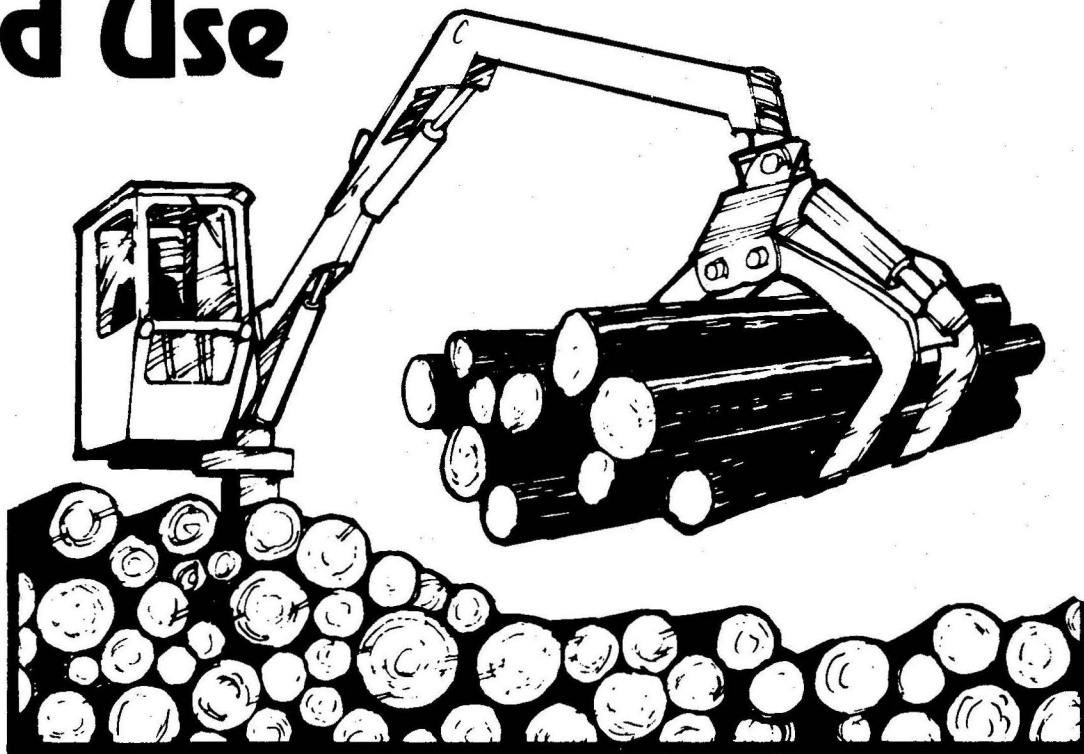


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Safe Landing Layout and Use



Logging landings are busy places. These small central areas of a timber harvesting operation are the sites of many activities, including parking, wood processing, equipment maintenance, loading, and personnel gathering. To avoid accidents, landings must be designed with care and caution must be taken during landing operation.

Landing Location

Selection of the right location for a landing will help the whole logging job run more smoothly. Look for areas as level and uniform as possible to help vehicles maneuver around the landing. A quick check of the soil type will help indicate what to expect during heavy rainfall or snowmelt. Select a site with good drainage under normal moisture

conditions. For a winter operation, choose a site where timber felling will not leave too many stumps and pack down a large enough area so that extra wood can be stored if needed. Allow the landing to freeze completely before entering with heavy equipment.

Size of the landing is critical. It must be large enough to permit trucks to enter and exit safely and without interfering with other activities. Consider the mix of equipment to be used. If there is to be more than one skidder and truck hauling, a larger area will be needed to let them operate efficiently without slowing each other down. If there are poor markets for a particular species or product, landing space may also be needed to stockpile the extra material.

Locate landings down from ridge crests to reduce the need for steep and hazardous roads.

Areas of heavy timber concentrations should be considered first for landing sites to save extra skidding time and keep the job efficient. During construction heavy equipment will move around more easily and with less chance of upset if landing areas have low stumps, with grubbing where necessary.



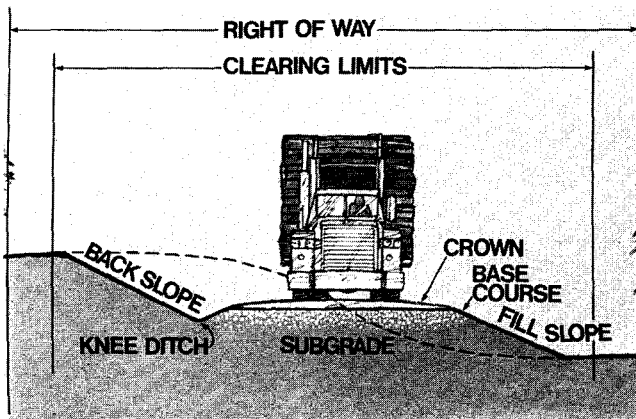
Landing location is an important factor for the success of the whole logging job.

Road System Design

Roads in a timber sale should be laid out close to where the wood is. Skidding generally should be restricted to distances of 1/4 mile or less. Roads and landings should be located to allow the most efficient movement of timber.

The first consideration is the type of equipment that will use the road. Road width and construction standard depends upon traffic expected, hauling distance, and volume of timber to be moved. Maximum load size will influence the quality of roadbed needed. A road that holds up well under maximum traffic will require less maintenance and will keep operations at peak efficiency.

A ten percent grade is the maximum preferred. Steeper grades for roads of any length may cause problems for loaded trucks and can lead to dangerous erosion and washouts. Road curvature is also important. Properly constructed curves let longer trailers negotiate corners without dropping



Good road construction procedures will help keep trucks moving and prevent unnecessary stockpiles.

tires from the roadbed.

When crossing drainages, use culverts large enough to handle the greatest expected runoff. Undersized culverts can force water over the road, causing a serious driving hazard. Keep culverts and ditches clear of debris to insure their continued operation. Water control will also be more effective if roads are located along contours. This practice will help avoid excessively steep grades.

Before starting construction, scout the proposed route and fell all dangerous snags, which could fall unpredictably. Plan and construct turnouts that are intervisible (can be seen from each direction), thus allowing approaching vehicles to pass safely without leaving a prepared road surface.

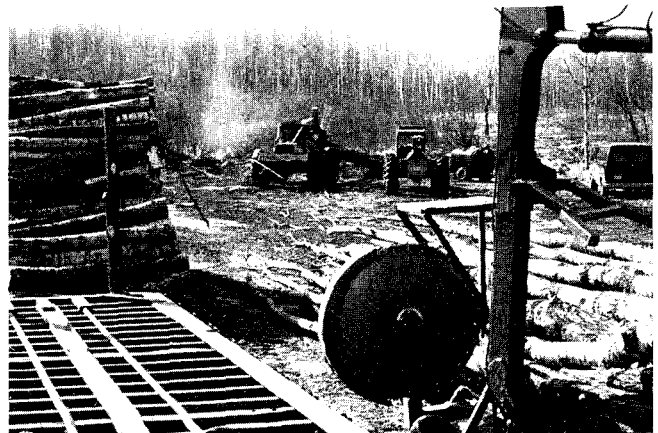
Once roads are constructed, post signs to alert other traffic to the logging and hauling activities. This may help avoid problems with other forest users.

Regular maintenance is needed to keep a road in good operating condition. Potholes or washboarding are best removed by grading and extra gravel may be needed in soft spots. If roadside trees and brush are removed, sunlight can reach the road's surface and help keep it dry and in safe operating condition. In winter, basic maintenance consists of regular plowing to keep the road solidly frozen, especially in wet areas. Be sure to remove snow completely from the roadbed.

Landing Layout

Traffic flow on a landing should be carefully planned before logging starts to improve production and reduce the chances of accidents. Keep loading from conflicting with entering skidders. Fuel should be stored in a separate spot well away from other activities, especially activities such as welding. Restrict smoking and post signs at fuel storage areas to remind workers and others of fire hazards. Use special caution in performing maintenance near pickups carrying fuel tanks.

Keep an ABC, 10-pound, dry chemical fire extinguisher around the landing. An extinguisher can often keep a small fire from becoming a large one.



Plan the traffic flow to keep skidders entering the landing from interfering with processing or loading.

Safe Landing Operation

A well-designed landing must have a well-trained crew to operate at top efficiency and to maintain a safe working environment. Effective communication is necessary in training a crew. Consider holding weekly meetings to reinforce operating rules and involve the entire crew in production decisions. Because noise during operation frequently makes talking difficult, workers can use hand signals to communicate. Workers in the landing area should wear high visibility colors to ensure that drivers of entering vehicles see them.

Nearly everyone on a logging job either uses or works near a loader. All workers should become skilled in basic loader operation in case they must shut it down or otherwise manipulate the boom in an emergency.

Before starting daily operation, an equipment check is helpful to make certain of the machine's safe operating condition. Special attention should be paid to possible leaks from hydraulic components. Leaks indicate potential hydraulic failure, which could cause a load to unexpectedly crash to the ground.

All landing workers should use basic protective gear including hard hat and eye and ear protection. Workers using a chain saw should also wear hard-toed boots, leather gloves, and chaps or safety pants designed specifically to stop moving chains on a chain saw.

Overhead electric wires can be particularly hazardous on a landing. If there is a danger of wire contact, consider changing the landing layout or choosing another location. If there is no alternative location, tell the power company about the problem; wires can often be raised to a safe height.

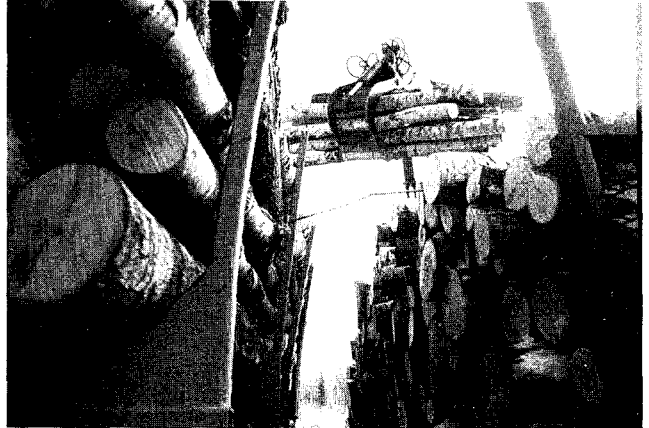


Overhead electric wires can be particularly hazardous on a landing. Call the power company if wires need to be raised.

Landing visitors and observers should be restricted to a safe area and not allowed to wander freely. Firewood gatherers, in particular, frequently present safety and liability problems.

Loader operators should keep loads within the rated capacity of the machine. Oversize loads may cause stress and failure of the loader. Instruct other workers to stay clear of the loading operation and do not allow anyone on the truck while it is being loaded. Suspended loads should never

swing above another worker or vehicle. Even one dropped log could cause a serious accident. Always lower the boom to its rest or the ground after using it to avoid having it fall without warning.



Loader operators are important to the success and safety of all landing activities. Be sure they are well-trained and knowledgeable of other workers on the landing.

Preparing for Transport

Before loading, a truck should be checked to see that it is safe for public roads. A return on all the work invested in producing wood products cannot be realized without a final safe escort to the mill or other market.

Tires and wheels are critical elements in transportation. Check tires routinely for wear and test pressure with a gauge or learn to recognize the sound of a properly inflated tire when it is hit with a bar. Periodic checking and tightening of wheel lugs is important to allow safe and efficient highway speeds.

Brakes need testing before every trip. The time to check the brakes is before the trip starts—not on the first hill.

All lights must function to keep other traffic informed of the driver's plans. Remember to wipe road grime off lights, especially in the rear.

For strength in load carrying, it is very important that stake pockets and extensions are solid. Welding is occasionally needed to reinforce them.



Drivers are professionals who are responsible for the safe operation of a logging truck. Loading should be supervised and vehicle components carefully checked before every trip.

The driver should watch carefully during loading to see that the load weight is evenly distributed. Overloaded axles may cause difficult handling and are subject to citations and fines.

Use care in loading to keep protruding log ends and loose limbs to a minimum as they can catch roadside objects and cause serious damage or shifting of the load. Although some states require only a single chain, pulpwood should be secured with two chains no smaller than $\frac{5}{16}$ " fastened to the vehicle's frame at both front and rear.

Finally, only trained operators should drive a truck. Before hiring a driver, consider requiring the applicant to have a physical examination. Also, it may be helpful to review the applicant's driving record.

If a serious accident should occur, it is important that everyone on the job knows what to do. First aid training, which is widely available, can prepare all workers to deal with medical emergencies such as stopped breathing, heart attack, or severe bleeding.

There should be written procedures for the entire crew to follow in emergencies. Use an emergency distress signal in the event of an accident to alert everyone to stop production. A list of emergency phone numbers should be kept in a central location.

Summary

Although landings are small areas in proportion to an entire logging operation, they contribute greatly to safe and efficient production. Careful planning, construction, and maintenance of road networks is essential. Proper location and layout of the landing area will help keep the job running smoothly and safely. Loading trucks safely will also minimize expensive and time-consuming breakdowns. Be sure crew members know what to do if a serious accident occurs. The payoff will be a healthier and more productive work environment.

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