

## CHAPTER 2

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# TRUCK SIZE AND WEIGHT LIMITS

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### EVOLUTION AND CONTEXT

The second issue of *Public Roads* magazine published in 1918 focused on the problems State highway departments were encountering as the result of truck traffic.<sup>1</sup> The lead article, “The Highways of the Country and the Burden They Must Carry,” summarized the issues of that era, many of which are still familiar today:

Apparently the point has been reached where the demands of traffic have exceeded the strength of the average road to meet them. Highways designed to withstand the pounding of ordinary loads, that have stood up under imposts they were intended to sustain, no longer appear to be adequate to meet the present-day conditions. Widespread failure is demonstrative of the fact the roads can not carry unlimited loadings. Their capacity is limited.

A review of past Federal and State regulatory roles and responsibilities for highways provides a sense of how the current regulatory environment evolved.

#### PRE-1956

#### FEDERAL REGULATION

Federal Government regulation of all transportation modes prior to 1956 was directed at economic regulation. First to be regulated were railroads in the mid- and late-1800s, then steamship lines in the early 1900s, followed by pipelines, motor carriers and airlines in the mid-1930s. Size and weight regulation was controlled by the individual States and developed in response to increasing motor carriage of freight on a developing highway system. Direct

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<sup>1</sup> TRB *Special Report 225, Truck Weight Limits: Issues and Options*, 1990.

Federal involvement in regulation of TS&W did not occur until the passage of the Federal-Aid Highway Act of 1956.

## STATE REGULATION

The first truck weight limits were enacted in 1913: Maine [18,000 pounds GVW], Massachusetts (28,000 pounds GVW), Pennsylvania (24,000 pounds GVW) and Washington (24,000 pounds GVW). Early State truck weight laws were passed to limit damage to the earth- and gravel-surfaced roads caused by the iron and solid rubber wheels of heavy trucks.<sup>2</sup> The limits included tire load limits in Maine, Massachusetts and Pennsylvania. Further, in Pennsylvania the first axle weight limit was set at 18,000 pounds.<sup>3</sup>

Limits on length, width, and height were generally adopted somewhat later in most States. By 1929, the majority of States regulated all dimensions. The most common form of early State size regulation was a width restriction that remained fairly uniform among the States at 96 inches until the 1982 Federally mandated increase to 102 inches on the NN. By 1933, all States had passed some form of TS&W regulation.<sup>4</sup>

The American Association of State Highway Officials (AASHO), organized in 1914, developed a model used by many States in adopting TS&W limits. Beginning with its first policy statement in 1932, AASHO (subsequently renamed American Association of State Highway and Transportation Officials, AASHTO) advocated State adoption of uniform regulations. While AASHO policy has significantly influenced State and Federal regulations, the call for State uniformity has produced limited results.<sup>5</sup>

The first Federal study that examined the need for Federal regulation of TS&W was published in 1941 by the ICC.<sup>6</sup> The Study found

. . . wide and inconsistent variations in the limitations imposed by the . . . States . . . [and that]. . . limitations imposed by a single State may and often do have an influence and effect which extend, so far as interstate commerce is concerned, far beyond the borders of that State, nullifying or impairing the effectiveness of more liberal limitations imposed by neighboring States.

The Study concluded that a need existed for Federal intervention and establishment of Federal standards on the sizes and weights of motor vehicles. Since the study also concluded that

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<sup>2</sup> TRB Special Report 223, *Providing Access for Large Trucks*, 1989.

<sup>3</sup> ICC, 1941.

<sup>4</sup> TRB Special Report 211.

<sup>5</sup> TRB Special Report 211.

<sup>6</sup> ICC, *Federal Regulation of the Sizes and Weight of Motor Vehicles*.

national uniformity of standards would be impossible, the recommendation for Federal intervention was confined to cases where State laws were determined to be an unreasonable obstruction to interstate commerce.

## **POST-1956**

### **FEDERAL REGULATION**

#### *The Federal-Aid Highway Act of 1956*

The first Federal TS&W limits were enacted in the Federal-Aid Highway Act of 1956 as part of the new Federal highway program for construction of the Interstate and Defense Highway System. The Act established Federal limits for the Interstate System that were based on AASHO policy adopted in 1946 that recommended:

- C Maximum width limit of 96 inches;
- C Single-axle weight limit of 18,000 pounds;
- C Tandem-axle weight limit of 32,000 pounds; and
- C GVW of 73,280 pounds.

The Federal limits were qualified by a “grandfather clause” (see subsequent section) that allowed continued operation of heavier trucks on the new Interstate System consistent with State limits in effect on July 1, 1956.

In the decades leading to the 1956 Act, Federal highway funding to the States increased from an equal 50/50 partnership to a 75/25 Federal/State match, and in 1956 to 90/10 and 80/20 for the Interstate System and State system, respectively. The new Interstate System was to be designed and constructed to higher, uniform standards than the State and local highway system. The substantial degree of Federal financial participation motivated increased Federal involvement in setting Interstate TS&W limits.<sup>7</sup> In the words of the House of Representatives’ Committee on Public Works and Transportation, Congress:

. . . recognizes the maximum weight limitations are fundamentally a problem of State regulations, but feels that if the Federal government is going to pay 90 percent of the cost of the Interstate System improvements, it is entitled to protection of the investment against damage caused by heavy loads on the highway.

Table II-1 provides a time line depicting Federal and State roles in highway funding and TS&W regulation from 1916 through 1991.

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<sup>7</sup> U.S. DOT, 1981, *An Investigation of Truck Size and Weight Limits*. Final Report.

**TABLE II-1  
FEDERAL/STATE ROLES AND RESPONSIBILITIES FOR  
HIGHWAYS: EMPHASIS AREAS<sup>8</sup>**

	Federal-Aid for Highways	Weight Regulation	Size Regulation
<b>Federal-Aid Road Act 1916</b>	Rural Post Road construction 50/50 match		
<b>Federal-Aid Road Act 1944</b>	Post-war highway construction: Federal-Aid Primary, Federal-Aid Secondary and Inter-Regional System 75/25 match		
<b>Federal-Aid Highway Act 1956</b>	Interstate construction, 90/10 match; other State system, 80/20 match	Interstate: maximum axle and GVW limits 18,000/32,000/ 73,280 pounds <sup>(a)</sup>	
<b>Federal-Aid Highway Act Amendments 1974</b>	Interstate construction, Federal-Aid Primary and Federal-Aid Secondary	Interstate: axle and minimum GVW limits 20,000/34,000/80,000 pounds under FBF B <sup>(b)</sup>	
<b>Surface Transportation Assistance Act of 1982 (STAA)</b>	Interstate construction, Federal-Aid Primary and Federal-Aid Secondary	Interstate: Mandated maximum limits on Interstate <sup>(c)</sup>	STAA vehicle mandate on Interstate and Designated System <sup>(d)</sup>
<b>Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)</b>	Interstate completion, NHS designation	LCV freeze	LCV freeze imposed by Congress <sup>(e)</sup>

- (a) First “grandfather clause” allowed operation on Interstate at higher limits in States where higher weights were legal prior to July 1, 1956.
- (b) Adopted new BFB with new “grandfather” provisions to allow previously enacted axle spacing tables to exceed new bridge formula on Interstate.
- (c) Congress mandated the Federal weight limits be allowed by the States on the Interstate to resolve problems of “barrier” States that had not adopted the 1975 Federal limits.
- (d) Required States to allow 48’ semitrailers and 28’ twin-trailer combinations without length restriction (plus auto carriers and household goods movers). Created designated system for operation off the Interstate and access provisions to terminals and service facilities.
- (e) Froze weight of LCVs on the Interstate and cargo box length of double- and triple-trailer combinations on the NN as of June 1, 1991.

The 1956 Act directed the U.S. Secretary of Commerce to provide information to Congress regarding maximum desirable vehicle size and weight. In response, extensive field tests of pavement and bridges were conducted by the Highway Research Board under sponsorship of AASHO.<sup>9</sup> The 1964 Report to Congress recommended the following changes:

<sup>8</sup> *Publication Number 156, Chapter 241, 1916; Federal-Aid Road Act, 1944; Federal-Aid Highway Act, 1956.*

<sup>9</sup> TRB Special Report 225.

- C Single- and tandem-axle weight limits should be increased to 20,000 pounds and 34,000 pounds, respectively.
- C The maximum GVW limit of 73,280 pounds should be replaced by a table of axle group weight limits, depending on the length of the axle group and the number of axles in the group. The look-up table would be based on Bridge Formula B.<sup>10</sup>
- C The maximum width limit should be 102 inches.
- C Maximum lengths should be: 40 feet for single unit trucks and buses, 40 feet for a semitrailer or full trailer, 55 feet overall length for a tractor-semitrailer, and 65 feet overall length for other combinations.
- C Performance standards should be specified for weight-to-horsepower ratio, vehicle braking systems, and linkages between combinations.
- C Grandfather exemptions should not be eliminated immediately, but should be phased out.

#### *The Federal-Aid Highway Act Amendments of 1974*

The Federal-Aid Highway Act Amendments of 1974 adopted several recommendations from the 1964 Report. The 1974 Act established maximum single- and tandem-axle limits of 20,000 and 34,000 pounds, respectively. It also set the maximum GVW limit at 80,000 pounds, disregarding the recommendation from the 1964 Report that GVW be limited solely by the bridge formula. Further, Congress expanded the grandfather exemptions from the 1956 Act to include provisions for State weight tables or axle spacing formulas not meeting the new bridge formula.<sup>11</sup>

Although the 1974 legislation provided for increases in the maximum axle weight limits and the GVW limit, it did not mandate State adoption of these weights. In fact, when six contiguous States in the Mississippi Valley, collectively referred to as the “barrier States,” refused to increase their Interstate GVWs to 80,000 pounds, the trucking industry effectively faced a barrier to cross-country interstate commerce. This situation contributed to congressional action in 1982.

#### *The Surface Transportation Assistance Act of 1982*

The STAA of 1982 substantially expanded Federal regulation and authority over both vehicle size and weight, overriding the more restrictive barrier States and establishing minimum, and maximum standards for weight, width, and minimum standards for length on the Interstate

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<sup>10</sup> Description of Bridge Formula B.

<sup>11</sup> TRB Special Report 225.

system and many Federal-aid highways.<sup>12</sup> The Federal size limits included two dimensions, trailer length and vehicle width. Congress also made the previous single-and tandem-axle and GVW maximum the States could allow, the minimums they must allow on the Interstate highways.

In addition, the new dimensional restrictions barred States from limiting the overall length of a tractor and 48-foot semitrailer in combination, or the overall length of a tractor and two 28-foot semi-trailers or trailers in combination on the Interstate and portions of the Federal-aid primary system. The width limit established in STAA was 102 inches, providing the highway lane width was 12 feet.

The motor vehicle size limits established in the STAA covered roads other than Interstate highways. The Act directed the Secretary of Transportation to designate a network of highways that would include Federal-Aid Primary (FAP) system roads that could safely accommodate STAA vehicles. This network is commonly referred to as the “National Network” and includes the Interstate in addition to designated sections of the FAP System.

The intent of Congress in expanding the Federal role was to improve carrier productivity through liberalizing restrictive State limits and to create a uniform national minimum standard.<sup>13</sup> However, some State and local transportation officials maintained that the majority of the non-Interstate highway system could not accommodate larger trucks and, therefore, restricted access beyond the Interstate.<sup>14</sup> The extent of restrictions on large trucks varied from slight to extensive. For example, nine States in the West had virtually no restriction on 48-foot trailers and STAA doubles<sup>15</sup> on the major highways connecting urban centers (the FAP System). By comparison, 17 primarily Eastern States and the District of Columbia restricted the larger trucks to fewer than one-third of their FAP highways.

Access restrictions imposed by the States following passage of STAA initiated litigation by the trucking industry. The result was court rulings that: (1) a State was prohibited from enacting or enforcing laws that denied reasonable access; and (2) congressional intent was not to preempt the reasonable exercise by a State of its police powers to protect public safety on roads within its jurisdiction. In other words, the States could not deny reasonable access, but what was reasonable would be defined by the States.

The STAA of 1982 included provisions to address increasing concerns of States over the deteriorating conditions of the Nation’s highways, bridges and mass-transit infrastructure. The STAA increased and restructured Federal highway taxes for the first time in over two decades

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<sup>12</sup> TRB Special Report 221.

<sup>13</sup> TRB Special Report 211 and U.S. Senate Report Number 97-298 1981.

<sup>14</sup> “Access for Large Trucks,” TR News, TRB, January - February 1990.

<sup>15</sup> Also referred to as Western Doubles.

and authorized increased Federal spending to finance several major transportation programs. The STAA also initiated two primary tax increases affected by vehicle-weight: a 5-cent-per-gallon increase in motor-fuel excise taxes and an increase in the GVW-based annual heavy vehicle use tax.

Significant TS&W highlights from the 1982 STAA are:

- C Combinations consisting of a tractor and two trailing units were allowed on Interstates and other primary highways to be designated by the Secretary of Transportation (creation of the NN). For these combinations (often referred to as “STAA doubles” or “twin-trailers”), States were prohibited from limiting the length of each trailing unit to less than 28 feet or imposing an overall length limit.
- C States were prohibited from limiting the length of semitrailers in tractor-semitrailer combinations to less than 48 feet and from placing any limits on the overall length of combinations.
- C States were required to allow 102 inch wide vehicles on Interstates and other Federal-aid highways with 12-foot lanes.
- C States were prohibited from denying reasonable access to twin-trailer trucks and 48-foot semitrailers to terminals; facilities for food, fuel, repairs, and rest; and points of loading and unloading for household goods carriers.
- C States were prohibited from enforcing any reduction of trailer size limits that would have the effect of banning trailers that were legal and actually in use on December 1, 1982. This restriction *required* States to keep higher limits.<sup>16</sup>

The 1982 legislation also addressed the issue of State permit practices and grandfather provisions. Permit practices in place in 1956 rarely specified absolute limits, as many States did not maintain records of weights actually allowed before 1956. Some States contended that the grandfather provision applied to their power to issue permits, not the specific permits themselves. Hence, these States claimed that they could issue permits for overweight vehicles that weighed more than those that might have been permitted before 1956. The STAA of 1982 resolved this dispute, by allowing States to permit vehicles “which the State determines could be lawfully” operated in 1956 or 1975.<sup>17</sup> Subsequent litigation over an FHWA regulation requiring States to seek approval for permits for divisible loads resulted in a court ruling affirming the States’ rights.<sup>18</sup>

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<sup>16</sup> TRB Special Report 211.

<sup>17</sup> TRB Special Report 225.

<sup>18</sup> TRB Special Report 211 and *Janklow v. Dole*, D.S.D. June 17, 1985.

## *The Intermodal Surface Transportation Efficiency Act of 1991*

The ISTEA froze the weight of LCVs and limited them to routes that were allowed by the States on June 1, 1991. The ISTEA defined LCVs as “any combination of a truck tractor and two or more trailers or semitrailers which operate on the National System of Interstate and Defense Highways with a GVW greater than 80,000 pounds.”

A second ISTEA freeze applied to the length of trailers and semitrailers, specifically cargo carrying units and stated

. . . no State shall allow by statute, regulation, permit, or any other means the operation on any segment of the National System of Interstate and Defense Highways and those classes of qualifying Federal-aid primary system highways as designated by the Secretary . . . any commercial motor vehicle combination (except those vehicles and loads which cannot be easily dismantled or divided and which have been issued special permits in accordance with applicable State laws) with 2 or more cargo carrying units (not including the truck tractor) whose cargo carrying units exceed -- the maximum combination trailer, semitrailer, or other type of length limitation authorized by statute or regulation of that State on or before June 1, 1991; or the length of the cargo carrying units of those commercial motor vehicle combinations, by specific configuration, in actual lawful operation on a regular or periodic basis (including seasonal operation) in that State on or before June 1, 1991.

Further, ISTEA prohibits all States from expanding routes or removing restrictions related to LCV or longer double operations after that date. Congress required each State to submit information on LCV and longer double restrictions and requirements to the FHWA by December 1, 1991, and to certify annually to the FHWA in their size and weight certification that they are enforcing the freeze.

## **STATE REGULATION**

In the first 20 years following passage of the 1956 Highway Act, and the beginning of Federal regulation of TS&W, States continued to control size and weight limits on State highways and Interstate highways under grandfather rights. As the Federal investment in the Interstate system grew and Interstate construction neared completion, Federal regulations and control increased, often putting the State and Federal Governments in adversarial positions. One issue that continues to emerge in the TS&W debate is grandfather rights exercised by a growing number of States as the result of the STAA of 1982 and ISTEA.



## *Grandfather Rights*<sup>19</sup>

In the 40 years following enactment of the Federal-Aid Highway Act of 1956 the extension of grandfather rights to the States has grown more controversial. At the State level, truck weight limits are influenced by three different grandfather rights provisions. The first was enacted in 1956 and deals primarily with axle weights, gross weights, and permit practices. The second was adopted in 1975 and applies to bridge formula and axle spacing tables. Finally, the third enacted in 1991, ratifies State practices regarding LCVs.

### The First Grandfather Clause

Before enactment of the Federal-Aid Highway Act of 1956, some States permitted motor carriers to operate with axle weights or GVWs in excess of the limits specified in the 1956 Act (18,000 pounds on a single axle, 32,000 pounds on a tandem axle, and 73,280 pounds GVW). To avoid a rollback of vehicle weights in those States where the higher limits were permitted, Congress included a “grandfather clause” in the 1956 legislation.

The FHWA had the authority to determine whether specific grandfather claims would be permitted. Although no formal approval process was established, informal procedures soon evolved. In general, a State seeking to establish grandfather rights would submit copies of the appropriate 1956 statute to the FHWA. The Agency would review the claim and if it determined the documentation was ambiguous or otherwise arguable, FHWA would request an Attorney General’s opinion. Claims that were not legally defensible were rejected.

During the 1960s and 1970s, most grandfather issues related to the interpretation of State laws in effect in 1956. While these have been largely resolved, States occasionally make new claims, mostly for exemptions from Federal weight limits. However, most grandfather rights were established decades ago.

After the mid-1970's, the meaning and intent of the grandfather clause itself came into dispute. At issue was the use of divisible load permits for overweight vehicles. A strict interpretation of the 1956 Act would prohibit use of divisible load permits today for weights in excess of the weight allowed under permit in 1956. The FHWA has held that the grandfather clause allowed States to issue permits only if the same circumstances and conditions are present today as were present in 1956. Problems arose with this reading of the Act because many States did not specify the weight allowed under permit and most were unable to document the weight limits or other conditions imposed in 1956.

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<sup>19</sup> The material presented in this section was excerpted from the personal papers of Charles Medalen, Office of Chief Counsel, FHWA.

State courts<sup>20</sup> have supported a more permissive interpretation of the grandfather clause, requiring only proof that certain weights could have been operated under divisible/nondivisible permits in 1956, rather than proof that they were in actual operation. This interpretation of the grandfather clause essentially repealed the Federal 80,000 pound GVW. Today, many States issue divisible load permits allowing vehicles weighing over 110,000 pounds to routinely operate on the Interstate Systems.

### The Second Grandfather Clause

Interstate single axle, tandem axle, and GVW limits were increased with passage of the Federal-Aid Highway Amendments of 1974. In addition, the bridge formula was added. Also provided was a grandfather clause which would allow States to retain any bridge formula or axle spacing tables governing motor vehicle operations as of January 4, 1975, which allowed higher weights than Bridge Formula B.

However, in 1975 few States had specified bridge formulas or axle-spacing tables. In fact, it was common for State law to be silent on axle spacing requirements. Because short-wheelbase trucks (that were nonconforming with respect to the bridge formula) were permitted in a number of States before 1975, the absence of a regulation was grandfathered. Therefore, many State motor vehicle operations are exempt from the bridge formula up to the highest GVW allowed in 1975, typically 73,280 pounds. Not all States take advantage of their grandfather exemption.

### The Symms Amendment

The STAA of 1982 included language to amend the then current provisions addressing the withholding of Federal-aid funds (revised language underlined):

This section shall not be construed to deny apportionment to any State allowing the operation within such State of any vehicles or combinations thereof which the State determines could be lawfully operated within such State on July 1, 1956, except in the case of the overall gross weight on any group of two or more consecutive axles (i.e., the bridge formula), on the date of enactment of the Federal-Aid Highway Amendments of 1974.

The amendment was introduced by Senator Symms (hence, it is commonly referred to as the “Symms Amendment”) and was intended to resolve disputes about grandfather rights between the FHWA and certain States. However, it had the opposite effect since some States began to make unrealistic claims for grandfather rights that went well beyond rights that had previously been claimed.

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<sup>20</sup> State ex rel. Dick Irvin, Inc., v. Anderson 525 P. 2d. 564 (1974) and South Dakota Trucking Association v. South Dakota Department of Transportation, 305 N.W. 2d 682 (1981).

## ISTEA: The Third Grandfather Clause

The ISTEA placed a freeze on the operation of LCVs. An LCV was defined as a tractor and two or more trailers or semitrailers operating on the Interstate with a GVWs exceeding 80,000 pounds. The legislation allowed LCV combinations which were in actual and lawful operation under State law on June 1, 1991, to continue in operation, if the State so desired. Thus, the grandfather date for LCVs is 1991.

### *Permits*

Many States allow exemptions for certain classes of vehicles or commodities, with or without permits. For example, dump trucks in many States in the Northeast are allowed higher weight limits either through a special truck registration or permit.

States continue to issue permits for divisible loads under grandfather authority. Thirty-seven States issued divisible load permits in 1985 and 1995 totaling 153,642 and 380,511, respectively. The number of permits available for specific commodities continues to increase. For example, in 1995 Pennsylvania added two new overweight permits for 94,000 pounds GVW and 21,000 pounds per axle, on State highways only, for steel coils and milk; in 1996 the Pennsylvania legislature added bulk animal feed. State authority to control vehicles that operate off the Interstate continues to be an important issue.

## **CURRENT ENVIRONMENT**

### **FEDERAL**

Federal truck weight law applies to the Interstate System while Federal vehicle size law applies to the NN which includes the Interstate System. Current Federal TS&W law establishes the following limits:

- C 20,000 pounds for single axles on the Interstate;
- C 34,000 pounds for tandem axes on the Interstate;
- C Application of Bridge Formula B for other axle groups up to the maximum of 80,000 pounds GVW on the Interstate;
- C 102 inches for vehicle width on the NN;
- C 48-foot (minimum) for semitrailers in a semitrailer combination on the NN; and
- C 28-foot (minimum) for trailers in a twin-trailer combination on the NN.

Federal law regulates trucks by specifying basic TS&W standards and excepting certain situations from those standards by recognizing State grandfather rights and special permits.

## **STATE APPLICATION**

### **WEIGHT**

There are four basic weight limits: single axle, tandem axle, bridge formula and gross vehicle. These limits generally apply both on and off the interstate system. When taken together, the 50 States and the District of Columbia have created 40 different combinations of these eight limits. Only seven States apply the Federal limits Statewide without modification or “grandfather right” adjustment. Even in these seven, however, the upper limits for routine permits are all different. In a sense, each State has a different weight limit “package.” Table II-2 provides vehicle weight limits for each of the States.

#### *Single Axle, Tandem Axle and Gross Weight Limits*

Fourteen States have a single axle limit greater than the Federal standard of 20,000 pounds on the Interstate. Off the Interstate, 17 States have limits greater than the Federal limit and 3 States are below the Federal limit.

Fifteen States have a tandem axle limit greater than the Federal limit of 34,000 pounds on the Interstate. On the non-Interstate State system, 21 States have limits greater than 34,000 pounds and 2 States are below the Federal limit.

Four States have grandfather rights to exceed 80,000 pounds on the Interstate. On non-Interstate State highways, 18 States have a GVW limit higher than 80,000 pounds. Alternatively, five States have GVWs less than 80,000 pounds on some of their non-Interstate highways.

#### *“Routine” Permit Limits*

For a 5-axle unit there are 28 different permitted maximum GVW limits ranging from 80,000 pounds to 155,000 pounds. The mode value (the value that occurs most frequently) is 100,000 pounds and occurs in seven States. For any number of axles there are 25 different maximum permitted GVW limits (the mode value is 120,000 pounds and occurs in 10 States).

For single axles there are 16 different limits ranging from 13,000 pounds to 32,000 pounds. For tandem axles there are 17 different limits ranging from 26,000 pounds to 64,000 pounds.

**TABLE II-2  
1994 VEHICLE WEIGHT LIMITS  
(IN 1,000 POUNDS)**

State	Gross Vehicle		Single Axle		Tandem Axle		FBF "B"		"Routine" Permit		
	"T"	Other Highways	"T"	Other Highways	"T"	Other Highways	"T"	Other Highways	GVW	Single Axle	Tandem Axle
Alabama	80	84	20	20	34	40	Yes	No-WT	110/150	22	44
Alaska	--	90(2)	--	20	--	38	---	Yes	88.6(2)/150	30	50
Arizona	80	80	20	20	34	34	Yes	No-WT	106.5(3)/250	28	46
Arkansas	80	80	20	20	34	34	Yes	Yes	102/134	20	40
California	80	80	20	20	34	34	Yes-mod	Yes-mod	119.8(4)/(5)	30	60
Colorado	80	85	20	20	36	40	Yes	No	127/164	27	50
Connecticut	80	80	22.4	22.4	36	36	Yes	Yes	120/160	22.4	NS
Delaware	80	80	20	20	34	40	Yes	No-WT	120/120	20	40
D.C.	80	80	22	22	38	38	Yes -mod	Yes-mod	155-248	31	62
Florida	80	80	22	22	44	44	Yes (6)	No-WT	112/172	27.5	55
Georgia	80	80	20.34	20.34	34(7)	37.34	Yes	Yes(6)	100/175	23	46
Hawaii	80.8	88	22.5	22.5	34	34	Yes	No -- Case-by-case above normal limits			
Idaho	80	105.5	20	20	34	34	Yes	Yes -- Case-by-case above normal limits			
Illinois	80	80(8)	20	20(9)	34	34(9)	Yes	Yes(9)	100/120	20	48
Indiana (10)	80	80	20	20	34	34	Yes	Yes	108/120	28	48
Iowa	80	80	20	20	34	34	Yes	Yes	100/160	20	40
Kansas	80	85.5	20	20	34	34	Yes	Yes	95/120	22	45
Kentucky	80	80(11)	20	20	34	34	Yes	Yes	96/140	24	48
Louisiana	80(12)	80(12)	20	22	34	37	Yes	No	108/120	24	48
Maine	80	80(13)	20(14)	22.4	34	38	Yes-mod	No	130/167	25	50
Maryland	80	80	20(15)	20(15)	34(15)	34(15)	Yes	Yes	110/110	30	60
Massachusetts	80	80	22.4	22.4	36	36	Yes	Yes	99/130	NS	NS
Michigan (16)	80	80	20	20	34	34	Yes	Yes	80/164	13	26
Minnesota	80	80(17)	20	18	34	34	Yes	Yes-mod	92/144	20	40
Mississippi	80	80	20	20	34	34	Yes	Yes	113/190	24	48
Missouri	80	80 (18)	20	20(18)	34	34(18)	Yes	Yes(18)	92/120	20	40

State	Gross Vehicle		Single Axle		Tandem Axle		FBF "B"		"Routine" Permit		
	"T"	Other Highways	"T"	Other Highways	"T"	Other Highways	"T"	Other Highways	GVW	Single Axle	Tandem Axle
Montana	80	80	20	20	34	34	Yes	Yes	105.5/126	20	48
Nebraska	80	95	20	20	34	34	Yes	Yes	99/110	20	40
Nevada	80	129(19)	20	20	34	34	Yes	Yes	110(20)/(21)	28	50.4
New Hampshire	80	80	20(15)	22.4	34(15)	36	Yes	No	130/150	25	50
New Jersey	80	80	22.4	22.4	34	34	Yes	No	100(22)/150(22)	25(22)	40(22)
New Mexico	86.4	86.4	21.6	21.6	34.32	34.32	Yes-mod	Yes-mod	104(23)/120	26	46
New York	80	80	20(24)	22.4	34(24)	36	Yes(24)	Yes(24)	100/150	25	42.5
North Carolina	80	80	20	20	38	38	Yes-mod	Yes-mod	94.5/122	25	50
North Dakota	80	105.5	20	20	34	34	Yes	Yes	103/136	20	45
Ohio	80	80	20	20	34	34	Yes	No	120/120	29	46
Oklahoma	80	90	20	20	34	34	Yes	Yes	95/140	20	40
Oregon	80	80	20	20	34	34	Yes/mod	Yes-mod	90/105.5	21.5	43
Pennsylvania	80	80	20(25)	20(25)	34(25)	34(25)	Yes(25)	Yes(25)	116/136	27	52
Rhode Island	80	80	22.4	22.4	36	36	Yes-mod	Yes-mod	104.8/(21)	22.4	44.8
South Carolina	80	80	20	22	34(26)	39.6	Yes(26)	No	90/120	20	40
South Dakota	80	129(19)	20	20	34	34	Yes	Yes	116(27)/(21)	31	52
Tennessee	80	80	20	20	34	34	Yes	Yes	100/160	20	40
Texas	80	80	20	20	34	34	Yes-mod	Yes-mod	106.1(28)/200	25	48.125
Utah	80	80	20	20	34	34	Yes	Yes	100/123.5	20	40
Vermont	80	80	20	22.4	34	36	Yes	Yes	108(29)/120	24	48
Virginia	80	80	20	20	34	34	Yes	Yes	110/150	25	50
Washington	80	105.5	20	20	34	34	Yes	Yes	103/156	22	43
West Virginia	80	80(30)	20	20	34	34	Yes	Yes	104/110	20	45
Wisconsin	80	80	20	20	34	34	Yes-mod	Yes-mod	100/191	20	60
Wyoming	117	117	20	20	36	36	Yes	No	85/135	25	55

NS...Not specified  
 WT...Weight table

- (1) "Routine" Permit GVW: The first number (left) is the highest weight a 5-axle unit can gross before special (other than routine) review and analysis of an individual movement is required. The second number (right) is the highest gross weight any unit with sufficient axles can gross before special review is required.
- (2) State rules allow the more restrictive of the FBF B or axle summation. The 5-axle "routine" permit value is estimated using a truck tractor-semitrailer with a 65' outer bridge (based on a 48' semitrailer).

- (3) The 5-axle "routine" permit value is estimated using a truck tractor-semitrailer with two 5' tandems @ 47.25K each + a 12K steering axle.
- (4) Estimate based on State weight table values for a 4' tandem (drive) @ 46.2K, a rear tandem at the 60K maximum, and a 12.5K steering axle.
- (5) Maximum based on the number of axles in the combination.
- (6) FBF applies if GVW exceeds 73.28K.
- (7) If GVW is less than 73.28K, the tandem axle maximum is 40.68K.
- (8) On Class III and non-designated highways the maximum is 73.28K.
- (9) On non-designated highways the single axle maximum is 18K, the tandem axle maximum is 32K, and the Bridge formula does not apply.
- (10) On the Indiana Toll Road the single axle maximum is 22.4K, the tandem axle maximum is 36K, and the maximum practical gross is 90K.
- (11) The maximum gross weight on Class AA highways is 62K, on Class A highways 44K.
- (12) 6- or 7-axle combinations are allowed 83.4K on the Interstate System, and 88K on other State highways.
- (13) A 3-axle tractor hauling a tri-axle semitrailer has a maximum GVW of 90K.
- (14) If the GVW is less than 73.28K, the single axle maximum is 22K.
- (15) If the GVW is 73K or less, the single axle maximum is 22.4K, and the tandem axle maximum 36K.
- (16) Federal axle, gross and Bridge formula limits apply to 5-axle combinations if the GVW is 80K or less. For other vehicles and GVWs over 80K other limits apply. State law sets axle weight controls which allow vehicles of legal overall length to gross a maximum of 164K.
- (17) Most city, county and township roads are considered "9-Ton Routes" with a maximum gross vehicle of 73.28K.
- (18) On highways other than Interstate, Primary, or other designated, the single axle maximum is 18K, the tandem axle maximum 32K, the Bridge formula is modified, and the GVW maximum is 73.28K.
- (19) The maximum is directly controlled by the FBF. Given the State's length laws, the maximum practical gross is 129K.
- (20) The 5-axle "routine" permit value is estimated using a truck tractor-semitrailer with a 12.5K steering axle, a 47.25K drive tandem (5' spacing from State weight table), and a 50.4K spread tandem (8' spacing from the State weight table).
- (21) A determination is made on a case-by-case basis.
- (22) All "routine" permit values are calculated using 10" wide tires and a maximum 800 pounds/inch of tire width loading value.
- (23) The 5-axle "routine" permit value is estimated using a truck tractor-semitrailer with two 46K tandems + a 12K steering axle.
- (24) If the GVW is less than 71K, the single axle maximum is 22.4K, the tandem axle maximum 36K, and a modified Bridge formula applies.
- (25) If the GVW is 73.28K or less, the single axle maximum is 22.4K, the tandem axle maximum 36K, and the Bridge formula does not apply.
- (26) If the GVW is 75.185K or less, the tandem axle maximum is 35.2K, and the Bridge formula does not apply.
- (27) The 5-axle "routine" permit value is estimated using a truck tractor-semitrailer with two 52K tandems + a 12K steering axle.
- (28) The 5-axle "routine" permit value is estimated using a truck tractor-semitrailer with a 13K steering axle, a 45K drive tandem, and a 48.125K spread tandem. Both tandem weight values are from the State weight chart.
- (29) The 5-axle "routine" permit value is estimated using a truck tractor-semitrailer with two 48K tandems + a 12K steering axle.
- (30) The maximum GVW on non-designated State highways is 73.5K, and on county roads 65K.

Information Sources:

J. J. Keller & Associates, Vehicle Sizes and Weights Manual. July 1, 1994.

Specialized Carriers & Rigging Association, Permit Manual. July 19, 1994.

Western Association of State Highway and Transportation Officials (WASHTO), Guide for Uniform Laws and Regulations Governing Truck Size and Weight. June 26, 1993.

## LENGTH

Ten States allow semitrailers over 53 feet in length. See Table II-3 for a State-by-State presentation of maximum semitrailer lengths.

**TABLE II-3  
1994 MAXIMUM SEMITRAILER LENGTHS BY STATE**

State	NN		Other State Highways		
	Length	Kingpin	Length	Kingpin	Overall
Alabama	57-0	41-0 KCRA(1)	53-0		
Alaska	48-0		45-0		70-0
Arizona	57-6(7)		53-0		65-0
Arkansas	53-6		53-6		
California	53-0	40-0 KCRTA(8) 38-0 KCSRA(9)	53-0	Same as NN	
Colorado	57-4		57-4		
Connecticut	53-0		48-0		
Delaware	53-0		53-0		60-0
D.C.	48-0		48-0		55-0
Florida	53-0	41-0 KCRT(2)	53-0	41-0 KCRT	
Georgia	53-0	41-0 KCRT	53-0	41-0 KCRT	67-6
Hawaii	No Limit		45-0		60-0
Idaho	53-0		48-0	39-0 KCRA	
Illinois	53-0	42-6 KCRA	53-0	42-0 KCRA	
Indiana	53-0	40-6 KCRA	53-0	40-6 KCRA	
Iowa	53-0		53-0	40-0 KCRA	60-0
Kansas	59-6		59-6		
Kentucky	53-0		No Limit		57-9
Louisiana	59-6		No Limit		65-0
Maine	53-0(3)	43-0	53-0		65-0
Maryland	53-0(4)	41-0 KCRT	53-0	41-0 KCRT	
Massachusetts	53-0(5)		53-0		
Michigan	53-0	41-0 KCRT	50-0		
Minnesota	53-0	41-0 KCRT	53-0	41-0 KCRT	
Mississippi	53-0		53-0		
Missouri	53-0(4)		No Limit		60-0
Montana	53-0		53-0		
Nebraska	53-0		53-0		
Nevada	53-0		53-0		70-0
New Hampshire	53-0(6)	41-0 KCRT	53-0	41-0 KCRT	
New Jersey	53-0	41-0 KCRT	53-0	41-0 KCRT	



NN			Other State Highways		
State	Length	Kingpin	Length	Kingpin	Overall
New Mexico	57-6		No Limit		65-0
New York	53-0(4)	41-0 KCRT	48-0		65-0
North Carolina	53-0	41-0 KCRT	No Limit		60-0
North Dakota	53-0		53-0		
Ohio	53-0		53-0		
Oklahoma	59-6		59-6		
Oregon	53-0		Varies		
Pennsylvania	53-0		No Limit		60-0
Puerto Rico	48-0				
Rhode Island	48-6		48-6		
South Carolina	53-0	41-0 KCRT	48-0		
South Dakota	53-0		53-0		
Tennessee	53-0	41-0 KCRT	53-0	41-0 KCRT	
Texas	59-0		59-0		
Utah	53-0	40-6 KCRT	53-0	40-6 KCRT	
Vermont	53-0(4)	41-0 KCRT	48-0		60-0
Virginia	53-0	37-0 Last tractor axle to first trailer axle.	No Limit		60-0
Washington	53-0		53-0		
West Virginia	53-0	Same as VA	No Limit		60-0
Wisconsin	53-0	41-0 KCRT	No Limit		60-0
Wyoming	60-0		60-0		

- (1) KCRA = Kingpin to center of rear axle.
- (2) KCRT = Kingpin to center of rear tandem.
- (3) Permit may be required.
- (4) Interstate and designated State routes
- (5) Requires annual letter of authorization. Does not apply on the Massachusetts Turnpike.
- (6) Designated routes.
- (7) Only on Interstate System.
- (8) KCRTA = Kingpin to center of rearmost tandem axle.
- (9) KCSRA = Kingpin to center of single rear axle.

The ISTEA froze the maximum GVW for LCVs in 16 States. Table II-4 provides the State LCV weight limits.

**TABLE II-4  
LCVS WEIGHT LIMITS BY STATE (1994)**

Pounds	Truck Tractor and 2 Trailing Units	Truck Tractor and 3 Trailing Units
86.4	NM	
90	OK	OK
95	NE	
105.5	ID, ND, OR, WA	ID, ND,OR
110	CO	CO
111	AZ	
115		OH
117	WY	
120	KS, MO <sup>21</sup>	
123.5		AZ
127.4	IN, MA, OH	IN
129	NV, SD, UT	NV, SD, UT
131.06		MT
137.8	MT	
143	NY	
164	MI	

Source: Final Rule on LCVs published in the Federal Register at 59 FR 30392 on June 13, 1994.

## **OVERSIZE AND OVERWEIGHT PERMITS**

State administration of TS&W regulations includes issuing permits for nondivisible and divisible loads that have been mandated by State legislatures or are protected by “grandfather rights.” Prior to ISTEA there were 41 States which exercised congressionally authorized grandfather rights, with 34 issuing overweight permits for divisible loads.

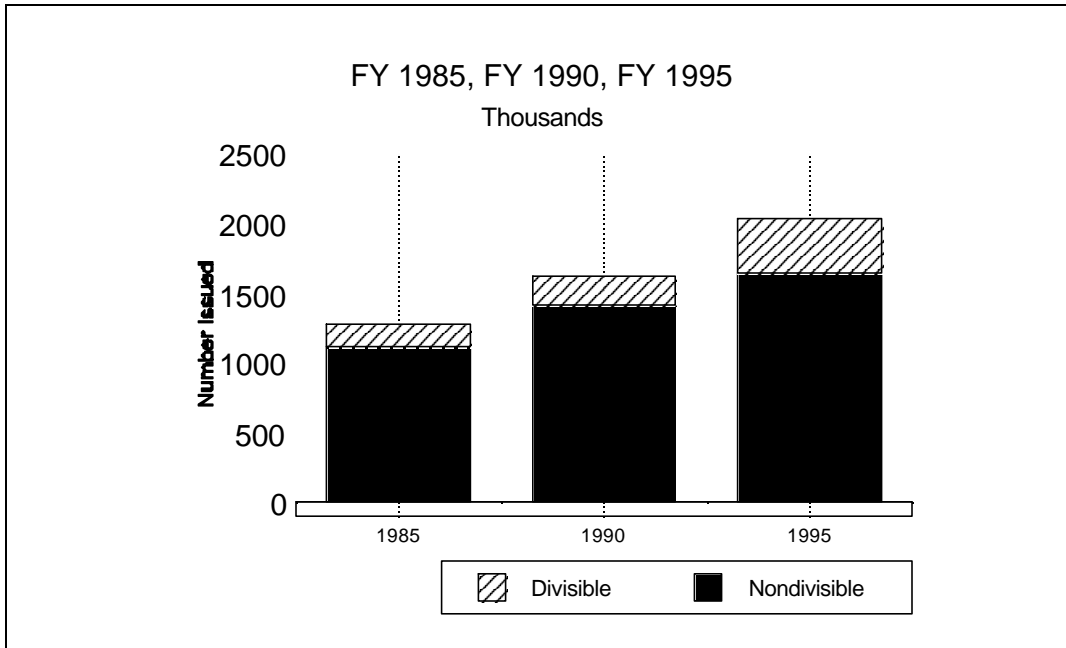
## **PERMITS ISSUED**

As Figure II-1 shows, the most significant increase in overweight permitting has been in the number of divisible load permits issued. That number increased by 148 percent from FY 1985 through FY 1995 while nondivisible-load permits increased by 50 percent.

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<sup>21</sup> From Kansas, within 20 miles of border.

**FIGURE II-1  
OVERWEIGHT PERMITS ISSUED BY STATES**



The details of these trends are shown in Table II-5. In the 11-year period the total number of overweight permits issued annually (divisible and nondivisible) grew from 1.2 million in 1985 to 2.0 million in 1995, an increase of 60 percent.

Grandfathered gross weight and axle weight limits and overweight permits constitute “legally overweight” vehicles and result from Federal and State statutes allowing their use. From a cost recovery perspective the use of “multitrip” permits is more problematic for at least two reasons: (1) they allow virtually unlimited operation of overweight vehicles on the highway system, and (2) fees for State permits (divisible and nondivisible) are often insufficient and unrelated to damage imposed and associated costs.

Table II-6 compares data for 1983, 1989 and 1995 from the 40 States that issued divisible load permits. During that time, there was significant growth in the number of multitrip permits, with the exception of two States. Trip permits offer more control and information on routes and mileage of operation for the issuing agency, whereas the multitrip<sup>22</sup> permits essentially allow

<sup>22</sup> This includes monthly, “blanket,” and “annual” permits.

unlimited operation with no accounting for mileage or routes for a greater length of time, generally a year.

**TABLE II-5  
STATE PERMITTING OF OVERWEIGHT LOADS, FY 1985 - FY 1995**

Year	Divisible Trip	Divisible Multitrip	Divisible Total	Nondivisible Trip	Nondivisible Multitrip	Nondivisible Total	Total Permits
1985	62,810	90,832	153,642	1,072,776	46,451	1,119,227	1,272,869
1986	53,976	96,193	150,169	1,149,625	59,274	1,208,899	1,359,068
1987	51,824	102,759	154,583	1,136,649	67,132	1,203,781	1,358,364
1988	64,955	112,801	177,756	1,151,732	61,222	1,212,954	1,390,710
1989	67,194	136,267	203,463	1,205,394	76,687	1,282,081	1,485,544
1990	73,270	140,697	213,967	1,321,261	88,362	1,409,623	1,623,590
1991	163,228	160,914	324,142	1,259,176	66,848	1,326,024	1,650,166
1992	184,711	162,040	346,751	1,347,773	92,734	1,440,507	1,787,258
1993	160,847	166,865	327,712	1,325,802	104,870	1,430,672	1,758,384
1994	157,114	198,236	355,350	1,426,143	116,934	1,543,077	1,898,427
1995	169,013	211,502	380,515	1,543,270	106,746	1,650,016	2,030,531

Source: FHWA Annual Inventory of State Practices, Overweight Vehicles -- Penalties and Permits, FY 1985 - FY 1994; and FY 1995 Annual State Certifications

Thirty-nine States and the District of Columbia issued divisible load permits in the period between 1983 and 1995 (see Table VII-2). Six States that issued divisible load permits in 1983 stopped issuing them by 1995 (Arizona, Hawaii, Illinois, Pennsylvania,<sup>23</sup> Tennessee, and Virginia).

<sup>23</sup> This was reversed in 1996 when Pennsylvania implemented legislation mandating permits for milk.

**TABLE II-6  
DIVISIBLE LOAD PERMITS ISSUED BY STATES**

STATE	SINGLE TRIP			MULTIPLE TRIP		
Alaska	0	0	16	0	43	0
Arizona	1,286	0	0	8	0	0
Colorado	0	5	0.00	0	85	3,002
Connecticut	(a)	0	0	(a)	1,844	1,986
D.C.	0	0	161	646	954	563
Florida	0	0	0	1,256	0	0
Georgia	0	12,835	54,253	0	202	1,376
Hawaii	43	5	0	194	85	0
Idaho	0	139	0	4,866	15,165	16,262
Illinois	169	399	0	0	0	0
Indiana	0	18,130	53,982	(b)	6,182	0
Iowa	0	0	0	0	132	191
Kansas	0	0	0	0	0	1,807
Kentucky	0	0	0	382	4,035	3,831
Louisiana	0	0	0	0	0	8,591
Massachusetts	0	0	0	8,211	14,942	12,972
Michigan	61	0	0	657	540	968
Minnesota	1,257	0	0	1,076	1,722	3,260
Montana	0	2,275	5,246	0	5,468	11,846
Nebraska	3,296	0	20,816	0	837	84
Nevada	8	15	48	917	229	2,599
New Hampshire	0	0	0	0	NA	0
New Mexico	0	0	0	0	0	225
New York	©	0	0	©	37,122	54,038
North Carolina	0	0	640	0	0	0
North Dakota	25,136	30,330	21,446	0	0	0
Ohio	767	0	0	0	1,912	31,124
Oklahoma	0	0	0	2,890	3,005	388
Oregon	0	0	23	9,253	4,286	27,342
Pennsylvania	81	342	0	0	0	0
Rhode Island	0	0	0	2,118	4,473	3,571
South Carolina	0	81	1,908	0	243	1,797
South Dakota	17,517	278	1,162	0	0	297
Tennessee	0	0	0	1,117	0	0
Texas	0	0	0	0	411	13,042
Utah	17,458	2,320	8,569	22,995	8,814	858
Vermont	0	0	0	455	1,949	2,246

STATE	SINGLE TRIP			MULTIPLE TRIP		
Virginia	0	0	0	5,579	7,581	0
Washington	17,458	0	0	3,566	4,286	2,480
Wisconsin	0	0	0	397	2,231	4,339
Wyoming	168	40	743	0	0	417
<b>TOTAL</b>	68,113	67,194	169,013	74,231	128,778	211,502

(A) 78 total permits, not stratified (included as single trip in total).

(B) 7,476 oversize/overweight permits on toll road.

(C) 172 multiple trip permits, 788 single trip permits; not stratified as divisible or nondivisible (included as divisible in total).

Source: FHWA Annual Inventory of State Practices, FY 1983 (Table 12), FY 1989; and Annual State Certifications (FY 1995)

## PERMIT FEES

While the number of overweight permits issued has increased dramatically, the fees assessed for permits appear to have changed little, if at all. Permit fees are established in either State laws or regulations. Historically, they have not been set on an infrastructure cost occasioned basis. The fees are usually established to recover the costs to administer the permit programs, and in some States enforcement is cited as an administrative cost.<sup>24</sup>

In 1989, State permit fees for an 84,000-pound overweight vehicle ranged from \$6 to \$61.<sup>25</sup> Although there has been little significant change to the 1989 fees, case studies conducted for this Study (see page VII-32) indicate that States are considering increases that would take into account damage costs; none are considering elimination of the “multitrip” permit. Oregon periodically conducts a cost allocation study; based on the results, its legislature makes adjustments to the various truck fees, including permits. Oregon officials noted that their most recent study indicated an overpayment by the industry, and permit fees were, therefore, adjusted downward. Pennsylvania will be initiating a study following a legislative audit of the motor carrier program that found “truck weight waiver fees do not appear to cover the cost of the damage caused by overweight trucks.”<sup>26</sup>

Minnesota and Washington have set permit fees that better reflect infrastructure damage. Minnesota revised its permit fees in 1993 to include damage cost per mile based on pavement

<sup>24</sup> Confirmed in case study interviews and comments to Docket 93-28.

<sup>25</sup> Source: FHWA “Inventory of State Practices.”

<sup>26</sup> “Performance Audit Report of the Department of Transportation,” Commonwealth of Pennsylvania Legislative Budget and Finance Committee, 1996.

wear for axle groups on an Equivalent Single Axle (ESAL) basis.<sup>27</sup> The cost assessed to a particular axle group increases for a given load as axles are added to the group. Pavement costs per ESAL are based on unit costs/ESAL for typical pavements. Bridge costs are not specifically accounted for in this fee, such costs were felt to be covered by registration and other taxes paid.<sup>28</sup>

Table II-7 provides the cost factors that are based on weight and axle group within a defined axle spacing under the Minnesota formula. The maximum weights for which an overweight permit is available are: (1) 12,000 pounds for a 2-axle group; (2) 18,000 pounds for a 3-axle group; and (3) 22,000 pounds for a four-or-more axle group. The permit fee is a combination of the base single trip fee plus the calculated damage cost per mile fee.

**TABLE II-7  
MINNESOTA OVERWEIGHT AXLE GROUP COST FACTORS  
(\$ PER MILE) SINGLE TRIP PERMITS**

Number of Pounds	2 Axles at 8 Feet Or Less	3 Axles at 9 Feet Or Less	4 Axles at 14 Feet Or Less
0 - 2,000 Pounds	0.12	0.05	0.04
2,001 - 4,000 Pounds	0.14	0.06	0.05
4,001 - 6,000 Pounds	0.18	0.07	0.06
6,001 - 8,000 Pounds	0.21	0.09	0.07
8,001 - 10,000 Pounds	0.26	0.1	0.08
10,001 - 12,000 Pounds	0.3	0.12	0.09
12,001 - 14,000 Pounds	Not Permitted	0.14	0.11
14,001 - 16,000 Pounds	Not Permitted	0.17	0.12
16,001 - 18,000 Pounds	Not Permitted	0.19	0.15
18,001 - 20,000 Pounds	Not Permitted	Not Permitted	0.16
20,001 - 22,000 Pounds	Not Permitted	Not Permitted	0.2

Washington State passed legislation in 1995 that increased the per mile overweight permit fees for nondivisible loads to reflect damage cost as well as administrative costs. Washington's

<sup>27</sup> The formula is  $(Af \times UC) \times D + ADMIN$  where  $Af$ = Axle Group Factor,  $UC$ =Unit Cost,  $D$ = Distance increment, and  $ADMIN$ = minimum administrative fee. The cost factors adopted by Minnesota were based on a methodology developed by a Minnesota DOT Research Engineer.

<sup>28</sup> Comments to Docket 93-28, Minnesota DOT, FHWA Docket 93-28-17, March 14, 1994.

action was in response to FHWA findings of inconsistencies in their law and a concern that the fees were insufficient. Washington has a two-tiered fee structure; in addition to a “flat fee” there is a per mile fee. Prior to the 1995 changes, the per mile fee was capped at \$2.80 for 80,000 pounds or more overweight. The current fee increases from \$2.82 per mile for 80,000 pounds to \$4.25 per mile for 100,000 pounds plus \$.50 per mile for each additional 5,000 pounds.

The FHWA HCA Study provides information on the overall cost recovery by States as well as by the Federal Government. While several States are attempting to establish permit fees that recover damage to highways, most States presently set permit fees well below levels that would cover infrastructure costs caused by vehicles operating under overweight permits. Follow-up work on the HCA Study will provide the States with data and methodology to use in designing permit fees or developing their own HCA Study.