

19 HAULAGE AND OFF-ROAD EQUIPMENT

ANSWERS—QUIZ 1

1. a
2. a
3. b
4. b
5. a
6. c
7. c
8. d
9. d
10. b
11. c
12. The best place to find instructions for safe and proper equipment operation is the manufacturer's manual
13. They should be wide enough so that large trucks do not need to cross the centerline of the road.
14. The Manual on Uniform Traffic Control Devices for Streets and Highways is also published as the American National Standards Institute standard D6.1.
15. It is good policy for companies to require that guards must cover gears and that the manufacturer must provide safeguards, such as oiling devices, handholds, and slip-resistant steps.
16. The operator should swing the shovel to the clear side and away from the rock face.
17. The operator should place a block behind the tailgate of a scraper so it cannot fall.
18. The bulldozer blade should be kept close to the ground for balance.
19. First, the person responsible for dumping must know how close to the edge a vehicle can safely approach under various weather conditions. The signaler should stand on the driver's side of the vehicle, clear of the backing truck, but still visible to the driver. By looking over the left shoulder, the driver has a maximum view of the area in the direction the truck is moving. This view also reduces the danger of going over the crest, especially in the case of side dump trucks where the operator is on the crest side. Once the load has been dumped, drivers should lower the dump box to avoid hitting overhead lines or other low clearances. Drivers can also dump loads away from the crest; graders or bulldozers can then level the loads.

20. When doing clearing work, a bulldozer should be equipped with a heavy, well-supported, arched steel-mesh canopy to protect the operator from low-hanging branches, high brush, or falling limbs. Operators should also wear safety goggles to shield their eyes from whipping branches. To safely uproot trees, operators should cut the roots on three sides and then apply power to the fourth side. A long rope can be used to pull trees over, but operators should make sure in advance that they will be in the clear along with the equipment when the tree falls. Operators should be sure all workers are in the clear before pushing over trees, bulldozing rock, and rolling logs.

ANSWERS—QUIZ 2

1. a
2. a
3. b
4. a
5. b
6. b
7. c
8. a
9. b
10. d
11. a
12. It involves the maintenance of safety features on equipment, systematic equipment maintenance and repair, trained operators, and trained repair and maintenance personnel.
13. They can provide sprinkler trucks to wet down the roadways.
14. The best insurance is having a person trained in proper dumping procedures.
15. Soil conditions and soil conductivity determine the number of steel rods used to set up an earth-ground system and their spacing.
16. It is especially dangerous to undercut sand banks in the winter and spring because freezing and thawing can cause overhanging material to collapse.
17. Before coupling trailer equipment to a tractor, an operator needs to stop the tractor, put the shift level in neutral, and set the brakes. He or she also needs to block the wheel of the equipment that is going to be coupled.

18. The condition of the ground determines how close a bulldozer can work to an excavation.
19. There are five main ways to prevent accidents when towing motorized equipment: (1) No one should go between the vehicles while either vehicle is in motion. (2) Parked vehicles should be secured by either having their brakes set, their wheels blocked, or both. (3) Drivers should receive an all-clear signal before moving a vehicle. They should not move a vehicle if someone is between it and another vehicle, a wall, or anything else that is reasonably solid and immovable. (4) Workers should know that tow bars are safer than towropes, but if ropes must be used they should be in good condition and of sufficient size and length. (5) Any equipment that will be towed on a trailer should be securely attached to the trailer.
20. If an operator needs help, he or she can usually rely on an experienced rigger. However, if the rigger is untrained or relatively inexperienced, the operator should direct the details of the lift, such as the type of sling and hitch to be used. An operator can also ask a supervisor for assistance. Ultimately, however, the operator is responsible for the safety of the lift.

ANSWERS—CASE STUDY

1. When handling loads there are six essential safe practices to keep in mind.
 - First, operators should center the hook over a load to keep the load from swinging when lifted. Second, employees should keep their hands out of a pinch point when holding the hook or slings in place while the slack is taken up. A hook, or even a small piece of board, may be used instead. If workers have to use their hands, they should hold the sling in place with the palm of their hand.
 - Third, the hooker, rigger, and all other personnel must be in the clear before a load is lifted.
 - Fourth, when working around cranes, they must also keep clear of the swing of the boom and the cab.
 - Fifth, tag lines should be used to guide loads.
 - Finally, no load should be lifted without a signal. When an operator cannot see the entire movement of a load, a trained person should be posted as a guide. To avoid confusion, only standard hand signals should be used.

In addition to these six points, operators should be careful not to overfill dippers. This prevents excess material from falling on workers or spilling. Insofar as possible, loading should be done from the blind side. Operators should not swing a load over a vehicle or load a truck until its driver has dismounted and is in the clear. The only exception is if the truck has a canopy designed to protect the driver and the truck.

2. Signalers can also help ensure safety along roadways. They can be stationed at dangerous points along the road, such as curves or the crests of hills, when equipment is stopping, turning, or backing. These maneuvers generally require a clear view of approaching traffic for a distance of about 1,000 ft (305 m). When operations are extensive, employees with warning devices should stand at each end of the working area so they are visible to oncoming traffic for at least 500 ft (152.5 m). Barrier signs should be placed at both ends of the road section under construction to warn oncoming and outgoing traffic. Primary warning signs should be placed 1,500 ft (460 m) from the beginning of the working area. Distances for warning signs increase as highway speed increases. Suggestions are given in the *DOT Manual on Uniform Traffic Control Devices for Streets and Highways*, ANSI D6.1. If operators must drive even a short distance on a public road, they are required to put a slow-moving vehicle sign on the rear of their vehicle.