

2016 ND Asphalt Conference

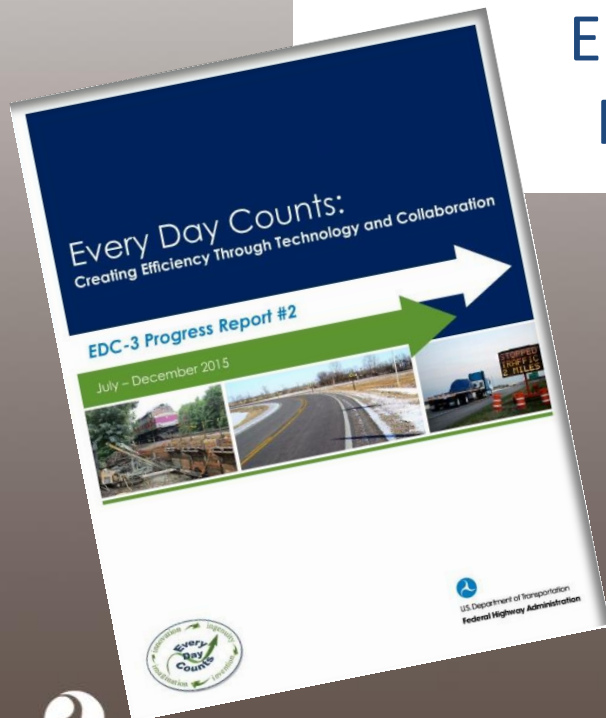
North Dakota Division Office

Rugged North Dakota Landscape

Innovation Activities from FHWA

Kevin Michel

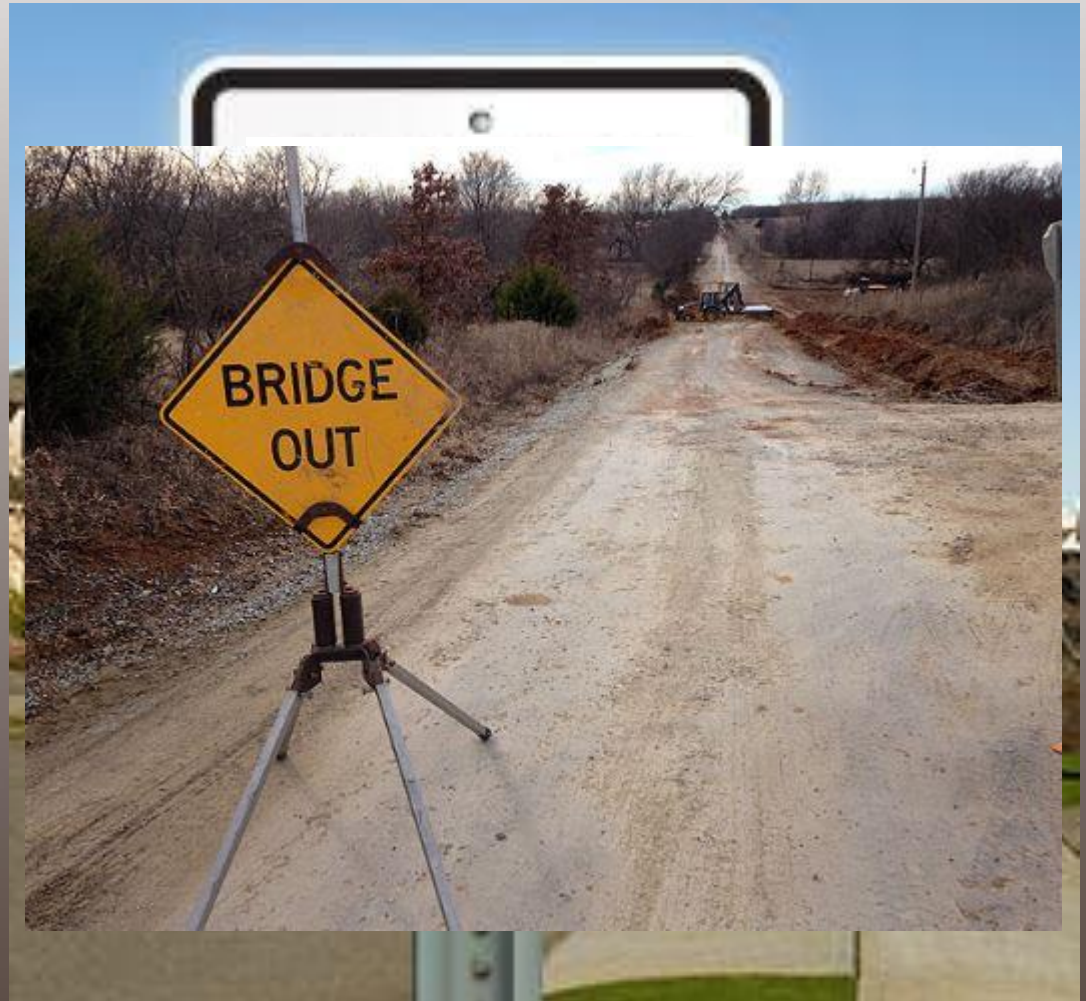
Engineering Services Team Leader
Federal Highway Administration



2016 ND Asphalt Conference

North Dakota Division Office

Rugged North Dakota Landscape



Where would we be without Innovation?

North Dakota Division Office

Rugged North Dakota Landscape

Once upon a time we had this:



And now things are like this:



What will future innovations bring?



Where does innovation come from?

North Dakota Division Office

Rugged North Dakota Landscape

- Can come from anywhere !!!
- FHWA/AASHTO
 - *Every Day Counts (EDC)*
 - Turner Fairbank Highway Research Center (TFHRC)
 - SHRP2



What is “Every Day Counts”?

North Dakota Division Office

Rugged North Dakota Landscape



**Strategic DOT
Selection of
Chosen
Innovations**

**Necessity is
the Mother of
Invention**

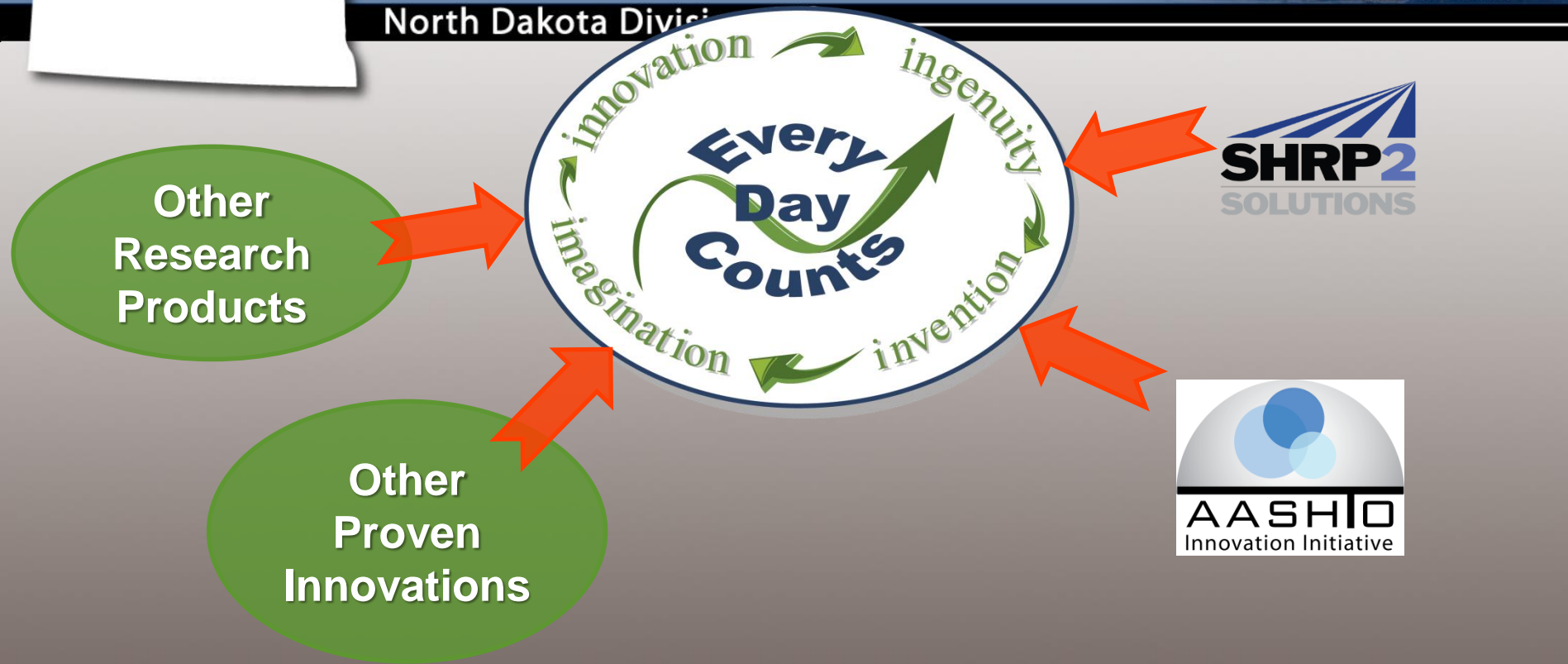
**Rapidly Deploy Proven,
Underutilized Innovations**



Every Day Counts

Rugged North Dakota Landscape

North Dakota Division



- Not about inventing the next “big thing”
- Advancing effective, proven and market-ready technologies into widespread use
- ***Will not succeed if nobody tries the new technologies, so how do we give people the incentive?***



How EDC Works: Incentives

North Dakota Division Office

Rugged North Dakota Landscape

Funding incentive programs:

- **State Transportation Innovation Council (STIC) Incentive Program**
 - Up to \$100,000 available to each STIC per year
 - Fund activities that have a statewide impact on making an innovation a standard practice
- **Accelerated Innovation Deployment (AID) Demonstration Program**
 - Incentive funding (up to a maximum of \$1,000,000) to offset risk of using an innovation on a project

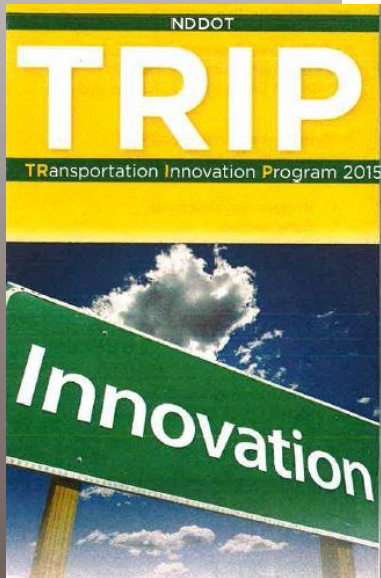


Current STIC Incentives

North Dakota Division Office

Rugged North Dakota Landscape

- NDDOT Transportation Innovations Program (TRIP)
 - NDDOT/UGPTI have developed an avenue to submit innovate ideas (website)



TRIP Ideas Being Advanced

- Using a Texas Underseal on HBP Overlay projects
- Studying the use of Fiberglass Rebar & Dowels Bars in Bridges and Pavements
- Using Fiber Reinforced HBP
- Installing Culvert Movement Monitoring/Instrumentation
- Using URETEK Deep Polymer Injection on frost heaves
- Monitoring traffic flows with Distributed Acoustic Sensing
- Using Geogrid Reinforcement under aggregate base for flexible pavement
- Using a MIT Scan T2 for collecting concrete pavement thicknesses
- Using Hydrated Lime as an anti-stripping agent in new full-depth HBP pavements
- Developing a digital driver's license application process
- Using TheSmartCone™ technology for security, work-zone safety and surveillance applications
- Using Jointbond to address longitudinal HBP joint deterioration
- Using WatershedGeo HydroTurf® for drainage way armoring



Current STIC Incentives

North Dakota Division Office

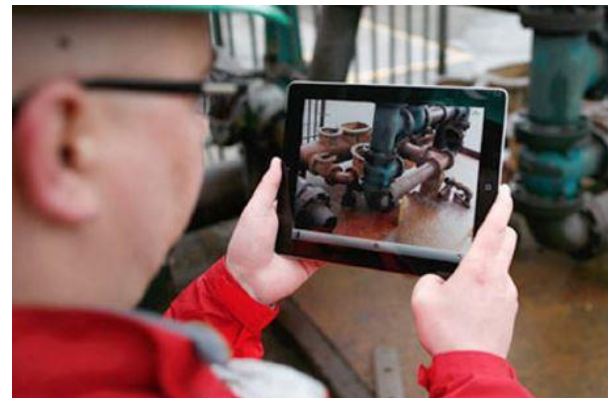
Rugged North Dakota Landscape

- E-Construction
 - NDDOT/Iowa DOT held Peer Exchange
 - Purchased iPad for field personnel

From this:

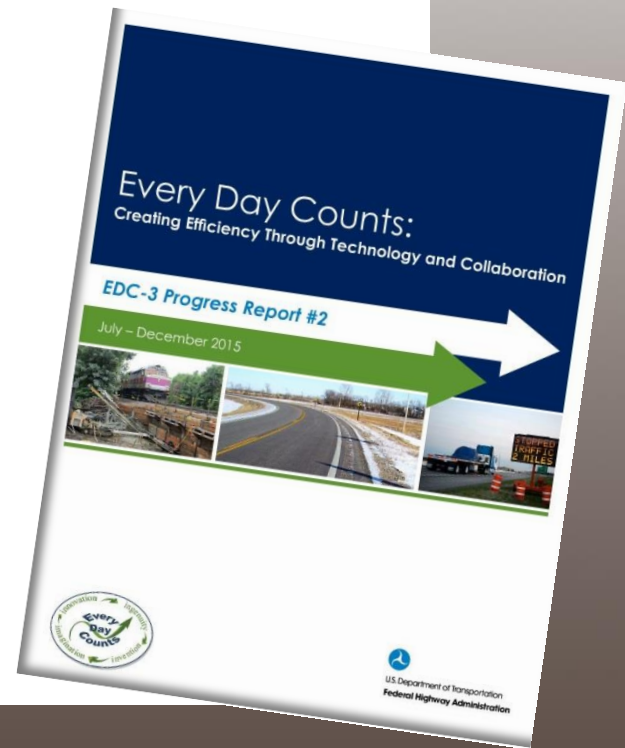


To this:



Results of EDC

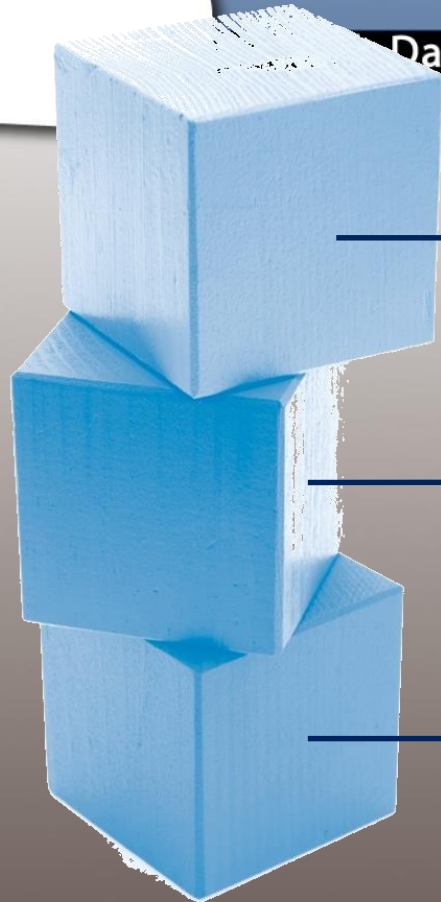
- Creating an Innovation Culture
 - A new way if thinking ?
- Accelerating Innovation Deployment
 - Shortening project delivery
 - Enhancing safety
 - Reducing congestion
 - Improving environmental sustainability



Building on our Achievements

Dakota Division Office

Rugged North Dakota Landscape



EDC-3 (2015-2016)

- 11 innovations (2 from EDC-2)

EDC-2 (2013-2014)

- 13 innovations (4 from EDC-1)

EDC-1 (2011-2012)

- 14 innovations

Accelerated deployment of 32 innovations to date



EDC-3 Innovations

- **Data-Driven Safety Analysis**
- **Road Diets (Roadway Reconfiguration)**
- **Smarter Work Zones**
- **Regional Models of Cooperation**
- **Improving Collaboration and Quality Environmental Documentation (eNEPA and IQED)**
- **Ultra-High Performance Concrete Connections for PBES**
- **Geosynthetic Reinforced Soil-Integrated Bridge System (GRS-IBS)**
- **3D Engineered Models: Schedule, Cost, and Post-Construction**
- **e-Construction**
- **Locally Administered Federal-Aid Projects: Stakeholder Partnering**
- **Improving DOT and Railroad Coordination**



EDC Cycle Timeline

North Dakota Division Office

Rugged North Dakota Landscape

Jan 2014

Jan 2015

Jan 2016

April

Jan 2017

EDC-2

Idea Solicitation

Innovation Selection

Official Rollout

Regional Summits

State Implementation Plans

Dec - Jan

May - June

July - Aug

Oct - Dec

Jan

Establish Teams

Baseline Report

EDC-3

6-month Progress Reports

Final Report



U.S. Department of Transportation
Federal Highway Administration

EDC-4 is coming.....

EDC-4 Innovations (Double Secret Info) !

Rugged North Dakota Landscape

North Dakota Division Office

Sample EDC-4 Proposals:

Cold In-place Recycling - Wielinski ←

Concrete Overlay Treatments - Taylor

Concrete Pavement curling and warping tool - Merritt

High Tensile Strength Fiber Reinforced Asphalt Concrete ←

Highly Modified Asphalt - Kluttz ←

HIPERPAV Cloud System - Ruiz

In-Place Recycling - Dietz

Longitudinal Joint Stabilization - Harper ←

LWA for Surface Treatments - Castrodale

Nanomaterial Strengthener for Pavements -

pavement recycling - Wandtke ←

Permeable Pavements - Lee

Rapid reconstruction of concrete pavements

Roller Compacted Concrete - Harper

Thinlays - Copeland ←

Advance Highway Technology 2-0 for bridges - Akiu

Bridge Information Modeling - Maier

connecting devices for bridges - Hao

Hillman Composit Beam - Hillman

HMA Waterproofing for Bridge Decks - MASSDOT

low cracking deck concrete - Wandtke

LWA for Structural Concrete - Castro

Non-contact optical detection for bridge

CFRP strips for bridge decks -

Using Unmanned Aircraft for Bridge Inspections - Wallace

Bridge Preservation Toolkit - Dangelo

Mobile IT for Asset Management - Sturgill

Neatstreets for Asset Management

Pavement Preservation Toolkit - Lee

Advanced Geotechnical Systems - White

Culvert Relining - Lee

Lightweight Aggregate for Geotechnical Fill - Castrodale

Sheet Pile Abutments - Ford

5 Dimensional Project Management - Gransberg

ATC-VE Benchmarking - AGC-Deery

Construction Workforce Diversity - Harper

Consultant Procurement - Richins

Flash Tracking for Accelerated PD - Wandtke

Headlight for Construction partnering - Feliz

smart safety process management system - Grant

Corrosion Control Meter - Doucette

Cost Share Program - Harper

Embedded Data Collector Pile - Putcha

Fiber reinforced polymer - Chynoweth

Galvanized Pile - Harper

IR Scanning - Harper

LWA for Internal Curing of Concrete - Castrodale

Mobile IT Devices - Dadi

Radio Frequency Identification - MASSDOT

Steel Fiber Reinforcement - Harper

Tools for Risk Based Analysis -Varma

Underground Utility Electronic Marker Systems - Lee



FHWA's TFHRC

(Turner Fairbank Hwy Research Center)

North Dakota Division Office

Rugged North Dakota Landscape

TFHRC plays vital leadership role in developing and implementing coordinated highway research

- Vehicle/highway interaction
- Nanotechnology
- Safety
- Pavements
- Bridges/structures
- Human-centered systems
- Operations
- ITS
- Materials
- International research



What is SHRP2? (Second Strategic Highway Research Program)

North Dakota Division Office

Rugged North Dakota Landscape

SHRP2 Solutions have the power to change the way transportation agencies do business. SHRP2:

- ➔ *Provides new research-based tools and innovative products and processes*
- ➔ *Creates efficiencies*
- ➔ *Uses State and Federal taxpayer investment more effectively*

U.S. Department of Transportation
Federal Highway Administration

About Programs Resources Briefing Room Contact Search FHWA

FHWA AASHTO TRB

SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

Sign up RSS Contact Us

Home About Solutions Year SHRP2 Resources What's New Implementation Assistance FAQ

Save lives.
Save money.
Save time.

The second Strategic Highway Research Program (SHRP2) is at the forefront of transportation innovation—helping the Nation's transportation community improve safety, enhance productivity, boost efficiency, and increase reliability by introducing solutions that improve the country's highway network. [Read More](#)

What's New

New Brochure Highlights How States Will Use SHRP2 Safety Data in 11 Research Efforts

SHRP2 recently completed the largest study of in-vehicle driver behavior. The study collected trip and video data from more than 3,100 drivers over a 1- or 2-year period. A new brochure details how 10 State DOTs will use the newly available SHRP2 Naturalistic Driving Study and Roadway Information databases to pursue safety research across 11 topics.

[More of What's New](#)

Register Now for Implementation Assistance Webinars

Round 5 implementation assistance opens January 16, 2015. [Register now](#) for upcoming informational webinars to learn more.



SHRP2 Implementation Assistance Levels of Engagement

Rugged North Dakota Landscape

North Dakota Division Office

Proof of Concept Pilot

To evaluate product readiness.

Contractor support to collect data and evaluate the product application.

Lead Adopter Incentive

To help offset costs associated with product implementation and risk mitigation.

Recipients required to provide specific deliverables designed to further refine the product.

User Incentive

To support implementation activities, such as conducting internal assessments, changing processes, and organizing peer exchanges.



Further Information

North Dakota Division Office

Rugged North Dakota Landscape

- Every Day Counts
 - <http://www.fhwa.dot.gov/everydaycounts/>
- Turner Fairbank Hwy Research Center
 - <http://www.fhwa.dot.gov/research/>
- SHRP2
 - <http://www.fhwa.dot.gov/goshrp2/>
- Transportation Innovations Program (TRIP)
 - <https://www.dot.nd.gov/business/innovate>



Other Innovations

North Dakota Division Office

Rugged North Dakota Landscape

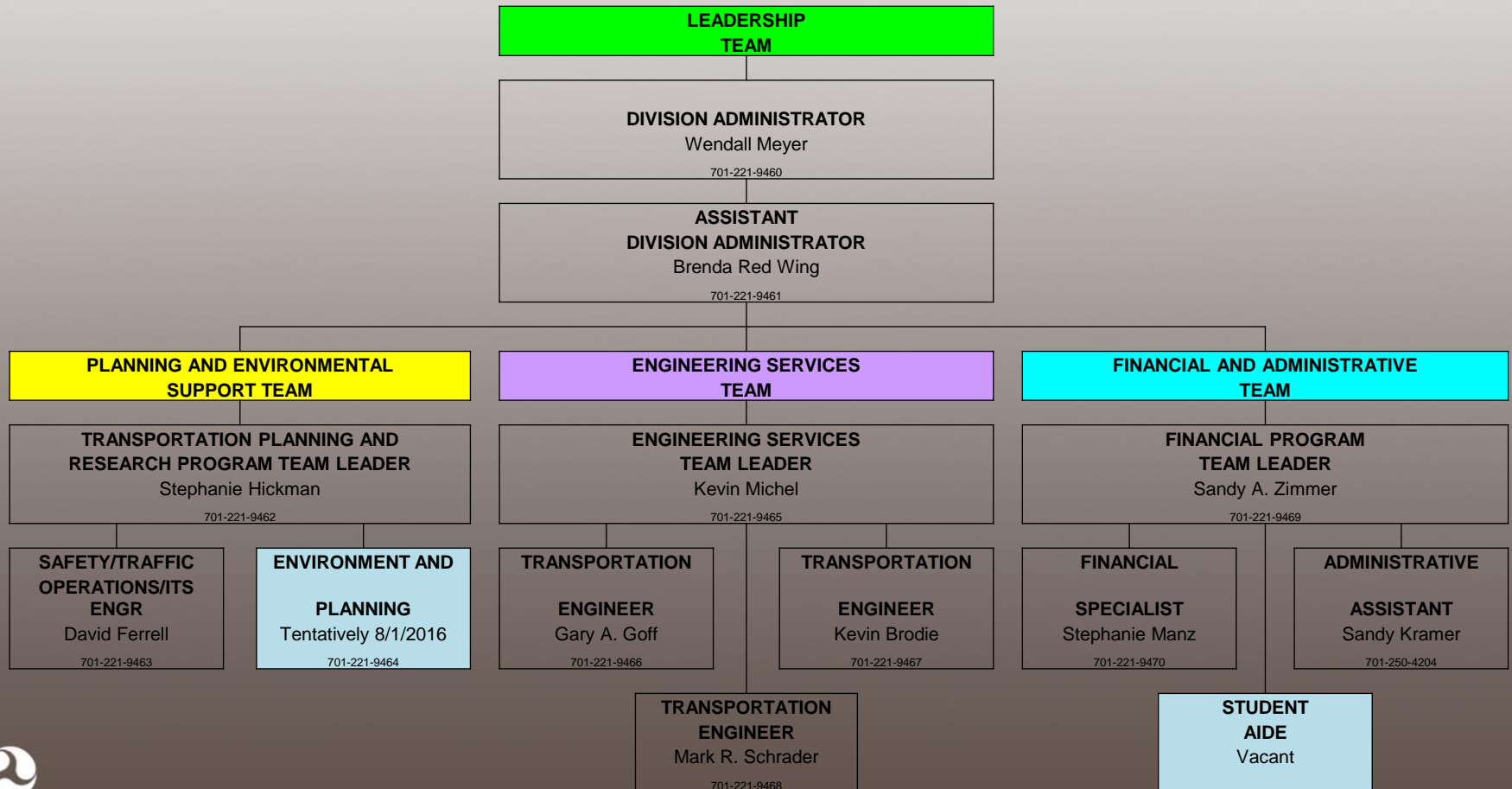
- All of our USDOT agencies each have emerging innovations
 - Smart Car and “V2V” – NHTSA
 - Rail crossing safety – FRA
 - Pipeline safety – PHMSA
 - Commuter safety – FTA
 - Airport Security – FAA



FHWA Office

Rugged North Dakota Landscape

North Dakota Division Office



Questions?

North Dakota Division Office

Rugged North Dakota Landscape

Kevin Michel, PE

FHWA Engineering

Services Team Leader

701-221-9465

Kevin.Michel@dot.gov

