

Low Volume Road Preservation

Midwest Pavement Preservation Partnership

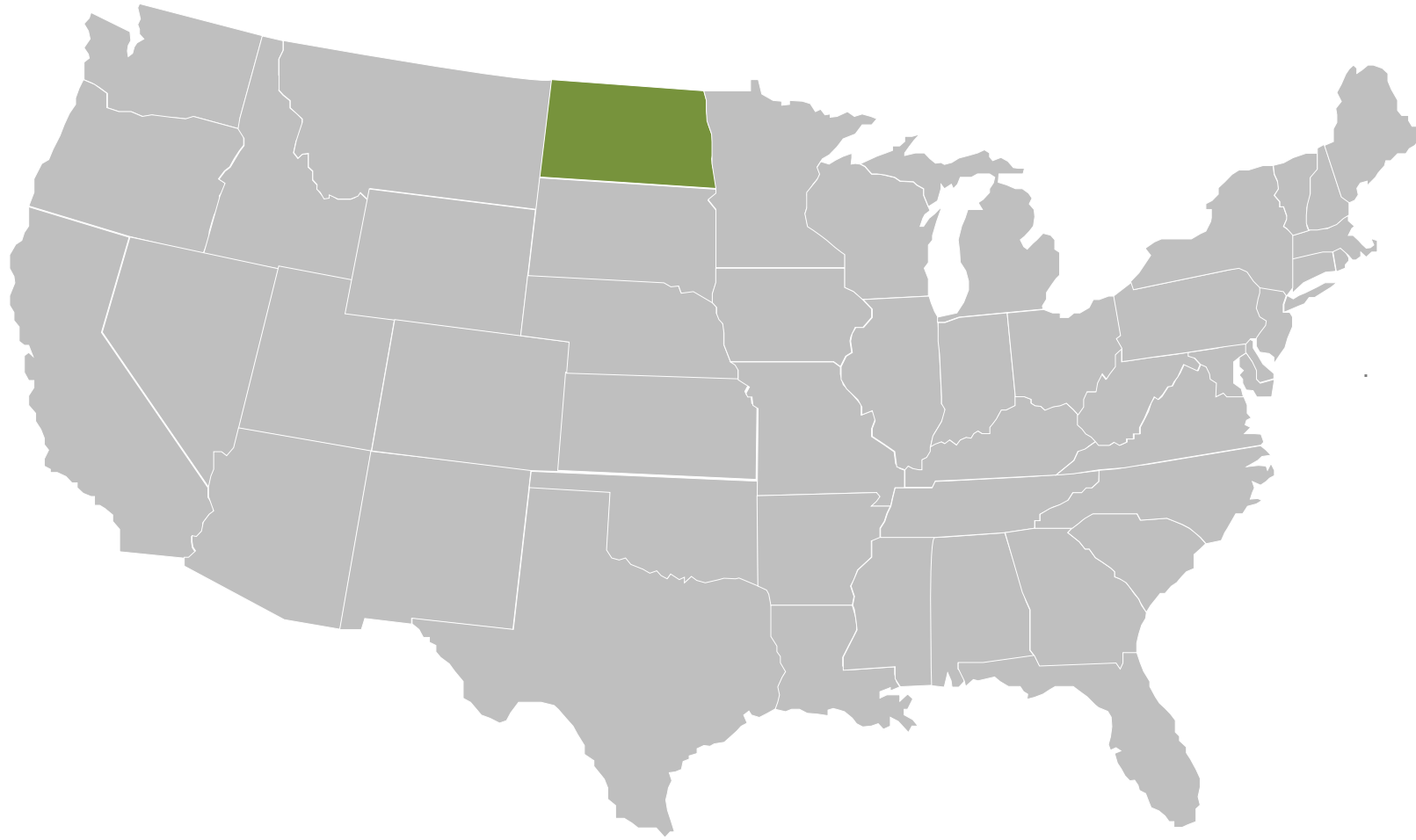
9/29/2015 Kansas City, Missouri

Dale Heglund, PE/PLS, NDLTAP Director

North Dakota Local Technical Assistance Program



Northern Perspective

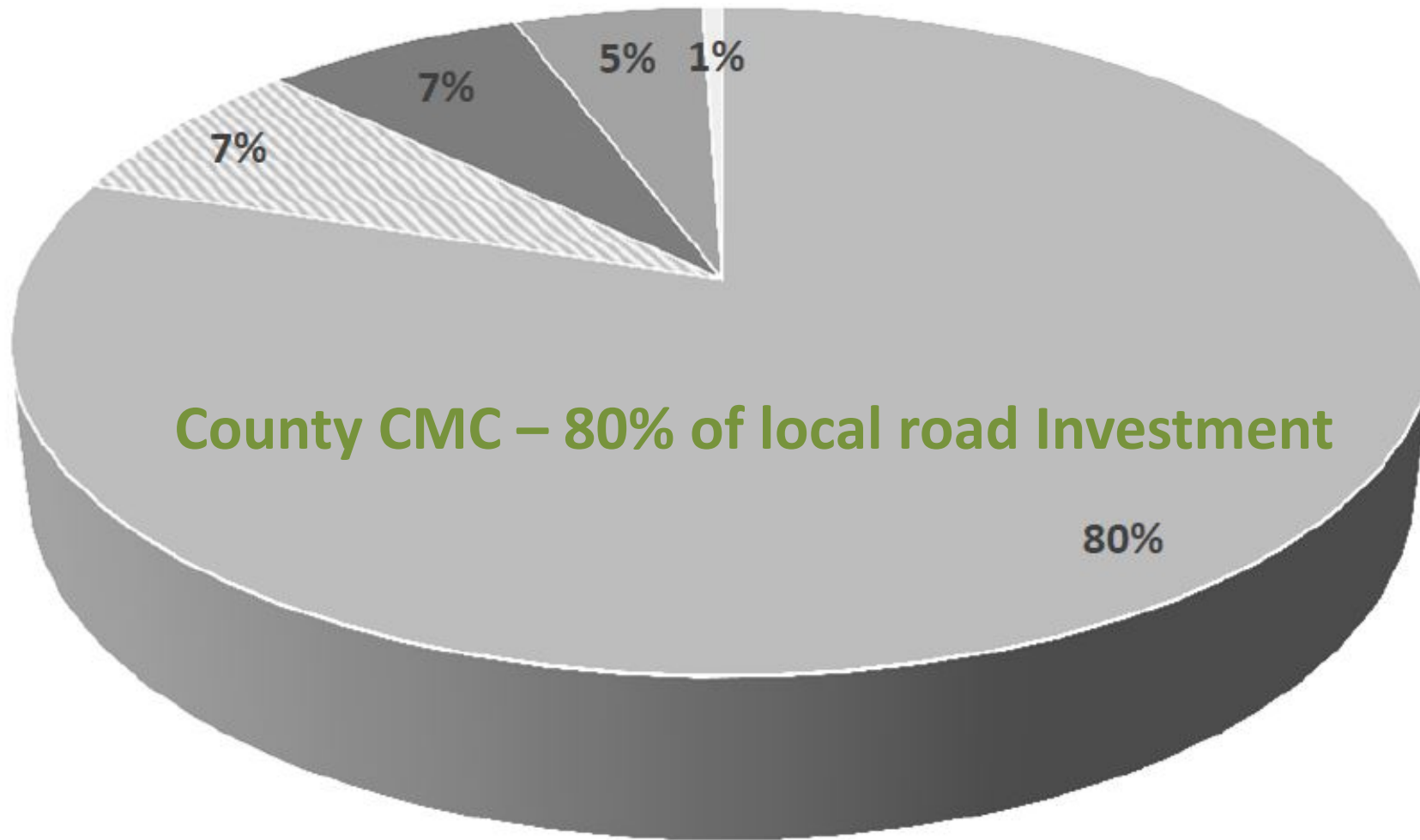






- Define Normal
- Local Roadway Demands
- Roadway Issues
- Preventative Maintenance
- Technology Transfer

■ CMC ▨ County Non-CMC ■ Township ■ Indian Reservation ■ Forest Service



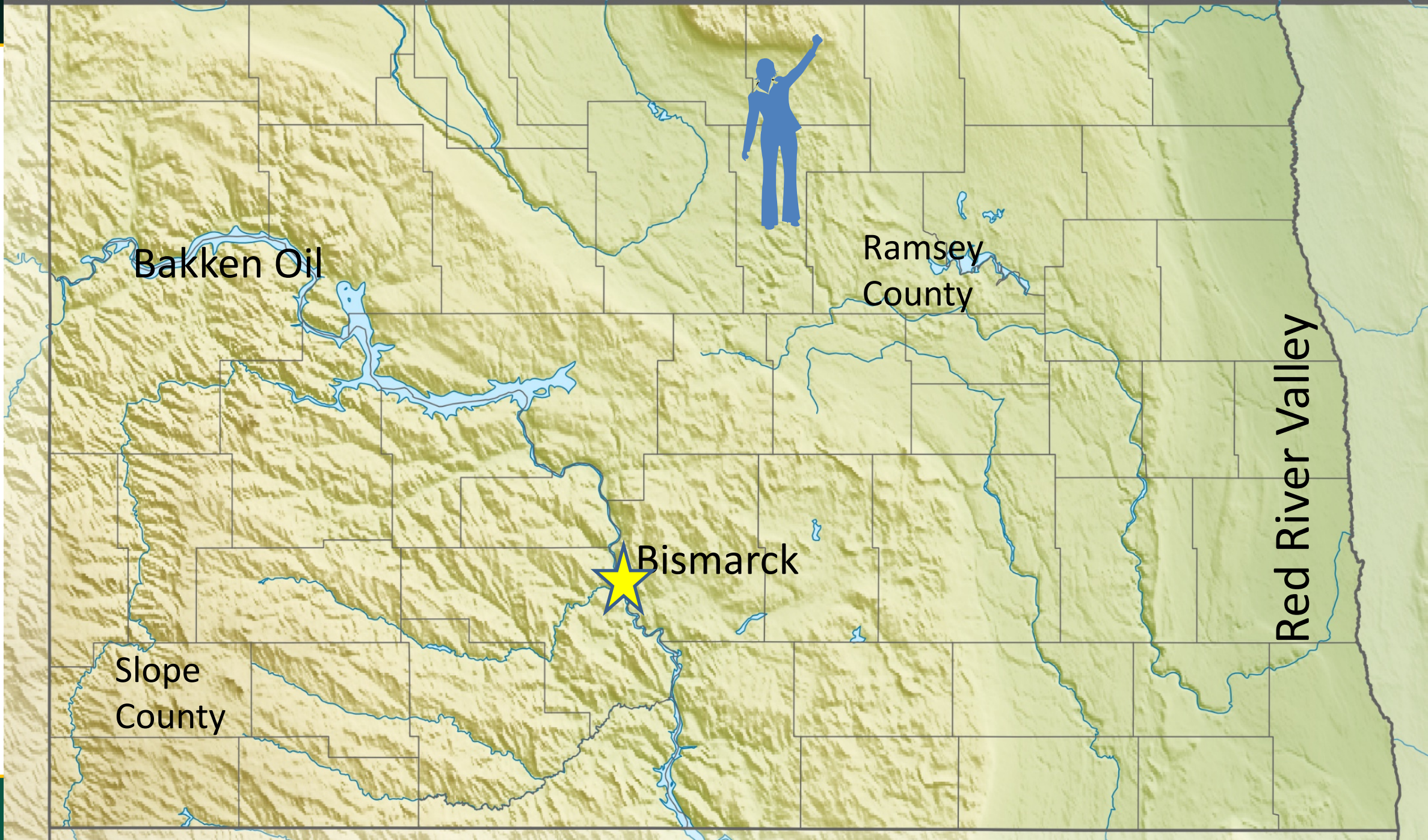
County CMC – 80% of local road Investment

Table 22: Conditions of Paved County and Township Roads in North Dakota in 2014

Condition	Miles	Percent
Very Good	520	9%
Good	3,557	62%
Fair	1,163	20%
Poor	339	6%
Very Poor	146	3%
All	5,722	100%



03/18/2014



Bakken Oil

Ramsey
County

Bismarck

Slope
County

Red River Valley

Paradigm Shift





10/16/2012



10/16/2012



10/18/2012



I M HVY

SUPER
HOPPER
TIMPTE
Since 1884

SUPER
HOPPER
TIMPTE
Since 1884





Foundation





09/18/2012















03/18/2014



09/18/2012

Water





Moisture Damage – Ken Swedeen, DAPA

- MD attacks the “weak”, exposed and disenfranchised areas of the pavement first and therefore establishes the “critical path” for Preventative Maintenance (PM).
 - Pavement edges: Area of maximum deflection, stress concentration point in the pavement.
 - In most cases this is thought of as the in-slope, but can also be any “edge” such as transverse or longitudinal cracking (which have two “edges” if not treated).
 - Crack sealing/filling is the first important step in making PM effective. Addressing drainage issues (e.g. clear in-slopes, unimpeded borrow ditch flow lines, etc.) is an equally important step. Pay particular attention to gore points and radius points (intersections, approaches, etc.). In most cases blade time and minor patching are the only costs involved and are relatively small costs in the big picture.





03/18/2014





























09/25/2012



















09/09/2013



09/11/2013















09/18/2012









09/17/2012



NORTH DAKOTA ASPHALT CONFERENCE

Local Road Surface Selection Tool

[Home](#) [Analysis](#) [Administration](#) [Help](#) [C](#)

This analytical tool applies the low-volume road management under the project titled “Local Road Surfacing Criteria (SD 200) study is to develop a methodology that allows the user to compare different road surfaces. Specifically, this tool is used to determine maintaining roads with different surfaces and selecting the most a specific set of circumstances. More information about this project clicking “Software Introduction”.

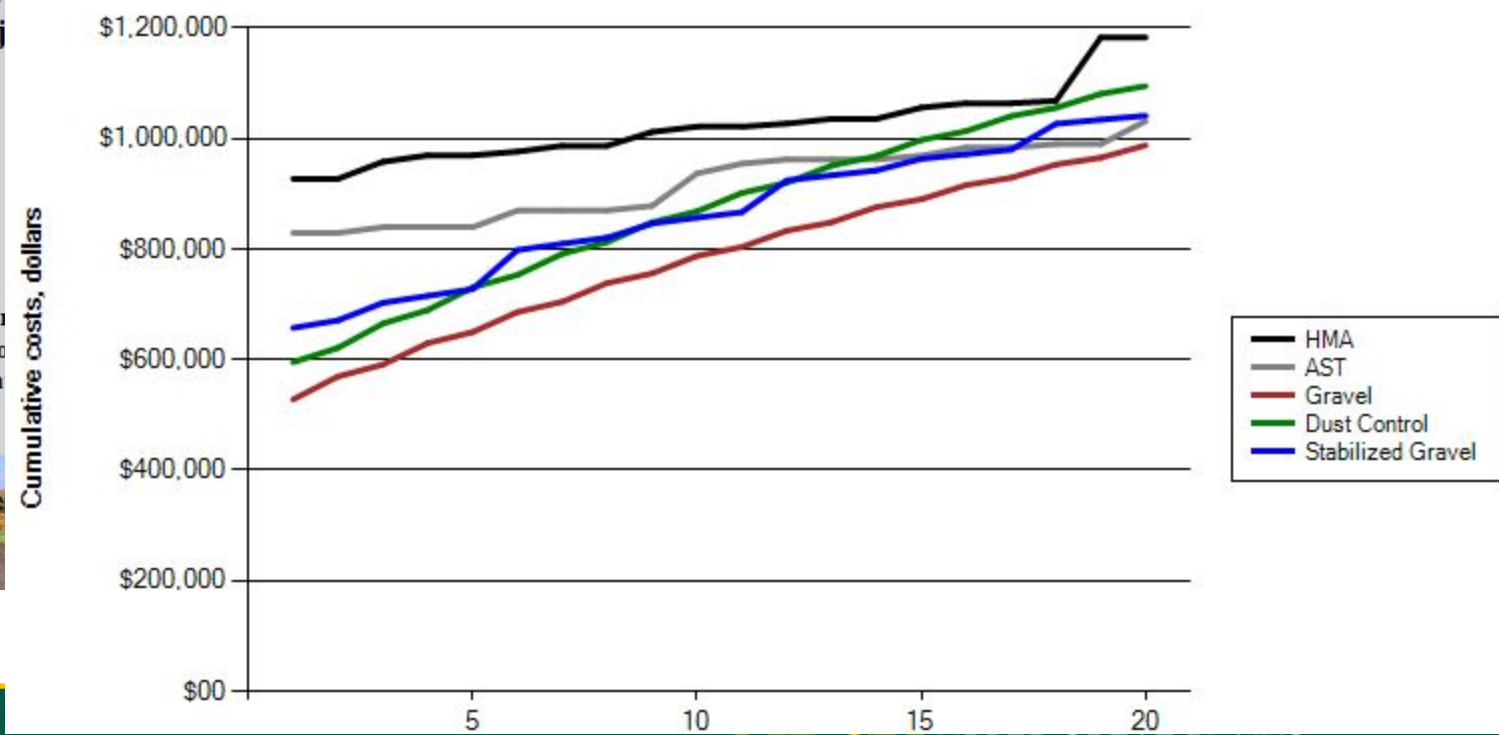
Click “Start Analysis” to start a regular analysis.
Click “Administrator Login” to log in if you are an administrator.
Detailed user’s guide is available by clicking “User’s Guide”.

DISCLAIMER: Although the information generated by this model has been believed to be reliable, the information generated by this model is for estimation. Transportation Institute and North Dakota State University make no representation implied, regarding the accuracy or reliability of the model or results.



Surface Type	HMA	AST	Gravel	Dust Control	Stabilized Gravel
Total Initial Cost	\$ 927,149	\$ 804,269	\$ 508,773	\$ 568,200	\$ 646,413
Total Maintenance Cost	\$ 255,799	\$ 227,348	\$ 478,962	\$ 526,793	\$ 395,040
Total Salvage Value	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Total Agency Cost	\$ 1,182,948	\$ 1,031,617	\$ 987,735	\$ 1,094,993	\$ 1,041,453

Comparison of Cumulative Costs Associated with Different Surface Types



North Dakota Truck Weight Calculator

NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE ND 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.

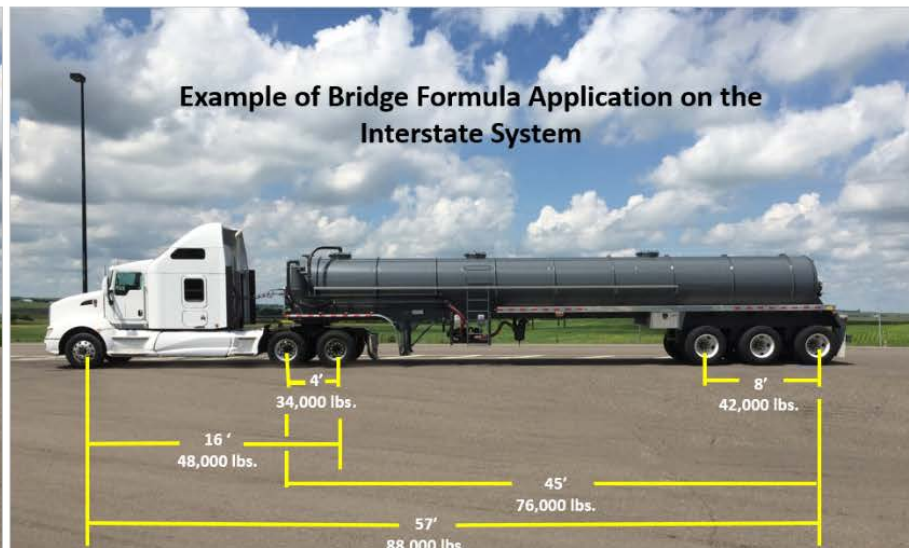
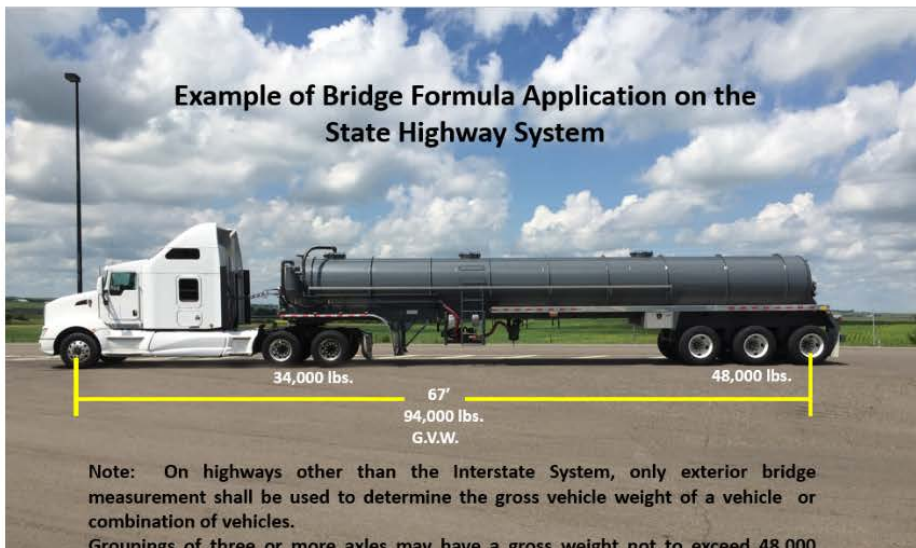
L = Distance in feet between extremes of any group of two or more consecutive axles.

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 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.



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

ND Truck Weight Calculation Results

9/11/2015

Given Information for Weight Calculator

Highway Type	State Highway
Restriction Type	By Legal Weight
Axle Count	5

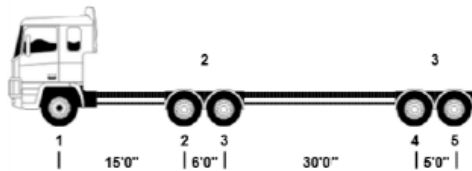
Axle Details - Weights

Legal GVW - State:	80,100 lbs.
The maximum legal gross vehicle weight for this vehicle/vehicle combination.	
Weight (per bridge length chart):	83,000 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

Configuration Details.

	No of Tires	Tire Width
Axle 1	2	11
Distance	15 ft 0 in	
Axle 2	4	11
Distance	6 ft 0 in	
Axle 3	4	11
Distance	30 ft 0 in	
Axle 4	4	11
Distance	5 ft 0 in	
Axle 5	4	11
Total Distance	56 ft 0 in	

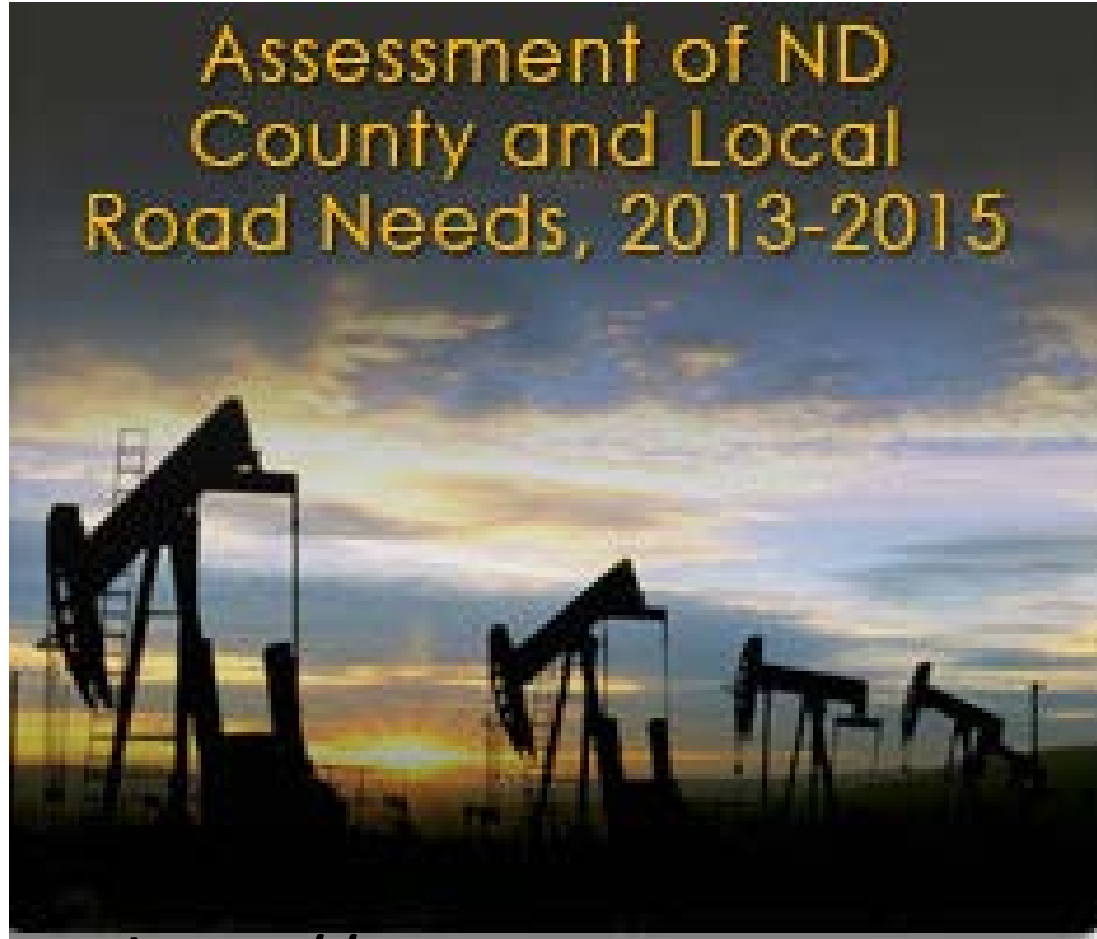
Disclaimer: The information generated by this calculator is for estimation uses only. The Upper Great Plains Transportation Institute and North Dakota State University make no representation or warranty, expressed or implied regarding the accuracy or reliability of the results.

NDSU

UPPER GREAT PLAINS TRANSPORTATION INSTITUTE
DEPARTMENT OF TRANSPORTATION SUPPORT CENTER

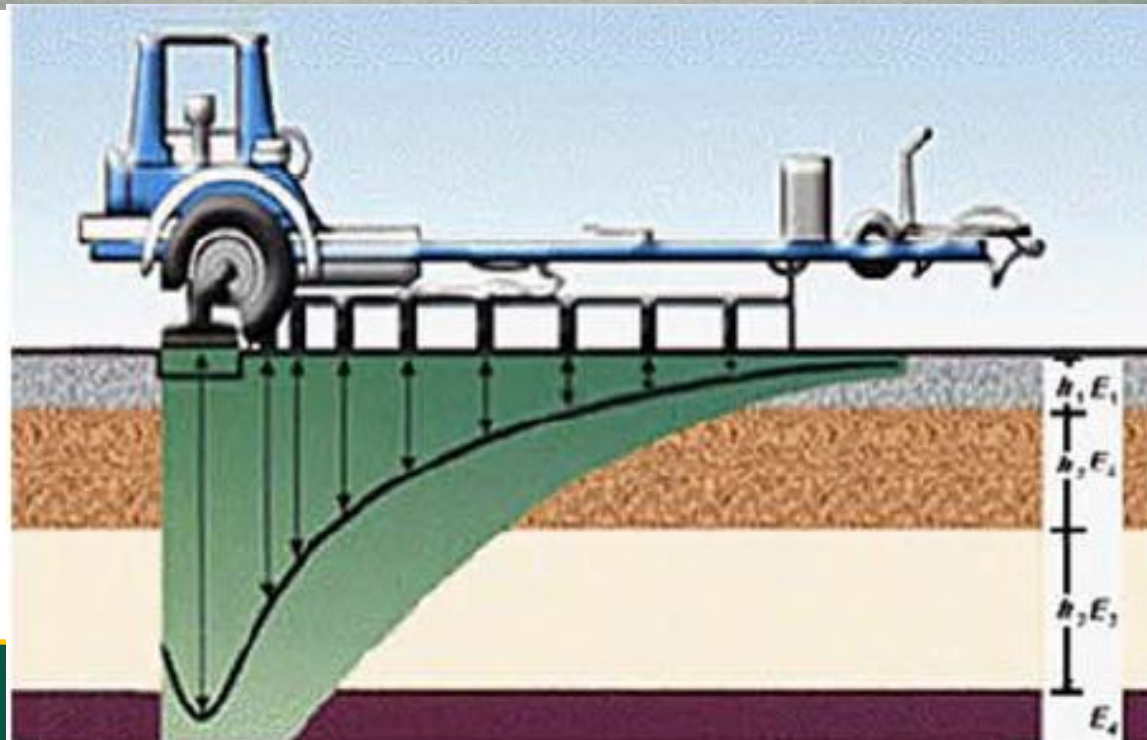
Local Road Infrastructure Needs Study Process

Assessment of ND
County and Local
Road Needs, 2013-2015



<http://www.ugpti.org>





On-Line Interactive Map

2013 County Road Information **Click here for HELP**

71st Street Southeast

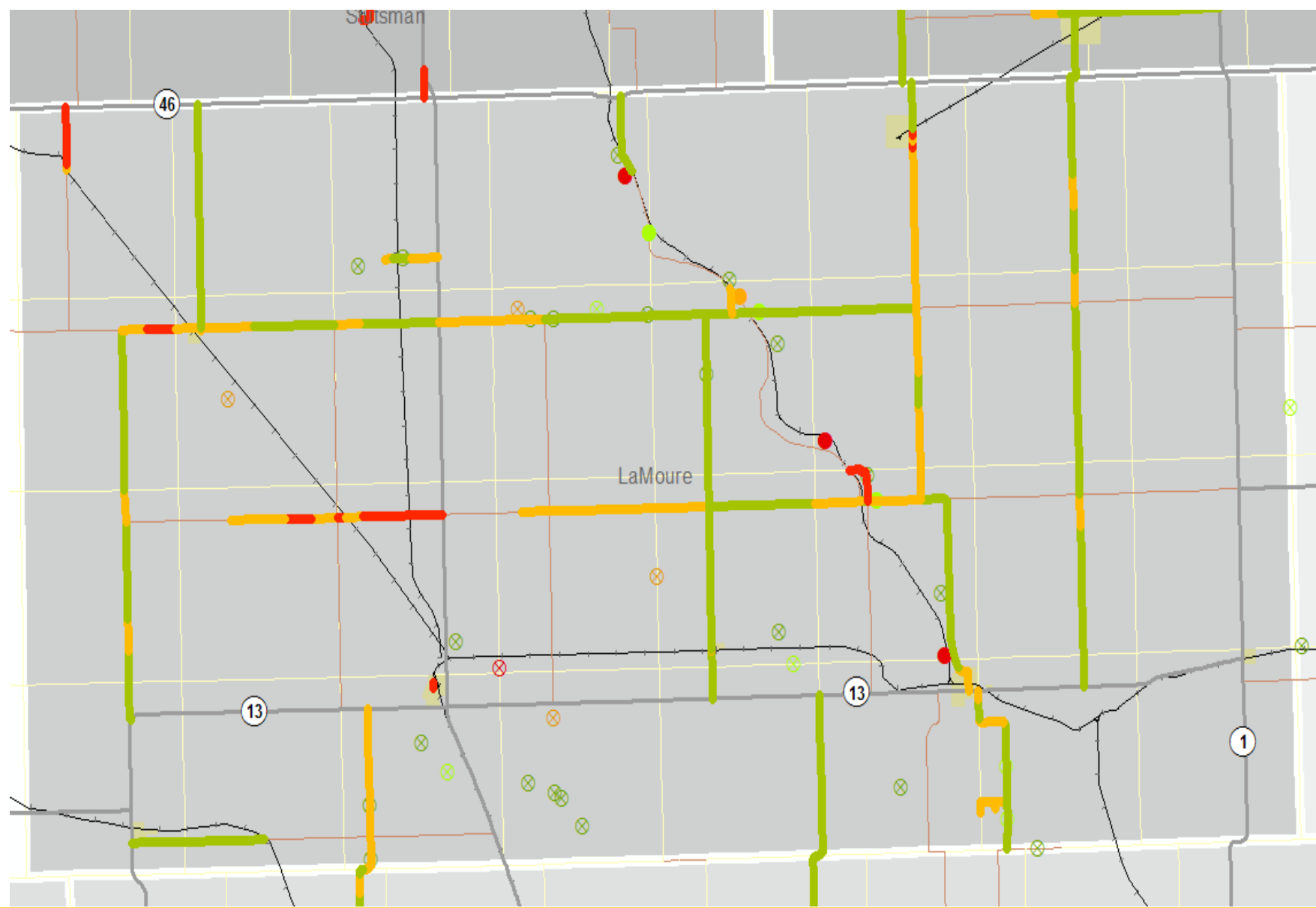
71st Street Southeast

100m
300ft

© OpenStreetMap (and) contributors, CC-BY-SA

Map Contents

- Legislative Study 2
 - Modeled Improvement Year
 - 2015 - 2016
 - 2017 - 2018
 - 2019 - 2024
 - 2025 - 2034
 - Pavement Condition (PSR)
 - 0.1 - 2.0
 - 2.1 - 3.0
 - 3.1 - 4.0
 - 4.1 - 5.0
 - Strength Testing (Sub E)
 - Not Tested
 - 0.1 - 6.0
 - 6.1 - 10.0
 - 10.1 - 20.8
 - Bridge (Suf Rating - Projects)
 - 0.0 - 50.0
 - 50.1 - 70.0
 - 70.1 - 90.0
 - 90.1 - 100.0
 - Bridge (Suf Rating - Non Project)
 - 21.5 - 50.0
 - 50.1 - 70.0



- Layers**
- Pavement Condition (PSR)
 - PSR_comb
 - 0.1 - 2.0
 - 2.1 - 3.0
 - 3.1 - 4.0
 - 4.1 - 5.0
 - Strength Testing (Sub E)
 - Subgrade_E
 - Not Tested
 - 0.1 - 6.0
 - 6.1 - 10.0
 - 10.1 - 20.8
 - Bridge (Suf Rating - Projects)
 - Sufficiency Rating (0 to 100)
 - 0.0 - 50.0
 - 50.1 - 70.0
 - 70.1 - 90.0
 - 90.1 - 100.0
 - Bridge (Suf Rating - Non Projects)
 - Sufficiency Rating (0 to 100)
 - 21.5 - 50.0
 - 50.1 - 70.0
 - 70.1 - 90.0
 - 90.1 - 100.0
 - Truck Traffic - Class Counts
 - TOT_TRUCKS

Local Roads Asset Inventory Toolkit

Toolkit for local governments to preserve and maintain roads and bridges.

<http://www.ugpti.org>

NATMEC: Impro x onlinepubs.trb.c x NATMEC: Impro x SCI_draft_initial x Geographic Roa x

dotsc.ugpti.ndsu.nodak.edu/AssetManagement/WebForm1.aspx

Construction History Create New

Location LP Surface Base X Section

Last Project Type: Surfacing

LP Surfacing: AST

LP Year: 2005

LP Surface Depth: 2 0

Total Surf Depth: 2 0

LP \$/Mile:

Edit

Toggle Legend

Map Satellite

Background Layers:

Map data ©2015 Google 2 km Terms of Use Report a map error

Asset Inventory Advisory Group

UGPTI

Tim Horner, Alan Dybing, Brad Wentz , Andrew Wrucke and Dale Heglund

NDDOT

Bryon Fuchs

NDACO

Terry Traynor, Genny Dienstman and Donnell Preskey-Hushka

North Dakota County Representatives

Dan Schriock - Burleigh

Tom Soucy - Cass

Ken Miller - Mercer

Jana Heberlie - Mountrail

Kevin Fieldsend - Ramsey

Shirley Murray - Sheridan

Todd Miller - Stark

Tyler Michel - Stutsman

Sharon Lipsh - Walsh

Dana Larsen - Ward



Hans Langseth – 18’-6” beard



Low Volume Road Preservation

Midwest Pavement Preservation Partnership

9/29/2015 Kansas City, Missouri

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North Dakota Local Technical Assistance Program

