

# Geographic Roadway Inventory Toolkit (GRIT)

Western Dakota Energy Association  
Oct 13, 2021

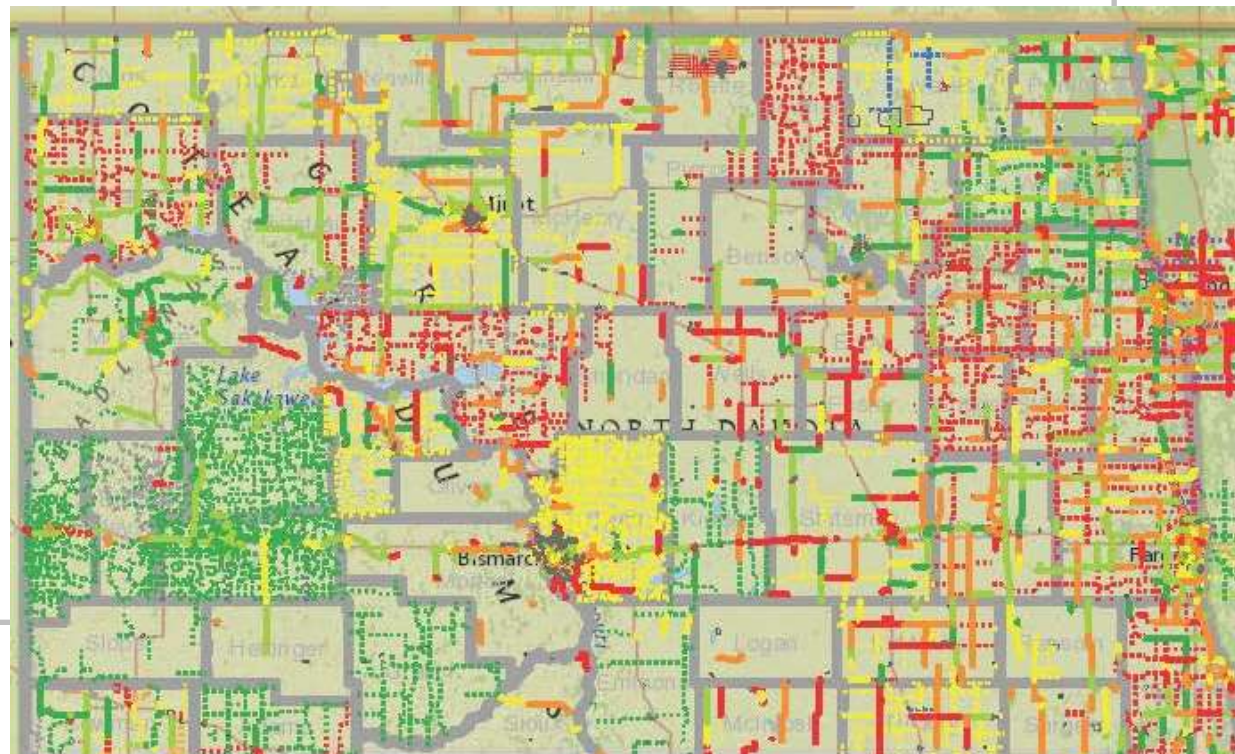
Leanna Emmer

State Tech. Rep.  
Truck Weight Expert  
NDLTAP/UGPTI/NDSU



## Geographic Roadway Inventory Toolkit

- Inventory of ND local roads network
  - Counties
    - townships
  - Cities
  - Tribal



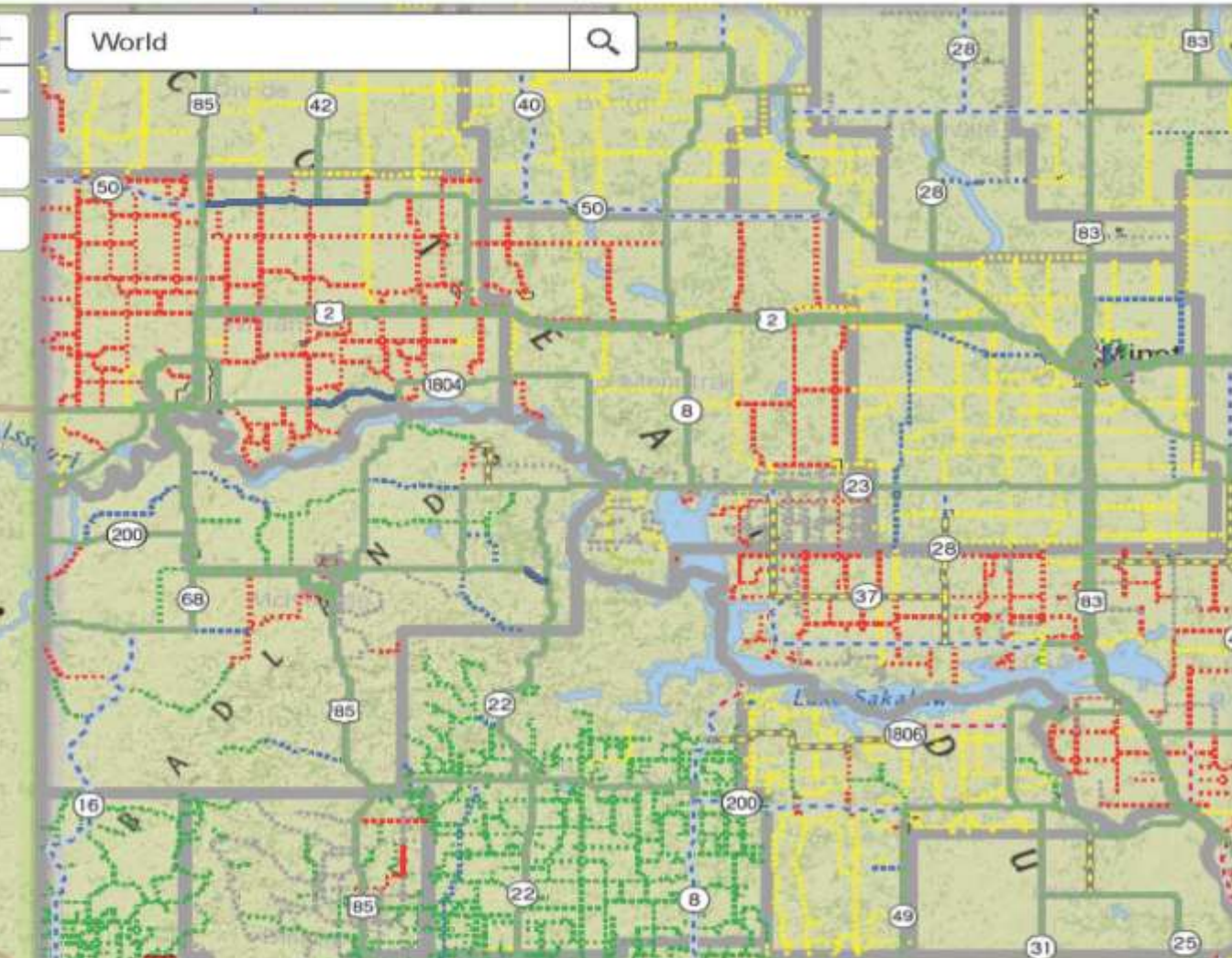
# Travel Information Map

## Local Roads

Load Restrictions\*\*

Construction Planning\*\*

Emergency Road Event\*\*





# LOAD RESTRICTIONS

FunctionalClass	major collector
SeasonalLoadLimit	8 ton
YearRoundLoadLimit	8 ton
County	McKenzie
RoadwayType	paved
SegDesc	
CalculatedLength	14.28
State	ND
Agency_State	McKenzie_ND
SeasonalGrossWeight	105,500
YearRoundGrossWeight	105,500
StartingLat	47.80
StartingLong	-102.94
EndingLat	47.68

## Legend

### \*\*LOAD RESTRICTIONS ALL\*\*

#### Proposed Spring Load Restrictions (County)

----- legal weight

----- 9 ton

----- 8 ton

----- 7 ton

----- 6 ton

----- 5 ton

----- not available

#### County Paved Roads



### STATE BASE MAP

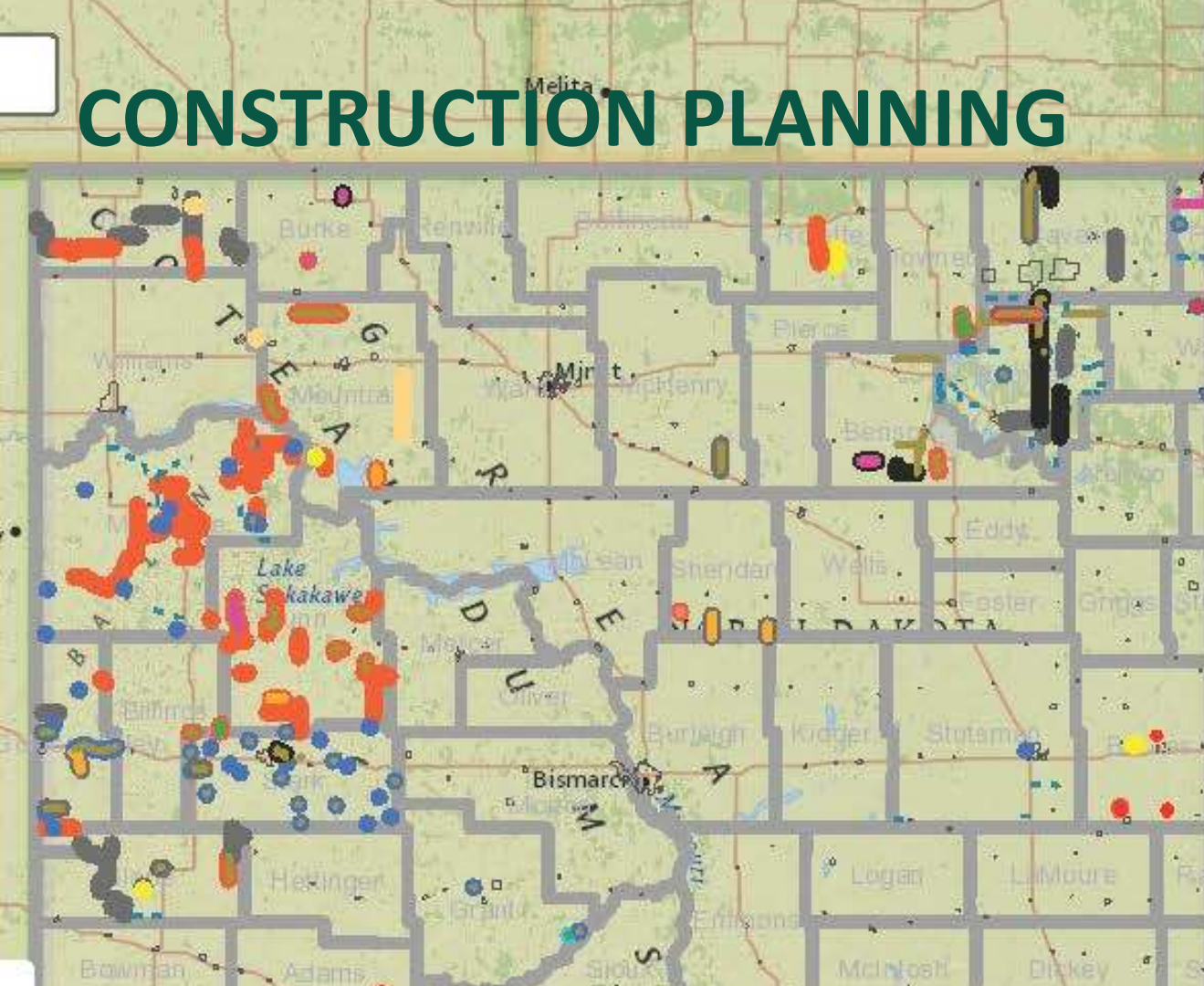
#### MunicipalBoundary



#### County



# CONSTRUCTION PLANNING



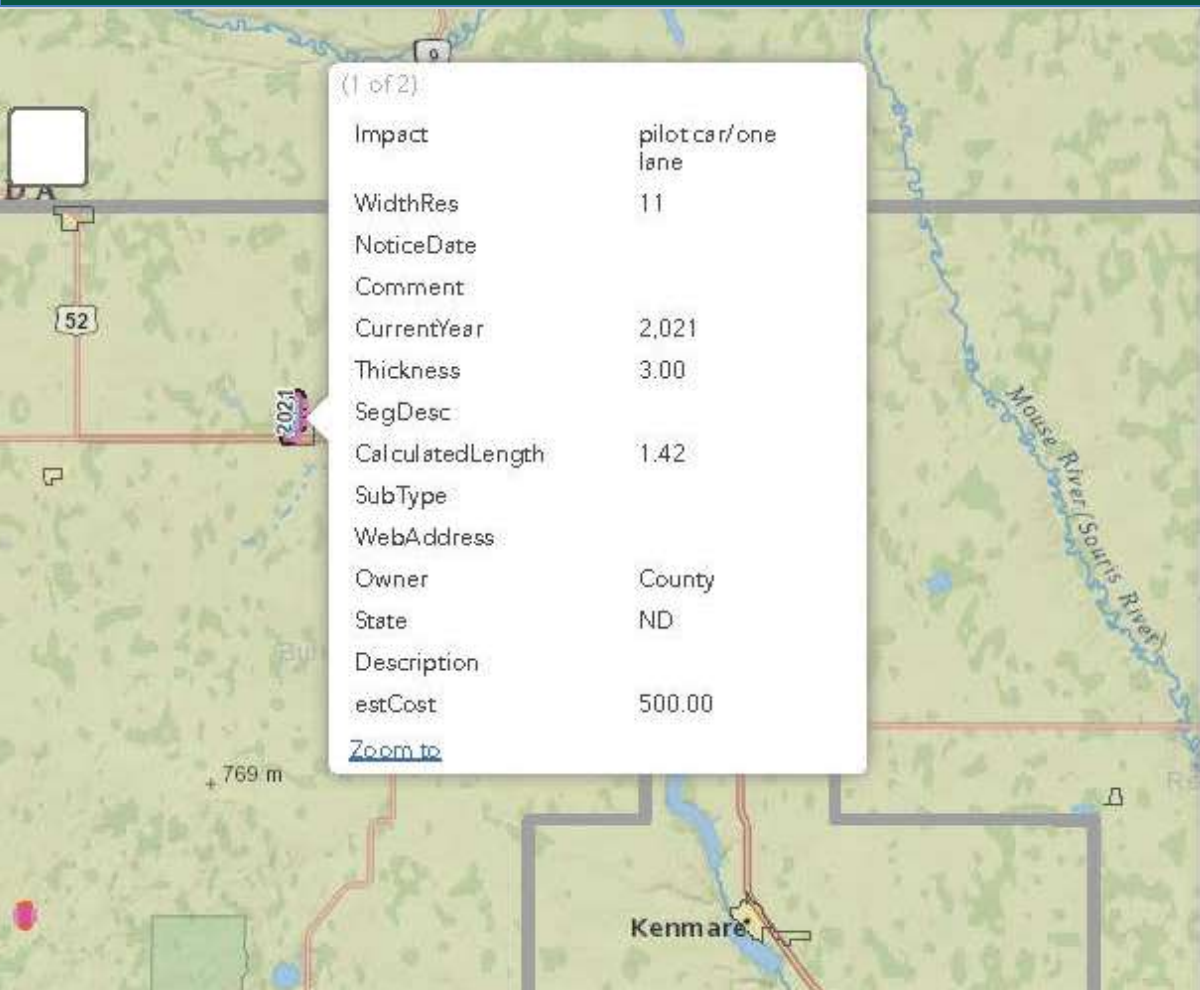
## \*\*CONSTRUCTION PLANNING ALL\*\*

### Current Year Construction (Public Impact)

- no impacts
- construction not started
- reduced speeds
- pilot car/one lane
- detour in place
- road closed

### Planned Improvements

- construction
- overlay
- surfacing
- mine & blend
- bridge rehab
- bridge replacement
- maintenance
- safety
- other
- <Null>



## Legend

### \*\*CONSTRUCTION PLANNING ALL\*\*

#### Current Year Construction (Public Impact)

- no impacts
- construction not started
- reduced speeds
- pilot car/one lane
- detour in place
- road closed

#### Current Year Construction (Status)

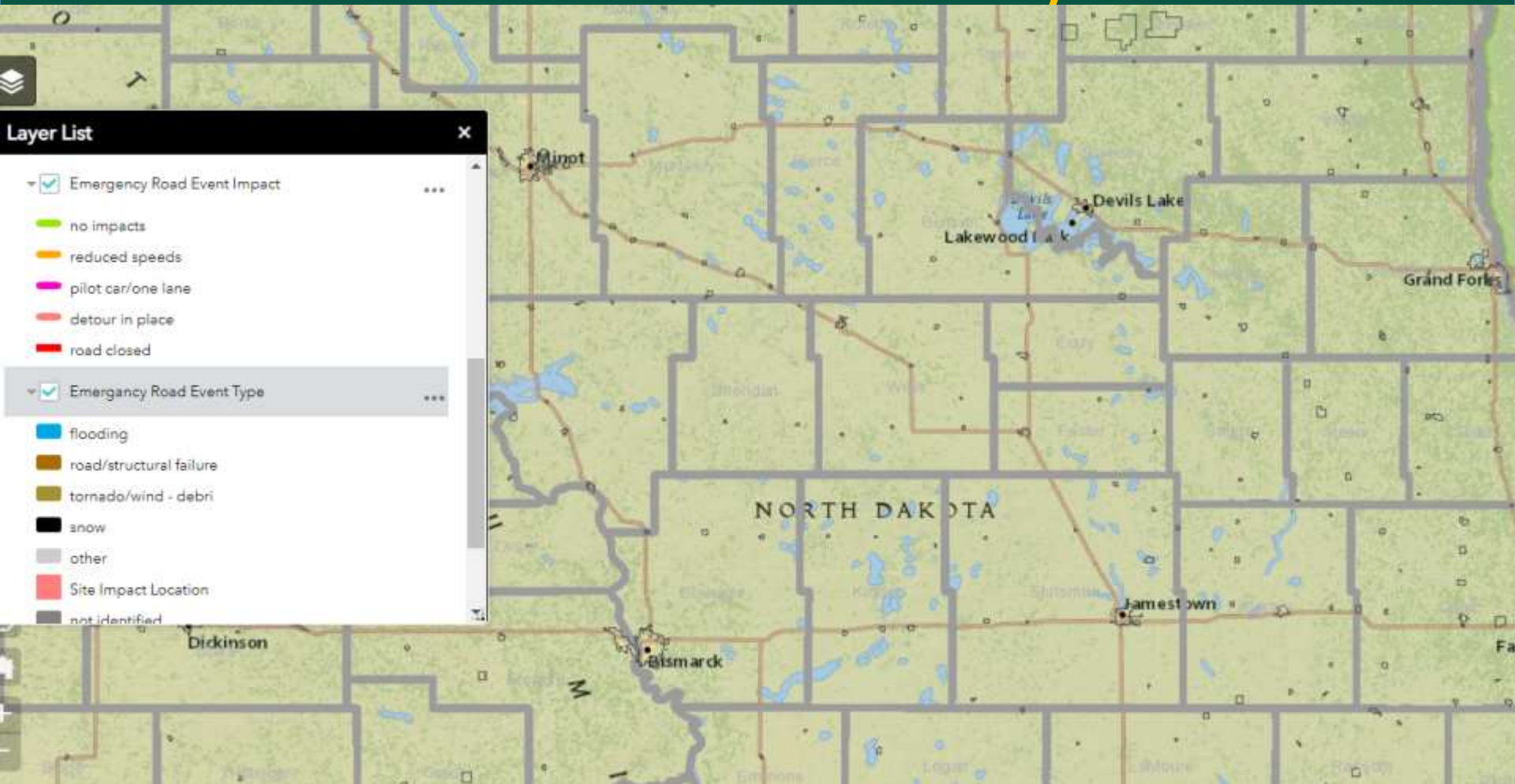
- under construction
- completed
- planned
- on hold
- no info

#### Planned Maintenance

- seal coat
- crack repair
- patching
- re-gravel



# EMERGENCY ROAD EVENT/IMPACT





# Geographic Roadway Inventory Tool

## GRIT

### New Tools

Layers

Construction History Inventory

Location Last Project Surface Base Cross Section

Last Project Type  
Overlay

Last Project Surface  
Bituminous

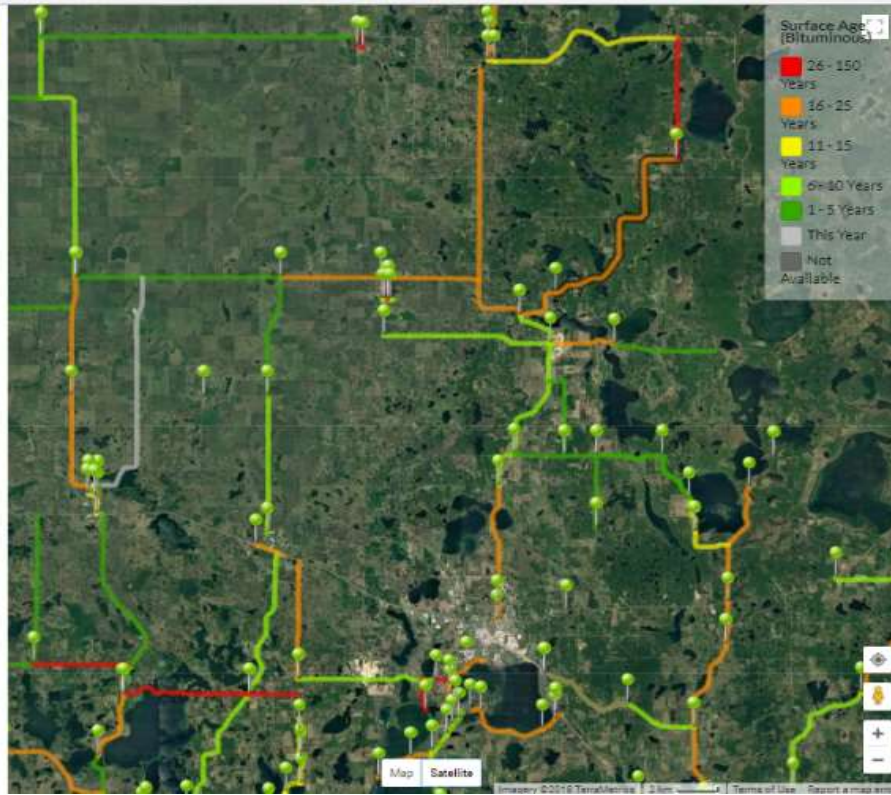
Bituminous Type  
Hot Bituminous (Class 27, 29, etc.)

Last Project Year  
1998

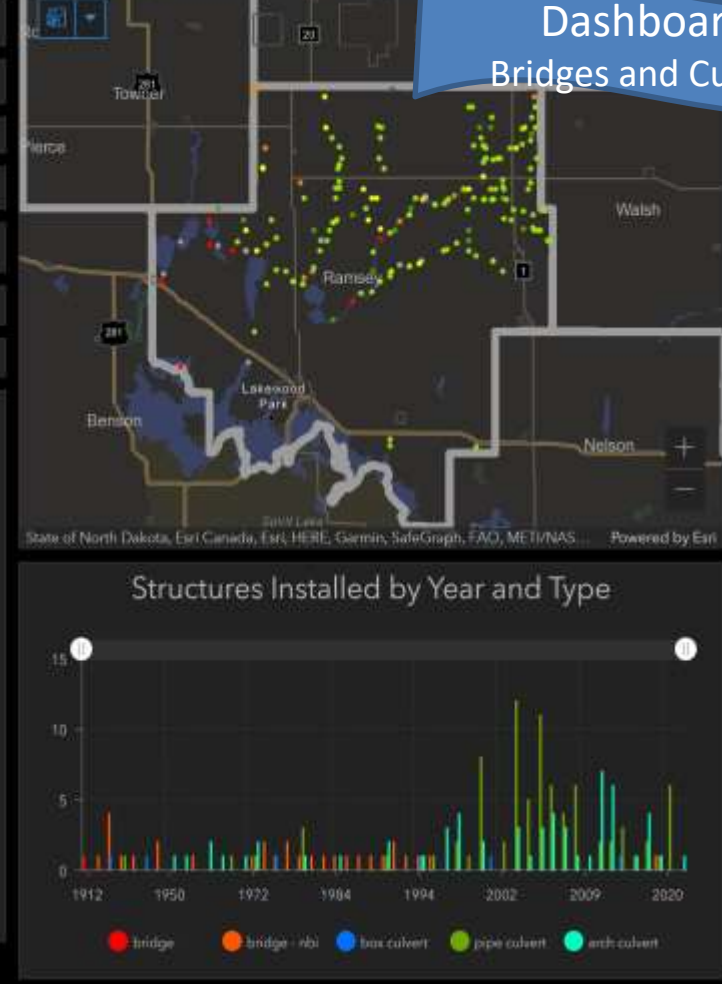
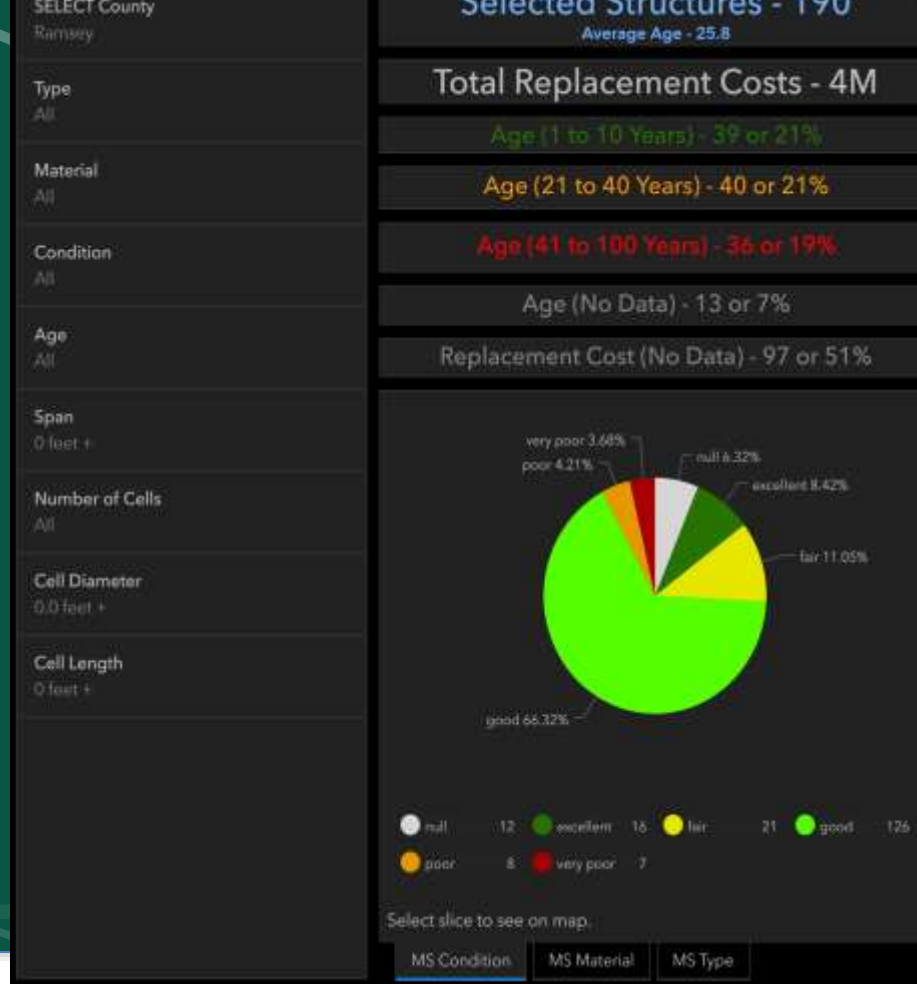
Last Project Surface Depth (inches)  
3.50

Total Surface Depth (inches)  
5.00

New Edit Cancel



# Dashboards Bridges and Culverts



## RESOURCES

[Research Reports](#)[Geographic Roadway  
Inventory Tool \(GRIT\)](#)[Event Proceedings](#)[Staff Presentations](#)[Other Resources \(Surface  
Selection Tool, Grain Industry  
Data, etc.\)](#)

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## Geographic Roadway Inventory Tool (GRIT)

## WebMap Viewers

The following webmap links were created to view various information as entered into the GRIT database. These webmap viewers will be updated and changed based on feedback from the Counties using them. Additional viewers will also be added to this list based on feedback. All data shown in these viewers is entered and maintained by the responsible County or City through the GRIT Editor Program. 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 data displayed.

## Web Maps

- [GRIT Viewer – All Layers – ND](#)
- [GRIT Viewer – All Layers – MN](#)
- [Load Restrictions – All Roads](#)
- [Construction-Maintenance-Emergency Travel Impacts](#)
- [Pavement Condition Forecasting](#)

## GRIT Dashboards

- [ND County Crash Dashboard](#)
- [Pavement Performance Forecasting](#)
- [Minor Structures Dashboard](#)



# Gross Vehicle Weight to Axle Weights





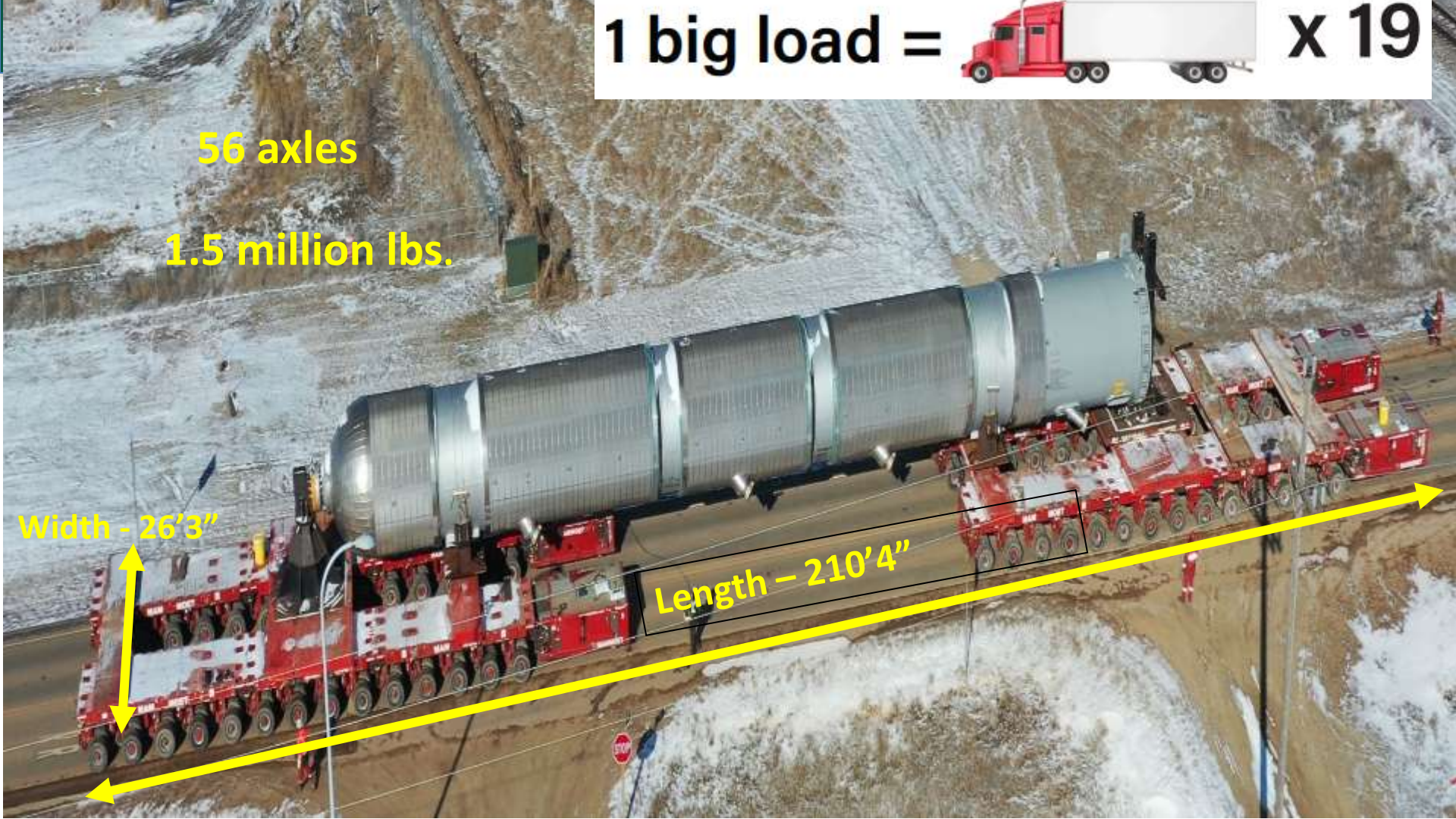
1 big load =  x 19

56 axles

1.5 million lbs.

Width - 26'3"

Length - 210'4"

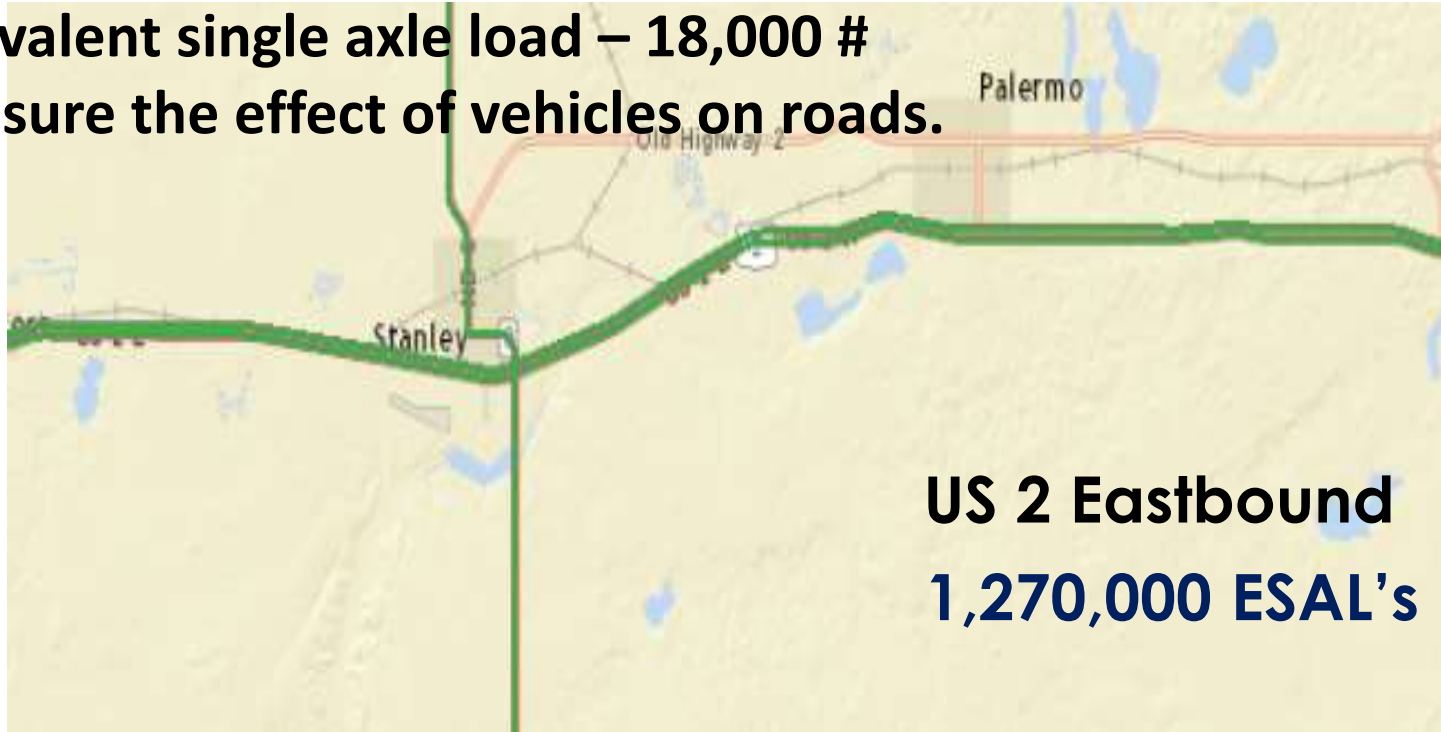


# Road Design

**ESAL concept -**

**Equivalent single axle load – 18,000 #**

**Measure the effect of vehicles on roads.**



**US 2 Eastbound  
1,270,000 ESAL's**



1967 Lincoln Continental  
0.0004 ESALs



# 6 axle truck and semitrailer



= 2.3 ESAL of  
road life

12,000 lbs  
.102 ESALS

34,000 lbs  
1.08 ESALS

48,000 lbs.  
1.015 ESAL





10:53 AM 6/6/17

143° N- M  
Lat: 46.854076° N Lon: 102.894344° W





Largest  
GVW I have  
ever seen  
by far

Win Win Win



- for NDLTAP**
  - Advances mission of preserving a safe & efficient local road system
- for the motor carrier industry**
  - Automated & convenient
- for local road departments**
  - Protects local roads & bridges & allocated fees
- for taxpayers and daily road users**
  - Safer roads & dollars saved

Win

LOAD COMPARISON	
Big Load	vs. 18-Wheeler
1.5 million lbs.	80,000 lbs.
56 axles	5 axles
224 tires	18 tires
Width: 26'	8'6"
Height: 24'	14'
Length: 210'	75'
1 big load =  x 19	

**RECENT CHALLENGE**  
Move 1.5 million lb. load

**CHALLENGE ACCEPTED**  
LoadPass facilitated the permitting process

**END RESULT**  
Large load delivered; infrastructure not compromised

# Gross Vehicle Weight to Axle Weights

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