Federal Bridge Gross Weight Formula

The purpose of the Federal bridge weight formula is to protect bridges on the Interstate System by controlling the number and spacing of truck axles. For a step-by-step way to check vehicle weight and exceptions to the formula, go to www.mcra.randmcnally.com and download the Federal Bridge Gross Weight Formula page. It’s available as a Portable Document Format (PDF) file.

The weight of groups of two or more axles must be checked against the bridge formula to ensure that they meet Federal weight limit requirements and that the allowable gross and axle weights are correlated with the spacing and number of axles to prevent severe overloading of highway bridges. Compliance with bridge formula weight limits may require axle weights lower than the standard 80,000-pound Interstate System limit. Weight allowed under the bridge formula can be increased up to these limits by adding axles or positioning them farther apart. Since states may retain higher bridge weight limits than in others, questions about weight limits, the limits may be higher in some states than in others. The weight of groups of two or more axles or positioning them farther apart. 

Weight allowed under the bridge formula is to protect bridges on the Federal law. The Federal single axle weight limit on the Interstate System and reasonable access thereto is 80,000 pounds. The weight of a vehicle combination may exceed 80,000 pounds if these weight limits on the vehicle (The Federal single axle weight limit on the Interstate System and reasonable access thereto is 80,000 pounds.)

Maximum load in pounds carried on any group of 2 or more consecutive axles

<table>
<thead>
<tr>
<th>Distance in feet between the axles of any line of 2 or more consecutive axles</th>
<th>Maximum load in pounds carried on any group of 2 or more consecutive axles</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>134,000</td>
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<td>3</td>
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<td>4</td>
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<td>7</td>
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<td>8 and less</td>
<td>134,000</td>
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<td>9 and more</td>
<td>134,000</td>
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</tbody>
</table>

Axle 1 is 12,000 lbs. Axles 2, 3, and 4 are 18,000 lbs. each and there are no spacing violations.

Check axles 1 through 3 using the illustration and table. W (actual weight) = 12,000 + 17,000 + 17,000 + 17,000 = 68,000 lbs.

N = 4 axles

L = 51 feet

W maximum from the table for L = 51 feet and N = 4 axles = 80,000 pounds. This axle spacing is satisfactory.

Now check axles 2 through 5 using the illustration and table. W (actual weight) = 17,000 + 17,000 + 17,000 + 17,000 + 17,000 = 85,000 lbs.

L = 35 feet

N = 5 axles

W maximum from the table for L = 35 feet and N = 4 axles = 65,500 pounds. This means the illustration shows a violation; the actual weight of 68,000 pounds exceeds the maximum allowable weight of 65,500 pounds for the given axle spacing. To correct the situation, some load must be removed from the vehicle or the 35-foot axle spacing must be increased.

Bridge formula definitions

The following definitions are used in conjunction with the Bridge Formula Table.

**Axle formula weight:**

The weight of a vehicle combination without load plus the weight of any load thereon (The Federal gross weight limit on the Interstate System and reasonable access thereto is 80,000 pounds.)

**Single Axle Weight:**

The total weight transmitted to the road by all wheels whose centers may be included between two parallel transverse vertical planes not more than 40 inches apart, extending across the full length of the vehicle (The Federal single axle weight limit on the Interstate System and reasonable access thereto is 20,000 pounds.)

**Tandem Axle Weight:**

The total weight transmitted to the road by two or more consecutive axles whose centers may be included between parallel vertical planes spaced more than 40 inches and not more than 56 inches apart, extending across the full length of the vehicle (The Federal tandem axle weight limit on the Interstate System and reasonable access thereto is 34,000 pounds.)

**Consecutive Axle Weight:**

The Federal law states that any consecutive two or more axles may not exceed the weight as computed by the formula even though the single axles, tandem axles, and gross weights are within the legal requirements.