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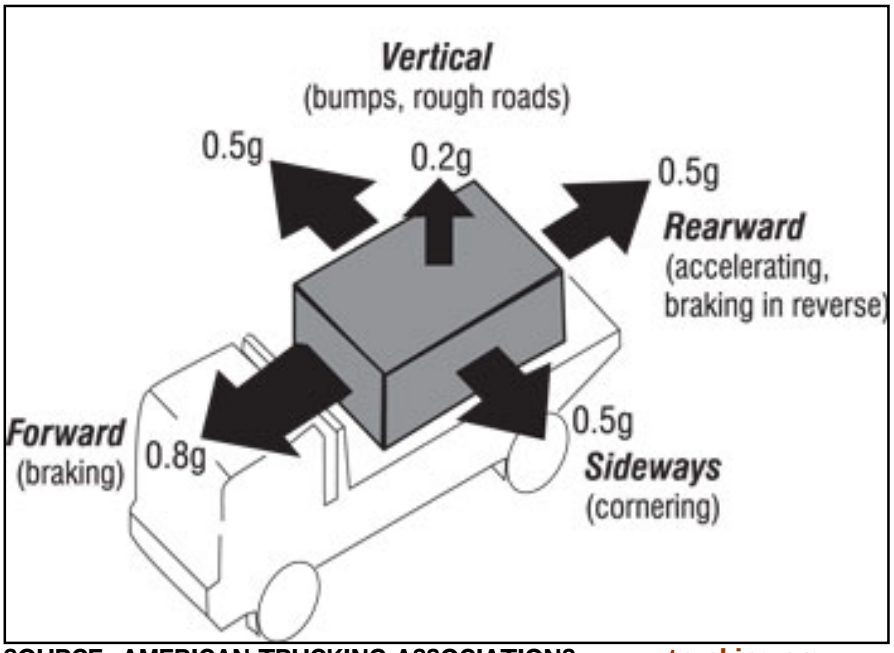
Transporting Trusses: Load Securement & Driver Responsibility (Part 3 of 3) by Sean D. Shields

Let's begin with a brief review of key concepts from the first two articles in this series. Within the issue of transporting the manufactured materials of the structural building components industry from plant to construction site, two federal agencies have jurisdiction: the Federal Highway Administration (FHWA) and the Federal Motor Carrier Safety Administration (FMCSA). The FHWA sets size and weight limits allowable for commercial transport, which includes non-reducible load requirements, whereas the FMCSA approves rules that pertain to cargo securement. This article will address those issues pertaining to the FMCSA cargo securement.

PERFORMANCE CRITERIA



SOURCE: AMERICAN TRUCKING ASSOCIATIONS, www.trucking.org

The most difficult aspect of this issue lies in the fact that under the new FMCSA standard, there are clear guidelines on how many "tie downs" (nylon straps or chains, for example) must be used, and how far apart they should be spaced, depending on the length of the item and it's weight. However, trusses are specifically named in statute 49 CFR Part 393.110(d), as exempt from these tie down guidelines:

> Special rule for special purpose vehicles. The rules in this section do not apply

to a vehicle transporting one or more articles of cargo such as, but not limited to, machinery or fabricated structural items (e.g., steel or concrete beams, crane booms, girders, and trusses, etc.) which, because of their design, size, shape, or weight, must be fastened by special methods. **However, any article of cargo carried on that vehicle must be securely and adequately fastened to the vehicle.** (emphasis added)

The question is what does "securely and adequately fastened to the vehicle" mean? This article will begin to explore that very issue.

RISK MANAGEMENT

It is important to point out that proper load securement has as much to do with risk management as it does legal compliance. First, the customer is paying for safe, timely and damage-free delivery. Second, damaged cargo can result in claims against your company, hurt your reputation, and impact your profitability. And third, insufficiently secured cargo can lead to an accident resulting in loss of property or injury.

Improperly securing and adequately fastening truss loads has proven to result in claims. Specifically data obtained from CNA for the years CNA maintained a truss industry insurance program, showed that for CNA truss manufacturer insureds, 36 percent of the claims were vehicle-related. Of those claims, 148 had to do with clearance issues. These losses occurred on trucks delivering over-hanging trusses to jobsites that

struck something or someone. The next most frequent number of losses, 93, occurred when objects fell off vehicles and struck something or someone.

NORTH AMERICAN CARGO SECUREMENT STANDARD

In the early 1990s, several serious accidents involving loss of cargo prompted Canadian and U.S. government officials to request a review of the adequacy of cargo securement regulations. In 1993, government and industry groups, including the highway patrol, the departments of transportation, commercial trucking firms, and manufacturing industries from both countries agreed to sponsor a major research program.

From 1993 to 1997, research was conducted to form a better understanding of the mechanics of cargo securement on trucks and the effectiveness of different cargo securement techniques. In 1997, the study findings were presented to a U.S./Canadian joint committee for use in preparing the new North American Cargo Securement Standard.

After a period of intense public rulemaking, the FMCSA issued its final rule in the September 27, 2002 edition of the Federal Register (Vol. 67, No. 188). The purpose of the new standard was to reduce the number of accidents caused by cargo shifting or falling from commercial motor vehicles (CMV), and to harmonize securement regulations for the U.S., Canada and Mexico to the greatest extent practicable.

The new standard now applies to all cargo transported on public highways for CMVs with a gross weight (including the vehicle and equipment) over 10,000 lbs. These standards do not apply to roads that are not part of the Interstate System (approximately 43,000 miles), the National Highway System (an additional 120,000 miles), or roads that provide reasonable access to these federal systems. However, since it is rare the vehicle transporting your cargo will not travel on roads governed by these standards during some portion of its trip, it is advisable to, as a rule of thumb, follow these guidelines for every trip. (View pdfs of these guidelines.)

ADEQUATE SECUREMENT

As noted above, FMCSA issued guidelines in their final rule as to the number and spacing of tie downs used depending on the length and weight of the cargo being transported. However, because of their unusual size and shape, trusses are explicitly exempted from these guidelines. The only guidance given is that trusses must be adequately and securely fastened to the vehicle. Below are the factors provided by the FMCSA you must use in order to meet their definition of “adequate and secure.”

THE “G” FACTOR

Under 49 CFR Part 393.102(a), the rules specify minimum standards to meet securement requirements and apply to all cargo that would be transported by component manufacturers. The cargo must remain immobilized up to the following levels of acceleration (A “G” is the measure of the force of gravity):

- 0.80 G in the forward direction
- 0.50 G in the rearward direction
- 0.20 G in the lateral direction

In addition, there must be force acting downward on the cargo equal to at least 20 percent of its

weight if it is not fully contained within the structure of the vehicle to prevent vertical movement. Essentially, this requirement relates to situations where a vehicle may hit a bump in the road, causing an upward force on the cargo. The 20 percent downward force is generally created through using tie downs with an appropriate work load limit (WLL) rating (the WLL rating will be discussed in a later section of this article). This use of tie downs also satisfies the lateral and above referenced rearward force requirements. However, it is important to note that the forward direction (braking) force limit is significantly greater. To meet this requirement, you may need to use additional tie downs, blocking, or use a trailer with a forward guard or grate.

For example, if you undergo one G acceleration, you experience a force equal to your own body weight. In short, this means that the faster the vehicle transporting the cargo moves (traveling on a highway at 55 mph versus on an urban road at 25 mph), the greater the G-force exerted on the trusses in lateral directions. It follows that the route you chose to deliver to the work site may have an impact on the number of tie downs or other securement methods you chose to utilize. In other words, if the route includes interstate-speed travel, you may consider increasing the number of tie downs used to secure the load.

LOAD SECUREMENT DEVICES

There are a wide variety of methods to properly secure cargo to the transporting vehicle. The new standard, in 49 CFR Part 393.104, states that regardless of the method, it must be able to withstand the "G-forces" discussed above and be in good repair:

> (a) General. All devices and systems used to secure cargo to or within a vehicle must be capable of meeting the requirements of § 393.102. (G-force limits)
>
> (b) Prohibition on the use of damaged securement devices. All vehicle structures, systems, parts, and components used to secure cargo must be in proper working order when used to perform that function with no damaged or weakened components that will adversely effect their performance for cargo securement purposes, including reducing the working load limit, and must not have any cracks or cuts.

Specifically, the statute addresses both safety devices that are part of the vehicle, as well as additional devices used to secure the load. Devices listed as part of the vehicle include: structures, floors, walls, decks, tie down anchor points, headerboards, bulkheads, stakes, posts and associated mounting pockets used to contain or secure articles of cargo.

Additional devices not part of the vehicle can include, but are not limited to, nylon or steel straps, chains, wire rope, synthetic webbing and cordage. According to the new standard, in 49 CFR Part 393.104(e), tie downs cannot contain knots, and if they are repaired, the repairs must be done so in accordance with the manufacturer's instructions. You may want to inspect your tie down devices periodically to check for excessive wear and replace them if necessary in conformance with these requirements.

WORK LOAD LIMITS

In 49 CFR Part 393.102(c), the issue of working load limits (WLL) is addressed:

> Prohibition on exceeding working load limits. Cargo securement devices and systems

> must be designed, installed, and maintained to ensure that the maximum forces acting on the devices or systems do not exceed the working load limit for the devices under the [minimum G] conditions.

The WLL can be determined by using either the tie down manufacturer's markings (printed on nylon straps, for example), or by using the tables created by FMCSA for various tie down methods. The tables are listed on page 61228 of the Federal Register (Vol. 67, No. 188). One item of note, for those of you using unmarked welded steel chain to secure loads, this statute considers its WLL to be that for grade 30 proof coil chain.

In addition, you must always use the lowest WLL value of the equipment you are using when dealing with securement devices attached in series (i.e., the weakest link). For example, if a strap is attached to the vehicle by a hook, and the WLL of the hook is less than that of the strap, you must use the WLL of the hook.

49 CFR Part 393.106(d), discusses the way in which WLL determines the number and method used to secure cargo:

> Minimum strength of cargo securement devices and systems. The aggregate working load limit of any securement system used to secure an article or group of articles against movement must be at least one-half times the weight of the article or group of articles. The aggregate working load limit is the sum of: (1) One-half of the working load limit of each associated connector or attachment mechanism used to secure a part of the article of cargo to the vehicle; and (2) One-half of the working load limit for each end section of a tie down that is attached to an anchor point.

For example, a stack of trusses weighing 5,000 lbs must have a total of 2,500 lbs of WLL securing it to the vehicle. The aggregate WLL is the sum of the minimum WLL of all the securement devices used. A more in-depth discussion of this issue, along with helpful examples and calculation methods, will be available in the WTCA "Guide to Loading and Transporting Trusses."

DRIVER RESPONSIBILITY

Finally, there is the issue of driver responsibility. Once the truck leaves your manufacturing facility, the driver assumes responsibility of the vehicle and the cargo it is transporting. For this reason, it is always a good idea to have the driver inspect all tie downs, anchor points and other load securement methods before departing. The new standard also stipulates that all load securement devices must be adjustable (with the exception of pre-applied steel straps).

In addition, the driver is required to ensure that the cargo is properly distributed, does not obscure the forward or left and right view from the driver's seat, or prevent access to emergency accessories (e.g., flares, cones, etc.) or a viable exit from the cab of the truck.

For components transported long distances, the driver has an additional responsibility to inspect cargo securement while in transit. At a minimum, the driver must ensure adequate tension of securement devices within the first 50 miles of the trip, when their duty status changes (i.e., they stop to sleep or eat), or after three hours or 150 miles.

ENFORCEMENT

Again, these guidelines should be followed because it is a sound risk management decision. However, there is also the possibility of legal penalties from law enforcement officials. In most cases, an obvious infraction can result in a hefty fine or ticket as long as the load can subsequently be properly secured.

If the cargo cannot be properly secured at the point of citation, most law enforcement officers (i.e., state patrol or state Department of Transportation inspectors) can place the vehicle "out-of-service," until a different vehicle or additional securement devices are brought to transport the cargo. This can mean costly delays and affect your company's reputation.

CONCLUSION

The FMCSA has established new rules for proper load securement on commercial cargo transported on public highways. These new rules may change the way you currently secure your manufactured products when they are delivered to the jobsite. In addition to proper securement, there are additional requirements of drivers that increase their responsibility for the load they are transporting.

In response to issues component manufacturers have encountered, particularly within enforcement and reducible load permitting, as well as proper load securement requirements, WTCA is putting together the "Guide to Loading and Transporting Wood Trusses." This document will supply strategies you can use for working with local inspection and enforcement authorities to ensure products are loaded and transported practically, efficiently and legally.

SBC HOME PAGE

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