



HOLT

CAT

**SAFELY HOME.
EVERYONE.
EVERY DAY.™**

Wheel Equipment Safety

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WELCOME

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Why is SAFETY important to you?

3 BIG REASONS:

- ACCIDENTS DISABLE AND KILL
- ACCIDENTS COST
- ACCIDENTS CAN BE AVOIDED

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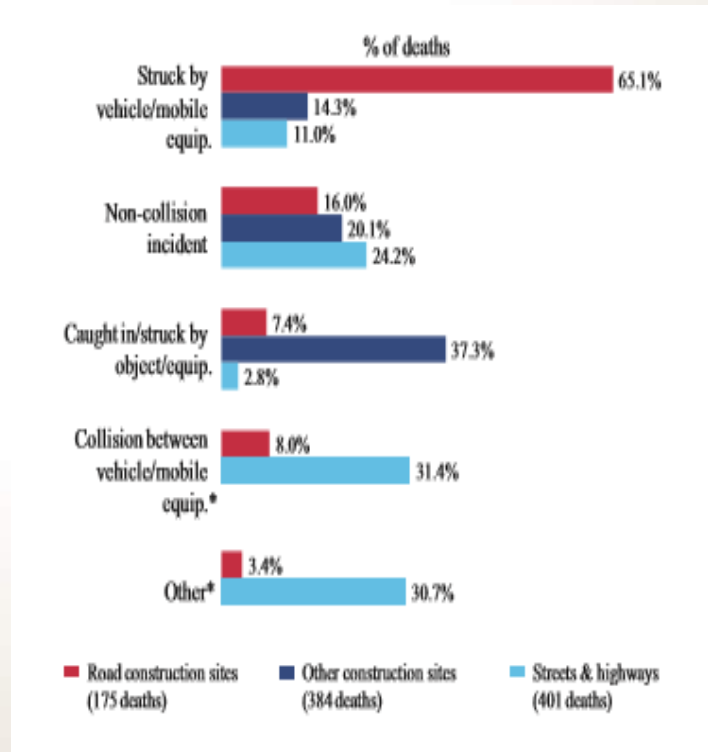
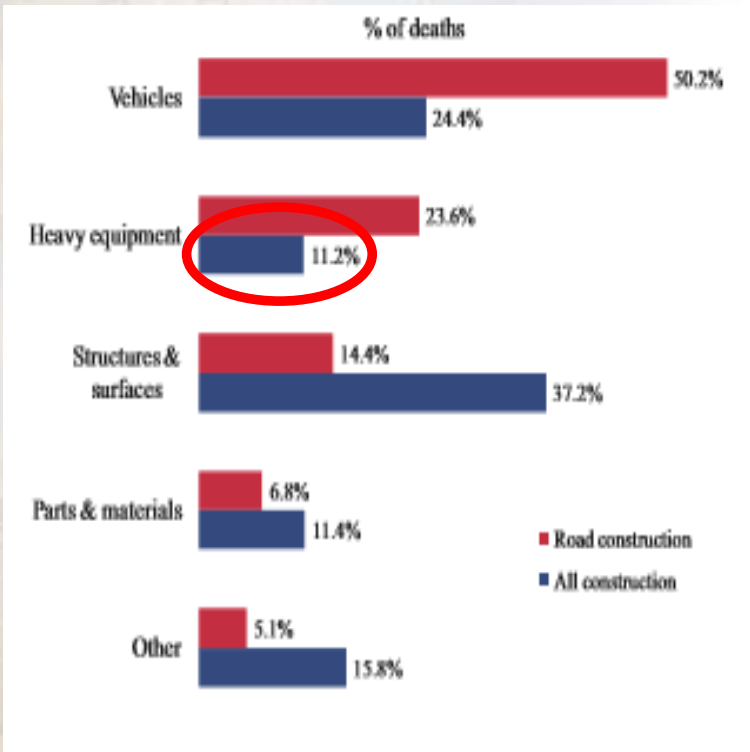
Fatalities Involving Heavy Equipment

Bureau of Labor Statistics

- Mobile Heavy Equipment were a major source of fatalities in work place accidents.
- Nearly 1000 deaths annually occur involving Heavy Equipment.
- Rollovers were the main cause of death of Heavy Equipment Operators.
- For workers on foot, being struck by heavy equipment (especially while backing up) and being struck by equipment loads were a major causes of death.



Fatal Events Involving Heavy Equipment





The Cost of Downtime

Cost of Lost Production

Cost of the Associated resources

Cost of rent a Replacement machine to maintain production

Cost of Repairs

Owning Cost of the down machine

Cost of Employee



OSHA

For safety operation of any machine, the operator must be a qualified and authorized operator. To be qualified, you must understand the written instructions supplied by the manufacturer, have training, including actual operation of the machine and know the safety rules and regulations for the jobsite.

On the job, an operator must not use drugs or alcohol which can impair his/her alertness or coordination. An operator on prescription or over-the-counter drugs need medical advice regarding whether or not he/she can safely operate machines.



Preventing Heavy Equipment Accidents

The Majority of injuries and death that occur on work sites are associated with some degree of human error, though many often also involve faulty equipment and weather conditions.

The most obvious, and preventable, reasons accidents occur include,

- Inadequate Training
- Unsafe Construction Site Design
- Negligent Equipment Maintenance
- Safety Violations - Removal of Safe Guard
- Ineffective supervision
- Blatant inattention
- Reckless misuse of equipment



Initial Training Recommendations

Wheel Equipment operators should receive initial training in the following topics:

- Operating instructions, warnings, and precautions for the types of equipment the operator will be authorized to operate.
- Wheel equipment controls and instrumentation: where they are located, what they do, and how they work
- Engine operation
- Steering and maneuvering
- Visibility (including restrictions due to loading)
- Forks and attachment adaptation, operation, and use limitations
- Wheel equipment capacity and stability
- Any vehicle inspection and maintenance that the operator will be required to perform



Initial Training Recommendations

- Equipment refueling
- Operating Limitations
- Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of equipment that the employee is being trained to operate
- Surface conditions where the equipment will be operated
- Falling loads
- Overloading if equipment

Remember

- Develop good initial and annual operator training material
- Keep it updated



Refresher Training and Evaluation Recommendations

Refresher training, including an evaluation of the effectiveness of the training, should be conducted to ensure that the operator has the knowledge and skills needed to operate the equipment safely. Refresher training in relevant topics should be provided to the operator when:

- The operator has been observed to operate the equipment in an unsafe manner
- The operator has received an evaluation that reveals that the operator is not operating the equipment safely
- The operator is assigned to operator a different type of equipment
- A condition in the workplace changes in a manner that could affect safe operation
- Once every 3 years, an evaluation should be conducted of each type of equipment that the operator operates



Work Area Safety

Learn all work site rules:

- Learn
 - All signals, who has signaling responsibility
 - Meaning of all flags, signs & markings
- Know procedures for a disabled machine
- Be aware of indoor clearances & weight limitations
- Properly ventilate enclosed areas
- Utility line locations





Work Area Safety

- Conditions of service and haul roads, pit or quarry
- Direction of travel and traffic right of way site rules
- Holes, obstructions, mud and/or ice conditions in work site areas
- Heavy traffic creating potential visibility issues
- Thick dust, smoke and/or fog due to changing weather conditions





Personal Safety



I	M	S	A	F	E
Illness	Medication	Stress	Alcohol	Fatigue	Eating



Personal Safety

- Hard hat
- Safety shoes
- Eye protection
- Face protection
- Heavy gloves
- Reflector vests
- Ear protection
- Respirators





Personal Safety

Avoid clothing that may be a problem:

- Neckties
- Loose clothing
- Scarves
- Rings
- Wristwatches
- Bracelets





Personal Safety

- Seats must be adjusted for correct distance to pedals, height and weight, and back of seat for proper back support.
- Make the seat adjustments when the operator is sitting against the back of the seat.




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Safety & Maintenance Inspection

Safety & Maintenance Inspection 

Inspector _____ Evaluator _____

What are you inspecting?	What are you looking for?	✓	Evaluator Comments
FROM THE GROUND			
Tires, Wheels, Stem Caps, Lug Nuts	Inflation, Leaks, Damage, Wear		
Bucket Cutting Edge, Moldboard	Excessive wear, Damage		
Bucket Lift and Tilt Cylinders, all lines and hoses	Excessive wear, Damage, Leaks		
Loader Frame, Arms	Excessive wear, Damage		
Underneath Machine	Leaks, Damage		
Transmission, Transfer Case	Leaks		
Steps and Handholds	Condition, Cleanliness		
Fuel Tank	Fuel Level, Damage, Leaks		
Differential and Final Drive Oil	Fluid Level		
Air Tank (if equipped w/ air brakes)	Drain Moisture		
Axles - Final Drives, Differentials, Brakes, Duo-cone Seals	Leaks, Damage, Wear		
Hydraulic Tank	Fluid Level, Damage, Leaks		
Transmission Oil	Fluid Level		
Lights, Front and Rear	Function, Damaged Lens, Housing, or Wiring		
Battery Compartment	Cleanliness, Loose Nuts & Bolts		
ENGINE COMPARTMENT			
Engine Oil	Fluid Level		
Engine Coolant	Fluid Level		
Radiator	Fin Blockage, Leaks		
All Hoses	Cracks, Wear Spots, Leaks		
Fuel Filters / Water Separator	Leaks / Drain Water (if equipped)		
All Belts	Tension, Wear, Cracks		
Air Filter	Restriction Indicator		
Overall Engine Compartment	Trash or Dirt Buildup, Leaks		
ON THE MACHINE, OUTSIDE THE CAB			
Handholds	Condition and Cleanliness		
ROPS	Damage, Loose Mounting Bolts		
Fire Extinguisher	Charge, Damage		
Windshield, Windows	Broken Glass, Cleanliness		
Windshield Wipers / Washers	Wear, Damage / Fluid Level		
Doors	Open properly, broken glass		
INSIDE THE CAB			
	Adjustment-Height, Weight, Able		

Safety & Maintenance Checklist



Operation and Maintenance Manual

- Safety Section
- Product Information Section
- Operation Section
- Maintenance Section
- Warranty Section
- Reference Information Section
- Index Section
- **Always located Behind Operators Seat**





Machine Safety

Make sure you...

- Know the machine safety features and devices
- Know the location and function of all warning indicators and systems
- Read and follow the Operation and Maintenance Manual for each machine you are operating



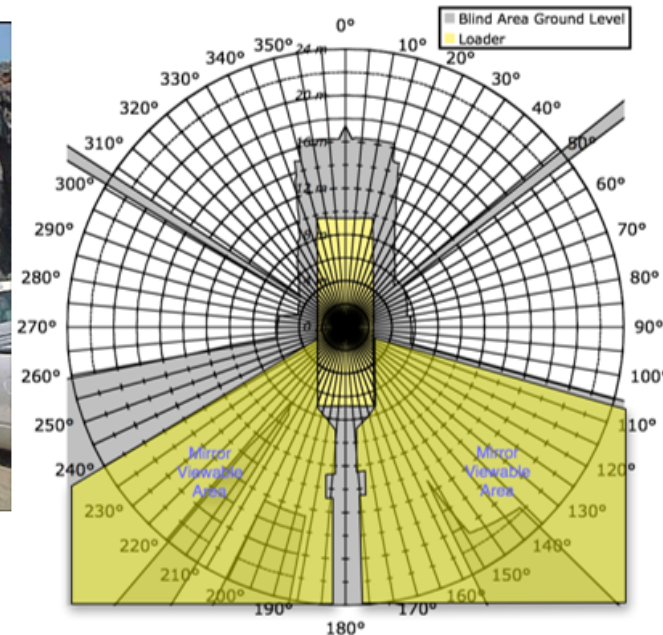


Machine safety

Loader Blind Spots

Loader Manufacturer & Model	Caterpillar 992G
Gross Vehicle Weight	209,278 pounds
Machine length	53ft 3in
Bucket size	16 yards

**Blind Area Diagram - Wheeled Loader
Ground Plane**





Machine Safety

Three causes of accidents are...

- Machine
- Weather
- Human Element

**80% of all accidents are caused
by human element**





Machine Safety

Learn & know your machine's:

- Safety features
- Operating & maintenance characteristics
- Capabilities & limitations
- Location and function of all controls, indicators & warning lights
- Safety devices and instructions on your machine





Machine Safety

In the cab:

- 2-way radio
- Water

On the machine:

- Fire extinguisher
- Fire suppression systems
- First aid kit

On the worksite:

- Washing stations
- Emergency phones
- Site offices
- First aid stations





Machine Safety

Fasten seat belt-

- Inspect the condition of the seat belt and mounting hardware.
- Replace any parts that are worn or damaged regardless of the appearance
- Inspect seat belt tag, replace the seat belt if older than 3 years of installation
- **Must be worn at all times!!!**

What happens if MSHA or OSHA catches a person with out a seat belt?





Machine Safety

- Wipe steering controls, foot pedals, hand levers and knobs clean of oil and grease
- Unsecured items can become flying objects in rollovers, tipovers and other emergencies
 - Remove unauthorized tools, supplies and other material from cab
 - Make sure items that you carry are not loose or in the way





Machine safety

- Refueling
 - Stop engine
 - No smoking, open flame or sparks
- Battery checks, jumps or service
 - No open flame or sparks
- Remove all trash or debris
- Check for fluid leaks
- No smoking when using ether
- Assure fire extinguisher date check is current and extinguisher is in working order





Machine Safety Features

- FOPS or ROPS
- Seat belts
- Back-up alarm
- Lights
- Horn
- Guarding
- Shields
- Mirrors
- Brakes
- Fire extinguishers
- Warning labels
- Indicator lights & gauges
- Non-slip surfaces
- Hand rails
- **O&M Manual**
(One safe source)



Safety & Maintenance Inspection

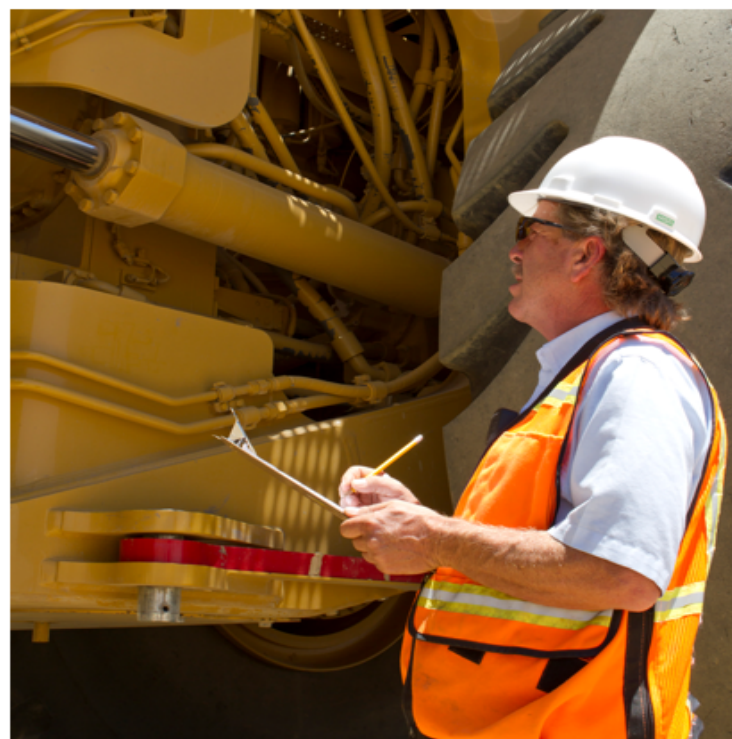
- Why do we do walkarounds
 - Safety!
 - To help increase machine life and performance
- When doing walkarounds and when operating use your four senses (sight, smell, hearing, touch)
- Always consult O&M manual for information





Safety & maintenance Inspection

- How many times per shift?
 - Start of shift
 - Any time you get off of machine
 - End of shift
- Do the same way every time!





Prepare for safe operation

Before you begin your workday, you should inspect your machine and have all systems in good operational condition.

Do not operate the machine until all deficiencies are corrected.

- Check for broken, missing or damaged parts. Make necessary repairs.
- Check the tires for cuts, bulges and correct pressure. Replace badly worn or damaged tires.
- Check service and parking brakes for proper operator.
- Perform all maintenance procedures outline by the manufacturer of your machine.
- Check the hydraulic system. Repair any leaks.



Machine safety > Mounting & Dismounting

For all machines:

- You **must** use ladders and steps provided
 - Keep clean and safe to use
- You **must** use three points of contact with steps & grab rails
- Always face the machine
- Do not use controls as hand holds
- **NO JUMPING!!**





Safety: Loader Operator Responsibilities

- What is the Loader responsibilities
 - Keep a clean level work area
 - Keep eye out on highwall digging area conditions
 - He/she is in charge of trucks
 - How they spot under the loader
 - How they come into the work area
- What is the maintenance responsibilities
 - Grease machine
 - Fuel machine
 - Pre/post walk around
 - House keeping
- Remember you need to communicate
 - Nobody on site is a mind reader



Safe Machine Operation

Remember These Rules:

If equipped with ROPS, stay in the operator's seat AT ALL TIMES when operating and keep your seat belt/operator restraint fastened and comfortable snug.

Be in control of your machine at all times.

In the event of a rollover, stay in the seat with the seat belt fastened.

Assure yourself that the work area is clear of persons.

Look and listen for malfunctions. Stop if a malfunction or erratic operation is detected.

Never allow a untrained or unqualified person to operate the machine.

Never permit a rider.

Never use a bucket for a work platform or personnel carrier.



Safe Machine Operation (continued)

- Always look around before you back up, hook up, or swing an attachment.
- Know the pinch points and rotating parts on the machine.
- Never let anyone in or near the pivot area of articulated machines.
- Never lift, move or swing a load over anyone.
- Take it slow and easy traveling through congested areas.
- Give the right of way to loaded machines.
- Maintain a safe distance from other machines.
- Don't obstruct your vision when traveling or working.
- Carry the bucket low for maximum stability and visibility.
- Carry attachments in transport position.
- Operate at speeds slow enough so you have complete control at all times.



Safe Machine Operation (continued)

Travel slowly over rough or slippery ground and on hillsides.

Stay in gear when traveling downhill. (Do not shift into neutral)

Maintain engine RPM to provide steering and braking functions.

Use the same gear for traveling down a grade as you would for traveling up the grade.

Know the machine static tipping load limitations.

Do not use the machine as a ram.

Use caution when backfilling.

Never undercut a high bank.

Use caution when working along the top of banks or slopes.

Always check clearance height and weight limitations.

Try to work the machine straight up and down steep slopes. (NOT ACROSS)



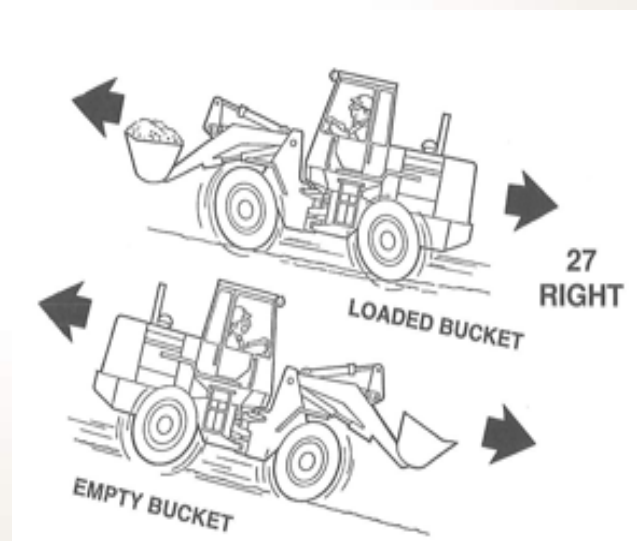
Safe Machine Operation (continued)

Warning:

Travel up and down on inclines, slopes,
And ramps

LOADED....Face the bucket (and load) uphill.

EMPTY.....Face the bucket downhill.



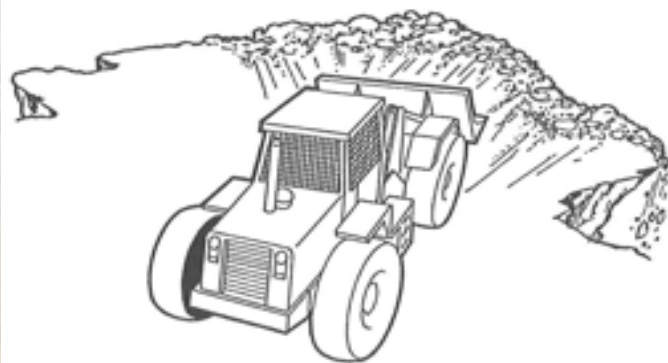


Safe Machine Operation (continued)



WARNING: When working on storage piles, stay away from areas where conveyors are discharging and those areas where below grade hoppers or feeders are drawing down materials. Materials may be “bridging” and could suddenly collapse.

When working on a slope, push or drift material downhill, if possible. When pushing material over a cliff or steep embankment, leave a small windrow at the edge. This will allow you to maintain a safe distance from the edge. (29)



Watch Out For Obstacles

Adjust your speed to conditions.

Watch for obstacles. Go around rocks and stumps. Avoid crossing ditches, curbs or exposed railroad tracks. (30) If obstacles are unavoidable; reduce speed, raise bucket, blade or attachment a short distance if needed for clearance, and cross at an angle.

Check for hidden or buried obstacles that could cause a collision. At railroad crossings, stop at approach, remove ear protectors, if any, and look and listen for trains before crossing the tracks.



Safe Machine Operation (continued)



WARNING: If you intend to perform any forestry operations, on-site clearing or demolition with your machine, it must be equipped with a special operator's cage or cab specifically designed for this type of work.



WARNING: Snags (dead standing trees) and hangers (cut trees prevented from falling by leaning against other trees) are extreme hazards and must be brought down immediately in a safe manner (check with your supervisor for instructions). (31)(32)



WARNING: If you use your bucket or blade to topple trees, back away immediately when the tree starts to fall. Never allow your tractor to ride up onto the root ball.





Rules of the Road

- If the machine is to be driven over the road, refer to the OM&M for instructions.
- Make sure clearance flags, all lights and warning signs are in place and visible.
- Make sure the “Slow Moving Vehicle” emblem is visible to any vehicle approaching from the rear.
- When traveling on public roads or streets, obey all local traffic regulations appropriate to your machine use and local classification.
- Always use hazard warning lights. Find out if you must use an escort.
- Place the bucket in the transport position and secure all accessory equipment.
- Know your stopping distance at a given speed.
- Always regulate your travel speed accordingly.
- Avoid panic stops and sharp turns.
- If traffic backs up, pull over and allow other vehicles to pass.
- Always use hand signals or turn signals when turning.



Machine Safety > Before Dismounting

- Lower all implements
- Transmission to neutral
- Set parking brake





Safety technology

- Work Area Vision System (WAVS)
- Object Detection System
- Detect Proximity Detection System
- Drivers Safety System
- Smartband
- Ground Worker Detection
- Fatigue Risk Assessment



Test Your Knowledge

You MUST know these for your safety:

- Your safety program?
- Your machine manufacturer's manual(s)?
- Proper clothing and personal safety equipment?
- Your machine's controls, warning signs, devices, and safety equipment?
- How to properly inspect, mount and start your machine?
- How to check your machine for proper operation?
- Your work area and any special hazards that may exist?
- Proper operating procedures?
- Operating safety precautions?
- Proper loading and unloading procedures for transporting?
- Under what conditions you should not operate your machine
- Proper parking, shutdown, and dismounting procedures?
- Proper maintenance procedures?



Thank You