

## Chain Grade Identification

## For More Information

Enforcement personnel will check for the following components and proper use of securement systems:

Purpose-built trailers fitted with bunks, bolsters, stakes or standards that cradle the logs and prevent them from rolling.

Securement components must be built to withstand all anticipated operational forces without failure.

Stakes or standards that are not permanently attached to the vehicle must be secured to prevent unintentional separation during transit.

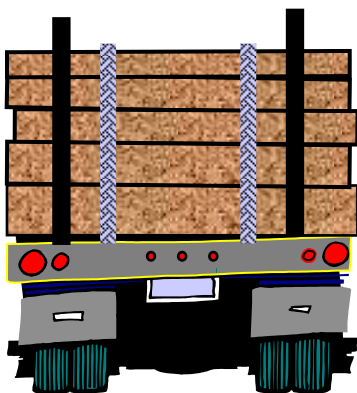
Use of tiedowns that meet or exceed the working load limit (one-sixth the weight of logs) in combination with the stabilization provided by bunks and stakes.

Logs must be solidly packed and the outer bottom logs must rest solidly against the bunks, bolsters, stakes or standards.

Each outside log on the side of a stack of logs must touch at least two stakes or must extend beyond each stake while resting on other logs in a stable manner.

The center of the highest outside log on each side or end must be below the top of each stake, bunk or standard.

Fig. 4—When two tiedowns are used, tiedowns should be spaced at one-third and two-thirds the length of the logs



	Grade 80 alloy	Grade 70 transport	Grade 43 high test	Grade 30 proof coil	Size inch (mm)
	3500 (1590)	3150 (1430)	2600 (1180)	1300 (580)	1/4 (7)
	4500 (2000)	4700 (2130)	3900 (1770)	1900 (860)	5/16 (8)
	7100 (3200)	6600 (2990)	5400 (2450)	2650 (1200)	3/8 (10)
	.....	8750 (3970)	7200 (3270)	3700 (1680)	7/16 (4,11)
	12000 (5400)	11300 (5130)	9200 (4170)	4500 (2030)	1/2 (13)
	18100 (8200)	15800 (7170)	13000 (5910)	6900 (3130)	5/8 (16)
	T	.....	HT	PC	Chain Mark
	8	7	4	3	Examples
	80	70	43	30	

This brochure was developed by the Minnesota Timber Producers Association and the Minnesota Logger Education Program in cooperation with the Minnesota Highway Patrol. Questions can be directed to:

Minnesota Timber Producers Association  
324 W Superior Street, Suite 903  
Duluth, MN 55802  
(218) 722-5013

Minnesota Logger Education Program  
301 W 1st Street, Suite 510  
Duluth, MN 55802  
(218) 722-5442

Minnesota State Patrol  
Commercial Vehicle Enforcement  
1110 Centre Point Curve, Suite 410  
Mendota Heights, MN 55120  
(651) 350-2000

\*Specific questions regarding load securement should be directed to the Minnesota State Patrol at (218) 729-9773.

**Seasonal Load Limits** can be found at:

[www.mrr.dot.state.mn.us/research/seasonal\\_load\\_limits/sllindex.asp](http://www.mrr.dot.state.mn.us/research/seasonal_load_limits/sllindex.asp)  
or by calling (800) 723-6543

**Overweight Permit Information** can be found at:

[www.mrr.dot.state.mn.us/research/seasonal\\_load\\_limits/owpindex/owp.asp](http://www.mrr.dot.state.mn.us/research/seasonal_load_limits/owpindex/owp.asp)  
or by calling (651) 296-6000

## Load Securement Standards



# Cargo Restraint Standards

# GUIDELINES

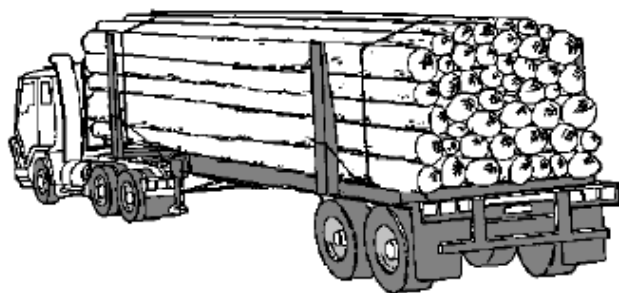
For the purpose of this brochure, “logs” will be defined as sawlogs, bolts, pulpwood, or tree length roundwood.

This brochure provides easy-to-follow guidelines to help the logging community comply with the new standards.

## Remember...

- All tiedowns must be tightened after loading.
- Inspect your load when moving from a forestry road to a public road.
- Drive safe!

Fig. 1—Upper logs that form the top of the load must be crowned and held in place by a tiedown if not held in place by contact with other logs, stakes/standards, or bunks. Two tiedowns required for proper securement.



## Logs Hauled Lengthwise

**Shortwood Logs Loaded Lengthwise** Each stack of shortwood (16 feet or less) loaded lengthwise on a frame or flatbed vehicle must be secured to the vehicle by at least two tiedowns. However, if all the logs in any stack are blocked in the front by a front-end structure or another stack of logs, and in the back by logs or an end structure, the stack may be secured with one tiedown positioned about midway between the stakes.

**Longwood Logs Loaded Lengthwise**—Longwood (over 16 feet) must be cradled in two or more bunks and must either be secured to the vehicle by at least two tiedowns or be bound by tiedown devices such as wire rope, used as wrappers that encircle the entire load.

## Tree Length Logs

**Securement of logs transported on pole trailers** calls for at least one tiedown at each bunk or at least two tiedowns used as wrappers that encircle the entire load.

## Logs Hauled Crosswise

**Use of securement system:** logs must be solidly packed and the outer bottom logs must be in contact with and resting solidly on the bunks, bolsters, stakes or standards. Each outside log must touch at least two stakes, bunks, bolsters or standards. If it doesn't actually touch the stake, it must rest on other logs in a stable manner and extend beyond the stake, bunk, bolster or standard. The center of the highest outside log on each side or end must be below the top of each stake, bunk or standard. **Each log not held in place by contact with other logs or the stakes, bunks or standards must be held in place by a tiedown. Additional tiedowns must be used when the condition of the wood results in low friction between logs.**

**Securement of shortwood logs loaded crosswise:** The end of a log in the lower tier cannot extend more than one third of the log's total length beyond the nearest supporting structure of the vehicle. **When only one stack of shortwood is loaded crosswise, it must be secured with at least two tiedowns. When two tiedowns are used, they must be positioned at one-third and two-thirds of the length of the logs. Trailers more than 33-feet long must be equipped with center stakes and each tiedown must secure the highest log on each side of the center stake, and must be fastened below these logs. Stakes subjected to upward force must be anchored to withstand that force.**

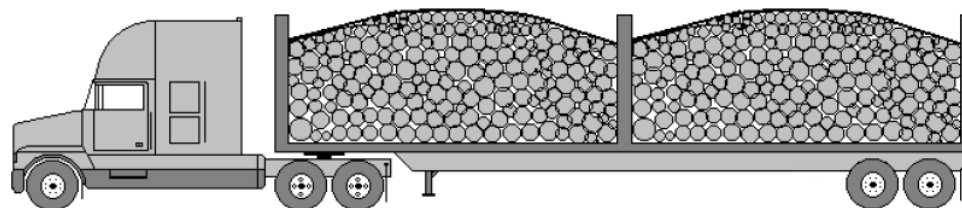


Fig. 2—Vehicles over 33 ft. must be equipped with center stakes, or comparable devices, to divide it into sections of equal length. Each tiedown must secure the highest log on each side of the center stake and be fastened below these logs.

## Crib-Type Trailers

Crib trailers do not require tiedowns provided:

- Components are built to withstand all anticipated operational forces without failure. In addition, crib trailers must have a front and rear-end structure that is solid or that has openings which are smaller than the smallest log on the load.
- Logs are solidly packed, with the outer bottom logs resting solidly against bunks, bolsters, stakes or standards.
- Each outside log on the side of a stack of logs must touch at least two stakes or extend beyond each stake while resting on other logs in a stable manner.
- The maximum height of each stack of logs being transported is below the height of the stakes and the front and rear-end structure.
- The heights of the stacks are approximately equal so that logs in the top of one stack cannot shift longitudinally onto another stack on the vehicle (Stacks must be level.)
- Bunks must be spaced properly to prevent logs from moving forward or backward & bypassing stakes or bolsters.

Fig. 3—Logs in center of stack can exceed the height of the stakes if stack does not exceed allowable height and each log forming the crown is supported on each side by another log or stake.

