WDEA/NDLTAP

Roundtable – December 18, 2019

Watford City – Event Host McKenzie County

Dale C. Heglund, PE/PLS

NDLTAP Program Director

"Helping local transportation leaders grow"

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NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM


McKENZIE
COUNTY

Special thanks to our host and to our lunch sponsor: McKenzie County and Job Development Authority


McKENZIE COUNTY
PUBLIC WORKS
1300 12TH STREET SE


McKENZIE COUNTY
PUBLIC WORKS


McKENZIE COUNTY
EST. 1905
STATE OF NORTH DAKOTA
ROAD DEPARTMENT

Western Dakota Energy Association Roundtable

Watford City, ND - Wednesday, December 18, 2019
New McKenzie Public Works Facility, 1300 12th St SE, Watford City

9:00 AM to 2:00 PM Central Time (8:00 AM to 1:00 PM Mountain)

Moderator: Dale C. Heglund, UGPTI/NDLTAP

Wednesday, December 18, 2019

9:00 AM CT (8:00 AM MT)	**Welcome and Introductions**	Tom McCabe
	WDEA & Legislative Update	Geoff Simon
	Watford City Community Updates McKenzie County Job Development Authority (JDA)	Daniel Stenberg
	Operation Prairie Dog - Loadpass	Brent Bogar/Janet Sanford
	Drone Special Project Review	Tommy Kenville, Isight Services
	Road Design Basics	Dana Larsen, Ward County
	Industry Updates	
	Oil Well Site Development – From Pad to Pumping	Guy Arman, Continental
	Road Closure – What it Means at the Pad	Toby Romo, Whiting

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Weather Predictions – Meet Our Meteorologist	Jonathan Rosencrans, WDEA
Wise Roads - NDLTAP Research – 2020 Roadway and Weather Reviews	Curt Glasoe, NDLTAP
FHWA – DOD Ca CL2	Mark Schrader, FHWA Jana Hennessy, Mountrail County
Tribal Update – MHA Nation	Scotty Satermo, MHA
Needs Study Review	Alan Dybing, UGPTI
GRIT – Construction Layer County 2020 and beyond Construction Plans Industry Build out Plans for 202 and beyond	Brad Wentz, UGPTI
Roundtable Discussions: Roadway Safety Issues County Road Building Plans for 2020 Industry Oil Development Plan Success Stories Industry Perspectives	Open Floor

11:30 AM **Lunch** Provided by JDA – McKenzie County Job Development Authority

12:30 PM Sessions (Continued)

2:00 PM CT **Roundtable Ends - Safe Travels Home**

2:00 – 3:00 PM - TENORM Informational Session – What's Happening in Williams County?

3:30 PM – WDEA Board Meeting

Special thanks to McKenzie County and the JDA for supporting this event.

WDEA Roundtable Meeting Location

McKenzie County Public Works Facility, 1300 12th St SE, Watford City

NDLTAP Contacts

Curt Glasoe – cell 701-260-9459

Dale Heglund – cell 701-318-6893

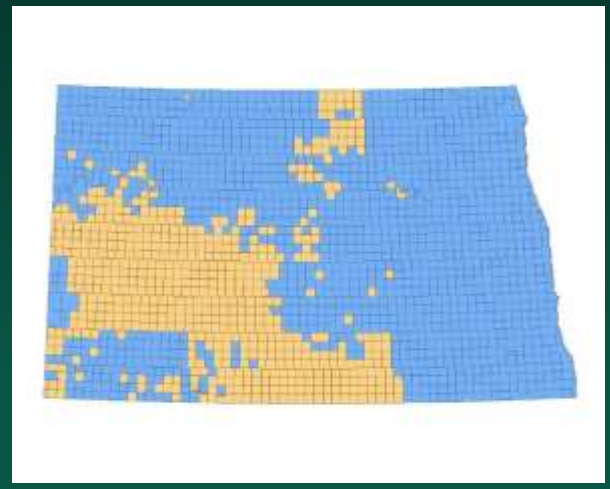
WDEA Contact

Geoff Simons – cell 701-527-1832

Notes


THE JOHN M. AGREY AWARD
Senator Rich Wardner

North Dakota has 107,000 miles of roadway



NDDOT - 7,400 miles – all paved – 92% asphalt and 8% concrete

Cities - 1,900 miles - 200 miles of gravel

County/Local Road Network has 97,700 miles

6,600 miles are paved, 59,000 miles are gravel surfaced (55% of total system!) and 32,000 miles are unsurfaced

State Network	107,000 Miles	Paved	Gravel
NDDOT	7,400	7400	0
Cities	1,900	1,700	200
Local Roads	97,700	6,600	59,000

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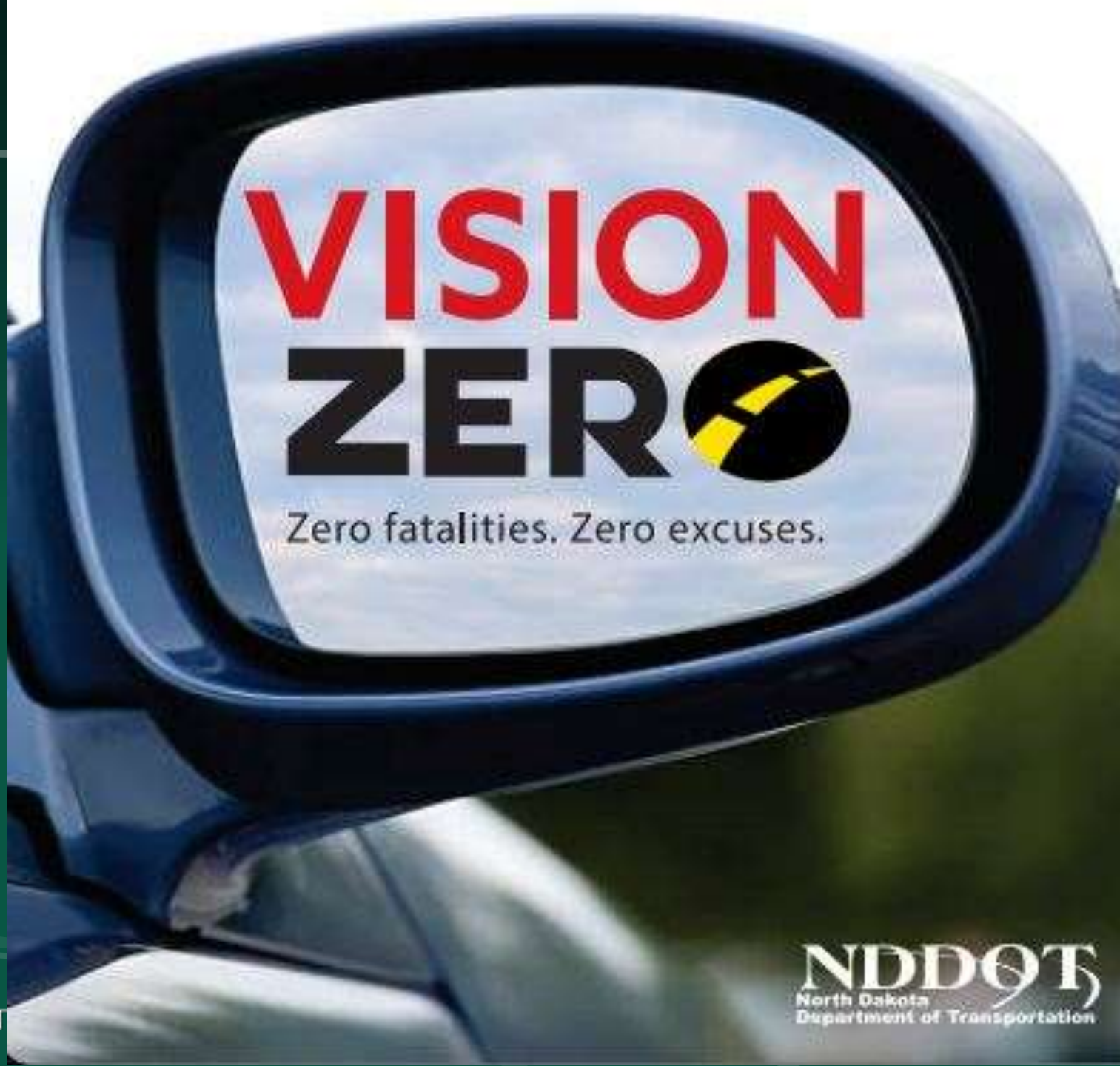


NDDOT
North Dakota
Department of Transportation


BRIDGE
MAY BE
ICY
LAKE SAKAKAWEA
SandBox


SandBox
LOGISTICS
ROAD
WORK
AHEAD
SPEED LIMIT ENFORC
MINIMUM FEE $80
WHEN WORKERS PRESEN
SandBox
LOGISTICS

Frost Heaves

https://www.youtube.com/watch?v=7gjtFaCxVRU

Press Esc to exit full screen

FROST DAMAGE IN PAVEMENT: Causes and Cures

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Sign Warrior Program

NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

North Dakota Local Technical Assistance Program added 6 new photos.

Published by Dale Heglund [?] · October 4 ·

Poor hunter or serial sign killer? Morton County has had enough. Morton County Sheriff Kyle Kirchmeier has joined forces with Mike Aubol, Morton County Engineer, and Chad Schneider, Morton County Sign Crew Lead, to create an initiative aimed to put a stop to vandalism of signs, flashing beacons and other public property. The recent news release is a great way to get the public involved. Let's face it, most damage is locally driven. As such, county residents working with ... See More

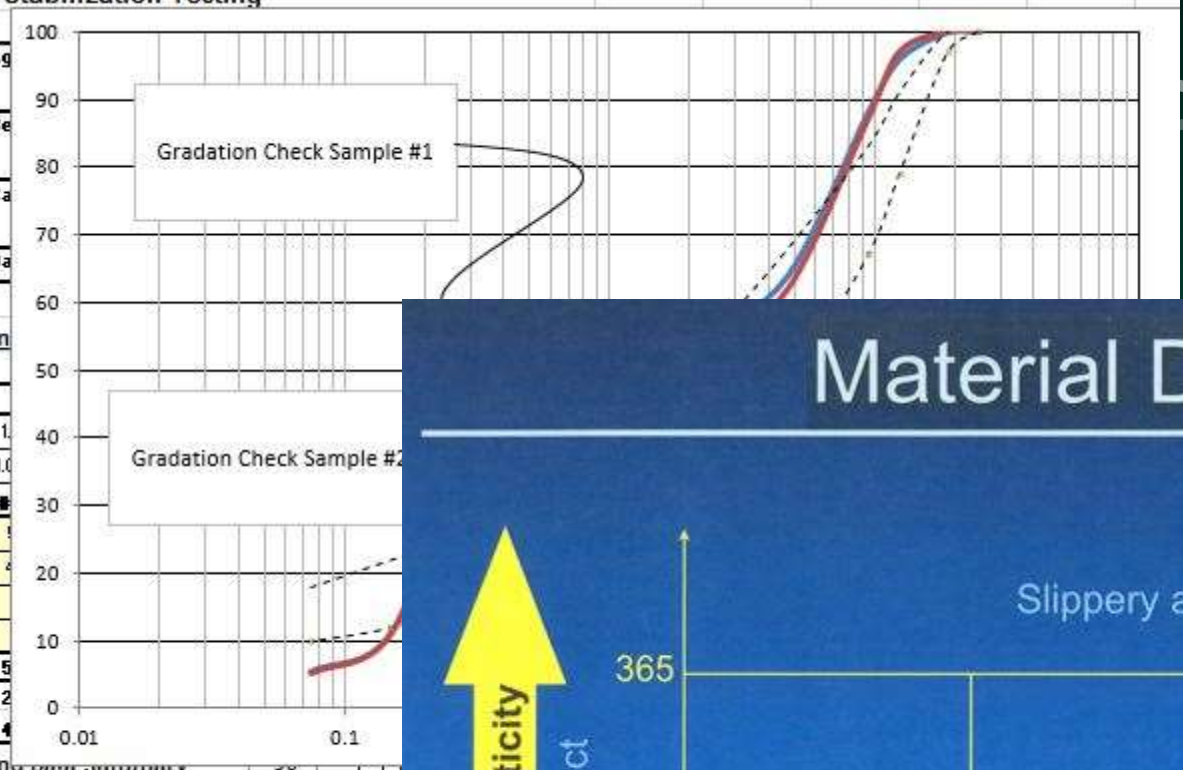
NDSU


2020
Saving signs = Saving lives
R R
ONE WAY
STOP
Report ALL vandals
SIGN WARRIOR
Save Our
Darrin L.


CAT

Gravel Road Surfacing Stabilization Testing

Client :	Richland County
	201 W. Holly St.
	Sidney, Mt. 59270
Project:	Gravel Roads
	5/8 inch reject



Preliminary Testin

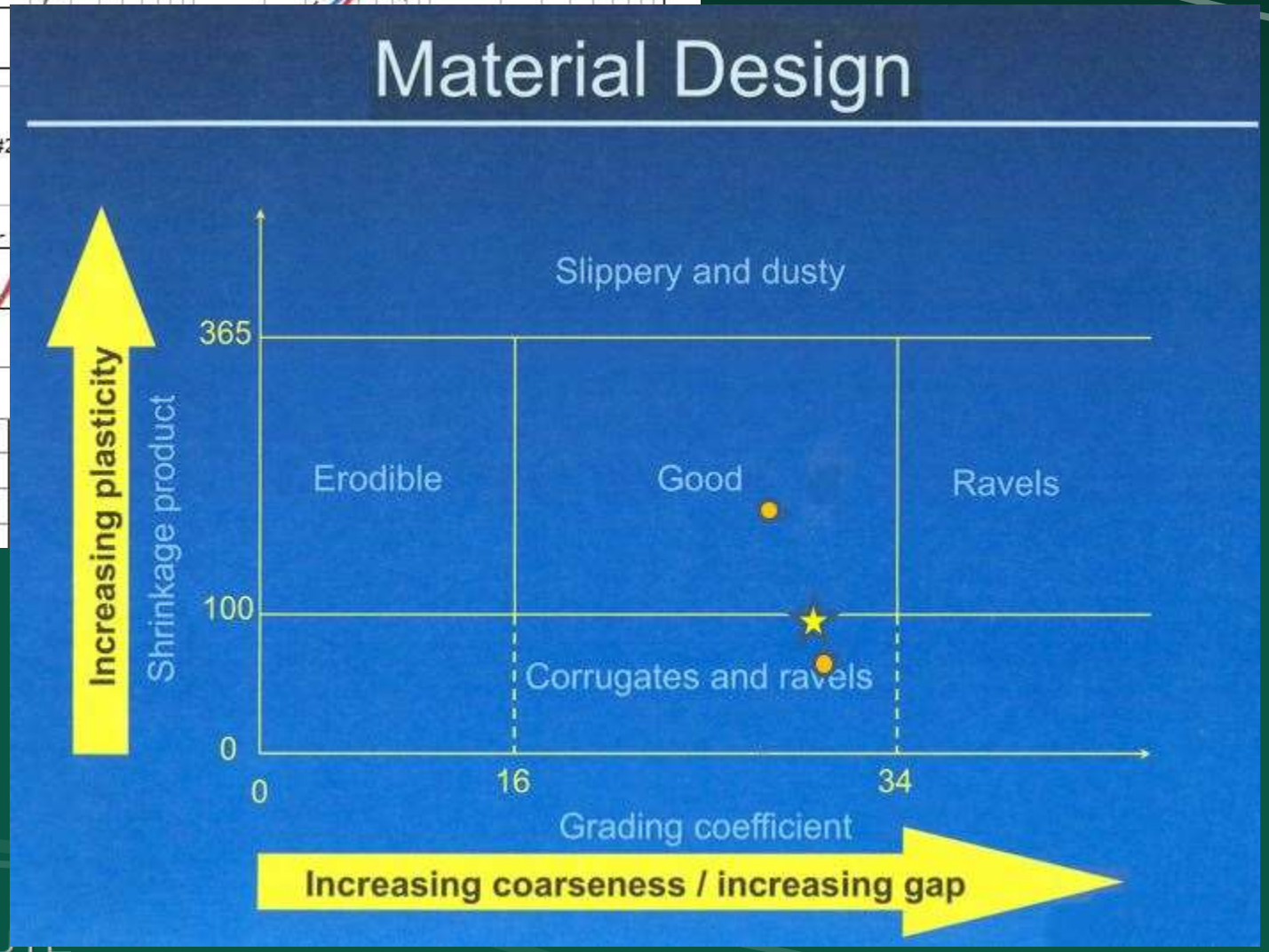
Sieve Analysis

Sieve Size	mm	25	19	12.5	9.5	4.75	2.36	2	1.
	0.45 P	4.257	3.762	3.116	2.754	2.016	1.472	1.366	1.0
	Std	**1**	**3/4**	**1/2**	**3/8**	**#4**	**#8**	**#10**	**#**
sample #1		100	100	96	88	64	55	53	
sample #2		100	100	97	87	62	53	52	
sample #3									
sample #4									
AVERAGE		**100**	**100**	**97**	**88**	**63**	**54**	**53**	**5**
Mod FS Spec	Low	**100**	**97**	79	**67**	**48**	34	32	**2**
	High	**100**	**100**	91	**83**	**68**	54	50	**4**

Mix Design Trial Blend Data Summary

Test No.	% Bentonite	% Calcium Chloride	AASHTO T180		CBR Specimen I		
			Optimum Moisture	Maximum Dry Density	% Mois	% of	CBR

Material Design



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10000
9000
8000
7000
6000
4000
2000
0
20000

Merry Christmas


DIVIDE
BURKE
RENVILLE
BOTTINEAU
WILLIAMS
MOUNTRAIL
WARD
MCHENRY
MCKENZIE
MCLEAN
DUNN
MERCER
OLIVER
GOLDEN VALLEY
BILLINGS
STARK
SLOPE
HETTINGER
BOWMAN
ADAMS
WESTERN DAKOTA ENERGY ASSOCIATION

Thank You!

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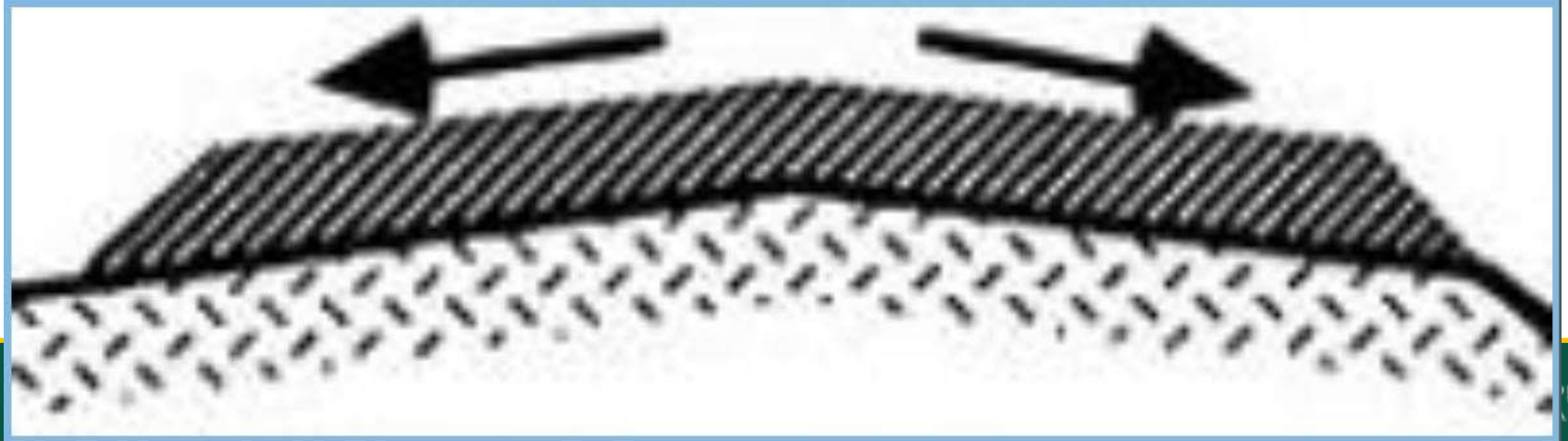
Gravel Road Warrior – Join the Team

Gravel at or near 4%

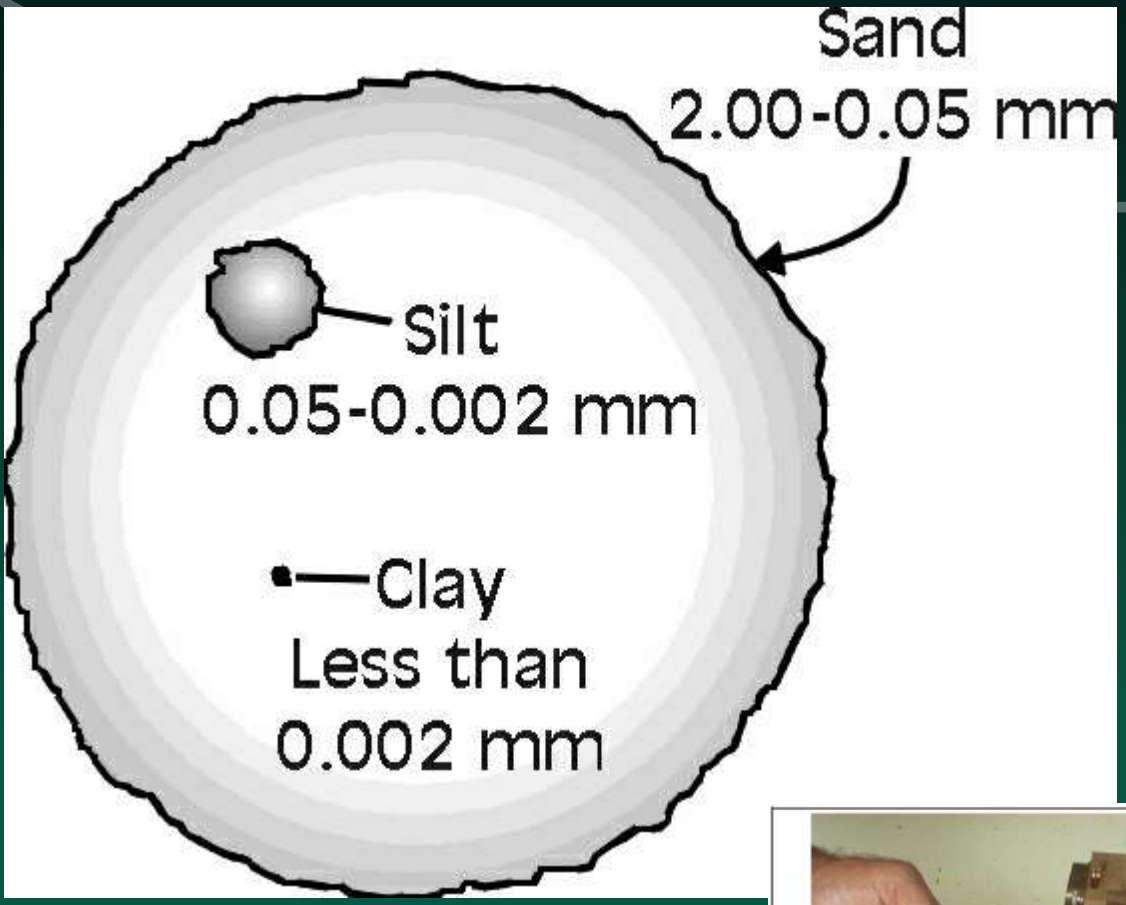


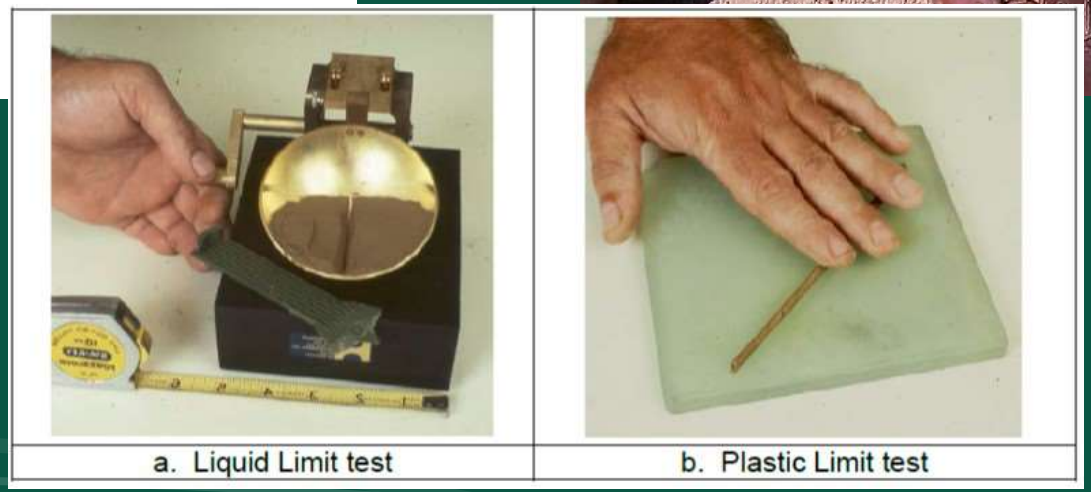

SMOKEY
ONLY YOU

Plasticity Index

Clay

The Glue that holds the rocks and sand together





a. Liquid Limit test

b. Plastic Limit test

https://www.youtube.com/watch?v=NT4HctWz8IM

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The #1 problem with a gravel road:

It’s not a paved road!

Gravel Road Surfacing

The North Dakota DOT maintains only PAVED ROADS. As such, the DOT uses gravel for pavement base and shoulder material. They typically specify:

Cl 5 Gravel – drainable base material that is placed beneath a paved surface. Water that passes through pavement cracks enters the Cl 5 base. Since the Cl 5 base has limited fine material, water easily drains to the outer edge of the roadway rather than progressing down into the subgrade. By keeping the subgrade (i.e., natural soil foundation) dry the NDDOT maximizes the roadway's load carrying capacity.

Cl 13 Gravel – shouldering material for highways. Cl 13 shoulder material is essentially a Cl 5 material with more fine material allowed (i.e., a dirty Cl 5). The fine material provides a reduction in water passage and allows sensible utilization of pit materials.

Local roadway gravel surfacing requires modifications to the typical pavement base and shouldering gravel. Gravel without binder leads to wash boarding, dust, and float – all critical safety risks. By adding a binder we can create a quality gravel surfacing material for local gravel roads.

Quality gravel surfacing includes a binder material to hold the stone and sand together. Clay is a natural binder that can bind the stone and sand into a gravel matrix. Generally, fines may be clay or silt. Clay has good binder properties, silt does not. Clay has good engineering strength properties, silt does not. A gradation test tells us the amount of rock, sand and fines. A PI test (Plasticity Index – clay value) – this tells us how cohesive or 'sticky' the fine material is and as such how well it will perform to hold the rock and sand together. Combined, the tests help tell us how well the gravel will function as a surfacing material. See spec info below.

Specifying and testing gravel are key to insuring that you get the correct gravel for your gravel road driving surface.

1) **Do you specify** the gravel surfacing that you purchase?
   Gradation – y/n
   PI (clay) – y/n

2) **Do you test** the gravel surfacing as part of your quality assurance/payment plan?
   Gradation – y/n
   PI (clay) – y/n

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

GRAVEL SURFACING

DESCRIPTION

This work consists of furnishing and placing aggregate as a roadway surface course

4. Plastic Index Adjustment Factor.

The Engineer will determine the PI content adjustment factor using the Table 1.

Table 1

PI Average	Pay Adjustment Factor
> 9.1	Non Acceptance
7.1 – 9.0	1.0
4.0 – 7.0	1.05
3.0 – 3.9	1.0
2.0 - 2.9	0.85
< 1.9	Non Acceptance

NDDOT 4, Fractured Faces[1]	10%

NDLTAP

Local Technical Assistance Program

Together, we do great things!

Dale C. Heglund

701-318-6893

dale.heglund@ndsu.edu

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WILLIAMS
DUST
CONTROL
COUNTY
BRINE
SPREADER

Guidelines for the Use of Oilfield Salt Brines for Dust and Ice Control

The North Dakota Administrative Code §33-24-02-02(5)(a)(2) states that wastes are exempt from waste management rules and are not considered a waste when it is: "(2) Used or reused as effective substitutes for commercial products; . . "

When used in the manner outlined in this guidance, the North Dakota Department of Health (NDDoH) considers oilfield-produced saltwater (brine) to be an effective substitute for commercial dust and ice control products. If oilfield saltwater brine is used in a manner that does not fall within these guidelines it may be considered illegal disposal of a waste, and the user may be subject to penalties pursuant to the requirements in North Dakota Century Code Chapter 23-29 and Chapter 61-28, and North Dakota Administrative Code Article 33-16, Article 33-20,

Oil Field Salt Brines

Loan Program

Dynamic Cone Penetrometer

SPOT ON SAFETY

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Delivering all your training needs

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NORTH DAKOTA LOCAL TECHNIC

GLUE FOR GRAVEL ROADS

May 1, 2018 (Tuesday) 9:00 – 4:00 PM CST
LISBON, ND – Ransom County, Veteran's Home – 1600 Veteran's Ave

May 2, 2018 (Wednesday) 9:00 – 4:00 PM CST
HARVEY, ND - Wells County – Harvey Shop

May 3, 2018 (Thursday) 9:00 – 4:00 PM MST (10:00 – 5:00 PM CST)
WATFORD CITY, ND – McKenzie County Courthouse, 201 5th St. NW

Registration Deadline: 1 week prior to workshop | **Class limit:**
(Lunch provided by DMC Wear

Learn how to add nature's glue to existing gravel surfacing and "Make Gra
is tough enough, but how can we make poor and tired gravel perform bet
the year-round qualities of asphalt, we can sweeten the mix and make th
gravel expert Steve Monlux, PE and LVR consultant, as he shares the secr
hold gravel surfacing together. **You'll find out why clay is nature's glue fo**

Following the class, we will head out to the field to apply our classroom lea
We will add bentonite clay to existing gravel, demonstrating proper blen
DMC Wear Parts, will demonstrate new quick-change cutting edge tech
surfaces and blending clay into the mix. **Todd Pendleton, Roadworx**, will
how clay binder in gravel surfacing enhances dust treatments.

No glue/clay results in washboarding, dust, float, safety hazards and high
together? This is a must attend training for anyone that touches gravel o
road superintendents, county and township officers, contractors, and gra
"Make Gravel Roads Great Again!"

STEVE MONLUX worked 30 years for the U.S. Forest Service a
volume roads in Montana and Idaho and many other we
provided consulting services for counties, state LTAPs, Tr
Service. His specialties include gravel surfacing, dust abate
pavement management, quality assurance, and contract adr

Need help? C

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CHAINSAW TRAINING

One-time s
Basic Training
Advanced Training
cut

April 16, 2018 (Monday) 8:00 – 5:00 PM CST
4-H camp –2702 8th Street SW, Washburn, ND
Class limit: **30** attendees - **$75** registration fee, includes lunch

April 17-19, 2018 (Tuesday – Thursday) 8:00 – 5:00 PM CST
4-H camp –2702 8th Street SW, Washburn, ND
Class limit: **12** attendees - **$500** registration fee, includes lunches (not breakfasts
and overnight accommodations in the new 4-H camp bunkhouses.

REGISTRATION DEADLINE: April 9, 2018 | (NDLTAP will invoice pos

DAY 1 = Classroom

Topics covered include ethanol gas and its effects on two-cycle engines; simple ways
ready for use at all times; carburetor tuning and adjusting; chain sharpening techniques;
more. During this class we will actually work on your equipment and go through each step
problems as we encounter them. Class is 8 hours. Participants should bring their own chain

DAY 2-4 = Hands-On Session

Day 2-3. Topics covered include basic safety equipment, PPE, the saw's reactive forces, c
and hinge, cutting techniques, wedging techniques and calculations. This class is d
homeowners and is designed to be a 16-hour course that includes a hands-on portion whe
All students are required to have a helmet with face shield, hearing protection, safety glas
leather work gloves or chainsaw resistant gloves, and work boots. Participants should brin
pass a safety test prior to use. The instructor will have chainsaws for use if participants do
fails the safety test. Some PPE is available to loan.

Day 4. Advanced class for chainsaw operators who will be dealing with trees that ha
weather. This class will teach techniques to relieve pressure commonly found in storm-d
hazards, spring poles, hangers and leaners pulls and splits, and others. All students are re
face shield.

Participants are encouraged to stay at the camp – enjoy the walking paths along the ri
chainsaw carving basics after each day.

Mike Smith, Chainsaw Strategies of Massachusetts, has been opera
years. He is also a 25-year veteran firefighter. Mike has taken exte
chainsaw operation. His teaching style includes a healthy porti
interaction. The hands-on portion of Mike's classes are always inte
trees fall is always fun! TIMBER!!

Need help? Contact us at **ndlta**

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NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM

BRIDGE 101

On-site – Classroom
7 Hours – Road Scholar Credits

June 6, 2018 (Wednesday) 8:00 – 4:00 PM CST
Sheriff's Dept. conference room – 5205 Gateway Drive, Grand Forks, ND

June 13, 2018 (Wednesday) 8:00 – 4:00 PM CST
Williams County Shop – 5218 141st Ave NW, Williston, ND
(lunch provided by Williams County)

Registration Deadline: 1 week prior to workshop
Class limit: 30 attendees per workshop
$50 Registration Fee (NDLTAP will invoice post-training)

Want to learn everything there is to know about bridges in one day? Bridge 101 is for you. While we can't promise that you will learn EVERYTHING about bridges, we will help you understand the key elements, such as:

- Bridge part names
- Why we complete scour surveys
- What is a bridge
- How to read an SIA sheet
- What alert codes mean
- Loading factors
- Maintenance best practices
- Load limits
- Signing requirements
- How to inspect a bridge
- Failure modes

Along with classroom training, we will go to the field and walk through a bridge inspection. Bridge 101 will help blade operators, truck drivers, road superintendents, county, city and township officials, and those in local governmental road or street departments, learn about bridges.

Gary Doerr. NDDOT Bridge Division. He has been a registered PE since 1984 and joined the NDDOT Bridge Division in 2000 where he manages nearly 5,000 state and local bridges and bridge-length culverts. Doerr manages the bridge inspection program that inspects more than half of these bridges every 24 months and produces reports to FHWA annually on the condition and safety of the system's bridges.

Bryon Fuchs. Assistant Local Government Engineer for the NDDOT. He graduated from NDSU and is a registered professional engineer. Fuchs previously worked for a consultant for three years and has worked for NDDOT for 16 years in Materials and Research and Local Government.

Dale Heglund. NDLTAP Program Director. Forty years of transportation experience ranging from equipment operator to design engineer. Career focus has been to promote a quality roadway network by helping others understand roadway engineering principles, the synergies of working cooperatively with others, leadership skills, and new technology implementation processes.

Need help? Contact us at **ndltap@ugpti.org** or 701-328-9855

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PAVEMENT ENDS

A North Dakota Success Story

by Dale C. Heglund, NDLTAP Director

Roadway development follows a logical progression: grade, gravel, and pave. But sometimes it's welcome and cost-effective to step back to gravel and replace the "Rough Road Ahead" sign with a "Pavement Ends" sign.

Some local roads should never have been paved. With others, conditions change, creating the need to evaluate the roadway surfacing and long-term strategies. Either way, the opportunity to convert a distressed paved road to an engineered gravel road is a viable option.

The local roadway network is the economic backbone of North Dakota. Of the 107,000 miles of roadway in the state, the North Dakota Department of Transportation (NDDOT) manages about 7,400 miles of paved roadway. The remaining mileage is under local, city, township, Tribal, and county management. The county/township road network includes about 6,600 miles of paved roads, 59,000 miles of gravel roads and 32,000 miles of unsurfaced roads.

Highway realignments can result in jurisdictional road transfers that are made with the intent to provide a benefit to the local users. But over time, these transferred roads can become a liability. Let's take a look at a sample project in North Dakota.

Not far south of the U.S.-Canadian border, Mountrail County owns and maintains an old state highway segment. The original roadway east of Blaisdell was built in 1936 as State Highway 2. In 1939, the base was stabilized to provide an improved "all-weather" surface and, in 1953, the first asphalt wear course was placed.

In 1978, the highway was realigned and the original roadway segment was transferred to Mountrail County. The county accepted the state's no-fee roadway transfer, recognizing local citizen demands to maintain convenient farm to market access. With the bulk of the traffic expected to shift to the new state highway, it was expected that the old route would last forever or at the least for a very long time.

ROAD READY R3 RESEARCH

JAN 2018 NO. 1

RESEARCH REVIEW: Crack Seal Best Practices

by Andrew Wrucke, NDLTAP Technical Expert

"Preventative maintenance is the key to wisely utilizing public dollars and building and maintaining an effective transportation system. This is particularly important for regions such as the Upper Great Plains and northern Rocky Mountains where "road miles" and "land area" far exceed population, weather and environment present a never ending series of cycles and challenges, and subgrades and base layers are many times composed of or contaminated by water and frost susceptible, fine grained soils. The first step in pavement preservation is crack sealing/crack filling as water is a constant, sometimes "unseen", but always ever present enemy of road performance. Effective and timely materials, methods and placement are the first step in this critical pavement preservation technique."

– Ken Swedeen, Dakota Asphalt Pavement Association (DAPA) Executive Director

Crack sealing in the field

Crack sealing/filling is a cost effective pavement maintenance tool that can be effectively completed by county workers or contractors. Knowing how to most effectively employ this technique is important, as failure of this product is costly, especially in low budget situations. This review includes some researched best practices from NDDOT, FHWA, and other sources. Crack sealing and crack filling are similar processes which prevent water infiltration into the pavement layers. Crack sealing is commonly referred to as a "route and seal" which can include routing out the cracks and is best for cracks that are considered "working." Crack filling is commonly just filling of existing cracks with sealant.

Routed crack being sealed

The ideal crack seal/fill creates a watertight seal over longitudinal and transverse cracks in the roadway. This prevents infiltration of water into the asphalt layer, base and subgrade, extending the life of the pavement. Cracks must be clean, dry and at least 1/8" wide to be candidates to be filled or sealed. Block and fatigue cracks are not good candidates to be sealed, as they are symptoms of pavement failure. Cracks wider than 1.5" will need to be evaluated for filling, as these are also symptoms of pavement failure. Thinner cracks may be routed to allow for a better seal placement. If a crack is routed, it should be routed to a minimum of 3/4" width to allow for a reservoir of sealant.

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

FREE APP

North Dakota

TRUCK-WEIGHT CALCULATOR

- The **Truck Weight Calculator** helps the motor carrier industry, agricultural producers and others determine the maximum legal weight that any set of axles on a vehicle/vehicle combination may carry on North Dakota interstate and state highways.
- The **formula** for the calculator is a weight-to-length ratio.
- The **app** features simple picture explanations for intuitive use.
- The **calculator** generates a printable report with truck weight calculation results.

Weight calculations for a vehicle traveling on North Dakota's state highways and local roads are slightly different from the weight calculations for vehicles traveling on North Dakota's interstate system.

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ND Truck Weight Calculation Results

1/22/2016

Given Information for Weight Calculator

Highway Type	Interstate Highway
Axle Count	6

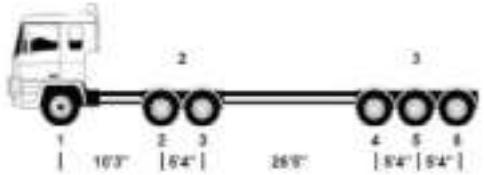
Truck Info

Unit Name	2000 WG64T
Serial No. (VIN)	10265845962
Year/Make	2012 / Volvo
Customer or Company Name	Black Hills

Axle Details - Weights

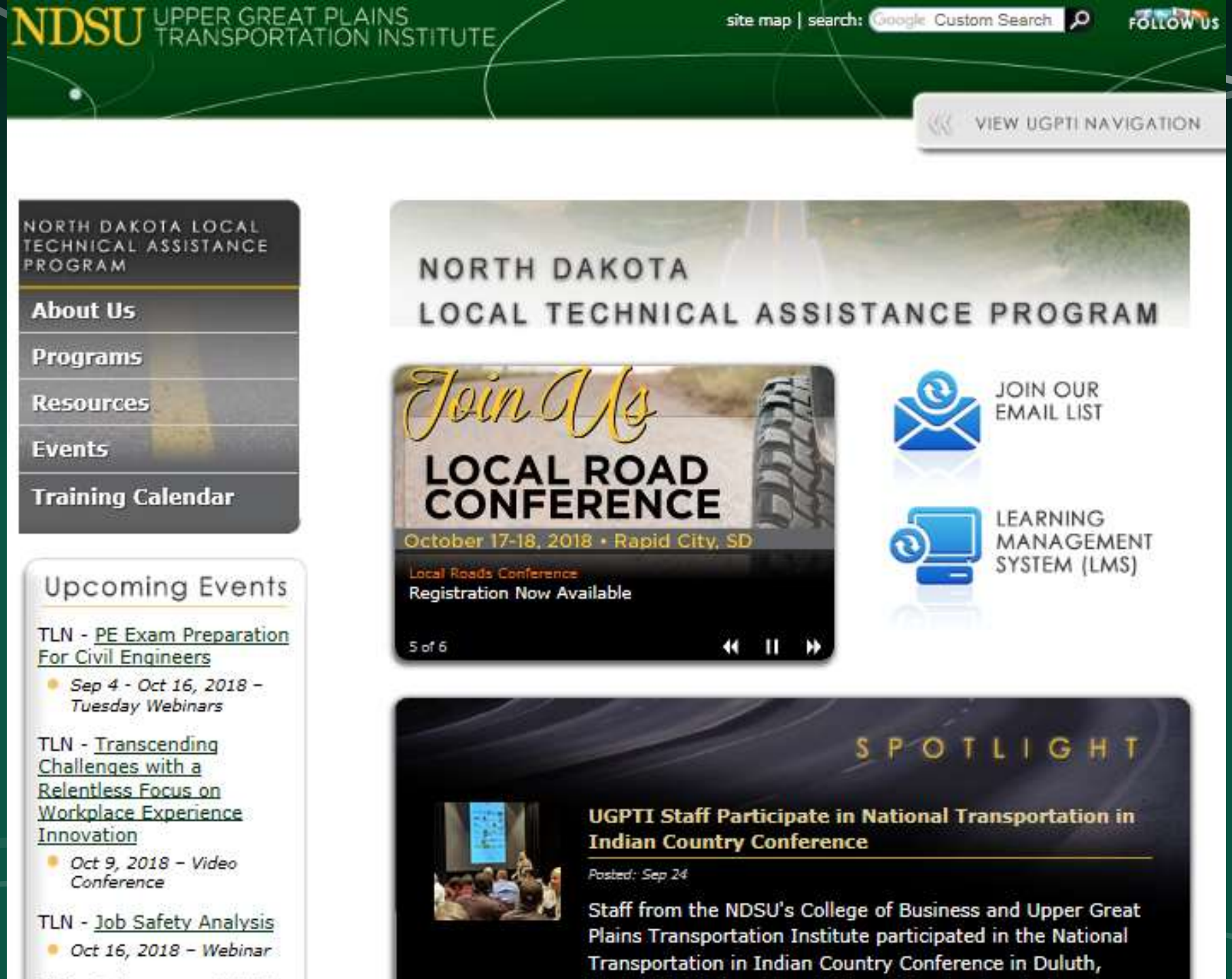
Legal GVW - Interstate:	**86,000 lbs.**
The maximum legal gross vehicle weight for this vehicle/vehicle combination.	
Maximum gross weight legal on axle #2 through the rearmost trailer axle shall not exceed 74,500 lbs.	
Weight (per bridge length chart):	86,000 lbs.

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	20,000
2	2 - 3	34,000
3	4 - 6	44,500



NDLTAP

"The Resource of Choice"

Investment Strategies - Alternatives

Agency Cost Parameters Setup

HMA | AST | Gravel | Dust Control | Stabilized Gravel

HMA

INITIAL COST

Total Initial Cost ($/mile): $ 725,115 [Initial Costs Calculator]

MAINTENANCE COST

Treatment Selection	Treatment Name	Application Times Per Year	Year Interval Between Applications	Application Start Year	Unit Cost (dollars)	Unit Selection
☑	Crack Sealing	1	4	6	10000	per mile
☑	Seal Coat	1	7	3	20000	per mile
☑	Thin Lift OverLay	1	20	20	250000	per mile
☐	Striping and Marking	1	3	3	2000	per mile
☑	Patching/Maintenance	1	3	3	3000	per mile
	Other	1	1	1	0	per mile

[et]

[ck to Common Parameters Setup] [View Analysis Summary] [Help]

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Delivering all your training needs

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