

CITY AND COUNTY OF DENVER

Heavy Equipment/Mobile Equipment Safety Policy		
Occupational Safety and Health Management System No. 65.5.6 This policy was developed and shall be implemented under the authority of Executive Order No. 65 and the Risk Management Office.	January 1, 2008	Prepared / Revised By: Risk Management – Safety Unit

1.0 Introduction

The City and County of Denver recognizes the hazards associated with the operation of heavy equipment/mobile equipment. This policy has been developed to establish guidelines to eliminate injuries or fatalities related to this type of equipment.

2.0 Scope

This policy applies to all free moving mobile equipment that may be propelled by gasoline, propane, diesel or electricity. Only competent personnel may operate heavy equipment/mobile equipments. An individual’s competency must be demonstrated by successful completion of the training and evaluation process specified in this policy. This policy establishes requirements to work in or around all types of mobile equipment.

City and County employees are required to comply with the procedures outlined in this document. Individual departments / agencies who have an existing Heavy Equipment/Mobile Equipment Safety Policy or Program in place may continue to use that program if it provides the same degree of protection.

3.0 Definitions

- **Competent Person** – Person who by possession of a recognized degree in an applicable field or a certificate of professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.
- **Free Moving Mobile Equipment** – Operator controlled mobile equipment not constrained by Fixed Rails and can include Industrial Fork Trucks, Aerial Lifts, Buggies, Sweepers and Backhoes.
- **Mobile Equipment** – Free moving equipment propelled/powered by gasoline, propane, natural gas, diesel or electricity used to haul, transport, excavate, move, maneuver, or hoist materials, equipment, products or personnel.
- **Pre-use Inspection** – Required inspection of a piece of mobile equipment completed when the facility has not operated the mobile equipment for each shift. (Attachment One –Forklift, Attachment Two – Aerial Lift)

4.0 Responsibilities

4.1. Department Heads will:

- Ensure that this policy and all department rules in the equipment training procedure are followed.
- Ensure a Competent Person is available for heavy equipment/mobile equipment training.
- Provide a resource for training the operators of heavy equipment/mobile equipment that is needed to operate all equipment safely.

4.2. Departmental Manager/Supervisors will:

- Enforce this policy and all departmental rules in the equipment training procedures.
- Identify and provide the appropriate training for the Competent Person to conduct heavy equipment/mobile equipment training.
- Ensure that operators of heavy equipment/mobile equipments are trained, evaluated, observed and given skills needed to operate the equipment safely.
- Document random observations and on the spot corrections or department refresher training.
- Enforce these safety procedures and rules as related to heavy equipment/mobile equipment such as but not limited to seatbelt use.

4.3. Employees will:

- Follow this policy and other safety rules pertaining to the pre-shift inspection of, operation and routine maintenance of heavy equipment/mobile equipments.
- Perform pre-shift inspections prior to start of work for respective equipment.
- Report any pre-shift inspection deficiencies with equipment to their immediate supervisor for maintenance or further action prior to operation of the equipment.
- Obey traffic signs and signals and audible or visual warning devices.

4.4. Competent Person (Equipment Trainer) will:

- Train and evaluate equipment operators in classroom, hands-on training process and refreshers.
- Be knowledgeable and experienced in the particular equipment operation and how-to train.
- Document evaluations and training.

4.5. Risk Management Safety will:

- Provide assistance for compliance with the policy to requesting individual departments/agencies.

5.0 **General Operating Requirements**

- The location shall determine the vehicle speed limit and post the information.
- All incidents involving mobile equipment shall be formally investigated following the City and County's Accident Investigation Guidelines.
- Equipment operators are responsible for keeping the equipment under control at all times.
- All equipment operators must obey traffic signs and signals, and audible or visual warning devices.
- Alteration or modification of equipment is not permitted without prior written consent of the manufacturer and location management.
- When parking equipment, the operator must not block fire aisles, access to stairs, stretcher storage, fire equipment, or other emergency response areas or equipment.
- Stunt driving and horseplay are strictly forbidden.
- All equipment rated capacities shall not be exceeded.
- Equipment operators shall perform a pre-shift inspection on all equipment using the appropriate form in the Attachments.
- Any deficiencies found in the pre-shift inspections shall be reported and the equipment taken out of service until repairs are made and equipment is safe to operate.
- The right of way must be yielded to emergency vehicles.
- Riders are not permitted except for the operator unless approved by location management.
- Operators must keep both hands free such as not eating, reading and drinking while operating.
- More specific procedures and rules in Equipment Operator's Training for heavy equipment/mobile equipments must be followed.

Free Moving Equipment or Vehicles

- If governors are in use and are set to a specific speed, they must not be removed or altered in any way.
- Equipment operators must maintain a safe following distance from other equipment or vehicles (three truck lengths or three seconds).
- For intersections with obstructed views, the equipment operator is responsible to slow down, sound the horn and use fixed convex mirrors, where provided to check for cross-traffic.
- Equipment operators must stay within the floor markings and out of the pedestrian lanes.
- Seatbelts must be worn at all times.
- Load backrest extension will not increase the maximum weight, which can be handled and provides overhead protection for operators and helps prevent parts of the load from falling on employees.
- Excess counter-weighting is forbidden.
- Unstable or unsafely arranged loads shall not be picked up and restacked, banded, taped, or shrink-wrapped.
- Transfer loads from broken pallets or containers to sound ones before picking them up and promptly remove these same pallets or containers to void their future use.
- The proper attachments must be used for the respective equipment.
- Be aware of bystanders and pedestrians that may be in the target zone of an unstable load.
- Level the top of the forks and do not lift with only one fork.

- Lift from the broadest side of the load and set the forks at the greatest width the pallet allows.
- Fork extensions shall be used for deep loads and can cause a pallet behind the load being lifted to move or fall over.
- Heavy equipment must be wedged; a spotter used; and controls not run from the floor unless made for that type of operation.
- Off-center loads must be strapped if it could become unstable; operate slower; and use controls such as raise and tilt smoothly.
- Center of gravity of the load must be as close to the mast as possible. The stability is greater as the center of gravity of the load is brought closer to the front axle.
- Tilt the mast gently backward to stabilize the load when the load is elevated.
- Loads become less stable when the load is raised, turning, on slopes, tilting the load, and on rough or uneven surfaces.
- Traveling surfaces must be able to support the weight of the equipment and the load.
- Railroad tracks and similar edges shall be crossed at a 45-degree angle, where possible.
- There must be adequate overhead clearance maintained such as from lights, sprinklers and pipes.
- Employees are responsible to report and help correct leaning stacks.
- Equipment operators must maintain a safe distances from edges such as elevated ramps, platforms and docks.
- Transporting an individual in a lift platform is forbidden.
- Equipment operators must not pass forks or attachments over anyone, nor shall anyone pass under them whether the equipment is loaded or empty.
- Equipment operators shall not pass other vehicles moving in the same direction at intersections, blind spots or other dangerous locations.
- Equipment operators shall check that wheels are blocked; brakes are set; and use dock locks before loading a trailer.
- Dock boards or bridge plates must be substantial to hold the equipment and the load; secured; and equipment operators travel slowly on them.
- Condition of the floorboards must be satisfactory and enough overhead clearance prior to boarding a trailer.
- Equipment operators need to look back over both shoulders before changing direction or moving in reverse.
- Equipment operators shall travel with the load as close to the floor as possible (one or two inches at the heel of the forks and four to six inches at the tips, with the load resting against the mast).
- Equipment operators must follow rules for refueling.
- When traveling loaded on ramps greater than 10%, equipment operators shall always have the load upgrade.
- When traveling unloaded on ramps, forks shall be down ramp and mast tilted back.
- When leaving free moving equipment or industrial trucks unattended (greater than 25 feet away is abandoned), the operator shall place the forks on the floor; put the truck in neutral; set the brakes; shut-off the truck; and block the wheels if on a ramp.
- Equipment operators shall keep their bodies within the dimensions of the truck and not between the mast uprights.
- When parking near railroad tracks, equipment operators must park no closer than 25 feet from the center of the railroad tracks.

- Equipment operators shall travel with the load trailing if it obstructs their view.
- Equipment operators must avoid running over loose materials, uneven or soft surfaces and slippery areas including oils slicks. The equipment operator must report and help correct these situations.
- Equipment operators shall slow down for the conditions including wet or slippery floors and weather factors.
- Equipment operators shall avoid running on ice and snow, where possible.
- All free moving mobile equipment shall have back-up alarms.
- Back-up alarms and lighting must be inspected during the pre-shift inspections and any deficiencies corrected.
- Flatbed truck operators shall avoid steering wheels all the way in either direction.
- The load must clear the floor for a flatbed truck before engaging the reverse speed.
- Flatbed truck operators shall pre-examine loads to ensure they do not overload the truck.
- Flatbed truck operators shall not use the reverse direction power for braking.
- Flatbed truck operators shall allow sufficient clearance for lowering loads into storage spaces.

6.0 Equipment Operator Training and Evaluation

6.1. General Training Requirements:

- (1) A formal training program that consists of a combination of classroom instruction with competency testing and practical training. (Attachment Three)
- (2) Training shall include safety rules, operating procedures, equipment controls and safety work instructions such as, but not limited to, job safety analyses and standard operating procedures.
- (3) A competent person who has the requisite mobile equipment knowledge, training and experience to conduct the training and evaluations.
- (4) The competent person will evaluate each prospective operator while performing the safe operation of the equipment.
- (5) All operators shall exhibit satisfactory operating skills and pass a supervised written exam.
- (6) Employee operating equipment shall be certified / re-certified on the specific equipment they operate. The documentation shall be training and evaluation records with the name of the operator, date of training and the competent person performing the training. These records shall be retained for review.

6.2. Safe Operation Topics for Training:

- (1) All operating instructions, warnings and precautions for the type of trucks the operator will be authorized to operate.
- (2) Differences between the industrial vehicle and an automobile.
- (3) Equipment controls and instrumentation location, what they do and how they work.
- (4) Engine or motor operation.
- (5) Steering and maneuvering.
- (6) Visibility (including restrictions due to loading).
- (7) Fork and attachment adaptation, operation and use limitation.
- (8) Vehicle capacity.

- (9) Vehicle stability.
- (10) Vehicle inspection and maintenance the equipment operator will be required to perform.
- (11) Any other operating instruction, warning or precaution listed in the operator's manual for the type of vehicle that the employee is being trained to operate.
- (12) Workplace related topics and operating procedures (i.e., weather, docks, etc).
- (13) Surface conditions where the vehicle will be operated.
- (14) Composition of probable loads and load stability.
- (15) Load manipulation, stacking, un-stacking.
- (16) Pedestrian traffic areas where vehicles will be operated.
- (17) Narrow aisles and other restricted places of operation where vehicles will be operated.
- (18) Hazardous (classified) locations where vehicles will be operated.
- (19) Ramps and other sloped surfaces that could affect the stability of the vehicle.
- (20) Other unique or potentially hazardous environmental conditions that exists or may exist in the workplace.
- (21) Closed environments and other areas where insufficient ventilation could cause a build-up of carbon monoxide or diesel exhaust.
- (22) Operating limitations.
- (23) Refueling and charging/recharging batteries.

6.3. Evaluation and Refresher Training:

- 6.3.1. A periodic evaluation and periodic formal documented refresher training based on the evaluation shall be conducted for equipment operators.
- 6.3.2. A competent person(s) must conduct and document an evaluation of the performance of the operator of heavy equipment/mobile equipment at least initially and where feasible triennially thereafter.
- 6.3.3. Documented corrective training shall be required when conditions in the workplace change or the equipment operator demonstrates the following:
 - (1) Observed operating in an unsafe manner;
 - (2) Involved in an incident;
 - (3) Evaluated not operating the equipment safely;
 - (4) Assigned to drive a different piece of equipment; or
 - (5) Conditions in the workplace have changed and could effect the safe operation of the equipment.

7.0 **Mobile Equipment Safety Requirements:**

7.1. Forklift

- (1) Only certified personnel are permitted to operate the forklift.
- (2) The operator shall perform pre-shift inspections. The form shall be readily available for review.
- (3) Defective equipment must be locked out until repairs are complete.
- (4) A preventative maintenance program shall be utilized and documented.

- (5) Seat belts shall be required at all times the forklift is being operated.
- (6) Make sure there is a clear path before moving loads
- (7) Always move at a safe speed.
- (8) Always face the direction of travel.
- (9) When necessary to travel in reverse, or there is obstruction to vision, have another person guiding.
- (10) Always sound horn when coming around blind corners, at intersections or traveling in reverse.
- (11) In picking up a load, be sure forks are set squarely and as far as possible under the load. Never raise or lower loads while traveling. Whether loaded or empty forks shall be carried as low as possible.
- (12) Never swing or suspend loads over people. No one is permitted to walk or stand under raised material handling equipment.
- (13) On inclines, forklifts must be driven with the load on the upgrade side of the driver.
- (14) Check to make sure loads are firmly fastened and positioned to prevent tipping or slipping.
- (15) Avoid any action that might dump a load.
- (16) Moveable or replaceable forks must be firmly in place by use of a proper securing pin.
- (17) Never use improvised attachments. Use only those approved by the manufacturer and be certain all attachments are properly secured.
- (18) Only the operator is permitted to ride the forklift.
- (19) The forklift may not be left unattended unless the load is lowered, controls are in neutral, brakes are set and the lift is turned off.
- (20) When the forklift is parked on an incline the wheels shall be chocked.
- (21) When trucks are unloaded the wheels of the truck must be chocked and only approved properly stabilized dock boards may be used.
- (22) Detached semi-trailers must be properly jacked before being unloaded.
- (23) The forklift driver will check the soundness of the dock plate and truck floor before driving the forklift onto either.
- (24) The forklift shall be used only for the purpose for which it is designed. Raising personnel on the forks, for example, must be prohibited.

7.2. Aerial Lift

- (1) Lift controls shall be tested prior to use to ensure safe working conditions.
(Attachment Two)
- (2) Manlift must not be used to carry any load that does not completely fit into the basket, or, with the addition of the operator's weight, exceeds the rated capacity of the lift.
- (3) An exception to the above rule can be allowed for installation of pipe or conduit. Pipe or conduit less than ten (10) feet long may be straddled across the top of the manlift provided the total load (operator and materials) is not in excess of the rated capacity of the lift. Operators must abide by safe lifting limits as prescribed in these procedures, and must survey the area for possible contact with electrical conductors.
- (4) Only the appropriate departmental personnel shall approve any exceptions to the above.
- (5) Operators shall always stand firmly on the floor of the basket and not sit or climb on the edge of the basket or use planks, ladders or other devices for work position.

- (6) The brakes must be set and outrigger, when used, shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial manlift on an incline surface.
- (7) The aerial manlift may not be moved when the boom is elevated in a working position with personnel in the basket. The exception is for equipment specifically designed for this type of operation.
- (8) If the aerial manlift is to exceed 16 feet inside a facility, all overhead cranes must be locked out and tagged or an observer must be in place to ensure the safety of the personnel.

7.3. Maintenance

- 7.3.1. The location shall follow the manufacturer's recommendations in their equipment preventative maintenance program.
- 7.3.2. Only designated maintenance personnel shall be authorized to perform service on equipment.
- 7.3.3. Maintenance shall conduct a pre-release inspection on equipment prior to return to service. Inspections should be reviewed periodically and retained for three (3) months.

FORKLIFT DAILY CHECKLIST
(EACH SHIFT)

Vehicle Number

Operator

Date

Supervisor

1st 2nd 3rd
Shift

Check: (S) each safe item, (D) each defect, NA for non applicable

	(1) Engine Oil Level
	(2) Radiator Water Level
	(3) Seat-Belt
	(4) Hydraulic Fluid Level
	(5) Gauge and Instruments
	(6) Light (front and rear)
	(7) Warning Device
	(8) Brakes (hand and foot)
	(9) Steering and Hydraulic controls
	(10) Tires and Wheels
	(11) Fluid Leaks
	(12) Physical Damage Y <input type="checkbox"/> N <input type="checkbox"/> Recent Does if affect safe operation?
	(13) Exhaust System
	(14) Air Cleaner
	(15) Hour Meter Reading
	(16) Neutral Safety Switch

Service Required?	Y <input type="checkbox"/> N <input type="checkbox"/>	Technician Called?	Y <input type="checkbox"/> N <input type="checkbox"/>
By Whom?		Date:	
Service Performed?	Y <input type="checkbox"/> N <input type="checkbox"/>	By Whom?	
Date:		Lock/Tag/Try Required?	Y <input type="checkbox"/> N <input type="checkbox"/>

Vehicle Back in Service?	Y <input type="checkbox"/> N <input type="checkbox"/>	Date:	
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Attachment Two

PRE-OPERATIONAL AERIAL MANLIFT INSPECTION FORM

INSPECTOR: _____

DATE: _____

CHECK THE FOLLOWING:

Air pressure of the tires for excessive wear	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Hydraulic fuel level and pressure	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Fuel, oil and coolant levels	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Battery level and connections. (On electrical units ensure it is properly charged)	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Ensure pivot pins are secure	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Check hoses for worn areas	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Check for cracks or deviations in welded parts	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Ensure the safety limit switch works freely	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Check the condition of the outriggers and stabilizers	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Check the security of the guard rail on the platform	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Raise and lower each boom system separately, listen for unusual noises, vibrations or uneven operations	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Check for hydraulic leaks	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>
Check both ground and platform control functions	OK <input type="checkbox"/>	NOT OK <input type="checkbox"/>

**FORKLIFT TRAINING
CLASSROOM AND OPERATOR PROFICIENCY**

CLASSROOM

- The operator must report any problem that is found during the inspection (pre-shift/daily inspection) to the immediate supervisor. Operation of the vehicle is prohibited until needed repairs are complete.
- The visual inspection shall include the following: tires and wheels, seat belt, physical damage, lights (front and rear), fluid leaks, lift/lower devices.
- The operation inspection shall include the following: horn, steering, hour meter reading, breaks, speed control, neutral safety switch, lift/lower system.
- To ensure a stable load operator are to do the following: tilt forks until level, retract the fork carriage as far as possible, and spread the forks as wide as possible and lock into place.
- Operators are to check overhead for sprinkler heads, beams, light fixtures, or any obstructions before raising the mast on the truck.
- Operators are to make all turns slowly to minimize the effects of centrifugal force.
- Operators are to avoid sudden starts and stops to minimize the effects of momentum.
- Operators are to know the load capacity and carry the designated load at center and appropriate elevated height.
- Operators are to face away from the load and drive in that direction when a tall load obstructs the view.
- Operators will not travel through a facility with a load elevated.

LIFT TRUCK OPERATOR PROFICIENCY TESTING

- **Pre-travel inspection:**
 1. Assure that no repairs are in progress
 2. Complete operator's daily checklist-visual checks section.
 3. Complete operator's daily checklist-operational checks section
 4. Observe all gauges for correct readings
- **Travel and load pickup:**
 1. Back up truck from designated parking area.
 2. Travel to selected work zone
 3. Select palliated load and adjust forks
 4. Pick up load and travel to selected materials storage area
- **Operation:**
 1. Kept proper distance from hazards and personnel? Y N
 2. Made proper turns without striking objects with counter weight? Y N
 3. Traveled with load at correct height? Y N
 4. Traveled with load balanced? Y N

5. Traveled at correct speed? Y N
6. Traveled on rough terrain with correct tires? Y N

- **Storing Material:**

1. Used sufficient mast height and tilt to store load? Y N
2. Placed load and returned to travel position? Y N
3. Returned to designated parking place of truck? Y N
4. (If applicable) placed battery on charge? Y N