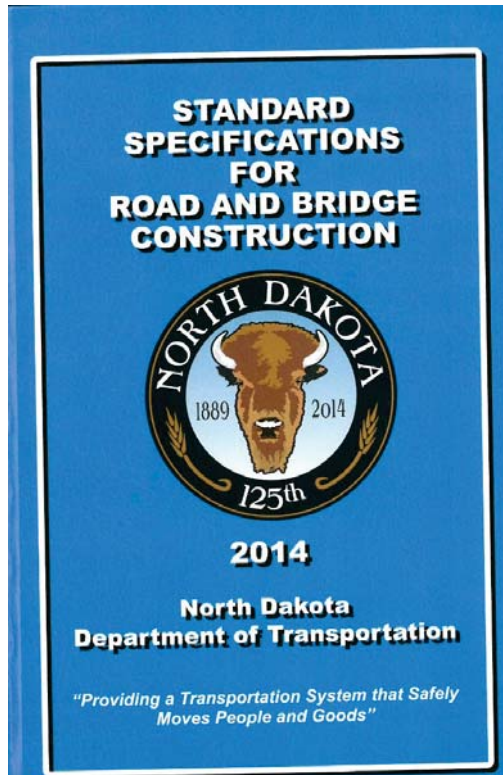




High shoulders – Do not allow
“berms”
“curbs”
” The engineering term is “secondary ditch”

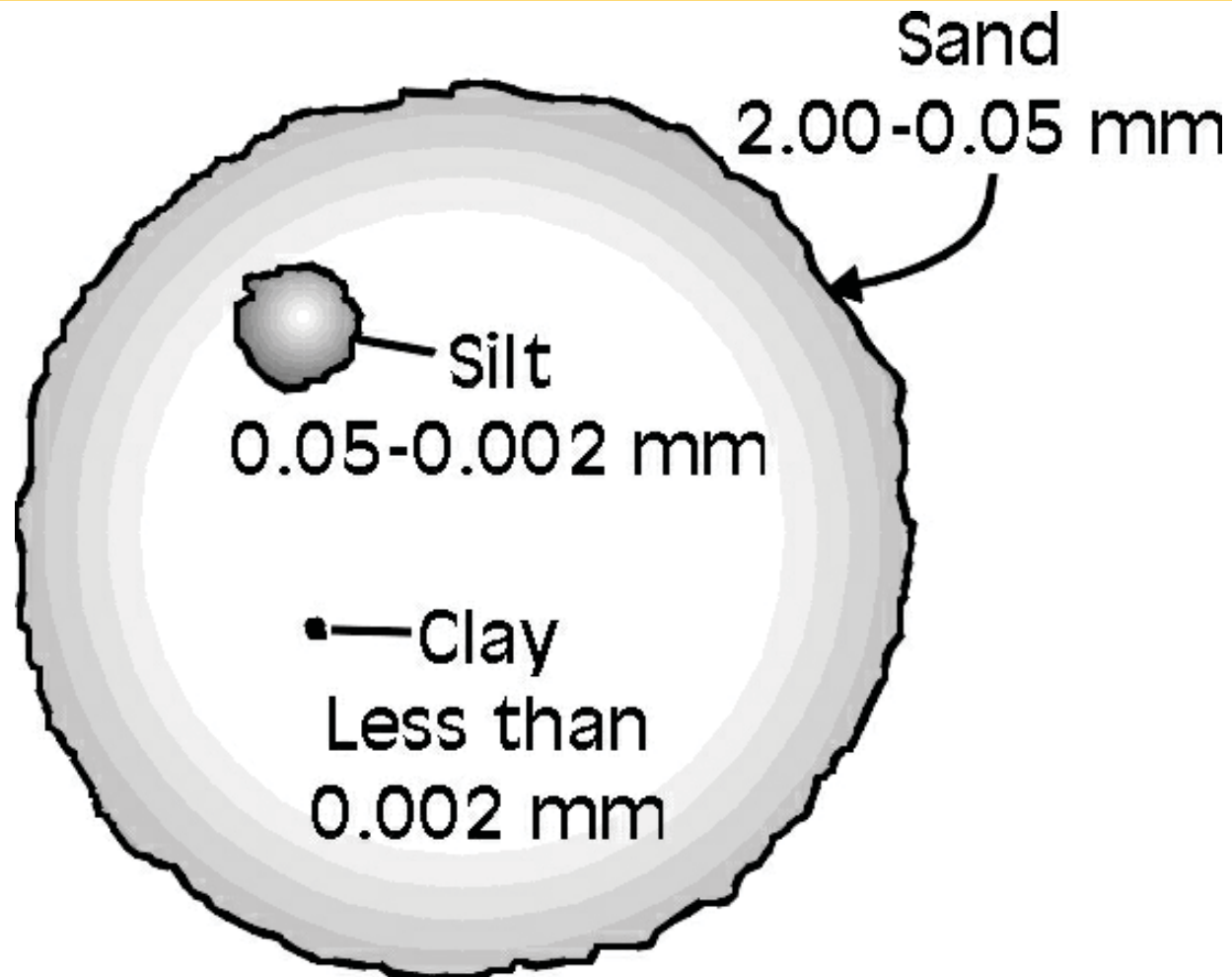


GRAVEL SURFACE SPECIFICATIONS



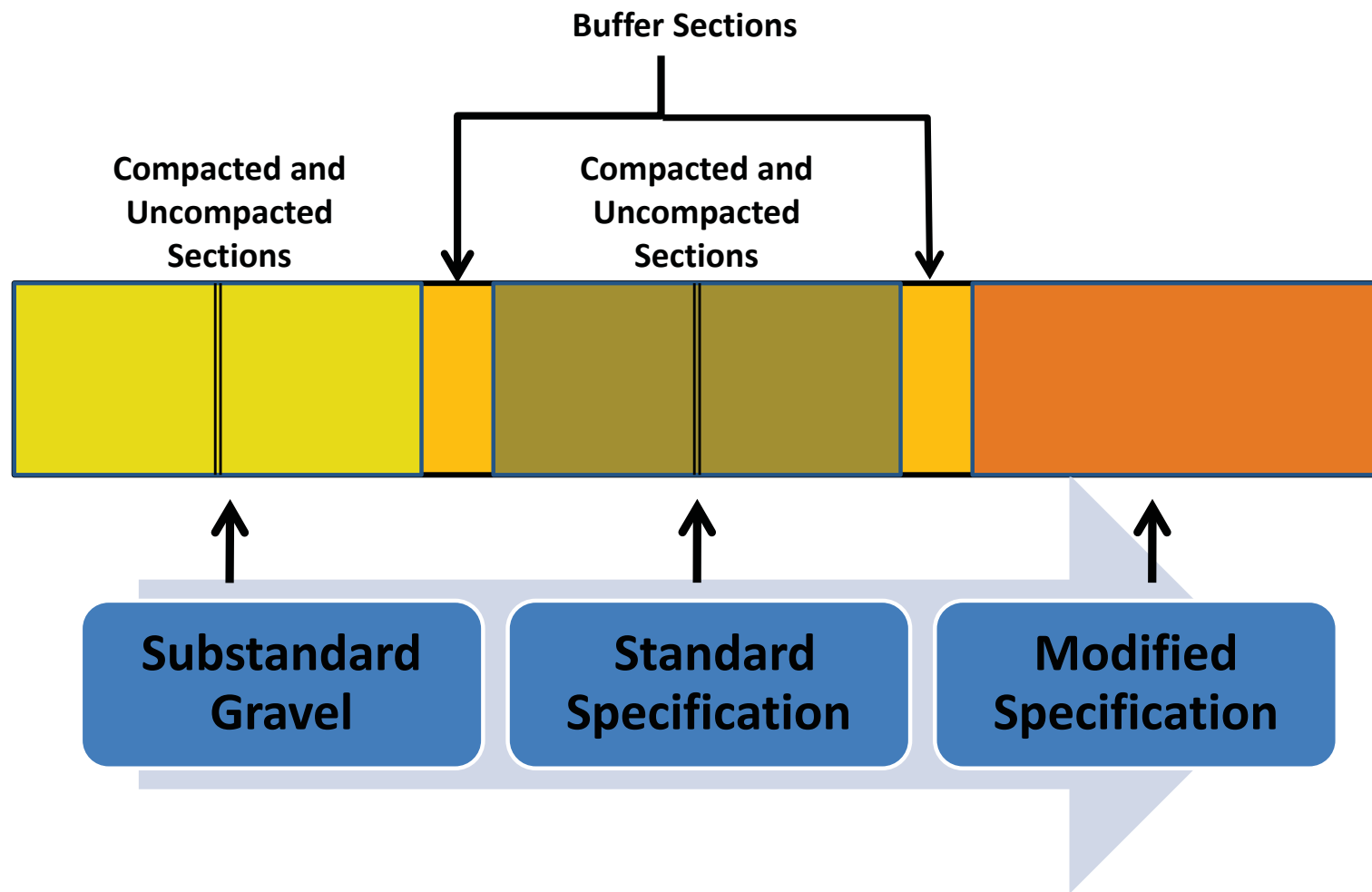
ND Aggregate Surface Spec (Class 13)

<u>Sieve Size</u>	<u>% Passing</u>
1"	100
3/4"	70 - 100
#4	38 - 75
#8	22 - 62
#30	12 - 45
#40	-
#200	7 - 15
P.I.	-
LA Abrasion	50%
Shale	12%
Process Required	-
Fractured Faces	10%*

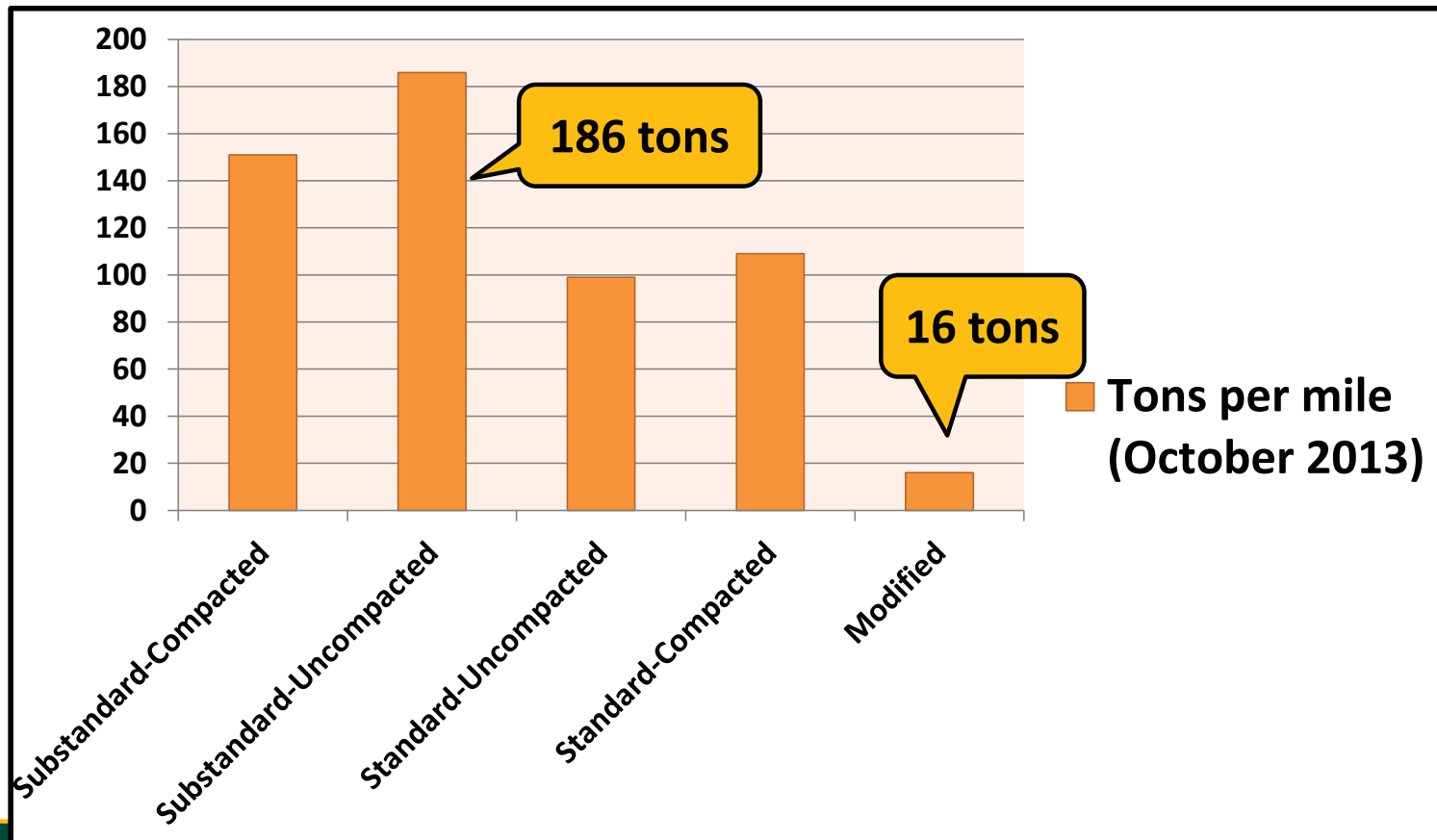








Brooking Section – Loose Aggregate





Pretend Blading





1 vehicle
1 year
1 ton dust per mile

Each mile with 100 cars per day
= 100 tons of fines per year!



Paradigm Shift



pg. 20



U.S. Department
of Transportation
**Federal Highway
Administration**

August 2015

GRAVEL ROADS **CONSTRUCTION &** **MAINTENANCE** **GUIDE**

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LOCAL ROADWAY SIGNING 101

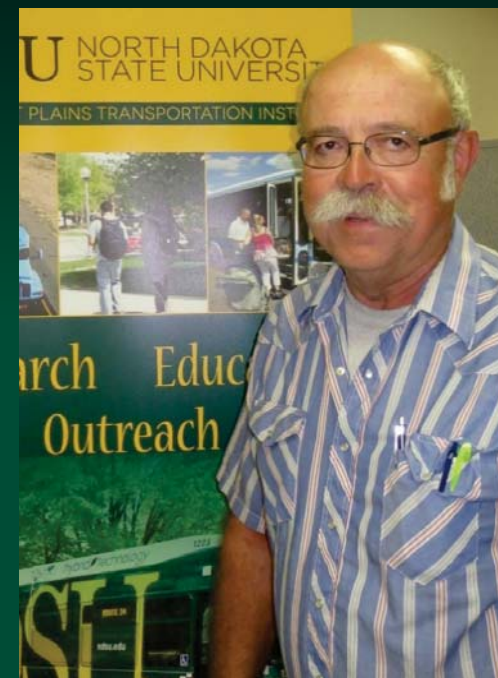


LOCAL ROADWAY SIGNING 101

Subject Expert
Jon Mill, PE/PLS

Presentation Author:

Dale C. Heglund, PE/PLS, NDLTAP Director – November 2015



NDSU

UPPER GREAT PLAINS
TRANSPORTATION INSTITUTE
NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM

LOCAL ROADWAY SIGNING — 101

COURSE DESCRIPTION

- MUTCD basics
- Low volume road departures
- Sign color, shape & size
- Sign hierarchy
- Components of roadway
- Vertical & lateral clearance of signs
- Sign offsets
- Sign support & bases
- Clear zones
- Sign inventory
- Sign condition assessment
- Sign policy
- Retroreflectivity

REGISTRATION / FEES \$25 PER PERSON

Register at www.ndltap.org
You must have an account with NDLTAP's
Learning Management System to register
for this training.

If you have questions about registration,
contact the NDLTAP office: 701-328-9855
sandra.baisch@ndsu.edu or
denise.brown.1@ndsu.edu



INSTRUCTOR

Jon Mill graduated from Montana State University in 1970. Mill worked for NDDOT in the Valley City District for 11 years as a construction engineer. He is a Professional Engineer, and also a Professional Land Surveyor. Mill was the Burleigh County Highway Engineer for 29 years, and was a contractor with NDDOT on the 2009 Emergency Relief Flood Damage Inspection.



TARGET AUDIENCE

County, city and township signing personnel

North Dakota State University
Upper Great Plains Transportation Institute
North Dakota Local Technical Assistance
Program (ND LTAP)

www.ndltap.org

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Like NDLTAP on Facebook

<https://www.facebook.com/ndltap>



Support for this program is provided by the North Dakota Department of Transportation, the Federal Highway Administration, and the North Dakota Insurance Reserve Fund.

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STITUTE

North Dakota Truck Weight Calculator



» RESOURCES [Contact Us](#)

[Go to Calculator](#)

The Truck Weight Calculator provides a convenient way to determine the maximum legal weight that any set of axles on a vehicle/vehicle combination may carry on ND interstate and state highways. The allowable weight on a vehicle/vehicle combination may increase by either adding additional axles or by increasing the axles. The formula for the calculator is a weight-to-length ratio. This formula was enacted by Congress and the State to limit the weight-to-length of a vehicle crossing a bridge.

The formula is $W = 500 [LN/N-1 + 12N + 36]$

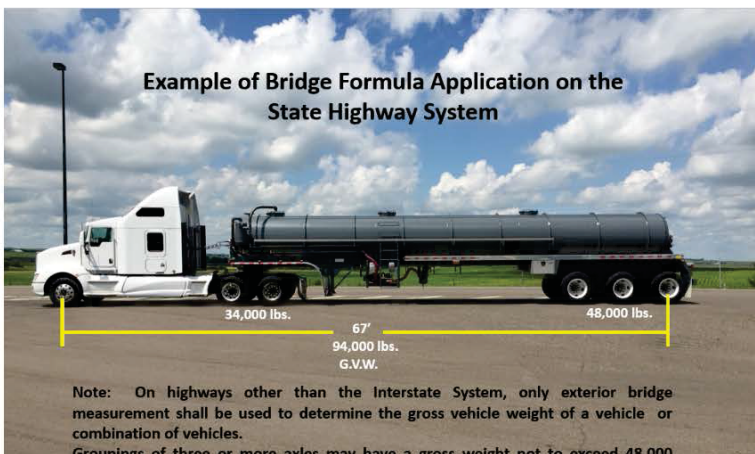
W = Maximum weight in pounds on any group of two or more axles.
L = Distance in feet between extremes of any group of two or more consecutive axles.
N = Number of axles in the group under consideration.

[NDHP Weight Limitations Chart](#)

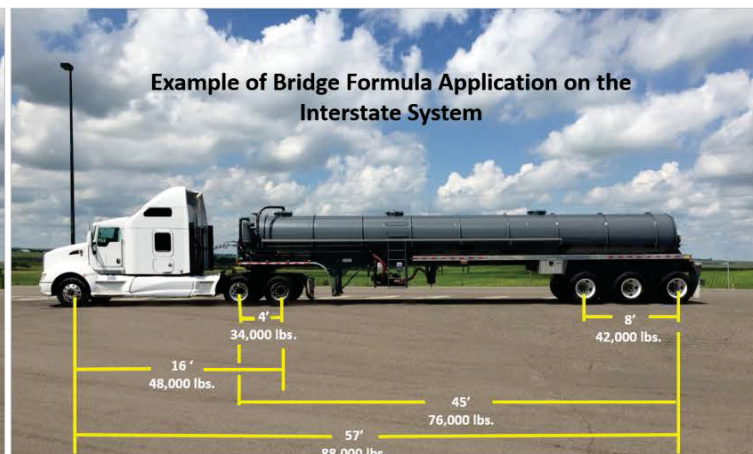
The legal gross vehicle weight (GVW) on ND [state highways](#) is 105,500 pounds unless otherwise posted. On all other highways the maximum GVW is 80,000 pounds unless designated for more, not to exceed 105,500 pounds. All tire and axle weights must be legal. No tire shall exceed 550 pounds per inch of tire width.

The legal GVW on the [interstate highway system](#) is 80,000 pounds. An interstate permit is required when a vehicle hauling a reducible load exceeds 80,000 pounds GVW. The GVW shall not exceed 105,500 pounds. The vehicle combination must have sufficient axles and bridge lengths. All tire and axle weights must be exceed 550 pounds per inch of tire width, except on the steering axle. The weight on the steering axle shall be determined by the manufacturer's [axle rating](#) and shall not exceed 20,000 pounds. For more information on the interstate permit visit the [NDHP Motor Carrier](#) website.

Example of Bridge Formula Application on the State Highway System



Example of Bridge Formula Application on the Interstate System



<http://dotsc.ugpti.ndsu.nodak.edu/TWC/>

ND Truck Weight Calculator

ND Truck Weight Calculation Results

10/6/2015

Given Information for Weight Calculator Truck Info

Highway Type	Interstate Highway
Axle Count	6

Unit Name	Red
Serial No. (VIN)	123412341324
Year/Make	2015 Freightliner
Customer or Company Name	Reg Local Road Confer

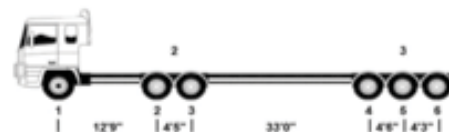
Axle Details - Weights

Legal GVW - Interstate:	89,100 lbs.
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 77,000 lbs.	
Weight (per bridge length chart):	89,500 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	34,500
3	4 - 6	43,500





Hans Langseth – 18'-6" beard



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