



# Impacts of Implements of Husbandry on Local Roads

In 1993, MN passed a law exempting Implements of Husbandry (IOH) from size, weight and load restrictions. Over the last two decades, as farming practices have changed from family to corporation, the size and weight of IOH have increased dramatically. As IOH continue to increase in size and weight, there is a serious concern about how these IOH are damaging roads. The states

surrounding Minnesota have addressed this concern by establishing maximum gross weights and gross axle weights; Minnesota has not. This brochure provides background information on the history of IOH; summarizes neighboring states' IOH weight restrictions and provides links to recent research data that details the damaging effects IOH have on pavements.

## History:

The 1993 law exempting IOH from size, weight and load restrictions was established due to influence from the agriculture industry. In recent years, farms have consolidated and increased in size significantly, requiring farm equipment manufacturers to respond by producing larger and heavier equipment.

Changes to the law in 2009 require IOH to comply with posted **bridge** weight restrictions. However, the change did not address the concerns of **pavement** damage to roads and highways. The Minnesota Department of Transportation (MnDOT), local road authorities and industry partners are concerned about the potential damage to pavements due to this increased size and weight. In 2001, MnDOT conducted a scoping study on the impact of agricultural equipment on Minnesota's low-volume roads. One of the recommendations from the study was to conduct an investigation using the MnROAD Pavement Test Facility to specifically address pavement damage due to agricultural equipment. The LRRB then participated in a five-year pooled-fund study titled [Effects of Implements of Husbandry \(Farm Equipment\) on Pavement Performance](#) at MnROAD to test the impacts of various IOH on fully instrumental pavements of different thicknesses. Furthermore, the project aimed

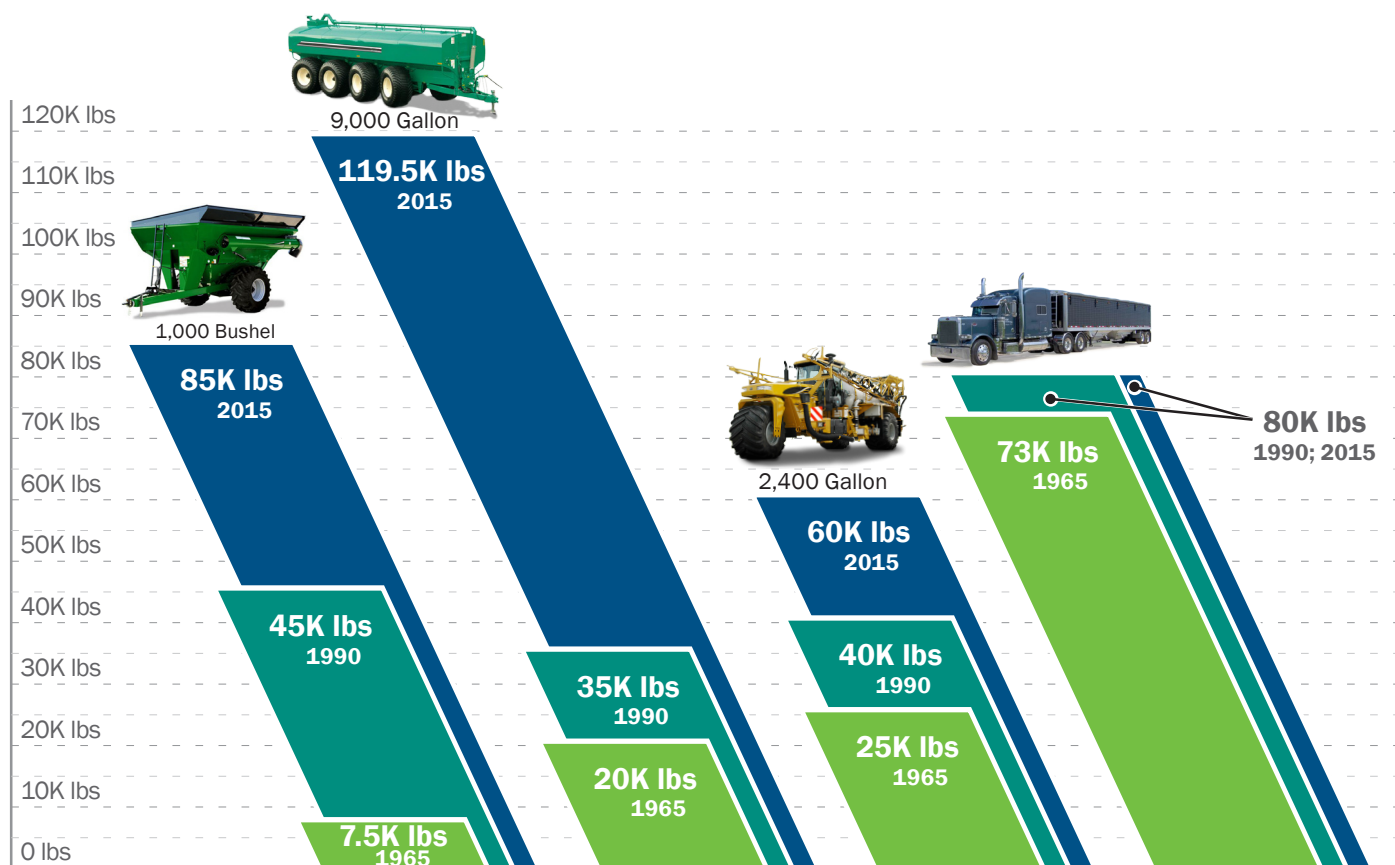
to quantify the pavement damage caused by heavy farm equipment as compared to the damage caused by a typical 5-axle, 80 kip semi-truck. The report was published in 2012 and provides many specific findings, with these major findings:

- Pavement was significantly impacted by IOH
- Pavement response is governed by axle weight, not gross vehicle weight
- Fully loaded farm equipment should not be allowed to drive on pavements as they cause significant damage. Additional increase in pavement damage occurs during certain conditions: Fully saturated soil, thawed base/subbase and high asphalt concrete temperature



Source: LRRB Study "Effects of IOH on Pavement Performance"

## Average Fully-Loaded Gross Weights of Different IOH Over Time



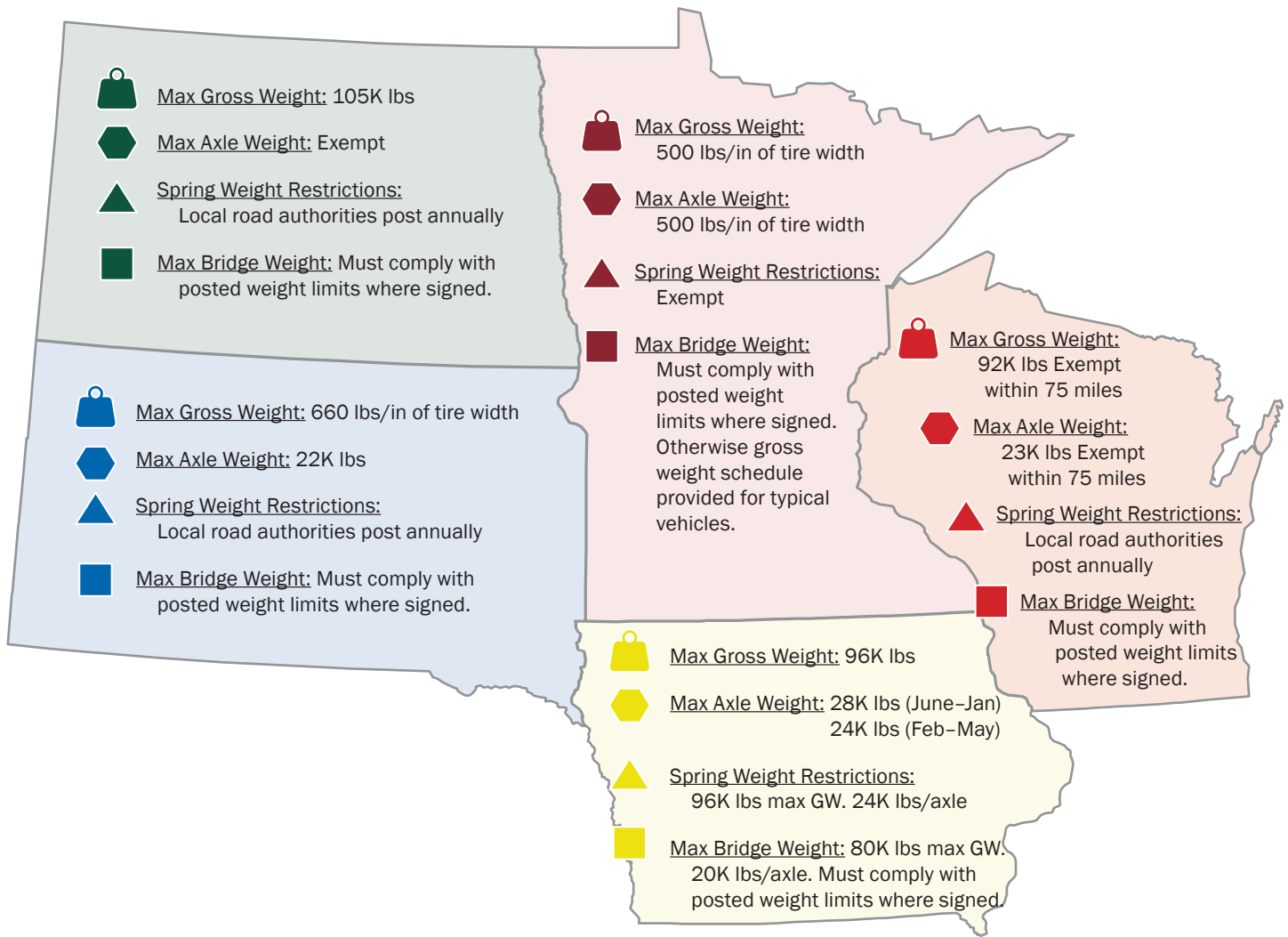
|      | Grain Cart* | Liquid Manure* | Terragator | Semi Tractor Trailer<br>(Legally Loaded) |
|------|-------------|----------------|------------|--|
| 1965 | 7,500 lbs   | 20,000 lbs     | 25,000 lbs | 73,000 lbs                               |
| 1990 | 45,000 lbs  | 35,000 lbs     | 40,000 lbs | 80,000 lbs<br>(on designated roads)      |
| 2015 | 85,000 lbs  | 119,500 lbs    | 60,000 lbs | 80,000 lbs<br>(on all roads)             |

\*These weights do not include the weight of the tractor that pulls them

## How IOH Have Increased In Size Over Time

|      | Grain Cart  | Liquid Manure  | Terragator  |
|------|---|--|---|
| 1965 | <br>125 Bushel   | <br>1,200 Gallon | <br>1,500 Gallon |
| 1990 | <br>600 Bushel   | <br>4,600 Gallon | <br>1,800 Gallon |
| 2015 | <br>1,000 Bushel | <br>9,000 Gallon | <br>2,400 Gallon |

# Comparison of Maximum IOH Allowable Weights By Neighbor States



|                     | <b>Maximum Gross Weight</b>                  | <b>Maximum Axle Weight</b>                   | <b>Spring Weight Restrictions</b>        | <b>Maximum Bridge Weight</b>   |
|---------------------|--|--|--|--|
| <b>Minnesota</b>    | 500 lbs per inch of tire width               | 500 lbs per inch of tire width               | Exempt                                   | Must comply with posted weight limits where signed. Otherwise gross weight schedule provided for typical vehicles. |
| <b>Iowa</b>         | 96,000 lbs                                   | 28,000 lbs                                   | 24,000 lbs per axle<br>96,000 lbs max GW | Must comply with posted weight limits where signed.<br>20,000 lbs per axle<br>80,000 lbs max GW                    |
| <b>North Dakota</b> | 105,500 lbs                                  | Exempt                                       | Local road authorities post annually.    | Must comply with posted weight limits where signed.  |
| <b>South Dakota</b> | 660 lbs per inch of tire width               | 22,000 lbs                                   | Local road authorities post annually.    | Must comply with posted weight limits where signed.  |
| <b>Wisconsin</b>    | Exempt within 75 miles, otherwise 92,000 lbs | Exempt within 75 miles, otherwise 23,000 lbs | Local road authorities post annually.    | Must comply with posted weight limits where signed.  |

## Current Law:

In 1993, Minnesota law deemed all IOH as exempt from size, weight and load restrictions on MN roads, with the following exceptions:

- Pneumatic tires may not be operated on a public highway with a maximum wheel load that exceeds 500 pounds per inch of tire width.

This law allows IOH of any size, weight and load, to drive on any paved or gravel roads in MN with no weight or axle restrictions.

- In 2009, the law was modified: a person operating or towing an implement of husbandry on a bridge must comply with state load restrictions.

## 2015 Minnesota Statutes – Official Language

### 169.801 IMPLEMENT OF HUSBANDRY

Subdivision 1. Exemption from size, weight, load provisions.

Except as provided in this section and section 169.82, the provisions of sections 169.80 to 169.88 that govern size, weight, and load do not apply to an implement of husbandry while operated in compliance with this section.

Subdivision 2. Weight restrictions.

(a) An implement of husbandry that is not self-propelled and is equipped with pneumatic tires may not be operated on a public highway with a maximum wheel load that exceeds 500 pounds per inch of tire width.

(b) After December 31, 2009, a person operating or towing an implement of husbandry on a bridge must comply with the gross weight limitations provided in section 169.824.

Subdivision 4. Bridge posting.

Despite subdivision 2, a person operating or towing an implement of husbandry must comply with a sign that limits the maximum weight allowed on a bridge.

### Impacts:

A recent research study at the MnDOT MnROAD Pavement Testing Facility indicates that heavy IOH accelerate damage to paved roads. Local paved roads are deteriorating at a much faster rate than expected, increasing the cost and labor for local agencies maintaining paved roads.

**It is important for Minnesota to establish maximum weights for implements of husbandry in order to protect our infrastructure.**

## Resources/Research

- Impacts of Heavy Loads: Effects of Implements of Husbandry on Pavement Performance; LRRB (2012-08)
  - Full Report: <http://www.lrrb.org/media/reports/201208.pdf>
  - Technical Summary: <http://www.lrrb.org/media/reports/201208TS.pdf>
- 2015 Minnesota Statutes:
  - 169.801 IMPLEMENT OF HUSBANDRY <https://www.revisor.mn.gov/statutes/?id=169.801>
  - 169.823 TIRE WEIGHT LIMITS <https://www.revisor.mn.gov/statutes/?id=169.823>
  - 169.824 GROSS WEIGHT SCHEDULE <https://www.revisor.mn.gov/statutes/?id=169.824>



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