

ROAD TRAIN PILOT PROGRAM STUDY - BACKGROUND MEMORANDUM

Section 2 of Senate Bill No. 2176 (2019) directs the Legislative Management to study the feasibility and desirability of creating a road train pilot program. The study must include consultation with the Department of Transportation (DOT), Highway Patrol, Agriculture Commissioner, Industrial Commission, Department of Commerce, the Upper Great Plains Transportation Institute (UGPTI), and the Governor. The study must include an assessment of the federal regulations impacting road train operations, the economic impact of permitting road train operations in the state, and the costs associated with implementing a road train pilot program. The Legislative Council may contract for consulting services to assist the Legislative Management in conducting the study.

BACKGROUND Study Directive

Senate Bill No. 2176, as introduced, would have required DOT to establish a statewide road train pilot program, in collaboration with South Dakota and Minnesota transportation officials and agencies. The bill also would have required DOT to consult with a committee designated by the Legislative Management in establishing the pilot program and to establish the parameters and policies regarding the use of road trains on state highways, including routes, hours of operation, and length and width restrictions. The bill would have required a Legislative Management study of the feasibility and desirability of creating a road train pilot program.

The Senate amended the bill to remove a \$200,000 appropriation to conduct the study. The House further amended the bill to make the pilot program by DOT contingent on the favorable recommendation of the Legislative Management and completion of the study.

Testimony

Testimony indicated the intent of the bill was to allow a pilot program to be put into place without waiting 2 years for the next legislative session. The bill allows DOT to establish and implement a pilot program as soon as the interim committee completes its study and if there is a favorable recommendation from the Legislative Management.

Testimony indicated there is a shortage of 900,000 truck drivers with a commercial driver's license (CDL) in the United States, and a proportional truck driver shortage exists in Canada. It was noted Australia and several countries in Europe are using road trains and platooning as a way to move large amounts of freight with a shortage of CDL-licensed truck drivers. Road trains have not been used in North America.

Before implementing a road train program, it was emphasized a study of possible safety issues and how road trains may affect the roadways in the state is needed.

Support for the bill noted road trains would help fill the gap between the shortage of CDL drivers in the state and the capacity of railroads to move freight. The testimony also indicated North Dakota is an ideal location for a road train pilot program due to the low population and relatively flat terrain.

Testimony indicated there is concern that a road train may be very hard on the roads in the state. Although shipping costs may be reduced, additional road maintenance costs may offset the reduced shipping costs.

Representatives of the North Dakota Motor Carriers Association, the Department of Agriculture, and the Red River Valley & Western Railroad Company testified in support of the study.

ROAD TRAINS AND PLATOONING

A road train is a trucking vehicle consisting of two or more connected trailers or semitrailers linked and hauled by a single operating prime mover or tractor unit in the front. Australia has used road trains since World War I.

According to the European Automobile Manufacturers Association, truck platooning is the linking of two or more trucks in convoy, using connectivity technology and automated driving support systems. These vehicles automatically maintain a set, close distance between each other when they are connected for certain parts of a journey, for instance on motorways. The truck at the head of the platoon acts as the leader, with the vehicles behind reacting and adapting to changes in its movement--requiring little to no action from drivers. In the first instance, drivers will remain in control at all times, so a trucker can also decide to leave the platoon and drive independently. Platooning vehicles also each may have an individual person located in the vehicle controlling it.

STATE AND FEDERAL MOTOR VEHICLE LENGTH AND WEIGHT LIMITATIONS

Federal Law

The United States Department of Transportation's Federal Highway Administration is responsible for certifying state compliance with federal standards regarding commercial motor vehicle (CMV) size and weight to preserve the nation's infrastructure and keep vehicles moving efficiently on the highways.

Width Limitations

The federal government first enacted size regulations for CMVs with the passage of the Federal-Aid Highway Act of 1956. This Act provided a maximum vehicle width of 96 inches on the interstate highway system. Subsequently, the Federal-Aid Highway Act of 1976 increased the allowable width for buses to 102 inches. The Surface Transportation Assistance Act of 1982 (STAA) extended the width requirement of 102 inches to commercial trucks. At the same time, the STAA expanded the highway network on which the federal width provision applied from the interstate to the National Network of highways.

Federal width limits do not apply to special mobile equipment, which consists of self-propelled vehicles not designed or used primarily for the transportation of persons or property and only incidentally moved over the highways. Special mobile equipment includes military or farm equipment, instruments of husbandry, road construction or maintenance machinery, and emergency apparatus, including police and fire emergency equipment. Federal rules do not require states to issue overwidth permits before allowing operation of special mobile equipment. However, if states wish to allow other vehicles more than 102 inches wide, i.e. nonspecial mobile equipment, to operate on the National Network, states must issue special overwidth permits.

Length Limitations

The STAA also regulated the length of CMVs. In 1982 Congress established minimum length standards for most commercial truck tractor-semitrailers and for twin trailers pulled behind a truck tractor. Congressional involvement in vehicle length reflected the desire to standardize the enforcement of length along the National Network and to eliminate any administrative and operating confusion caused by varying state provisions governing commercial vehicle length along that element of United States highways.

The minimum allowable length limit for the semitrailer in a truck tractor-semitrailer combination is 48 feet or the grandfathered limit for a particular state. A state may not impose an overall vehicle length limit on a truck tractor-semitrailer combination operating on the National Network or reasonable access routes, even if the trailer is longer than the minimum length required by federal law. A state may not impose an overall length limit on a truck tractor pulling a single semitrailer or a limit on the distance between the axles of such a truck tractor. A truck tractor is defined as a non-cargo-carrying power unit used in combination with a semitrailer. A truck that carries cargo on the same chassis as the power unit and cab, commonly known as a straight truck, is not subject to federal regulations, but is subject only to state provisions. Likewise, a straight truck towing a trailer or semitrailer is subject only to state vehicle length regulation, except that the total length of its two cargo-carrying units may not exceed a federally established limit of 65 feet.

The minimum allowable length states must allow for truck tractor-semitrailer-trailer combinations on the National Network is 28 feet. States also must allow the continued use of 28.5 foot semitrailers that were in use on December 1, 1982, provided the overall length of the combination does not exceed 65 feet. The maximum overall length of cargo-carrying units that states may allow for twin trailer combinations when one trailing unit is longer than 28.5 feet is determined by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA).

Semitrailers up to the maximum length which were lawfully operating in a truck tractor-semitrailer combination in a state on December 1, 1982, may continue to operate after that date. To clarify what these lengths were for each state, "grandfathered" semitrailer lengths have been established by regulation. The grandfathered length in North Dakota is 53 feet.

A "B-train" is a truck tractor-semitrailer-semitrailer combination. In this combination, the two trailing units are connected by a fifth wheel attached to a frame under the first semitrailer which extends beyond the rear of that semitrailer (the so-called "B-train" hitch). The second semitrailer connects to the first at this fifth wheel. B-train combinations are subject to the same length limits (65 feet) as truck tractor-semitrailer-trailer combinations.

Height Limitations

There is no federal vehicle height requirement for CMVs. Thus, states may set their own height restrictions. Most height limits range from 13.5 feet to 14 feet, with exceptions granted for lower clearance on particular roads.

State Law

Under North Dakota Century Code (NDCC) Chapter 39-12, motor vehicles are limited as to width, height, length, and weight but are allowed special permits under certain circumstances and are exempt if of a certain type.

Width Limitations

North Dakota Century Code Section 39-12-04 provides for width, height, and length limitations and exceptions to those limitations. The width limitation is 8.5 feet. However, the limitation does not apply to:

- Construction equipment up to 10 feet.
- Implements of husbandry by resident farmers but not at night on interstate highways.
- Daytime, noncommercial movement of haystacks or bales.
- Commercial movement of haystacks or bales, self-propelled fertilizer spreaders or chemical applicators, portable grain cleaners, forage harvesters, and hay grinders. However, these vehicles need a seasonal permit valid for daytime. The permits are valid anytime for fertilizer spreaders and chemical applicators. The permits require proof of financial responsibility. By rule, the permits for haystacks and bales allow for up to 12 feet if not designed for hay, and 12.83 feet if bail handler trailers.
- Safety devices required by the Highway Patrol.
- Non-load-carrying safety appurtenances.

North Dakota Century Code Section 39-12-06 prohibits a motor vehicle from having a load beyond 12 inches from the fenders.

Height Limitation

The height limitation for vehicles operated on highways in the state is 14 feet; however, the limitation does not apply to vehicles up to 15.5 feet which are implements of husbandry not used on the interstate highway for short daytime trips.

Length Limitations

The length limitation is 50 feet for a single unit vehicle with two or more axles; 75 feet for a combination of two, three, or four units; 110 feet for a combination of two, three, or four units operated on four-lane divided highways and designated highways; 53 feet for a trailer or semitrailer; and 60 feet for towed vehicles. The length limitations do not apply to:

- Building equipment.
- Tow trucks.
- Armed forces and National Guard vehicles.
- Telephone company materials.
- Truck-mounted haystack moving equipment under 56 feet.
- A truck tractor and semitrailer or truck tractors, semitrailer, and the trailer on the interstate highway system or parts of the federal-aid primary system when designated.
- Safety and energy conservation devices.

Recreational campers may exceed the width limitation by no more than six inches on either side of the vehicle if attributable to an appurtenance that extends beyond the body of the vehicle.

Weight Limitations

North Dakota Century Code Section 39-12-05 provides for weight limitations on the interstate highway system. These limitations are:

- Wheel load limitation - 10,000 pounds or one-half of axle load.
- Tire load limitation - 550 pounds per inch of width.
- Single axle limitation - 20,000 pounds.
- Multiple axles over 40 inches and under 8 feet apart - 17,000 pounds per axle.

The gross weight limitation is 80,000 pounds. The limitations may be less for a particular vehicle based on the distance between the extremes of any group of consecutive axles and axle numbers. A vehicle with two consecutive sets of tandem axles may carry a gross load of 34,000 pounds if there is 36 feet between the axles. North Dakota Century Code Section 39-12-05.2 allows a person to operate a vehicle on the interstate highway system at the highest weight allowed by congressional action, regardless of state law. Under federal law, 49 CFR 658 and a result of congressional passage of the STAA and the ISTEA, there are limits on the size and weight of vehicles on the interstate system and other qualifying federal-aid primary system highways. For instance, the length and weight limitations grandfathered in North Dakota for longer combination vehicles are 103 feet and 105,500 pounds.

Under NDCC Section 39-12-01, the governmental entity with control over a highway may classify the highway and limit the weight and loads of vehicles on the highway. In addition, under NDCC Section 39-12-03 the proper authority with jurisdiction over a highway may limit the weight of vehicles on a highway due to climatic conditions. The governmental entity must direct signs with the road restrictions. North Dakota Century Code Section 39-12-05.3 provides for general weight limitations on highways other than the interstate system. The weight limitations are by tire, wheel, and axle loads. These limitations are:

- Wheel load limitation - 10,000 pounds or one-half of axle load.
- Tire load limitation - 550 pounds per inch of width.
- Single axle limitation - 20,000 pounds.
- Tandem axles over 40 inches and under 8 feet apart - 34,000 pounds.
- Triple or more axles over 40 inches and under 8 feet apart - 48,000 pounds.

In addition, there are gross weight limitations of 105,500 pounds on the state highways and 80,000 pounds on all other highways unless otherwise designated. These limitations may be less for a particular vehicle based on distance between the two farthest axles and axle numbers.

The gross weight limitations do not apply to equipment approved by the director of DOT and the Highway Patrol up to a limit of 105,500 pounds to which a 1-year nontransferable permit is issued. The governmental entity with authority over a highway may issue harvest permits that allow a motor vehicle to exceed weight limitations by 10 percent up to 105,500 pounds. These permits are for agricultural products moving from the field of harvest to the point of initial storage or for the collection and transport of solid waste during the period of July 15 to December 1. A wintertime permit is allowed for the general movement of products from December 1 to March 7. The governmental entity may issue a permit for vehicles carrying potatoes or sugar beets from July 15 to December 1 to exceed the weight limitations by 10 percent not to exceed 105,500 pounds. The gross weight limitations do not apply to self-propelled fertilizer spreaders and agricultural chemical applicators with a single axle limitation of 22,000 pounds and a tire load limitation of 550 pounds per inch of width. However, these vehicles need a seasonal permit issued by the Highway Patrol.

Under NDCC Section 39-12-05.3(6), for \$100 per month or \$700 per year, the director of DOT may issue a permit for a truck with a gross weight that exceeds 105,500 pounds, not to exceed 129,000 pounds.

The weight limitations do not apply to equipment approved by the director of DOT and Highway Patrol for exemption, except the weight limitations for an interstate apply to these vehicles. The Highway Patrol must issue a nontransferable bridge length permit valid for a single trip or a calendar year for the movement of these vehicles.

North Dakota Century Code Sections 39-12-07 through 39-12-22 provide for enforcement and fees for violating the chapter.

North Dakota Century Code Section 39-12-02(1) allows the Highway Patrol and, when appropriate, local authorities to charge for and issue special written permits to operate a vehicle exceeding the size or weight maximums specified in NDCC Chapter 39-12. The permit may designate the route and name any other restriction or condition imposed by the issuer. Under this section, the Highway Patrol has adopted rules under North Dakota Administrative Code (NDAC) Chapter 38-06-02. The rules allow for single trip permits and require flags, signs, mirrors, escorts, routes, insurance, and travel restrictions. In addition, the Highway Patrol has adopted under NDAC Section 38-06-03-01 permit fees, and under NDAC Section 38-06-04-01 has determined the liability of the permittee.

Under NDCC Section 39-12-02(2), there are special provisions for the movement of a new manufactured building or modular unit from outside this state to be located inside this state. In addition, NDCC Section 39-12-02(3) provides for the following minimum fees:

- 10 percent weight exemption for harvest and wintertime - \$50 per month or \$250 per year.
- Non-self-issuing interstate permits - \$10 per trip or \$300 per year.
- Special mobile equipment - \$25 per trip (\$50 or \$75 for workover rig).
- Engineering - \$25 per trip.
- Faxing - \$5.
- Single trip permit - \$20 per trip.
- Bridge length permit - \$30 per trip or \$150 per year.
- Longer combination vehicle permit - \$100 per month.
- Overwidth vehicle - \$20 per trip or \$150 per year.
- Noncommercial fishhouse - \$20 per year.
- Overlength vehicle - \$20 per trip or \$150 per year.

Under NDAC Section 38-06-03-01 permit fees are designated in the following amounts:

- Excess weight on interstate - \$10 per trip.
- Seasonal permit for certain overwidth agricultural motor vehicles - \$50 per year.
- Overweight single trip movements exceeding 150,000 pounds - Graduated schedule from \$30.
- Escort fee - 50 cents per mile and \$50 per hour.

2015-16 INTERIM STUDY RELATING TO TRUCK SIZE AND WEIGHT PROVISIONS

Section 10 of House Bill No. 1012 (2015) directed a study of the truck size and weight provisions under NDCC Chapter 39-12 relating to size, width, and height restrictions. The findings of the study were to be used in collaboration with an UGPTI and DOT study of the impacts to the state of harmonizing truck size and weight regulations with states in the Western States Transportation Alliance (WSTA).

The committee received information from organizations including WSTA, UGPTI, and the Highway Patrol. The Western States Transportation Alliance has a compact to harmonize commercial vehicle weight and size limits for longer combination vehicles with 8 of the 10 members of the alliance, including North Dakota and 6 non-WSTA states. The committee reviewed a comparison of height, width, length, and weight limitations for vehicles in the states of North Dakota, Idaho, Minnesota, South Dakota, Montana, and the Canadian provinces of Saskatchewan and Manitoba:

State/Province ¹	Height	Width	Length	State Highway Gross Weight	Interstate Gross Weight
Idaho	14 ft	8 ft 6 in	97 ft	129,000 lbs ²	105,500 lbs
Minnesota	13 ft 6 in	8 ft 6 in	75 ft	80,000 lbs	80,000 lbs
Montana	14 ft	8 ft 6 in	100 ft	131,600 lbs ³	131,600 lbs
North Dakota	14 ft	8 ft 6 in	110 ft	105,500 lbs	105,500 lbs
South Dakota	14 ft	8 ft 6 in	100 ft	State bridge formula ⁴	129,000 lbs
Manitoba	13 ft 8 in	8 ft 6 in	65 ft 8 in	137,800 lbs	137,800 lbs
Saskatchewan	13 ft 8 in	8 ft 6 in	65 ft 8 in	140,000 lbs	140,000 lbs

¹All states or provinces listed provide special permits for height, width, length, and weight loads that exceed the restrictions listed and allow other exceptions.

²Idaho interstate highways are grandfathered up to 105,500 pounds and 129,000 pounds on all state highways.

³Montana allows 131,600 pounds provided that any vehicle carrying a divisible load over 80,000 pounds must comply with the federal bridge formula. Select roads allow 137,800 pounds under the Montana/Alberta Memorandum of Understanding subject to federal regulations.

⁴South Dakota allows 80,000 pounds on interstate highways with the exception of grandfathered routes which allow 129,000 pounds and utilizes the state bridge formula for noninterstate highways.

Additionally, UGPTI and DOT studied the impacts to the state of harmonizing truck size and weight regulations with states in WSTA. The final report by UGPTI in 2016 indicated the following key findings:

- Truck harmonization would reduce shipper costs for shipments that can take advantage of increased loading, for both intrastate and interstate long-combination vehicles.
- The increased size and weight of trucks would reduce the number of trucks on the roadways. The number of semi- and long-combination trucks carrying divisible loads would be reduced by 31 to 36 percent.
- Bridge analysis due to increased truck weights yielded as much as \$2.26 billion in statewide bridge replacement needs with approximately \$716 million occurring on the state system.
- Local road connectivity issues include inadequate roadway intersection geometry to accommodate longer trucks that require larger turning radii, and increased traffic delay in urban areas and signalized intersections.
- Agency and association impacts were identified for updating software, websites, printed materials, and staff for motor vehicle registration, permitting, and enforcement.
- The crash analysis and seasonal trip generation analysis were inconclusive due to a lack of data.
- Stakeholder outreach indicated commercial shippers would upgrade their fleets to take advantage of increases in allowable truck size and weights.
- Changing from North Dakota's existing exterior bridge formula to the interior/exterior bridge formula would reduce the allowable legal loads on a triple axle by 6,000 pounds. and would also increase law enforcement time required to verify a vehicle's legal weight.

The Transportation Committee did not make any recommendations as a result of its truck size and weight harmonization study. However, the Legislative Assembly passed House Bill No. 1255 (2017), which authorized the director of DOT to issue a permit for a truck with a gross weight that exceeds 105,500 pounds, not to exceed 129,000 pounds. The bill provided the permit fee is \$100 per month or \$700 annually.

2019 Legislation

The Legislative Assembly adopted House Bill No. 1199 (2019) which exempted a nonlead vehicle from the prohibition on following another vehicle too closely, provides a definition for the term "platoon," and requires DOT, in coordination with the Highway Patrol, to develop an operational plan that provides guidelines for operating a platoon.

STUDY APPROACH

In conducting this study, the committee may wish to receive testimony from:

- The Department of Transportation (state and federal);
- The Highway Patrol;
- UGPTI;
- The Agriculture Commissioner;
- The Industrial Commission;
- The North Dakota Motor Carriers Association; and
- The Department of Commerce.

The committee may seek testimony regarding an assessment of the federal regulations impacting road train operations, the economic impact of permitting road train operations in the state, and the costs associated with implementing a road train pilot program. The committee also may seek additional information regarding road trains, platooning, and best practices from organizations such as the National Conference of State Legislatures.