

HEADQUARTERS  
NORTH DAKOTA HIGHWAY PATROL  
Bismarck, North Dakota

**Transportation Committee Meeting – August 20, 2015**

Submitted by  
Eldon Mehrer, Captain, NDHP

Good morning, Mr. Chairman and members of the Transportation Committee. My name is Eldon Mehrer, Captain with the North Dakota Highway Patrol. I will be giving an overview of our automated routing project.

Since 2009, the NDHP has seen an increase in the demand for oversize/overweight permits. In the past five years, the number of permits has increased by approximately 50,000 permits per year. Our agency had previously built an electronic permitting application that went online in 2002 with a limited amount of permit types available for purchase. In 2010 the “oversize” permit was added to the online application. This system was limited and could only sell basic oversize permits online due to the complexity of routing a super load. So anything with increased weights or routes had to be sent into the permit office for approval.

During the 62nd ND Legislative Assembly in 2011, Senate Bill 2308 was enacted to enhance the online electronic permit system as well as implementation of an automated routing system for the North Dakota Highway Patrol (NDHP). The agency was given authorization for a \$2,560,000 line of credit at the Bank of ND to accomplish the project and would fund the planning, installation and operating costs with a routing transaction fee.

NDHP partnered with the Information Technology Department (ITD) in the study and planning of the online system, including the development of the web based permitting application, and the ND Department of Transportation (NDDOT) on requirements gathering for the routing portion of the project.

The group determined the best course of action was to leverage the current web-based application system and procure an automated routing module. Several factors influenced this decision:

- Maximizing dollars already invested
- Leveraging the states 'single sign-on' authentication system for external customers who interact with multiple state agencies.
- The routing module needed to integrate into the state technical architecture, and utilize existing data from multiple sources. Those sources included:
  - The state GIS, mapping and data hub
  - NDDOT bridge and roadway data
  - Restriction and construction zone data from the NDDOT Traveler Information Map

Due to the magnitude of the oil impact, there was an increased need to get new features and functionality to users as quickly as possible; the rewrite was completed using a phased approach.

After implementation of Phases I and II, 75% of permits were initiated online. This was a 45% increase from 2011.

Automated routing went online June 12, 2013. On the first day of routing, 80% of all routable permits were completed online with no permit office intervention.

Two years after implementation the benefits and savings to industry and the state are evident. 97% of all permits are initiated and purchased online. 87% of routed oversize/overweight permits are issued without NDHP involvement through the E-Permit system within minutes, 24 X7.

After implementation, a data sharing exchange was established with the ND Association of Oil & Gas Producing Counties permitting system. This allows users of the county system to import limited data elements from the state into their county permit.

## Current Initiatives

The NDHP has several enhancements started or scheduled for Epermits:

- User Managed Vehicle Configuration
  - Allow the public users to define and manage their vehicle configurations. Weight and dimension information can be stored for each configuration, allowing them to select the information from a list when creating their permit. This will reduce the amount of data entry for each permit, resulting in user efficiency.
- Addition of Specialized Trailers
  - Increase data validation rules surrounding the use of different specialized trailers used for hauling large equipment and buildings. This will allow some specialized trailer movements to be completed without coming in for review. At this time, all specialized trailer configurations come in for review.
- General System Enhancements
  - Automated testing – This is a relatively new feature offered at ITD to expedite testing of new development. This will increase efficiency behind the scenes and allow the NDHP to get changes into production quicker.
- Redesign External System to enhance user options
  - Add additional options for public users to customize their experience.
- Move to Statewide Base Map – Planned but not scheduled
  - The current routing application uses a purchased routing network provided by TomTom. Once the statewide base map is available for use, our goal is to migrate away from TomTom and utilize the statewide base map.

## **Potential Future Enhancement:**

### *Statewide system for all ND permits.*

Our current permits and routing application can be modified to incorporate county permitting, leveraging the system infrastructure already established by the state. This would provide industry with a single processing point for permitting and a seamless route through the state of North Dakota.

The system could be designed to provide each county with the ability to set their own roadway data specifications, road restrictions, and closures. This information would then feed the state system. As not all permits can be issued automatically, each county would retain the ability to allow movements that exceed limitation. This could be accomplished by providing each county with an electronic approval process.

There are several differences between the state and county permitting processes. One of main differences is data specific. The state system requires detailed vehicle configuration information such as tire size, axle spacings, and bridge length. Other differences include, permit types available, fees for ton mile, duration of permit, and permit requirements. Ideally, these differences would be streamlined into a single process; however we believe that we can incorporate the differences into the system.

To accomplish this, the following would be needed:

- a. Funding authorization to utilize dollars from the motor carrier electronic permit transaction fund to facilitate the modification of the NDHP permit system, any licensing or contracts needed for state/county permit consolidation and collection of county roadway data.
- b. Possible legislation to allow the venture to occur.
- c. Cooperation between the state and counties.
- d. Process for distribution of funds that are collected for permits.

- e. Gathering and consolidation of all information that is needed in order to offer this service. Such as weight limitations, roadway date, and load restrictions.
- f. Additional resources may be required.

In your handouts, we have included a study of state and county permitting options that was completed by our project team in 2012 as part of our original project. Three of the four immediate opportunities have been completed as well as option 2.3.2 Integration with the ND Uniform County Truck Permit Program operated by the Oil and Gas Association.

Also, in your handouts are examples of restriction and roadway data that feed the routing application. This is the type of information that would be needed from the counties to facilitate routing.

Mr. Chairman, this concludes my comments regarding our routing application. I would gladly answer any questions the committee may have.

---

**State of North Dakota  
North Dakota Highway Patrol**



**Electronic Permitting and Routing Project  
White Paper: Study of County Permit & Routing Options**

---

**Prepared by: Permit Project Team**

**October 23, 2012**

# 1 Document Purpose

Provide a high level review of the current permitting system and future vision as it relates to the project.

## 1.1 Introduction

To assist in better serving the motor carrier industry, the Legislature passed SB2308 to create an updated electronic permit system with a new automated routing capability. Several years ago, the Highway Patrol (NDHP) worked with the Information Technology Department (ITD) to establish an on-line system for purchasing many types of oversize and overweight permits which works well for many of the standard types of loads. However, larger loads need to be “routed” around certain road types, structures, construction zones, etc. Currently, the only way to complete the “routing” process is with agency personnel checking for the best routing option: this process may include contacting the Department of Transportation (NDDOT).

The implementation of an Automated Routing Module has been contracted to ProMiles. At the completion of the project, the module will be fully integrated with the State’s on-line permit system. The new system will provide on-line access to all permit types, including most excessive load permit requests for the motor carrier industry 24 hours per day. Once implemented, a \$15 transaction fee is authorized to be added to the cost of each routable permit.

The NDHP permits for all state/federal roadways. This system includes an in-house point-of-sale system and a public facing e-commerce site called E-permits. The E-permits system was implemented in 2004 with four permits available. Additional permits have been added to the site over the last several years. In 2010, the NDHP added its top selling permit Oversize/Overweight to the site. Currently, a limitation of the Oversize/Overweight permit is excessive dimensions and/or weight must be reviewed by the NDHP/NDDOT prior to being issued. In 2012, 73% of all permits began online.

- There are approximately 36 permit types and 10 non-permit fees.
- In 2011, the NDHP sold 199,252 routable permits.
  - The routable permits are:
    - Oversize
    - Mobile Home
    - Work Over Rig
    - Bridge Length – Single Trip
    - Interstate – Single Trip
    - Longer Combination Vehicle (LCV)
    - Special Mobile Equipment

In October 2011, representatives from the NDHP and ITD, scheduled a trip to Williston to better understand the challenges the industry has been experiencing. Our project team met with CalFrac, Haliburton, Black Hills Trucking, and local HP troopers. The team also met with TeamWorks, the company that sells county permits for a consortium of Oil and Gas producing counties.

The following are some common struggles with all three trucking companies:

- The companies are operating multiple shifts and would like permitting to be available 24X7.
- County and State permits are not always valid for the same length of time.
- Spring load restrictions require companies to add several miles onto each trip to go around the restriction, and in some cases require extra fees for use. This makes permitting more difficult and time consuming.
- A single trip could contain route permissions from three entities; state, county and township.
- Permit education needs to be more robust. New companies do not always understand the permitting process.
- New ID supplements are taking 30 – 60 days to issue. (ID supplements are required for each power unit using self-issue permits.

## **1.2 Electronic Permitting Project**

The project will consist of two components that will run parallel. The first is the rewriting of the existing NDHP receipt/permit system into a web based application. The second component is the purchase and implementation of a commercial off-the-shelf (COTS) routing module that is able to retrieve information from the various NDDOT applications for state and federal roads. This will allow for the motor carrier industry to purchase and route their permit online with limited HP personnel intervention.

### **1.2.1 Receipt/Permit**

The receipt/permit component is to enhance and integrate the four current applications used for permitting into one application for state permits. In an effort to expedite the implementation process, the enhancement has been broken into four phases. The first two phases, addressed the public facing e-commerce site. The last two phases, will streamline the internal processes, including but not limited to finance, reporting and to complete the integration with the routing application.

- 2/1/2012 Implementation of Phase I (Completed)
  - Included in the phase was:
    - Online ID Supplements
    - Online Mobile Home 3507
    - Online Work Over Rigs
    - Adding user defined fields for each permit
    - Adding more search criteria for users to find permits
    - Request extension for permit
    - Update and revamp of all E-permit application pages
- 3/27/2012 Implementation of Phase II (Completed)
  - Included in this phase:
    - All remaining permit types are available online
    - Added axle configurations to the maintain power unit area
- 3/1/2013 Implementation of Phase III
- 6/1/2013 Integration with Routing Application

### **1.2.2 Enhanced Automated Routing**

In early 2012, the NDHP solicited proposals for the purchase and implementation of a COTS routing module to interface with the NDHP in-house oversize/overweight permitting application. The product will also utilize data from various Department of Transportation (DOT) systems for State and Federal roads. This contract was awarded to ProMiles.

The integrated system will allow the motor carrier industry to purchase and route their permit with limited HP personnel intervention. It will take into account roadways, height, width, weight restrictions for movement of the load and route the load movement accordingly.

The project team is currently planning the configuration and implementation schedule. The following is an estimate of deliverables:

- Project Plan - 10/26/12
- Preliminary Restrictions and Routing - 11/15/12
- Architectural Design – 12/7/12
- Bridge Analysis Development – 1/22/13
- Routing System and GIS Data Development – 4/12/13
- Search and Reporting Development – 1/18/13
- Integration Development – 4/18/13
- Documentation – 6/7/13
- Testing – 6/13/13
- GO LIVE – 6/24/13

## **2 Additional Project Enhancement Opportunities**

### **2.1 County Permitting Overview**

In September, our team consisting of members of the HP, ITD and NDDOT, met with representatives from the ND Uniform County Truck Permit Program. These representatives included ND Association of Oil & Gas Counties, TeamWorks Consulting, and DAWA. The objective of the meeting was to understand the business processes currently utilized by the Uniform County Permitting solution. In addition to the Williston meeting, the team interviewed persons from county road offices and documented permitting processes in two counties that are not members of the Oil and Gas Consortium.

The consortium offers both self-issue and automated permits for 17 oil and gas producing counties. A \$4 service fee is applied to each permit to cover the cost of producing the permit, the back-end systems and administrative support. The end-user can pay by credit card or the consortium will bill the end-user at the end of the month for each move. Payments are made directly to the counties. Permits available are over-dimensional, over-weight and rig moves. The permittee must contact the county for approval if their route includes a restricted roadway. Each county has the ability to provide restriction information to the consortium website. This is a running text-based list of restrictions. It is the responsibility of the county to manage the list.

While the consortium does offer rig move permits, Mountrail County offers a rig move permit independently of the consortium. The sheriff's office approves the sale and collects the fee. The consortium offers several services from self-issue permits to the restriction list; not every member utilizes all of the services.

The team also conducted a phone interview with Burleigh and Cass Counties to establish a comparison of permit and routing processes between the entities. Highlights of those conversations are:

- Burleigh County
  - Reviews oversize permit applications on paper.
  - Does not charge a fee.
  - Offers a single trip permit.
- Cass County
  - Application process is done via fax, but they scan the paper application into a repository later.
  - Charges a fee for each permit.
  - 4 permit types are available.

After gathering the information, the team reviewed all of the processes to identify any potential points of integration and made the following observations:

## **2.2 Immediate Opportunities:**

In an effort to improve navigation for the end user, the following could be accomplished fairly quickly, with minimal resources.

- NDHP could print a link to the ND Uniform County Truck Permit program on each permit.
- NDACO could add a link to both state and county permitting on their website.
- Any counties with a website, within the consortium, could add links for permitting.
- The State could develop a portal for obtaining any ND permits. Links for both State and County permits would be located on one page. All counties could provide a link to forms or information on obtaining permits for their county.

## **2.3 Intermediate Opportunities**

### *1. Using the routing feature to track county road restrictions only.*

- The option would allow any county to maintain their road restriction in the State's routing module. During the completion of a state permit, the system would issue a route for both state and county roadways. Upon payment of the state permit the application would notify the user that a county permit is needed prior to the completion of the load movement. The system would also notify each county affected in the route. This notification could be instantaneous via an email or weekly using a reporting tool.
  - To accomplish this option, the following would be needed:
    - a. Cooperation between NDHP and ND Association of Oil and Gas Producing Counties.

- b. Gathering and consolidation of all information that is needed in order to offer this service - maps and other data such as routing restrictions.

<b><u>Benefits</u></b>	<b><u>Challenges</u></b>
Option could include all counties.	All county road information, bridge information and road restrictions must be included within the auto-routing databases and all information must be current and up-to-date.
County personnel would be notified of each load movement on their roads.	Counties could choose not to participate.
Would provide a complete route to the customer for counties providing restriction information.	Routes provided to customers for non-participating counties may include county roads but not county restrictions.
Current permitting business processes would be maintained by each entity.	Would need to address questions of liability.
If costs would be minimal, the current project may be able to absorb the costs.	

2. *Integration with ND Uniform County Truck Permit Program operated by the Oil and Gas Association (Focusing only on the counties within the consortium).*

- o NDHP and ND Uniform County Truck Permit Program would continue to operate two separate systems that interface in some manner. This may include limited sharing of data between systems.
  - To accomplish this option, the following would be needed:
    - a. Funding for the joint venture.
    - b. Cooperation between NDHP and ND Association of Oil and Gas Producing Counties.
    - c. Gathering and consolidation of all information that is needed in order to offer this service - maps and other data such as routing restrictions.

<b><u>Benefits</u></b>	<b><u>Challenges</u></b>
Focusing on the uniform counties could expedite the integration process.	All county road information, bridge information and road restrictions must be included within the auto-routing databases and all information must be current and up-to-date.
Would make it a little easier for the consumer as some information could be passed to the Uniform County Permit application reducing data that would need to be keyed.	Members of the consortium could choose to opt out of this service. Reducing the number of participating counties.
Would provide a complete route to the customer for counties included in the consortium.	There would still be two separate payment processes.

<b>Benefits</b>	<b>Challenges</b>
Current business processes would be maintained by both entities.	May be confusing to the user to jump from the state permitting application to the county permitting application and potentially back again.
	Not all counties are included in the solution.
	May cause the customer confusion because they can only use the system for the counties within the consortium.
	Routes provided to customers that are not in the consortium may include county roads but not county restrictions.
	The benefits of this would be questionable as almost all of the permits used are self-permits and not permits entered into the system by the trucking industry.
	Modifications would need to be made to the Uniform County application to have fields in a format that matches ours.
	The integration process would only function when the customer needs both a state permit and a county permit. Would not allow a route for only a county permit.
	Implementation of this process during the routing project would require a timeline change.
	Would need to address questions of liability.

**2.4 Future Options:**

3. *Integration with ND Uniform County Truck Permit Program operated by Association of Oil and Gas Counties (Focusing only on the counties within the consortium).*

- o A process to offer a single portal for purchase of both state and uniform county permits by combining the applications. The application would be combined into one application with shared processes for billing and routing, while maintaining autonomy in other processes.
  - To accomplish this option, the following would be needed:
    - a. Funding for the joint venture.
    - b. Potential legislation to allow the venture to occur.
    - c. Cooperation between NDHP and ND Association of Oil and Gas Producing Counties.

- d. Integrated business processes such as permit types and costs.
- e. Process for distribution of funds that are collected for permits.
- f. Gathering and consolidation of all information that is needed in order to offer this service - maps and other data such as routing restrictions.
- g. Resources to maintain county restrictions.

<b>Benefits</b>	<b>Challenges</b>
Focusing on the uniform counties could expedite the consolidation process.	All county road information, bridge information and road restrictions must be included within the auto-routing databases and all information must be current and up-to-date.
Would provide a complete route to the customer for counties included in the consortium.	All counties participating will need to have agreement on business process changes.
Centralized processing	Would only benefit about 1/3 of the counties in the state and wouldn't provide any benefits to other counties.
Reduced cost of ownership	May cause the customer confusion because they can only use the system for the counties within the consortium
One payment	Customers would need to adjust to not having self-issue permits.
	Would need to address questions of liability

4. *“One stop shop” for all ND permits.*

- o A process to offer a "one stop shop" for both state and ALL counties in North Dakota. This would require that a system be built specifically for this purpose or the current NDHP system would need to be modified to include ND counties.
  - To accomplish this option, the following would be needed:
    - a. Funding for consolidation and collection of roadway data.
    - b. Legislation to allow the venture to occur.
    - c. Total and complete cooperation between NDHP and all counties in North Dakota.
    - d. Decision regarding what permit types will be required for travel on ALL State and County roads.
    - e. All business processes would be consolidated and potentially remodeled.

- f. Process for distribution of funds that are collected for permits.
- g. Gathering and consolidation of all information that is needed in order to offer this service - maps and other data such as routing restrictions.
- h. Additional resources may be required.

<b>Benefits</b>	<b>Challenges</b>
One central location/process for industry to conduct business (purchasing of permits).	Creating a process that would allow for permitting to be consolidated with State/all ND counties.
One central location/process for both the state and counties to handle permitting.	Counties may feel that the control has been taken out of their hands and placed with the state.
Easier for the consumer to purchase a permit – single point for entering information.	Cooperation between State/all ND counties.
All payments would be made at one time.	All counties would need to agree on fees/processes.
Allow for quicker turn-around for permits.	Need to make sure that counties are providing current and up-to-date information – roads, restrictions, bridges.
Would be able to provide a route to the customer that would include county restrictions.	Adequate computer oriented staffing in the counties to process permits through the application.
Standardization of rules and regulations.	Would need to create a county approval process for permits not allowed by routing.
Increased reporting would help manage state and county infrastructure.	Maintenance of weather related issues happening through a day.
Standardization would make enforcement easier.	Would need to get a standard approach for each county on management principles and would need to have consistent data formats for county roads.
	If any county roadway data is out-of-date, it would need to be updated and then managed to ensure that it stays current. This could result in a need for additional resources to maintain this data.
	May not reduce the involvement of county engineers
	Would need to address questions of liability.

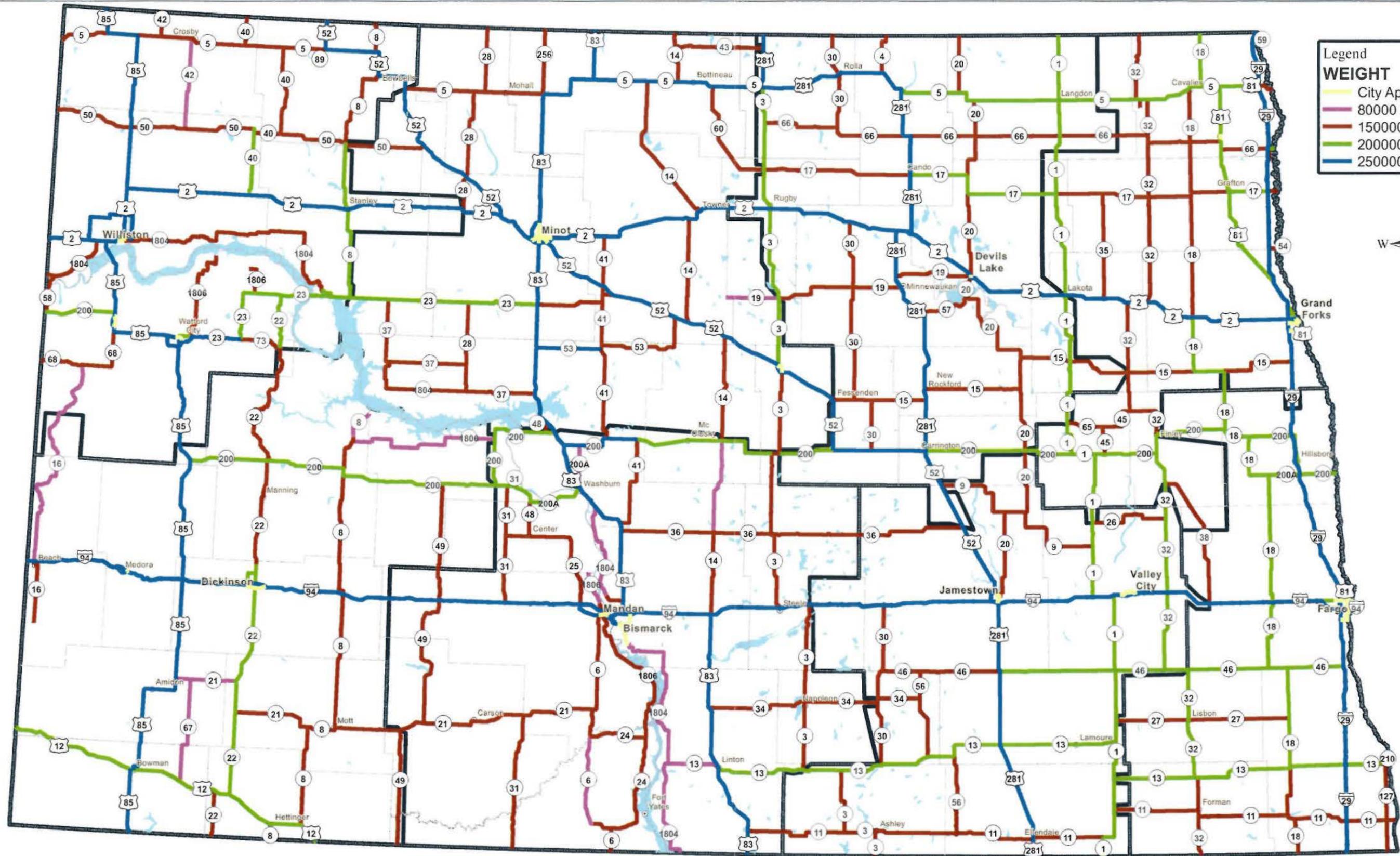
### 3 SUMMARY

In summary, several options have been identified as technologically feasible. The options range from basic notifications of a route involving county roads to complete consolidation of permitting and routing. The amount of time needed to analyze and implement each option increases as

the complexity rises. The same is true in regards to legislation and additional resources that may be required. For any option to be successful, the counties would need to provide roadway data including bridge and restriction information.

Option 1 would be a “Quick Fix” solution that would allow county road information, including restrictions to be managed by the county, within the State’s routing solution. County permitting would not be affected. The State would notify the county permitting solution as well as the county road maintenance office of any routes affecting their roadways. Option 2 would expand on that concept but facilitate a form of data integration with the Uniform County Truck Permit Program operated by the Association of Oil and Gas Counties. Options 3 & 4 are considered long-term alternative solutions as they are more complex and would require study and coordination on many levels. Option 3 would combine the Uniform County Truck Permit Program and the State permitting efforts in one system. Option 4 expands that concept to include all counties in the state.

Each option has a variety of benefits and challenges to both the State and counties, as well positive impacts for industry.



**Approved Routes for GVW up to 250,000 LBS**

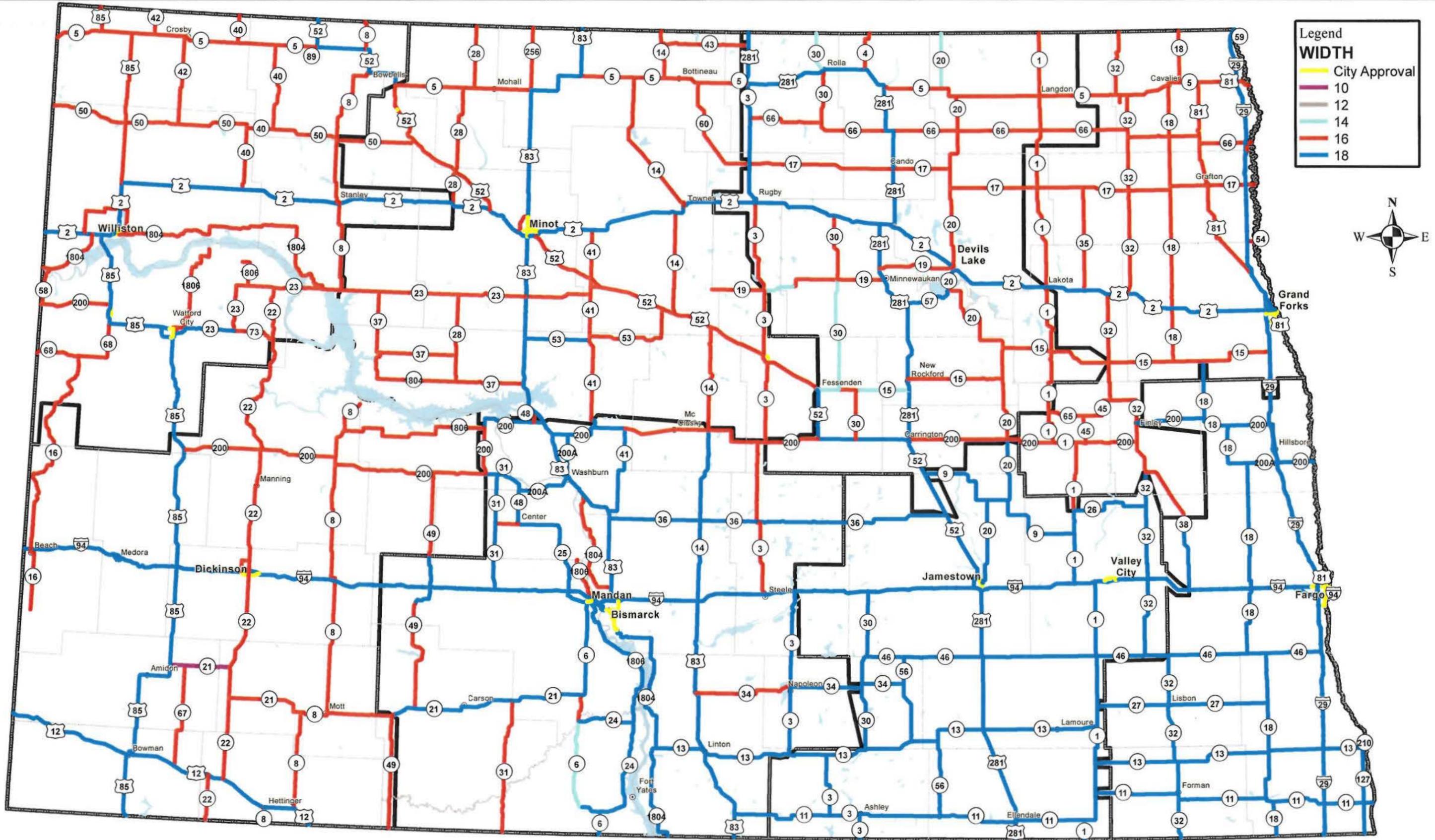


Path: F:\MAINT\HwyPfr10\Automated routing and permitting\GIS\Weight Limitations.mxd

*Grant Levi*  
 GRANT LEVI, P.E.  
 NDDOT DIRECTOR

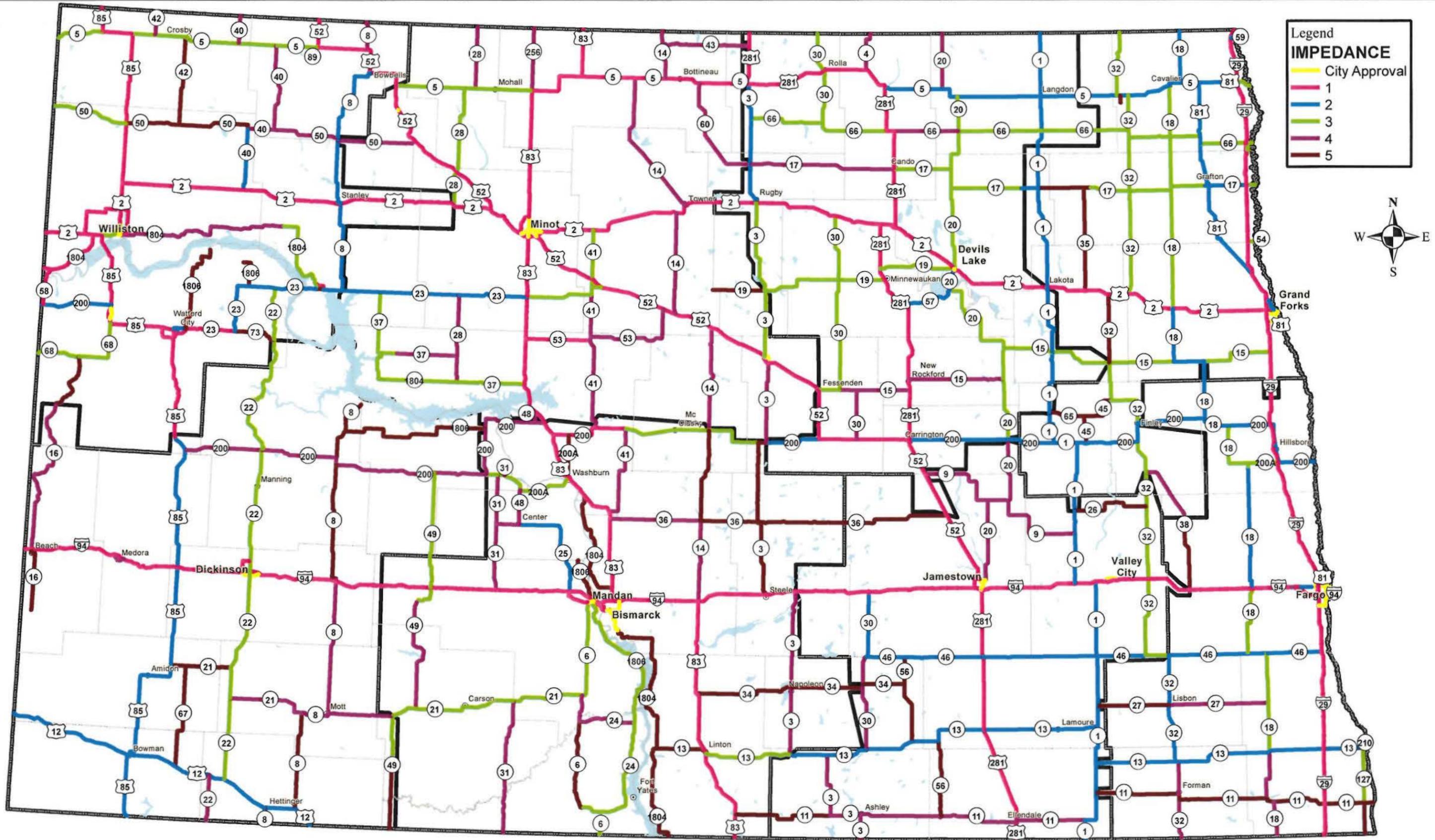
8/6/15

DATE  
 Revised: 8/6/2015



## Width Limits for Vehicles on North Dakota State Highways





## Impedance Values for Vehicles on North Dakota State Highways

