
Important United States Issues on Truck Weight and Dimensions

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INTRODUCTION

Truck size and weight limits at the federal level in the United States were relatively constant over 25 years.

However, in the last 3 1/2 years, these federally imposed size and weight limits have gone through drastic changes. Implementation of these changes has led to considerable confusion and controversy. Yet, while we try to resolve some of the lingering issues that resulted from these changes, new proposals are being advanced for even greater change. To place the current size and weight problems in the United States in proper perspective, it may be helpful to briefly summarize the history of Federal regulation of truck size and weights in the United States.

BACKGROUND

In reviewing this size and weight history, it is important to understand that the U.S. Constitution reserves certain rights, such as police power, to the States while other rights are granted to the Federal Government such as preemptive authority over State actions which inhibit interstate commerce.

The Federal Government formally entered the truck size and weight regulation area 30 years ago. Prior to 1956, truck size and weight was controlled exclusively by the individual States.

FEDERAL TRUCK WEIGHT LIMITS

In 1956, Federal law established funding for a National System of Interstate Highways. To protect this large investment from premature deterioration due to excessive loads, the States were required to adhere to maximum weight limits to receive Federal funding.

The maximum allowable weights were 18,000 pounds on a single axle, 32,000 pounds on a tandem axle and 73,280 pounds gross vehicle weight. States whose limits were lower than the Federal limits on the Interstate System were not required to raise them. In addition, States whose limits were higher than the Federal limits prior to 1956 were also not required to lower them. The 1956 legislation effectively froze the upper limits on allowable weights. Prior to passage of the 1956 legislation, most States imposed a gross weight limit of 73,280 pounds or less.

Truck weight limits on other roads off the Interstate System were and still are governed by the individual States.

In 1974, the allowable single and tandem axle limits were raised to 20,000 and 34,000 pounds and the gross to 80,000 pounds subject to a Federal bridge formula which controlled gross weight according to the number of axles and their spacing. Again, as in 1956, individual States were not required to raise their allowable weights to the new Federal maximum limits, although many States did. Also, States with such provisions, were allowed to continue to use their own axle spacing formula in lieu of the Federal bridge formula.

The 1974 legislation also required all States to certify annually that they are effectively regulating and enforcing all size and weight limits. This certification mandate was strengthened in 1976 to require each State to quantify its truck weight monitoring program, the methods by which trucks are weighed, the number of overweight citations issued, the penalties for overweight truck violations and the number of overweight permits issued exempting trucks from the legal limits. States were also required to develop a weight enforcement plan prior to the start of each year.

Nevertheless, the permissive Federal limits coupled with grandfather weight provisions led to

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the adoption of a wide variety of weight limitations from State to State and from region to region.

Between 1974 and about 1980, the energy crisis prompted added demands for uniformity in weight limits. Major segments of the trucking industry went on strike and police intervention was needed in many States. In 1978, only 35 of the 50 States had adopted the 80,000 pound gross limit.

By 1981, most States had adopted the Federal gross vehicle weight limit of 80,000 pounds. Three States along the Mississippi River (Arkansas, Illinois and Missouri) retained lower gross weight limits. These lower limits formed a barrier against long haul operation of 80,000 pound trucks. There was also inconsistency among States in allowable axle loads.

This nonuniformity negatively impacted truck operational efficiency and productivity. In an attempt to correct this problem, the United States Congress in December 1982 established new Federal weight limits. The new limits were a significant departure from previous requirements, in that they established mandatory rather than permissive maximum weight limits. More specifically, States were required to allow trucks carrying 20,000 pounds on a single axle, 34,000 pounds on a tandem axle and 80,000 pounds gross subject to the Federal bridge formula. Thus the barrier States were required to raise their allowable weight limits on the Interstate System.

Therefore, all States must now adopt the Federal limits on the Interstate System. These limits are also the maximum limits and cannot be exceeded unless a State possesses "grandfather" rights. One grandfather clause legalizes the continuation of all single axle, tandem axle and gross weights that were in effect in a State on July 1, 1956. The second grandfather clause legalizes formulas or tables that vary from the Federal bridge formula and that were in effect in a State on January 4, 1975. The intent of these grandfather provisions was to freeze the upper weight limits and to protect the status quo regarding the continuation of previously legal loads.

CURRENT ISSUES - TRUCK WEIGHT

Current regulations indicate that the Federal Highway Administration (FHWA) retains the authority to approve a State's claims to weight grandfather rights. However, this position has been challenged. One U.S. District Court in South

Dakota ruled that the State is the ultimate arbiter of differing opinions regarding grandfather rights. As the situation currently stands, the FHWA recognizes State grandfather claims unless they are inconsistent with explicit provisions of the law. For example, a few States contend that they are not required to adopt the Federal bridge formula since they were not governed by such a formula prior to the legislative requirement in 1974. The FHWA does not accept this bridge formula interpretation.

Preservation of the grandfather weight provisions in the 1982 legislation has encouraged increased variability among the States regarding the upper limits of allowable truck weight on the Interstate System. In some States, especially the West, grandfathered gross vehicle weights exceed Federal limits but axle weights typically do not. In the East, however, grandfathered axle loads exceed the Federal limits while gross vehicle weights generally do not exceed the current 80,000 pound cap. There are also differences among the States with respect to whether grandfather rights extend to all vehicles or only to those operating under special permit. A further complicating factor is, that in some States, loadings in excess of the Federal weight limit are restricted to certain commodity groups such as agricultural or timber products.

A sampling of States with grandfathered gross weight limits in excess of 80,000 pounds indicated that these allowable weights vary from 82,000 pounds to 127,000 pounds. A notable exception is the State of Michigan where the gross vehicle weight limit is 164,000 pounds. Many States are entitled to single or tandem axle weight limits which exceed the Federal maximums. On a tandem axle, for example, while the Federal limit is 34,000 pounds, grandfathered weights can vary from slightly over 34,000 pounds to about 44,000 pounds. Various segments of the construction industry are the major recipients of benefits in those States with higher axle load limits.

In total, 19 States have grandfathered weight limits on the Interstate System which exceed the Federal limits. The 20,000 pound single axle limit is exceeded in 12 States, the 34,000 pound tandem axle limit in 13 States and the 80,000 pound gross vehicle weight limit in 4 States. Two of the 3 Federal limits are exceeded in 8 of the 19 States and all 3 limits are exceeded in 1 State.

In addition to the wide latitude in legal weight limits, States may issue overweight permits for the

operation of vehicles with loads which cannot be easily dismantled or divided. The definition of a nondivisible load is becoming somewhat liberalized in certain States.

During the 10 years that States have reported their weight enforcement activities, the number of truck weighings in the United States has generally increased each year. For example, in 1984, slightly over 100 million trucks were weighed, representing an 11.3 percent increase over 1983. In 1985, the number of trucks weighed rose to 103 million.

In 1984, almost 675,000 overweight truck citations were issued, an increase of almost 15 percent over 1983. In 1985, the number of citations for overweight violations increased slightly to 681,000.

The number of States using weigh-in-motion (WIM) for weight enforcement purposes and the level of use by States has increased during the last 3 or 4 years. In 1984, 11 States weighed 5.7 million vehicles using WIM systems. Current efforts by the Federal Government to fund weigh-in-motion demonstrations and promote the widespread use of WIM should further accelerate this trend to adopt less labor-intensive data collection and weight enforcement practices. In 1985, the number of vehicles weighed using WIM increased to over 10 million.

In spite of widespread activities throughout the United States to increase weight monitoring and enforcement, information is not yet available to reliably estimate the nature and magnitude of the overweight truck population.

Truck weight enforcement programs are intended to ensure compliance with legal load limits and thus prevent trucks from prematurely damaging highway pavements and bridges. While State truck weight enforcement activities have increased in the last few years, the relatively small number of weigh stations in most States and the avoidance of scales by overweight trucks undermine the collection of representative data.

Only 11 States used WIM for enforcement during 1984 and 13 States used WIM for enforcement during 1985. However, 42 States have weigh-in-motion activities underway. In most States not using WIM for enforcement purposes, they have installed the equipment to collect data for planning or highway design purposes or are beginning to experiment with the use of the equipment.

Penalties for weight violations vary considerably from State to State. For example, the fine structure can vary from \$20 to \$1,000 for a 4,000 pound tandem axle violation, from \$25 to \$10,000 for 10,000 pound gross weight violation and from \$25 to \$20,000 for a 20,000 pound gross weight violation.

The methods by which States process and impose fines for overweight violations also vary. Most States adjudicate violations through their court system and the fine is subject to court discretion. About 20 percent of the States have fixed overweight fines which are assessed administratively rather than through their court system.

In addition to imposing fines, about 25 percent of the States require weight violators to unload their truck down to a legal weight before proceeding. This can be a major deterrent to overweight loading practices.

Overloading will continue in the United States as long as it remains economically viable. The possibility of an overweight penalty may be viewed as a risk of doing business in a highly competitive environment. I would hope that the individual States will continue to monitor the deterrent effects of their penalty structures as they relate to economic considerations and adjust their overweight penalties accordingly.

As stated earlier, the Federal Government governs maximum weight only on the Interstate System which comprises slightly over 1 percent of the total 4 million miles of public highways in the United States yet carries about 20 percent of the total traffic. On other roads and highways, the States establish their own individual weight limits. Like the weight regulation practices on the Interstate System, weight limits off the Interstate System also vary considerably from State to State.

EMERGING ISSUES - TRUCK WEIGHT

As mentioned earlier, a variety of factors, especially weight grandfather rights, has led to major variability in truck weight limits on the Interstate System. In addition, a recent court decision severely restricts the authority of the Federal Government to approve the legitimacy of individual State claim for grandfather weight limits. Presently, States define the grandfather rights to which they are entitled. Recognizing this, segments of the motor carrier industry are encouraging States to render relaxed interpretations of their

weight grandfather rights. As a result, some States are liberalizing their weight limits through loopholes in the interpretation of the Federal legislative provisions regarding grandfathered weight. In some cases, these provisions are restricted to the movement of certain types of commodities such as agricultural, timber or mining products or are reserved for particular truck configurations.

All of these developments are leading to even wider variability in State truck weight laws and regulations.

The need to better define the overweight truck population is becoming even more critical. It is impossible to sustain defensible arguments which may restrict further liberalization of weight regulations or to propose viable policy changes regarding these limits without a quantitative assessment of the number of trucks by type of roadway which are operating overweight and the influence of this overweight truck population on reduced pavement and bridge service life. The emergence of weigh-in-motion systems and the enthusiasm of many States to embark on WIM installations will enable the overweight truck population to be better defined. Preliminary data in 3 or 4 States at weigh-in-motion sites indicate that between 40 and 60 percent of the large trucks exceed current legal limits especially during late night hours when fixed scale installations are typically closed.

The increased prevalence of deteriorating highways and bridges prompted the United States Congress in 1976 to authorize Federal-aid highway funds for bridge and pavement rehabilitation and replacement. Nevertheless, highway improvement needs far exceed available fiscal resources at all levels of government - Federal, State and local. The recognition of these factors is stimulating public policy support for less liberal weight regulations and more stringent weight enforcement practices.

FEDERAL REGULATIONS ON TRUCK LENGTH AND WIDTH

The 1956 law which introduced Federal weight limits also established a 96-inch maximum allowable vehicle width on the Interstate System. In 1976, States were granted the authority to allow 102-inch wide buses on the Interstate.

Prior to 1982, the States held exclusive authority to regulate the length of trucks on all their highways. By 1982, considerable variability existed

from State to State in allowable truck lengths and configurations. Tractor-semitrailers operated in all States but generally the Eastern and Southern States imposed tighter length restrictions. Most Western States allowed short twin-trailer combinations to operate statewide. Some allowed limited operation of even longer combinations. Eastern States for the most part, did not allow the operation of multi-trailer combinations.

In addition to mandatory weight limits, as discussed earlier, another feature of the 1982 legislation was the requirement to establish a National Truck Network consisting of the entire Interstate System and other designated highways upon which the State must allow twin-trailer combination trucks, and single unit combinations with at least 48-foot semitrailers, all of which could be up to 102-inches wide. States were required to allow at least 28-foot twin-trailers on the Network and States were precluded from imposing overall truck length limits on these roads. States were also required to provide reasonable access to and from terminals and food and fuel stops.

Implementation of the new law on size and weight resulted in considerable controversy and confusion which coupled with legal challenges to major provisions of the law, caused considerable delay in implementation until June 1984, a full 2 1/2 years after the legislation was passed. Many States resisted allowing trucks of the dimensions called for in the Federal law. Eastern States did not want to allow double trailers while Western States didn't want long single trailers. Wider trucks were not welcome in States coast to coast. The designation of non-Interstate highways on which these vehicles could operate was complicated due to resistance by some States, the complete legalization on all roads of vehicles with parts of the authorized dimensions by other States, the lack of substantive information on the expected larger vehicle safety performance on the designated highways in question and the confusing and in some cases conflicting language of the law.

At the present time, there is a designated network for the larger trucks consisting of the 42,700 miles of the Interstate System and 54 percent of the 256,000 miles of the non-Interstate Federal-aid Primary System for a total nationwide network of approximately 181,000 miles. Twin trailers are beginning to be seen with more frequency in the Eastern States, 102-inch wide trucks are becoming more common throughout the United States and much of the controversy regarding implementation of the 1982 legislation has been resolved.

The 1982 legislation required the preemption of State laws and regulations regarding the operation of wider and longer trucks on the National Network. In addition, the legislation afforded special treatment for auto-transporters, household goods movers and other specialized equipment. Also, States, which allowed semitrailers longer than the minimum 48 feet to operate prior to the 1982 legislation, are required to continue to allow vehicles of those dimensions.

In the Fall of 1984, the United States Congress passed the Tandem Truck Safety Act. This Act clarified some of the ambiguities in the 1982 legislation and liberalized the access afforded by the States to single unit combination trucks where the semi-trailers are not longer than 28 feet.

CURRENT ISSUES - TRUCK LENGTH AND WIDTH

Although major provisions of the 1982 legislation were fully implemented 2 years ago, open issues still remain such as final regulations on auto-transporter lengths, grandfathered semitrailer lengths, deleting certain portions of the National Network where the lane widths are less than 12 feet and specialized equipment designations. Unresolved issues also involve access provisions on and off the National Network.

A National Network for longer and wider trucks composed of nearly 181,000 miles nationwide has been designated. However, the availability of the non-Interstate Federal-aid Primary System to larger trucks varies considerably State to State, from less than 5 percent in some States to 100 percent of the Primary System in other States. With a few minor exceptions, generally the Eastern States have a much shorter truck network than the Western States. Requests have been made for additions and deletions to the Network; however, these amendments will not appreciably change the size of the Network. We anticipate that there will be continuing proposed adjustments to the National Network.

The 1982 legislation required that all States must allow the longer and wider vehicles reasonable access between the National Network and terminals and facilities for food, fuel, repairs and rest. The implementing regulations did not include a detailed definition or interpretation of the reasonable access provisions due to the belief that States needed to adopt provisions that responded to their own unique situations and the needs of

the trucking industry. Nevertheless, the Federal Highway Administration is monitoring the reasonable access provisions in each State and if evidence reveals that a State is not providing reasonable access, appropriate action will be initiated.

The establishment of an explicit definition of reasonable access was deemed undesirable due to major differences from State to State in population density, road mileage, and traffic conditions. As a result wide latitude in access policy has evolved in the individual States. Some States limit access to and from the National Network to distances less than one-half mile; at the other extreme some States allow unlimited access. Certainly, this variability has prompted considerable confusion especially among the long-haul segments of the trucking industry.

The national legislation granted access to household goods movers and to the 28-foot trailers up to 102-inches wide to points of loading and unloading. This could be interpreted to equate to unlimited access from the National Network. These provisions have met with mixed interpretations especially in certain Eastern States.

As mentioned earlier, the legislation afforded separate treatment to so-called specialized equipment and explicitly identified autotransporters as falling within this category. Since categorization as "specialized" equipment entitled a particular truck configuration more liberalized length provisions on the National Network, we are beginning to get such classification requests which, if granted, would preempt State regulation regarding the legal operation of these "specialized" longer trucks.

In an attempt to better understand the safety performance of the larger trucks, the Federal Highway Administration has obtained the cooperation of about 10 States to monitor large truck accidents on segments of their National Network. Due to data limitations, this monitoring focuses on the safety record of the single trailer and multiple trailer truck combinations. Data from 1983 to 1985 suggest that the involvement rate of multiple trailer trucks in nonfatal and fatal injury accidents is somewhat less than the single trailer involvement rate. However, when you combine these results with other studies, limitations in data and other factors preclude conclusive evidence of any differences in the safety record of single versus multiple trailer trucks. Nevertheless, we will continue to monitor these accidents and perhaps

initiate new studies to expand our knowledge or large truck safety performance.

EMERGING ISSUES - TRUCK LENGTH AND WIDTH

Even though it has been 2 years since a National Truck Network was designated and most of the truck length and width provisions of the 1982 legislation were implemented, controversial issues regarding the operation of longer and wider trucks remain.

The Network is relatively lean in a number of States, primarily in the East. Industry sources are pushing for liberalizing the Network in many States. Conversely, there is mounting public sentiment in some of these States to eliminate portions of their Network and to impose restrictions on large truck operations such as limited hours of operation.

A number of States impose restrictive access provisions on and off the National Truck Network. There are mounting pressures from segments of the industry to liberalize these access provisions. Compounding the access problem is the difference in enforcement practices not only among States but even within States. While the Federal Highway Administration has deferred the definition of reasonable access to State interpretation, if controversies surrounding access provisions continue, the Federal Government may be forced to adopt a formal definition of reasonable access. If this occurs, the least common denominator on access will probably be selected. Such a selection would not solve many of the current access problems.

Since twin trailers and longer tractor-semitrailers were already running in Western States prior to the 1982 legislation, certain industry segments in the Western States feel short-changed by the length provisions of that legislation. Industry sources in the West claim that the legislation raised their highway user fees but gave them no benefit relative to increased size and weight. Thus, their taxes went up yet they achieved no real productivity gains.

There are emerging pressures, including legislative proposals and congressionally mandated studies, to allow even longer combination vehicles on the Interstate System in Western States.

These longer combination vehicles may consist of turnpike doubles which include twin 40 or 45-foot trailers and may be as long as 110 feet. Some longer combination vehicle proposals would also allow a "triple" consisting of three 28-foot trailers with an overall truck combination length of about 95 feet.

Fourteen of the Western States currently allow some form of longer combination vehicle (LCV) on a selected portion of their highway network. However, the highway network open to various LCV configurations differs markedly among the Western States. In addition, LCV operations are permitted on turnpikes in five Eastern States.

Efforts to monitor the safety performance of longer and wider trucks, particularly those authorized by the 1982 legislation, are plagued by limitations in available data. Studies are underway by the Federal Highway Administration, the Transportation Research Board and individual States to continue surveillance of the safety performance of large trucks and to better quantify the relationships among truck dimensions, highway and traffic volume characteristics and driver factors and accident causation.

Widespread media coverage of large truck safety issues and associated public reactions will probably have a major influence on public policy regarding an expanded national network for trucks and liberalized access provisions. The need for meaningful data to substantiate or refute some of the claims regarding safety performance, currently based largely on intuition and emotion, is becoming more and more critical.

EMERGING ISSUES - LEGISLATIVE AND POLICY INITIATIVES

Legislation has been introduced in the United States Congress which would impact truck size and weight regulations. These legislative proposals include liberalizing access from the National Network for the longer and wider trucks and lifting the gross vehicle weight cap but retaining the axle limits and bridge formula compliance requirements on the Interstate System in the 17 Western States. The proposal would also liberalize the grandfather semitrailer length provision contained in the 1982 legislation which, if enacted, would lead to widespread operation of longer tractor semitrailers on the National Network.

There is concern that liberalized access, especially for longer tractor-semitrailers, may well cause increased safety problems due to their restrictive maneuverability in negotiating curves and intersection movements. In addition, there is concern that, if the gross vehicle weight cap is lifted for the Western States, it is just a matter of time before pressures are brought to bear to lift the weight cap and allow longer combination vehicles nationwide.

Mr. Francis Turner, a former Federal Highway Administrator, has proposed that the national size and weight limits be changed to allow trucks with higher overall gross weights but with lower axle weights. Such vehicles would significantly increase truck payload capacity while reducing overall pavement damage and bridge service life. His proposal suggests adding an extra axle to both standard tractor semitrailers and to Western doubles. Mr. Turner is also advocating a double trailer configuration wherein the trailers would be 30-35 feet in length and unlike our current Western double, the vehicle would be fully equipped with tandem axles on the trailing units. He has proposed that the tandem axle loads be limited to 25,000 pounds as opposed to the current 34,000 pounds but the configuration would be allowed a gross vehicle weight above 100,000 pounds. The proposed longer trailer lengths are intended to result in a vehicle with off-tracking characteristics similar to current tractor-semitrailers. The proposed vehicle would have significantly higher volume and weight capacity than vehicles currently allowed on the Interstate System. This proposal is being evaluated in a study by the Transportation Research Board.

Other proposals which are being analyzed include eliminating the current gross vehicle weight limit of 80,000 pounds nationwide and phasing out weight grandfather provisions over a period of say 3 to 4 years. Axle weight limits and bridge formula compliance could still be required on the Interstate System. With some finetuning, this proposal may have considerable merit. To avoid major degradation in pavement service life, there may be a need to require trucks which would exceed 80,000 pounds under this proposal to employ tandem axles on all trailing units and abandon single axle trailers. Also, under such a proposal, modifications to the Bridge Formula may be required to avoid overstressing bridges. The industry would realize productivity gains by lifting the weight cap but certain segments of the industry, particularly the short wheel based vehicles in the East, would lose their current ability to carry heavy loads under grandfather provisions. Certainly, the phas-

ing out of weight grandfather rights would make major strides in achieving some semblance of nationwide uniformity in truck weight limits on the Interstate System.

The compelling economic forces underlying larger trucks have been demonstrated. Major difficulties, of course, arise when you try to package size and weight proposals that minimize overall costs to society.

CHALLENGES TO THE TECHNICAL COMMUNITY

It is certainly evident that truck size and weight regulations and practices have gone through major changes over the past few years. A dynamic regulatory and operating environment seems to be the trend.

Policymakers and legislators are being faced with increasingly complex decisions on truck size and weight matters involving economic, social, technical and political issues. The ability to substantiate or refute arguments on either side of these many issues is severely limited. In many instances, it is impossible to quantify the merits and shortcomings of specific proposals much less to defend qualitative assessments.

The United States has an active research program related to large truck safety and operations. Work is underway and new activities are planned both in the public and private sectors. The Federal Government has ongoing and planned research related to highway geometrics and large truck operations, the safety and handling abilities of longer truck combinations, the impact of various truck configurations and loading patterns on pavement damage and bridge overstress, cost responsibilities and user fee alternatives and the associated taxes which are levied on the trucking industry and the impacts of regulatory alternatives on various segments of the trucking industry. In addition, we are beginning to develop plans for improving motor carrier-related accident and travel data which will enable a more accurate assessment of the safety performance of various truck configurations.

I know that many of the countries that are represented here at the Symposium this week share the interest of the United States in improving our knowledge base regarding the safety and operation of large trucks. I therefore would like to charge all of us with a major challenge here this week. It is

probably too ambitious to suggest that a complete unified international agenda for truck research and development can be formulated. Nevertheless, there are certainly major commonalities of interest wherein the opportunities for formal or even informal joint venture projects would yield major benefits to all of us. Certainly, it is important to continue sharing our research methodologies and our research findings. However, we should be able to go a step further and achieve a consensus on at least a handful of high priority technical projects where we can cooperate meaningfully, avoid duplication of effort and channel our somewhat

limited collective resources toward specific common objectives related to truck size and weight in a much shorter period of time than if each of us pursues these goals independently.

One way to view this task is to consider our highway systems as resources that we are borrowing from future generations. Unless we strive for the preservation and protection of the integrity of highway systems in all of our countries, we are guilty of default of a multi-billion dollar loan from the generations of the future.