

Hauling Timber on County Roads

**C. Niman, J. Stringer, and Z. Grigsby*

The efficient harvesting and transporting of timber is critical for woodland owners, including farmers, to capitalize on their timber. Efficient transport is also important to local loggers and industries, allowing them to stay competitive and provide jobs. However, the trucking of logs, particularly on county roads, can be a source of concern for local communities. This concern can result in decisions regarding road use, including bonding.¹ Information, including the potential negative impacts on local timber values along with safety and road wear issues, is required to ensure that decisions do not have unintended economic consequences for local landowners and businesses. This publication provides information on the trucking of timber that may be useful to help inform discussion on local trucking issues.

Concerns over log trucks often focus on both safety and road wear. While safety encompasses a number of factors, many relate to how trucks are loaded and how logs are secured. Recognized standards for these factors are outlined below. Adherence to these standards improves safety as well as helping to control truck weight. The results of a recent study of the weight of log truck sizes common to Kentucky are summarized in this publication as well as a comparison of how repetitive hauling of logs compares to other agriculture

commodities that are often a more familiar sight on many county roads. The comparative information is provided to help put into context the trucking of timber compared to other agricultural commodities.

Some county roads have significant bases that can support the repetitive hauling of agricultural commodities, timber, and other rural products such as gravel or coal. However, many roads are not designed to handle repetitive loads. In agricultural counties these roads are more likely to occur in highly wooded areas where crop production is uncommon, but the occasional timber harvest may occur. Similar roads also exist in counties where coal is common. While it is easy to understand the concern over road wear in these situations, the reduction or total loss of local timber values from road bonding and other regulations that affect logging, the forest industry, and local landowners should be evaluated before decisions are made.

Economic Importance of Trucking on County Roads

Timber is an important commodity for many landowners in Kentucky, including farmers. Almost half the state is covered in forest. Seventy-eight percent of the woodlands in Kentucky are owned by small private landowners and farmers. Fifty-nine percent of



Kentucky row crop and pasture farms have woodlands, 2.7 million acres in total, representing approximately 25 percent of Kentucky's timber volume, the majority available for harvest.

Surveys show that 68 percent of non-farm woodland owners will harvest their timber, even if they do not own it solely for timber production. This coupled with an average land ownership tenure of 17 years, indicates that the majority of woodland acres will be harvested; landowners, the forest industry, and the economy at large are beneficiaries. Every acre of harvested timber yields approximately \$20,000 to Kentucky's economy, resulting in a contribution of over \$5 billion to the commonwealth. The majority of the \$5 billion stays in rural communities, indicating the positive financial impact that timber harvesting represents to local farmers, woodland owners, rural communities and the state as a whole. The efficient transporting of logs is important to ensure that individual landowners and local communities can continue to benefit from timber.

When county road use issues are raised, particularly related to road wear resulting in maintenance costs, it is not uncommon to consider bonding. Determining whether to require bonding and, just as important, decisions on bonding rates or amounts and how to establish equitable enforcement are critical issues that must be carefully considered. The effect of excessive bonding or vagueness on how it will be enforced have been shown to make some timber sales economically unfeasible. This can cause loggers and timber buyers to shy away from bidding on timber in a county, and/or significantly reduce the amount paid for the timber. It is also important to recognize that laws, regulations, and ordinances cannot unduly discriminate against an industry or commodity, thus regulatory decision-making must consider the consequences to all road users. While all of the factors discussed above are important, it is also recognized that hauling agricultural commodities, including logs, can result in wear on county



roads, particular those that are constructed for light duty use. Therefore, it is important to ensure that all issues are thoroughly vetted and that the best information possible is available for use in community decision making.

Weight and Length Regulations

Kentucky law (KRS 189.222) states that any vehicle hauling primary forest products or farm products with a gross weight up to eighty thousand pounds can legally travel any state highway without a special permit, as long as the weight does not exceed posted bridge weights or vehicle type/axle registered licensed weight. A 10 percent gross and axle weight tolerance is in effect on state roads, but this overage does not apply to federal interstate highways or county roads. Forestry and farm tags are additional truck registration options available for log hauling operations. Counties have the ability to set appropriate weight limits for county maintained roads.²

However, all agricultural commodities including grain, livestock, logs, pulpwood, and chips should be treated the same and are under the same legal limits for weight on roads.

According to Kentucky law, truck and trailer dimensions cannot exceed the following:

- Height** - including bunks or side rails, thirteen and one-half (13½') above the road surface
- Length** - trailers: 23 feet; trucks: 45 feet, not to exceed two trailers; and semitrailers: 53 feet.

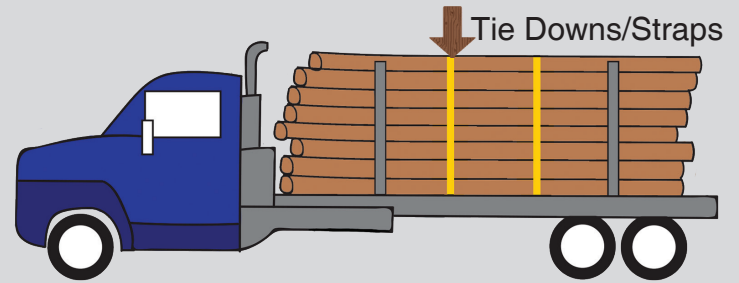
Log Load Safety

The Federal Motor Carrier Safety Administration has standards for stacking and secure tie-down of logs that are required on all public roads. These rules are generally adopted as safe practices industry-wide. It is important to note only a portion of the FMCSA regulations are covered in this factsheet. Visit the FMCSA website for the full set of regulations <https://www.fmcsa.dot.gov/>. The following is a brief summary for log trucks.

- All log trucks are required to have at least two stakes or standards that are permanently or temporarily secured to the bed so as to not separate from the bed (Figure 1).

Figure 1 - Stake and Strap Requirements

One and Two Bunk Configuration



Three or More Configuration

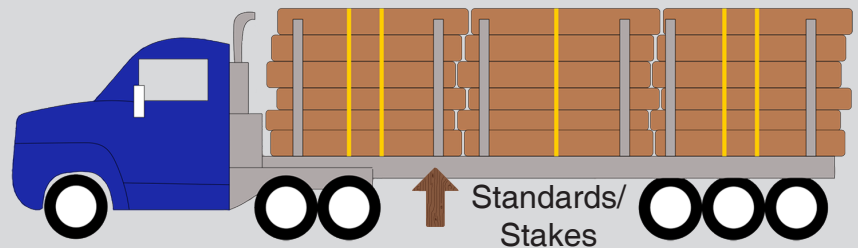
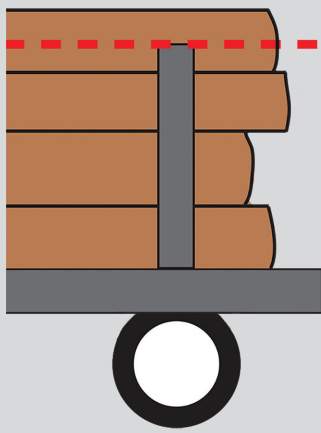
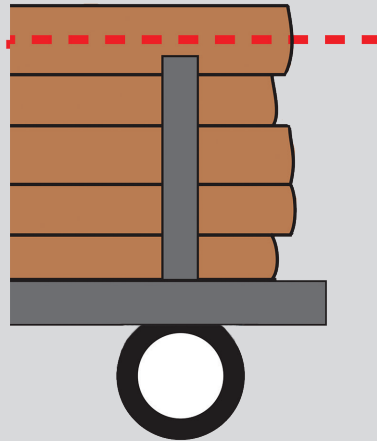


Figure 2 - Outside Log Stacking Requirement

Correct



Incorrect

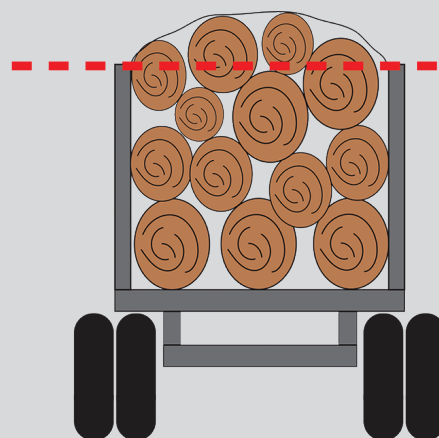


- Tie-downs are required. Each bunk (stack) of logs must have two tie-downs unless the truck has three or four bunks of logs where the inner bunks can have one tie-down (Figure 1).
- Outer logs must be touching or extending past at least two stakes.
- Bottom logs must be up against two stakes.
- The top outside logs must not be sticking above the stakes by more than one-half of their diameter (Figure 2).

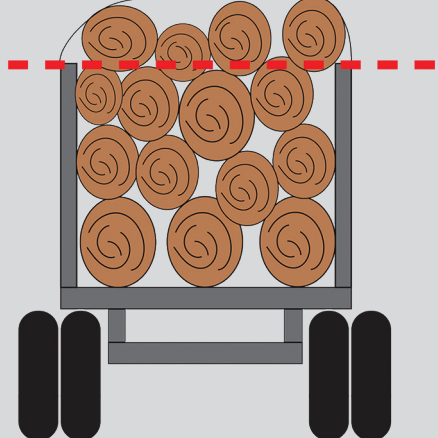
- A load can be crowned by one or more row of logs but they have to form a rounded top and must be securely resting on one another (Figure 3).

Figure 3 - Top and Load Crowing Configuration

Correct



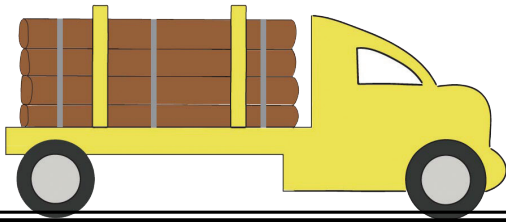
Incorrect



Log Truck Weights - The following provides information on low, high, and average log truck weights for different truck and axle configurations typically used for hauling sawlogs in Kentucky and surrounding states. Legal weight limits, plus the allowed 10 percent overage, are also provided for each truck and axle configuration. It is important to note that gross weight allowances can vary for trucks and trailers depending

upon rating of the front axle. The data came from log trucks that were loaded according to the standards discussed above. Some of the weights below include the front axle and some do not. Basically the front axle is allowed at 12,000 pounds but can vary depending on the width of the tires on the steering axle and the distances between rear axles. Axle weights below are for rear axles and exclude the front steering axle.²

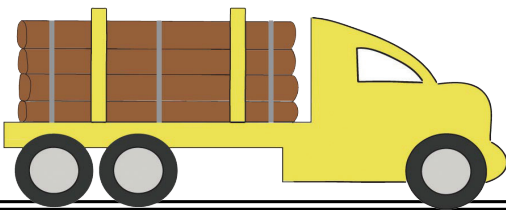
Single Axle:



Legal limit: 20,000 lbs (+2000 lbs additional tolerance)

<u>Low</u>	<u>Average</u>	<u>High</u>
11,440	22,270	25,718

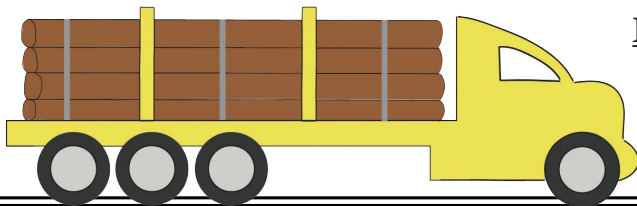
Tandem Axle:



Legal limit: 34,000 lbs (+3400 lbs additional tolerance)

<u>Low</u>	<u>Average</u>	<u>High</u>
20,319	30,007	37,120

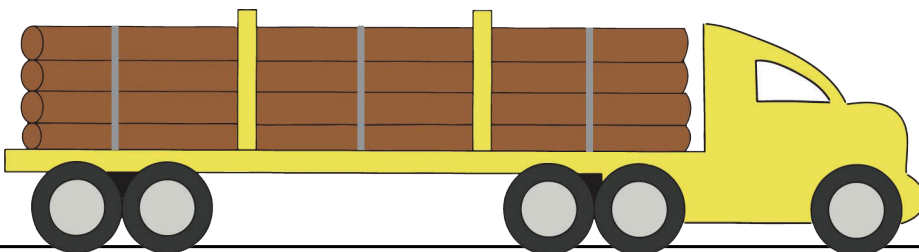
Tri Axle:



Legal limit: 48,000 lbs (+4800 lbs additional tolerance)

<u>Low</u>	<u>Average</u>	<u>High</u>
31,640	41,489	54,760

Four Axle:



Legal limit: 80,000 lbs (+8000 lbs additional tolerance)

<u>Low</u>	<u>Average</u>	<u>High</u>
52,202	77,043	88,320

The study included log trucks carrying a range of species with differing weights.³ The low range was typically from trucks that were loaded with yellow-poplar and other relatively light-weight species. The highest weights were from loads that were predominately oak, in this case white oak. Average load weights are indicative of mixed species loads. The take home message is that if trucks are loaded to the recognized standards this helps to control log weights and keep them within or close to allowed weight limits.

In a typical timber harvest there will be a mix of species. There are some woodlands where all the loads will be of low or average weights. There are some harvests that include heavier oak species and there will be a variety of weights including some loads that will be on the high end of the range. The loads of heavier species can be controlled by limiting the height of the load for heavy species. For example, restricting the height to that of the stakes rather than rounding the load above the stakes. Regardless, the proper loading of logs provides a visual indicator of loads to help inform if truck weights are appropriate.

Comparison of Trucking Logs and other Agricultural Commodities

Hauling agricultural commodities, including logs, often requires repetitive trips along county roads, as does the hauling of commodities from other rural industries, such as mining. If the road base was not designed to handle heavy repetitive loads, accelerated wear can occur. While many are familiar with the repetitive hauling of crops like corn or soybeans, as these occur on an annual basis, hauling of logs is not as common and there are concerns about the wear that log trucks can cause. To help better understand the potential effect of log trucks on roads it is helpful to compare the hauling of logs to common agricultural commodities such as grain. Three factors are important in determining trucking effects on a road, the weight of the load, the number of axles, and the number of loads that are hauled. As for weight, all commodities try to maximize allowable truck weights to make hauling as efficient as possible. Because of this, log trucks and trucks fully loaded with grain can both exceed legal weight limitations. As indicated above log trucks, when loaded with heavy logs, can easily reach the legal state limits; the same is true for grain trucks. Therefore to assess road impacts, it is useful to compare the number of loads hauled from a timber harvest to the loads associated with the harvesting of grain.

Table 1 shows the equivalent weight of one acre of harvested timber (averaging 3,563 board feet) to a

typical corn field (170 bushels per acre) or soybean field yielding 56 bushels per acre. It takes three acres of corn to equal one acre of light-weight timber like yellow-poplar and five acres of corn to equal one acre of heavy oak timber, based on the weights of timber and grain in Table 2.

This means that if you have an average timber harvest of 35 acres (state-wide average)

of mixed hardwoods it is the equivalent weight of a 140-acre corn field. A heavy timber species, white oak, from a 35 acre timber harvest is the equivalent to 175 acres of corn. It is important to note that grain crops are hauled each year where timber hauling occurs only periodically along any one county road. Regardless, these figures help put into perspective and gauge the impact of timber harvesting on county roads in comparison to other repetitively hauled agricultural commodities. In many cases sporadic timber hauling may represent less of an impact on county roads, particularly those subject to hauling agricultural commodities on an annual basis or continuous hauling from mining or quarries. On roads that are constructed to handle light-weight vehicles, primarily cars, and small trucks, repetitive commodity hauling can be problematic, regardless of whether it is timber, crops, or coal. However, on roads where agricultural and other rural commodities are commonly trucked, road wear associated with a timber harvest would not be more than that associated with trucking the other commodities.

Commodity	(lbs/acre)
Yellow-poplar	31,354
Mixed Hardwood - 50% oak	40,368
White Oak	51,307
Corn	9,350
Beans	3,360

Summary

The data from the log truck study indicates that if log trucks are loaded in accordance with the state standards for height and load configuration, most trucks will fall within state load limits. When hauling light-weight timber, such as poplar, they will fall well below the state limit and when hauling heavy timber, like oak, they will approach or can, in some instances, exceed the state weight limit. Managing log height on loads with heavier species can control this. The results

Log Type	Corn	Soybeans
Yellow-poplar	3 acres	9 acres
Mixed hardwoods	4 acres	12 acres
White oak	5 acres	15 acres

of the weight study indicates that adherence to the standards for load height, and proper load configuration and binding, can be used as an important tool for helping ensure that trucks are not significantly exceeding state weight limits as well as addressing some of the important safety concerns associated with log trucks. Comparisons with the repetitive hauling of agricultural products shows that the weight hauled from a typical timber harvest is comparable to the weight trucked from an annual harvest of grain. A timber harvest of 35 acres corresponds to the weight from 140 to 175 acres of corn and county roads that are designed to haul grain or other industrial products such as coal

will receive no more wear from the hauling of timber compared to the other products hauled on a repetitive basis throughout the year, or associated with a harvest. However, any road that is not designed to carry heavy trucks is subject to damage from the repetitive hauling of any agriculture commodity, including timber. The degree of impairment and the costs associated with maintaining road integrity vary widely. This uncertainty, along with the factors discussed, can make equitable decisions difficult. The information provided is designed to aid and provide some information to inform decision making that leads to an appropriate outcome for the community.

¹A road bond is money that is held by local government and kept to offset road damages that may occur from trucking. Bonds require firms to put considerable amounts of operating money upfront which is kept as payment for issuing the bond. Bonds are not an insurance policy and if damage occurs it guarantees payment, but the bonded company is responsible for all costs.

²There is an old longstanding Kentucky state law on county roads that weights cannot exceed 36,000 lbs. Hauling agriculture and other commodities commonly exceed that limit.

³To learn more about the study read “Log Truck Weights Common to the Central Hardwood Region of Kentucky”. FORFS18-06

*corresponding author chad.niman@uky.edu