

HEAVY EQUIPMENT AND LABOR CREW SAFETY PROCEDURES

The Heavy Equipment and Labor Shops are involved in the operation of different pieces of equipment. The following information regarding the safe use of this equipment will help reduce accidents and injuries.

GENERAL SAFETY RULES FOR OPERATING EQUIPMENT

- ♦ Wear appropriate personal safety protection gear as determined by job conditions.
- ♦ Know and perform the correct hand signals, and obey spotter; agree on signals before starting the job.
- ♦ Be sure all safety guards and covers are secure and in place.
- ♦ Do not operate machine until all personnel and obstructions are cleared from area.
- ♦ Do not jump on or off machine - whether it is parked or running. Mount and dismount properly, using handles and steps.
- ♦ Do not allow anyone to ride on machine.
- ♦ Know traffic pattern of job and obey spotter.
- ♦ Park on level ground as much as possible; set parking brake at all times when not in motion.
- ♦ Do not leave machine unattended while engine is running. Turn the engine off and take the key out of the ignition.
- ♦ Avoid operating too close to ditch banks or building overhangs.
- ♦ When using any equipment that has an elevating portion, such as forklift, dump truck, backhoe, etc., do not come within 10 ft. of high-voltage power lines. Death could result if a person is grounded.
- ♦ Although flags are rarely used on campus, be aware of flags indicating buried pipes and power and gas lines. Telephone and utility companies will flag the work site with appropriately colored flags as necessary:
 - Gas and Chemicals = Yellow Flag;
 - Telephone = Orange Flag;
 - Electric = Red Flag;
 - Water = Blue Flag; Sanitary and potable
 - Storm Sewers = Green Flag.
- ♦ Keep equipment clean.
- ♦ Always call for utility locates before digging.

SAFE USE OF OXYACETYLENE CUTTING TOOL

The main dangers of oxyacetylene cutting are fire, burns, and toxic fumes. If a person feels dizzy or nauseated, or has blurred vision, they should discontinue the job and get some fresh air.

PRECAUTIONS

- ♦ When using oxyacetylene torches, make sure that a multipurpose dry-chemical fire extinguisher is readily available and in working condition. It is recommended that a 10 lb. (4A.40BC) portable extinguisher be on hand.
- ♦ When using torch indoors, use only in a well-ventilated place.
- ♦ Wear welding goggles and protective clothing including gloves and welding shield. Keep gloves, hands, and clothing free of oil and grease. Wear gloves to handle hot metal.
- ♦ Avoid breathing toxic fumes like galvanized metal fumes, and some paint fumes.
- ♦ Use welding shield for jobs on campus that can be seen from passersby.
- ♦ Do not leave a burning torch unattended.
- ♦ Cut or weld at least 5 feet away from cylinders.
- ♦ Always use regulators; do not use oxygen or acetylene directly from cylinders. Be sure that the

- regulators used are of the proper design for the cylinder.
- ◆ Use flint lights, **NOT MATCHES**, for lighting torch.
 - ◆ Use hoses designated for oxygen and acetylene only.
 - ◆ Do not use oil on regulators, torches, fittings, or any equipment surface that may come in contact with oxygen. Be especially careful not to oil or grease oxygen fittings. These substances will ignite with a violent explosion.
 - ◆ Do not use compressed oxygen to clean off clothing, as compressed oxygen is not compressed air. Oxygen speeds up combustion, and if clothes become oxygen-soaked, they will need only a spark to burst into flames.
 - ◆ Do not breathe compressed oxygen directly from cylinder or hose.
 - ◆ Use soap and paintbrush to test connections for leaks.
 - ◆ Do not use acetylene at pressures higher than 15 pounds per square inch (psi). Acetylene becomes unstable and highly explosive when pressure is over 15 psi.
 - ◆ Do not cut or weld directly on gravel or concrete.
 - ◆ Keep heat, flames, and sparks away from combustibles.
 - ◆ Do not cut or weld on containers that have been used to store combustible materials unless containers have been properly cleaned and purged. Containers that fall into this category are ones that once contained nitrogen, carbon dioxide, or argon.

Air Compressor

- ◆ Understand the machine before using it.
- ◆ Wear close-fitting clothing; keep long hair tied back.
- ◆ Keep hands, arms, and clothing away from belts, pulleys, and other moving parts.
- ◆ Make sure that all guards and shields are in good working order and in place at all times.
- ◆ Keep people clear of compressor before starting or operating it.
- ◆ Do not use compressed air hoses that are cracked or worn.
- ◆ Inspect hoses regularly for damage and replace defective hoses immediately.
- ◆ Never use compressed air to clean yourself or another worker. Air at high pressure can break an eardrum, blow out an eyeball or penetrate the skin; injecting air into the blood can cause death.
- ◆ Keep away from all points of air discharge and away from hot exhaust gases.
- ◆ Do not smoke when fueling compressor.
- ◆ Make adjustments only when engine is shut off.
- ◆ Be sure that all connections and couplings are completely interlocked and pinned.
- ◆ Set up compressor in a location that is as level as possible.
- ◆ Block wheels.
- ◆ Make sure that all warning and safety devices are working properly.
- ◆ Know how to use cold-weather starting aids.
- ◆ Do not exceed recommended maximum air pressure.
- ◆ Be sure that all pressure has been released before disconnecting hoses. Use caution when releasing pressure from compressor air chamber.

Recommended Safety Equipment for Air Compressor and Attachments.

- ◆ Use a respirator in extremely dusty conditions.
- ◆ Wear a hard hat, hard toed shoes, ear protection, and close-fitting clothing.
- ◆ When using the compressor with a rock drill, paving breaker, or a tamper, wear gloves. Do this to protect your hands when parts of the attachment heat up.
- ◆ Do not wear gloves when operating an impact wrench. If wrench gets hot, wear gloves, but remove them when seating wrench on a bolt. Never use sockets or extensions with an impact gun that were not designed for that purpose. Non-impact tools will come apart even when used with the least powerful impact gun.
- ◆ Wear goggles or safety glasses when using the compressor, rock drill, or paving breaker.

Concrete Saw

The improper use of abrasive and diamond blades is dangerous. Know your equipment well and use it properly to avoid accident and injury.

- ♦ Recommended protective clothing is safety goggles, close-fitting clothing, and hard-toed, nonskid shoes. Nonskid shoes are important, as pavement can be slick with water and grindings.
- ♦ Be sure that guards and shields are in place and working properly. Keep hands away from moving parts.
- ♦ Operate saw only on a level surface. Uneven surfaces can cause the blade to break, possibly causing injury to the operator or other persons in the area.
- ♦ Inspect blade frequently, particularly when using a segmented blade. Look for undercutting of the steel core. Check for stress cracks in the segments. A segment breaking and flying off can cause injury.
- ♦ Keep a firm grip on handlebars. Operate saw from between the handlebars. Keep saw moving only as fast as it is cutting. Do not let the saw move faster than it cuts. It can jump forward and sprain or dislocate a shoulder.
- ♦ Never leave saw unattended while engine is running. Never stand in path of blade while starting or operating saw. Do not use excessive force or side pressure.
- ♦ Always cut wet when using a diamond blade. Be sure that blade is securely fastened.

Motor Graders

The responsibility for safe operation of a motor grader rests on the operator. The following are safety rules for operating a motor grader.

- ♦ Know the machine.
- ♦ Do not start or operate motor grader unless seated in the operator's seat.
- ♦ Make a walk-around, visual inspection to observe physical condition of machine before moving it.
- ♦ Drive carefully on hillsides and curves to avoid tipping.
- ♦ Reduce speed before turning or applying brakes.
- ♦ Use brake pedals together when traveling, and especially when making an emergency stop.
- ♦ Drive at speeds slow enough to ensure your safety, especially over rough ground.
- ♦ Travel with blade inboard of wheel tracks.
- ♦ Lower blade to ground when securing or working on machine.
- ♦ Bring motor grader to a complete stop before shifting from a forward gear to a reverse gear, or from a reverse gear to a forward gear.
- ♦ Do not use motor grader or blade as a battering ram.

Asphalt Rollers

- ♦ Know your machine.
- ♦ Wear close-fitting clothing, hardhat, safety shoes, ear protection, and goggles as required.
- ♦ Know and perform appropriate hand signals.
- ♦ Be sure all safety guards and covers are secure and in place.
- ♦ Do not operate machine until people and obstructions are clear of area.
- ♦ Check all safety devices before moving machine.
- ♦ Do not jump onto or from machine. Mount and dismount properly, using handles and steps.
- ♦ Do not allow anyone to ride on machine.
- ♦ Know traffic pattern of job and obey the spotter.
- ♦ Always park on level ground, if possible.
- ♦ Do not leave engine running unattended.
- ♦ Avoid operating too close to banks or overhangs.
- ♦ Keep machine clean.

- ♦ Watch for overhead obstructions like branches, building corners, and signs.
- ♦ Do not exceed recommended speeds on level ground and inclines.
- ♦ Always block wheels on an incline.

Operating Backhoes

- ♦ Do not permit anyone to stand alongside trench being excavated.
- ♦ Check all component hinge pins and the securing devices often.
- ♦ Be sure outriggers are properly extended before starting operations.
- ♦ Outriggers should lift wheels off the ground to stabilize backhoe.
- ♦ If trench excavation is to be more than 4 feet deep, do not excavate unless all shoring requirements are met. Excavations at a depth of four feet (4') or more, shall have a trench dug wide enough to prevent a cave-in or the banks shall be shored. Shoring means to prop up or support two opposing banks opposite of the other or a complete box on all sides to protect workers from falling dirt. This is done either by using regular trench shoring equipment or by building a safe structure of beams (4" x 4" or 2" x 4") to maintain a safe work environment. If dug wide enough, the trench will be at a 45-degree angle from the top to the bottom.
- ♦ Observe extreme caution when operating under low overhead obstructions or when excavating near underground wires and pipes.
- ♦ Always use warning signs and traffic control procedures when working on roads or streets.
- ♦ Never perform service or repairs on equipment that has not been properly blocked, secured, and tagged.
- ♦ Keep bucket as close to ground as possible when transporting loads.
- ♦ When operating on a steep slope, carry boom on uphill side for added stability.
- ♦ Always travel at safe operating speed.

ROLL-OVER PROTECTIVE STRUCTURES (ROPS)

A roll-over protective structure (ROPS) and seat belt were standard equipment for the tractor at time of factory assembly. The seat belt, when used by the operator, maximizes the protection offered by the ROPS. ALWAYS use your seat belt with the ROPS. Seat belts save lives when they are used.

If your Ford tractor is equipped with a ROPS it must be maintained in a serviceable condition. Be careful when driving through doorways or working in confined spaces with low headroom.

Under no circumstances:

- ♦ Modify, drill or alter the ROPS frame in any way as doing so could render you liable to legal prosecution.
- ♦ Attempt to straighten or weld any part of the ROPS frame or cab or retaining brackets, which have suffered damage. By doing so the structure may be weakened and endanger safety.
- ♦ Secure any parts on the ROPS frame or secure the ROPS frame with other than the special high tensile bolts and nuts specified.
- ♦ Attach chains or ropes to the ROPS frame for pulling purposes.
- ♦ Take unnecessary risks even though your ROPS frame affords you the maximum protection possible.

ROPS Maintenance and Inspection:

After the first 20 hours of operation, and then after every 300 hours of operation or six months, whichever comes first:

- ♦ Check the torque of the ROPS mounting bolts. Tighten, if necessary, to the specified torque.
- ♦ Check the operator's seat mounting bolts and the seat belt mounting parts. Tighten bolts to torque and replace worn or damaged parts.

Damage to the ROPS

- ♦ If the tractor has rolled over or the ROPS has been damaged (such as striking an overhead object during transport), the ROPS must be replaced to provide the original amount of protection.
- ♦ After an accident, check for damage to the (1) ROPS, (2) operator's seat, (3) seat belt and seat belt mountings. Before operating the tractor, replace all damaged parts.
- ♦ DO NOT TRY TO WELD OR STRAIGHTEN THE ROPS.

WARNING:

- ♦ Never attach chain, ropes, or cables to the ROPS for pulling purposes; this may cause the tractor to tip backward. Be careful when driving through door openings or under low overhead objects. Make sure there is sufficient overhead clearance for the roll bar.
- ♦ If the ROPS is removed or replaced, make certain that the proper hardware is used and the recommended torque values are applied to the attaching bolts.
- ♦ Always wear your seat belt when the tractor is equipped with a ROPS.

Forklifts

The safe operation of a forklift depends on safe driving habits and how safely the forks are loaded. The forklift operator should keep right and not tailgate (the same rules we follow in our own cars), as well as keep a distance cushion around the lift. Only certified forklift operators are allowed to operate the forklifts. Other rules that need to be followed are:

- ♦ Slow down at intersections.
- ♦ Blow the horn at blind corners.
- ♦ Keep a three-truck length distance between the vehicle you are driving and vehicles in front of you. This will ensure a safe stopping distance.
- ♦ Do not allow anyone to ride with you, especially on the lift.
- ♦ Always face the direction in which you are traveling. Pay attention to where the load and the lift are.
- ♦ Warn people as you approach them.
- ♦ Given the "slick" type of tire on forklifts, pay attention to wet and rough floor surfaces.
- ♦ Be aware of the environment, especially any low hanging objects and electrical lines overhead.
- ♦ Avoid travel with load raised.
- ♦ Always have dry hands and shoes.
- ♦ Always keep all parts of your body within the operator's protective cage.
- ♦ Check the area before moving truck.
- ♦ Be aware of the position of fork tips.
- ♦ When parking the lifts, the forks must be on the floor, the controls in neutral, and the brakes set. Remove the key.