Where can large trucks safely travel?

ACCESS FOR LARGE TRUCKS

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The growth of truck traffic and the trend toward larger trucks have focused public attention on the impact of truck travel on highway safety, traffic congestion, and highway condition. A major concern is the issue of truck access on highways off the Interstate system that may not be built to the highest design standards.

"Reasonable access" became an issue after passage of the Surface Transportation Assistance Act (STAA) of 1982. The act attempted to strike a balance between improved efficiency of trucking operations, by liberalizing minimum commercial vehicle size limits, and safety, by restricting the larger trucks authorized by the act (STAA vehicles) to a designated National Network of the nation's best highways. Congress required the states to provide "reasonable access" for STAA vehicles from the National Network to terminals and service facilities (i.e., for food, fuel, repairs, and rest) and identified safety as the primary criterion for access determination. The implementing regulations, however, entrusted to the states the determination of where such access could safely be provided.

TRB Study

All states have now enacted access policies but they differ widely in the extent of access provided and in the interpretation of "terminal." Because of the restrictiveness of some state policies, carriers and shippers have sought uniform federal standards for reasonable access, whereas state and local transportation officials maintain that access decisions should continue to be made locally. To help resolve these differences, in 1987 Congress requested that the Transportation Research Board conduct a study on the establishment of a nationwide policy for the provision of reasonable access. Funding provided by the Federal Highway Administration supported an 18-member committee of technical experts and practitioners under the leadership of Roland A. Ouellette, President of the Eno Foundation for Transportation, Inc., who conducted the study.

The Access Problem

States have regulated the size of trucks and other commercial vehicles since the early 1900s. The trend has been toward permitting larger trucks, mirroring improvements in the highway system and vehicle technologies. The truck size regulations of the 1982 STAA represent another increment in this trend. The act increased allowable truck width by 6 inches to 102 inches and truck trailer length to a minimum of 48 feet for a tractor-semitrailer unit (up to 59 feet for those vehicles grandfathered by the STAA) and 28 feet for each of the trailer units in a twin trailer truck. Before the act, the most common semitrailer length was 45 feet and twin trailer trucks were prohibited in many eastern states.

The cumulative effect of increasing allowable truck size has been to improve substantially the efficiency of freight transportation by truck. However, some state and local transportation officials believe that the highway system, particularly those highways built to lower standards than the Interstate system, is now at the limit of its ability to accommodate large trucks and have restricted their travel accordingly.

The extent of such restrictions varies considerably, particularly for STAA vehicles. For example, nine states (all in the West) allow these trucks on virtually all primary roads (i.e., major highways that connect urban centers). Another 18 states allow them on more than two-thirds of the mileage on their primary roads. In comparison, 17 states, nearly all in the East, and the District of Columbia allow these trucks on fewer than one-third of the miles on their primary highways. In any case, trucks must use other, often nonprimary roads, to gain access to major trunk routes where travel is authorized or to reach terminals and points of loading and unloading. The more restrictive policies of eastern states reflect lack of experience with certain vehicles, such as twin trailer trucks, and generally poorer highway conditions and greater traffic congestion than in other areas of the country. Not surprisingly, disputes over the extent of access provided STAA vehicles have been most heated in selected eastern states that have limited through-travel routes and provided short distances for access to terminals and services.

Where access is restricted, carriers must make detours to reach their destinations, increasing operating costs. Another option is to maintain two fleets so that smaller equipment can be used on restricted roads, which complicates pickup and delivery logistics and reduces operating flexibility; this option will become less viable as STAA equipment becomes the industry standard.

Study Committee Findings

In practice, disagreements between states and industry on access are concentrated in a relatively small number of states, although lack of rigorous enforcement of access regulations may partly explain the absence of more widespread problems. Nevertheless, the lack of consistency among state access policies and the wide variations in the extent of access provided offered convincing evidence to the study committee of the

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Committee for Truck Access Study

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need for a more uniform approach to determining appropriate highways for STAA vehicle travel. Moreover, some states appear to have restricted STAA-vehicle access arbitrarily without basing their policies on the likely effects on highway safety.

A uniform standard for determining access, based on such factors as distance from the National Network, type of highway, and roadway characteristics, is appealing. However, a national standard for access was deemed inappropriate by the committee because no single standard could take into account differences in local highway and traffic conditions. Instead, determination of appropriate highways for access should be based on safety-related differences between STAA vehicles and the vehicles they replace.

In the absence of direct information on the accident experience of STAA relative to pre-STAA vehicles, making this determination requires judgments about the adequacy of specific highway design features in relation to the particular handling and performance characteristics of STAA vehicles. The report examined several of the most important factors, including vehicle maneuverability on curves and at ramps and intersections, and the effect of vehicle length on sight distance for passing and intersections. The modest increase in vehicle width was deemed to have only a minor effect on the safe operation of STAA vehicles, except on narrow lanes of 10 feet or less.

Study Recommendations

To ensure more common procedures in evaluating access, the committee recommended that FHWA require states to adopt and use procedures based on safety and engineering considerations to evaluate the adequacy of highways to accommodate STAA vehicles and review and certify these procedures. An "escape hatch" was provided for states that have established procedures that differ from those recommended but that accommodate government and industry concerns about access; they could petition FHWA for certification of their current procedures.

Because vehicle maneuverability is an important aspect of truck performance that is noticeably and measurably different for STAA and pre-STAA vehicles, particularly for the longer tractor-semitrailer trucks grandfathered by the 1982 STAA, the report focused on measures to improve vehicle maneuverability.

The trailer wheelbase is the key dimension that affects the extent to which the rear wheels of the trailing unit are likely to swing inside the path of the front tractor wheels, forcing the truck driver to cut the corner or swing wide to stay on the road. By shortening the distance between the kingpin, the mechanism that couples the trailer to the tractor, and the rear axles, the maneuverability of the longer STAA tractor-semitrailers can approximate that of the vehicles they replace.

The committee recommended that states adopt a maximum kingpin-to-center-of-rear-axle setting of 41 feet. This setting would make the maneuverability of the longer grandfathered STAA tractor-semitrailers equivalent to the 48-foot STAA tractor-semitrailer (with its rear trailer axles in the farthest back position), which is rapidly becoming the industry standard semitrailer.

Although vehicle maneuverability is only one factor to consider in judging the safety of a road for STAA vehicle travel, shortening the trailer wheelbase could significantly improve the "fit" of the vehicle on roads with restrictive geometry and thus potentially expand the miles of access roads that could be opened to STAA vehicles.

Disputes over access have been exacerbated by lengthy reviews by multiple jurisdictions and by inconsistent application of policies. States were encouraged to take a leadership role in providing assistance to local governments as they establish access policies. Guidelines for processing access requests were recommended: requests should be reviewed in 30 days or less, with automatic approval if applications are not reviewed in 90 days. State and local governments were both urged to apply access policies equitably; if access is

granted for one type of STAA vehicle, this approval should apply to all vehicles of that type regardless of who owns or operates them.

Providing access to service facilities has not been raised as a problem by government or industry. Many states now allow STAA vehicles to travel a short distance from the National Network to reach service facilities. The committee concluded that it would be impractical and of limited value to require states to evaluate all of these short road segments. Instead, it supported a minimum distance of one mile from designated highways to provide access to service facilities.

Access to terminals is a more difficult question. In the absence of a uniform definition of terminal, some states have adopted very narrow definitions that could unduly restrict access on roads that might otherwise accommodate STAA vehicles. The committee reiterated the importance of evaluating the adequacy of the road rather than the destination of the vehicle in determining where access is appropriate and recommended a broad definition of terminal as any location where freight either originates, terminates, or is handled in the transportation process or where carriers maintain operating facilities. However, the definition is not intended to supersede existing bans or preclude new bans on combination truck travel, such as those on through travel on residential streets or on weight-posted roads or bridges.

Conclusion

The access issue illustrates many of the problems involved in developing sound public policy for large truck travel. The concept of a National Network appears attractive—productivity gains from larger equipment can be realized without compromising safety—but the concept is difficult to implement because a vast majority of carriers need to travel beyond the designated system. Determining where this travel can be accommodated safely is not a simple matter. The absence of accident data by vehicle size and road type is compounded by the difficulty of documenting the adverse impacts of relatively small increases in vehicle size on safety or traffic operations. Even with better accident data, it would not be easy to determine which roads are "safe" or "unsafe." Highways are merely "more safe" and "less safe"; determining where to draw this line is likely to remain a matter of considerable judgment.

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A single standard for determining where access for large trucks can be safely provided is inappropriate because of differences in local highway and traffic conditions.