

ABSTRACT

TRUCK SIZE AND WEIGHT REGULATIONS
IN THE UNITED STATES

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A brief history of truck size and weight regulations is presented. Dates of particular interest and impact are highlighted with focus on the status of regulation since the federal government's passage of the 1982 Surface Transportation Assistance Act (STAA). The separate roles of local government, state government and the federal government are described and some of the problems associated with non-uniformity are discussed. Implementation of the relatively new federal law has not been without difficulty and remains in contention with portions of the motor carrier industry and with some state and local governments. The paper offers the author's views on strategies that might help in the resolution of the remaining issues.

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The motor truck was first manufactured and sold in the United States in about 1904. In those beginning days, its power train, chassis and load-carrying capabilities were little different from the passenger vehicles of the time and its distinction was largely a more conveniently accessible cargo space. The potential of the truck was quickly recognized, however, and by 1907 some states began registering motor trucks as "special vehicles".

There were few surfaced roads in the U. S. in those days and the evolving increases in truck weight posed no particular threat to the roadway portions of the system. Even then, however, there were numerous small stream crossings and a fair number of major bridge structures spanning principal rivers. With the motor truck rapidly growing in size and weight, there was an increasing concern among lawmakers for the many small bridges that had been intuitively constructed rather than engineered. As early as 1913, some state Legislatures had reacted by imposing truck size and weight regulation and by 1931, all of the 48 states had some statutory form of size and weight control in place. Unfortunately for the budding motor carrier industry, those separate state laws were very inconsistent and lacked any attempt to provide interstate or inter-regional uniformity. That early pattern of patch-work regulation has persisted throughout the intervening years and even though there have been several notable attempts to lessen its impact, the industry in 1987 is still somewhat hampered by non-uniformity whether from state to state or from region to region. To some extent, state governments are at fault because they largely view truck size and weight regulation as a state's rights issue and further they are prone to grant special exemptions to major industries that are unique to their respective state (e.g., mining, agriculture, timber, etc.). Segments of the motor carrier industry must, however, also share some of the blame by being reluctant to negotiate on uniformity except in terms of incorporating the largest and heaviest vehicles permitted by any of the various state statutes and then only on the basis that all commercial vehicles must be at free will to travel on any and every road.

There are many owners of the 3.9 million miles (6.3×10^6 km) of public roads in the United States including the federal government, the individual states and the thousands of counties, cities, townships and burroughs. There are privately-owned roads, roads owned by special districts, toll authorities, and a myriad of small independent agencies that have a few miles of inventory. Very obviously, roadway facilities in the U. S. range from superbly designed highways to roads that are barely usable and from freeways combining the highest current standards of load capacity and geometry to minor roads having no standards at all. Despite this conglomerate array of regulation and highway type, nearly one-trillion ton-miles (1.46×10^{15} kilogram-kilometers) of freight move annually by trucks which in aggregate travel in excess of 138 billion vehicle miles (2.22×10^{11} vehicle kilometers).

In the early 1940's, the concept of a nationwide, access controlled, high-standard system of highways was beginning to take shape and the National System of Interstate and Defense Highways was established by the Federal-Aid Highway Act of 1944. Twelve years later, the Federal-Aid Highway Act of 1956 and its companion Highway Revenue Act of 1956 defined the extent and purpose of that system and provided the funding mechanism necessary for construction. The Interstate System is limited by law to 42,500 miles (68,395 km.) and has the purposes of connecting as directly as possible, the Nation's principal metropolitan areas, cities and industrial centers; tying to routes of continental importance at suitable border points and providing transportation facilities to serve the national defense. It was a system envisioned to provide free and uninhibited movement of people and goods.

As early as 1935, the Congress directed the Interstate Commerce Commission to study the impacts on the motor carrier industry resulting from the varied state laws regulating the size and weight of trucks. The ICC's study (reported to Congress in 1941) did not conclude a need for federal entry into truck size and weight regulation at that time and the diverse state laws continued to govern. The 1956 federal legislation that enabled the actual beginning of the Interstate system also heralded the entry of the federal government into the regulation of truck size and weight and thus represented the first exercise of pre-emptive authority over state actions. Placed into federal law at that time were maximum single axle weights of 18,000 lbs. (8,165 kg.), maximum tandem axle weights of 32,000 lbs. (14,515 kg.), a maximum gross vehicle weight of 73,280 lbs. (33,240 kg.) and a limitation of 96 inches (244 cm.) on vehicle width. The law was silent as to

vehicle lengths, combination lengths and maximum vehicle or load height.

Perhaps unfortunately, these partial regulations were not focused on any industry problems associated with non-uniformity but rather were designed solely to protect the massive public investment that the construction of the Interstate System would require. In fact, the regulations were applicable only to that system which, from the figures that I have quoted earlier, can be seen to comprise only about one percent of the public road mileage in the U. S. The regulations had other flaws as well. Namely, they were simply permissive maximums which allowed the states individually to regulate at lesser weights and/or width on the Interstate and secondly, the regulations permitted "grandfathering" when states had earlier allowed weights heavier than those prescribed by the new law. In a nutshell, the status of uniformity at that point was that the states technically remained in sole control of truck size and weight on 99 percent of the country's mileage and on the remaining one percent (the Interstate), they could regulate weights at, below, or above the provisions in federal law. To be sure, most states reacted by adjusting their particular statutes to somewhat fit the pattern established for Interstate operation but this voluntary effort toward uniformity was by no means a universal success.

The era following the 1956 federal legislation was characterized by a flurry of construction activity in all of the states and as completed segments of these new high-standard highways became available for use, the motor carrier industry began petitioning the individual states and the federal Congress for an ability to use more productive vehicles. The laws of many states began to change rapidly with respect to operations off of the Interstate but the regulations at the federal level, applicable to the Interstate highways, remained constant until 1975. From this interim period emerged a discordant situation that often allowed heavier axle and gross weights to operate on highways generally built to lesser capacity and geometric standards than those of the Interstate System.

To some extent, this paradox was recognized by the federal Congress in the 1974 Highway Act wherein the weight restrictions for Interstate operation were modified to permit 20,000 lb. (9,072 kg.) single axle weights, 34,000 lb. (15,422 kg.) tandem axle weights and a maximum gross vehicle combination weight of 80,000 lbs. (36,288 kg.). These newly permissible weights were further defined and controlled by a so-called Formula "B"; $W=500 \left[\frac{LN}{N-1} + 12N + 36 \right]$.

Again, however, these regulations were only permissive maximums, retained the "grandfathering" provisions and were applicable only to the Interstate. This time, the reaction of the several states to the new federal law was not as consistent as it had been in 1956 and resulted in the creation of what became known as the "barrier states". These were seven contiguous states situated as a north/south belt through the middle of the country that perpetuated the earlier Interstate weight standards and thus effectively restricted the east/west movement of freight. Other regional patterns developed as well and by 1982, considerable differences existed in truck lengths and configurations. For example, fourteen northeastern, eastern seaboard and southeastern states prohibited the double trailer combinations that were common throughout the rest of the country. Tractor-semitrailers operated in all states but generally in the eastern and southern states, these were restricted to lesser lengths and were allowed heavier axle and gross weights than in the remaining regions. If anything, truck size and weight uniformity was declining rather than improving.

In the 1982 Surface Transportation Assistance Act (STAA), the federal Congress acted to establish a National Truck Network consisting of the entire Interstate System and other designated highways upon which all states would be obligated to allow twin-trailer combination trucks with 28'-0" (8.53 m.) trailers and single unit combinations with 48-foot (14.63 m.) semitrailers. All of these combinations were unrestricted in overall length and could be up to 102-inches (2.59 m.) wide. These larger trailer sizes and the attempts to standardize the fleets involved in interstate commerce were directed to the increased productivity of the motor carrier industry. In exchange for the anticipated benefits, taxes on the industry were significantly restructured and generally increased.

In addition, the 1982 Act also removed the permissive maximum concept from the earlier Interstate weight regulations and made those weights simultaneously minimums and maximums for a highway system which now included much more mileage than just the Interstate. This mandated and expanded system for commerce is called the "National Network" and for the first time at the federal level, attempted to address some of the truck productivity problems associated with non-uniform truck size and weight standards. Unfortunately, the "grandfather" provisions for weight remain in effect.

Implementation of the new law resulted in considerable controversy and confusion which, coupled with legal challenges to major provisions of the law, caused considerable

delay in implementation. Many states resisted any implementation of the federal law, and a few made their entire mileage available to the larger vehicles. In general, however, eastern states did not want to allow double trailers and western states were concerned about longer 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 by the lack of substantive information on larger vehicle safety performance and by the confusing and, in some cases, conflicting language of the law.

Presently, the designated National Network for the larger trucks consists of the 42,500 miles (68,395 km.) of the Interstate System and 54 percent of the 256,000 miles (411,981 km.) of the non-Interstate Federal-aid Primary System for a total nationwide network of approximately 181,000 miles (291,283 km.). Twin trailers are beginning to be seen more frequently in the eastern states, 102-inch (2.59 m.) wide trucks are becoming more common throughout the United States, and some of the controversy regarding implementation of the 1982 legislation on the Network highways themselves has been resolved.

The most difficult aspect of the 1982 Act was the requirement that the longer and wider vehicles be provided reasonable access between the National Network and terminals and facilities for food, fuel, repairs and rest. Neither the law itself nor the implementing federal regulations included a definition of terminals or an interpretation of what constituted reasonable access. It was left to the states to adopt access provisions that responded to their own unique situations and the needs of the trucking industry. Therein lies the current dilemma for users of the tractor and trailer equipment enabled by the federal law. Some 13 states have made their entire mileage available for access use but the remaining 35 contiguous states have widely varying access regulations in place. Some impose mileage limitations (e.g. 3, 5 or 10 miles) (4.8, 8.0 or 16.1 km.) while others like California, have regulations focused on the compatibility of operating characteristics with highway geometry and have used this approach as the basis for identifying a "terminal access" sub-system. It is perhaps impossible to quantify the exact mileage that is available to STAA-sized truck equipment but it is substantially greater than the mileage designated in the National Network and probably represents those corridors that traditionally serve 80 to 90 percent of the freight tonnage moved by truck. In all but 13 states there are still, however, inner city and other locations that cannot legally be served by STAA-sized equipment. This situation, coupled with the fact that

some state regulations strictly construe the meaning of "terminal," has not been well accepted by the shipping and trucking industries and they are presently seeking relief either through the federal rulemaking process or additional federal legislation.

What then is the 1987 status of truck size and weight regulation in the U. S? For the nearly 140,000 miles (225,300 km.) of designated National Network highways and the substantial addition of terminal access availability, vehicles can be 102 inches (2.59 m.) wide and tractor-semitrailers in which the semitrailer can be no shorter than 48 feet (14.63 m.), can be operated without combination length restriction. Double trailer combinations comprised of trailers at least 28 feet (8.53 m.) long are also unrestricted in combination length when in operation on this highway sub-system. Thus with regard to this 10 to 15 percent of public highway mileage, there are some beginnings of uniformity although these are somewhat nullified by those state regulations which, under the grandfather authority in federal law, allow semitrailers longer than 48 feet (14.63 m.) and/or trailers used in doubles to exceed 28 feet (8.53 m.). The mileage available from the National Network and terminal access sub-system is quite small as a percentage of total mileage but is very significant in the accommodation of major freight corridors. Realistically, however, freight does not originate or terminate on or near the right-of-way for these major highways and that fact has perhaps not been properly reckoned by the Congress. Leaving the sub-system for purposes of small shipment pickup or delivery, the motor carrier is again confronted with a myriad of state-specific regulation. (Show series of slides indicating off-system regulations.) It is obvious from these graphic presentations that diverse truck size and weight regulations can still have a major impact on fleet selection and method of operation and that they may, in fact, preclude a full realization of the productivity benefits envisioned by the STAA.

If they could be successfully negotiated between government and industry, there are several opportunities to vastly improve the uniformity of truck size and weight regulation in the U. S. First, and perhaps most important, is the complete elimination of all "grandfather" provisions on a schedule coordinated with the depreciation of existing equipment. Secondly, the industry would be well advised to internally agree to some operational standards for vehicle maneuverability and for loading and to then commit to those standards in the long term. Knowing what the vehicle of 10 to 20 years hence would require in terms of geometric design and pavement/bridge

capacity, would give the highway owners reason and credibility to plan and invest in the elimination of constrictions. With the budgetary realities of state and local governments today, such investment decisions are hard to make when seemingly each segment of the motor carrier industry has differing objectives and is separately seeking increases in the size and weight of vehicles on a continuing basis. For progress to be made, there must be unanimity of objectives and stability in the requests made to legislative bodies. Finally, there must be an acceptance of the fact that commercial vehicles when configured and sized to be productive and safe on the nation's best highways, may be neither if they operate on lesser highways or in the heart of urban areas.

It is fairly obvious that much of the history of truck size and weight regulation in the U. S. has been developed on the basis of emotional rather than technical response and often as a result of concession to many varied and sometimes contradicting special interests. In recent years and currently, much is being researched and learned about the interaction of the loaded commercial vehicle and the structure and preservation of the highway and its bridges. Much also is being learned about vehicle stability and safety and about the operational demands that larger, more productive vehicles can impose on other motorists and on highway geometrics. Many who are in the forefront on these issues are speakers or attendees of this conference and we compliment the organizers who have provided this opportunity for the exchange of information. As we all learn more about these subjects, there can be an orderly evolution of highly productive and safe commercial vehicles that operate in complete harmony with other highway users.