Section 8
HOISTWAYS AND MACHINE ROOMS

8.1 Hoistway Access Safety

Prior to gaining access to the hoistway, determine whether power is needed to perform the required task. If not, the appropriate lockout/tagout procedure shall be used. (See Section 7.) Do not open the hoistway door more than 6 in. (152 mm) until you determine the car or car top is located in a safe position to access.

8.1.1 Top-of-Car Access/Egress Procedure

CAUTION: Besides examination, inspection, maintenance and adjustment work that must be done on the car top, there is a considerable amount of work in the hoistway which must be done from the top of the car and, at times with the car in motion. Examples of safe access/egress procedures are outlined below.

8.1.1.1 Accessing Top-of-Car

Prior to accessing the hoistway always verify that the elevator has arrived before stepping into or on the car.

(a) Hoistway Access Switch Provided:

- Capture the elevator, and take it to the top access landing.
- Activate the means to disable the operating devices, (in car inspection service) located in the COP. Verify that the elevator is not on automatic operation by attempting to register multiple car calls.
- Insert proper door wedge tool to mechanically hold the door(s) in the open position, stay clear from the entrance and lower the car to a safe height by using the hoistway access switch to run the car in the down direction. Note: Be aware of car door clearances.

- Remove key from hallway access switch.
- Reach into the hoistway and place the top-of-car stop switch in the “STOP” position and turn the car top work light “ON”.
- Insert key into the hall access switch and try to move elevator in both directions. It should not move. Remove key.
- Place the car top inspection switch in the “INSPECT” position and the car top STOP switch to “RUN”. Reinsert the access key switch and try to run the car in both directions. It should not move. Remove key.
- Before stepping onto the car top, activate STOP switch to “STOP”, locate a safe refuge area and access the car top.
- Remove door wedge tool and allow doors to close.
- Proceed with necessary tasks in hoistway ensuring car top station remains on INSPECT and stop switch is in the STOP position when work is being performed.

CAUTION: Be sure you have a surface to stand on that will support your weight. Don’t stand on the car top emergency exit or the fan unit and use special care where the car tops are curved or domed.

(b) Without Hoistway Access Switch:

- Capture the elevator, and take it to the top access landing.
- Establish down demand by activating 2 in-car car calls.
- Using an approved door unlocking device, stop the elevator in flight to verify the door interlock by opening the hoistway no more than 6 inches. Be sure to stop the elevator in a safe position to safely reach the car top inspection run box.
- Insert proper door wedge tool and place the top-of-car stop switch in the “STOP” position, remove your door wedge tool and allow the doors to close

- Wait ten seconds and open the hoistway door no more than 6 inches to verify the top-of-car stop switch is working. Car should not move.
- Insert proper door wedge tool and place the car top inspection switch in the “INSPECT” position and the car top STOP switch to “RUN”. Remove your door wedge tool and allow the doors to close.
- Wait ten seconds and open the hoistway door no more than 6 inches to verify the top-of-car inspection switch is working. Car should not move.
- Insert proper door wedge tool and activate car top STOP switch to “STOP” position.
- Locate a safe refuge area and access the car top. Remove door wedge tool and allow doors to close.
- Proceed with necessary tasks in hoistway ensuring car top station remains on INSPECT and stop switch is in the STOP position when work is being performed.

CAUTION: Be sure you have a surface to stand on that will support your weight. Don’t stand on the car top emergency exit or the fan unit and use special care where the car tops are curved or domed.

(c) When in a multiple hoistway, **never place any part of your body in the runway of an adjacent operational elevator.**

NOTE: On elevators without top-of-car inspection stations, use the proper procedures in Section 8.1.2 (j).

8.1.1.2 Exiting Top-of-Car

(a) Position top-of-car level with the egress landing. When a hoistway access switch is provided, position the top-of-car at the landing where the top access switch is located.
(b) Place the top-of-car stop switch in the “STOP” position.
(c) Check for tools, keys, rags or any other equipment.

(d) Slowly open hoistway door and place door wedge tool into the sill.
(e) Step off top-of-car onto landing.
(f) Place the inspection switch in the “NORMAL” position.
(g) Place the top-of-car stop switch in the “RUN” position and turn off the car top work light.
(h) When a hoistway access switch is provided, with the hoistway door(s) in the open position, activate hoistway access switch to run the car up. Stay clear of moving car. Deactivate the means to disable operating devices.
(i) Remove door wedge tool and close hoistway door to engage pickup rollers with door clutch.
(j) Inside cab return “Access-Enable” to NORMAL or OFF position disabling access switch.
(k) Verify elevator is operational by placing a hall call.

8.1.2 Safety precautions when working on car tops:

(a) Familiarize yourself with the position of the car and counterweights of the car being accessed as well as any other cars/counterweights in the vicinity and take appropriate measures to keep yourself and others away from hazards.
(b) If movement of the car is needed while on top of the car, be sure to have a firm hold on the crosshead, or other part of the car structure.
(c) Never stand or sit on the crosshead when the car is moving.
(d) Never hold onto the ropes, sheaves or sheave guard.
(e) If the car top is not clean (i.e., oil, grease), clean it prior to performing any activities.
(f) Verify proper operation of top-of-car inspection operating buttons.
(g) Where outlets are provided, use a grounded portable light with a suitable, non-conductive or grounded lamp guard and reflector.

(h) Electrical cords are not to be hung on car or counterweight ropes.
(i) When a top-of-car operating device is available and operational, use it to operate the car instead of depending on an operator in the car.
(j) If top-of-car operating device is not available and you must ride on top of the car ensure:
    (1) The person on the car top shall identify and be positioned in a safe refuge space. Do not enter areas marked with Red and White strips.
    (2) The operator in the car is briefed on the signals to be used.
    (3) The operator in the car repeats instructions each time before moving the car.
    (4) That hall buttons cannot control the car.
    (5) The operator shall only run the car on the slowest possible speed and only in the specified direction.
    (6) In the case of single and collective-operation elevators or any elevator whose reversal at the terminals is automatically controlled, instruct the operator to reverse the direction of the car before the terminals by means of the reversal switch in the car.
(k) When a fall hazard exists, fall protection shall be used. (See Section 4.)
(l) Wire ropes shall only be inspected or lubricated when the car is stopped. Avoid pinch points.
(m) When opening hoistway doors from the car top, do so slowly so that no one steps in from the landing thinking a car has arrived.
(n) Observe overhead clearances.
(o) Use extra care when working on car tops that are curved, domed, or located in unenclosed hoistways.
(p) Do not leave parts, lubricants, etc on the top of elevator cars. This is a violation of the ASME A17.1 Code.

(q) The car top emergency exit shall remain in the closed position except when passing through same.
(r) Before performing repairs from top-of-car, with the car at or above the top landing, place a ladder in car under top emergency exit to provide means of exiting from car top.

8.2 Pit Safety

8.2.1 General

(a) Many serious injuries occur every year, entering and exiting pits. Every employee must be aware of the hazards before entering a pit. Some of the more common hazards are:
    (1) Inadequate refuge space
    (2) Inadequate lighting
    (3) Improper access
    (4) Tripping hazards
    (5) Unsafe or lack of pit ladders
    (6) Moisture/water/oil
    (7) Moving equipment

Take appropriate steps to minimize these hazards and any others that are identified.

(b) Before entering a pit, familiarize yourself with the position of the car and counterweights for the car being worked on as well as any other cars/counterweights in the vicinity.
(c) Control of the car shall be obtained prior to entry into the pit.
(d) If notified by the building owner or representative that the pit and/or hoistway has been classified as a permit required confined space (this notification could be verbal or the pit/hoistway may be labeled), immediately notify your Superintendent /Manager for further instructions. In either case, DO NOT enter the pit/hoistway until consulting your Superintendent/Manager and receiving authorization.

8.2.2 Elevator Pit Access/Egress Procedure

NOTE: These procedures do not apply to walk-in pits. See Section 8.2.3 for Walk-in Pit procedures.

8.2.2.1 Accessing Pits

(a) When the movement of the elevator is required, the following procedure shall be followed in lieu of the Lockout/Tagout procedure in Section 7.

(b) Lockout/Tagout procedures are required if movement of the elevator is not needed to complete the work being performed. (See Section 7.)

(c) Before entering the pit, notify the building manager/owner that you will be servicing the elevator. Tag the elevator out of service by placing a sign on the controller stating "ELEVATOR IS UNDER THE CONTROL OF A SERVICE PERSON - DO NOT OPERATE."

(d) Install barricades if the hoistway door is going to be open more than 5 in. (125 mm) while performing your work. (See Section 4.4)

(e) When a hoistway access switch is provided capture the elevator at the lower access landing and activate the "Access-Enable" to disable operating devices located at the car-operating panel. Verify elevator is not on automatic by registering multiple car calls. With the hoistway door(s) held in the half-open position, activate hoistway access switch to run the car up until toe guard clears opening. Stay clear of moving car.

(f) When a hoistway access switch is not provided, capture the elevator and place two car calls to upper floors to establish an up demand. As the elevator moves away from the landing, open the hoistway door with a hoistway door unlocking device key to insure interlock stops the elevator.

CAUTION: When using hoistway door unlocking device keys be aware of pinch hazard when the hoistway door opens under power.

(g) If hoistway access switches or hoistway door unlocking devices are not provided follow your company safety procedures for accessing the hoistway.

(h) Before accessing the elevator pit, place a door wedge tool in the sill to ensure that the hoistway door(s) will not shut, turn the pit light on and place the pit stop switch in the "STOP" position.

(i) Insert access key. Try to move elevator in both directions. It should not move. Remove key from switch.

(j) Where an access ladder exposes a person to a fall hazard of 6 ft (1.8 m) or greater; and
   (1) The ladder is further than 29.5 in. (750 mm) from the interior edge of the door frame; or
   (2) The ladder or handhold extends less than 42 in. (1067 mm) above the access landing,
   (3) The clearance between the ladder rungs and side wall is less than 4.5 in., a hazard assessment shall be conducted to identify the necessary safety precautions.

(k) If the pit does not have a pit stop switch, the lockout/tagout procedure is to be implemented before entering the elevator pit. (See Section 7.)

(l) Standing outside the hoistway, remove door wedge tool and close the hoistway door. Enter a hall call and wait 10 seconds to verify the elevator will not run and to verify that the pit stop switch is working. When working on a multiple bank of elevators wait for a minimum of 20 seconds to verify the elevator you are working on will not run.

(m) Once verification of the pit stop switch operation is complete, open the hoistway door, place a door wedge tool back into the sill, do a mental job hazard assessment and locate a safe refuge space. Do not enter areas marked with Red and White strips. Carefully enter the pit. Close doors to about 6" and use door wedge to block.

(n) In deep pits a second stop switch is typically installed 4 ft above the pit floor. After descending the pit ladder place the lower pit stop switch in the "STOP" position. The second

stop switch must be tested and verified by two independent means. Methods may vary across organizations.

(o) If operation of the elevator is necessary:
   (1) The car is only to be operated on inspection operation from either the car top with top-of-car inspection operation or inside the car with in-car inspection operation, if provided, by a qualified elevator person. The person operating the car and the person in the pit shall establish and maintain two-way communications.
   (2) Install pipe stands.
   (3) Remove the door wedge tool and allow the hoistway door to close.
   (4) Place the upper pit stop switch in the "RUN" position.
   (5) Stand on the pit floor and be prepared to stop the movement of the elevator with the pit stop switch.

CAUTION:

(p) Never stand on the pit ladder when the pit stop switch at the access landing is in the "RUN" position, unless two pit stop switches are provided and the lower switch is in the "STOP" position.

(q) When work is to be done on the hydraulic system, the car shall be landed on pipe stands, hydraulic pressure relieved and appropriate lockout/tagout procedures implemented. (See Section 7.)

(r) When in multiple hoistways, **never place any part of your body in the runway of an adjacent operational elevator**.

8.2.2.2 Exiting Pits

(a) Verify lower pit stop switch, where provided, is in the "STOP" position.

(b) Verify pit stop switch at access door is in the "STOP" position.

(c) Place lower pit stop switch in the "RUN" position.

(d) Remove pipe stands.
(e) Slowly open hoistway door and place a door wedge tool into the sill. Exit the pit.
(f) Turn the pit light off.
(g) Place the pit stop switch at access door in the "RUN" position.
(h) When a hoistway access switch is provided, with the hoistway door(s) in the open position, activate hoistway access switch to run the car down. Stay clear of moving car. Deactivate the means to disable operating devices.
(i) Remove door wedge tool and close hoistway door.
(j) Place the car back into service.

8.2.3 Walk-in Pits

NOTE: See Section 8.2.2 for pit access procedure through lowest hoistway door

8.2.3.1 General guidance

(a) Every walk-in pit is different. Therefore it is difficult to make one set of requirements that applies to all situations. For each situation that may be encountered, site specific requirements and procedures shall be established. Formulated requirements and procedures will depend on the height of the pit (7 ft. [2.1 m] or more of overhead clearance) and the guarding or location of related components such as; tapes, governors, counterweights, traveling cables, etc.
(b) Always wear a hard hat in walk-in pits where cars are operating.

8.2.3.2 General Rules that apply to the majority of walk-in pits.

(a) For walk-in pits where there is no risk of being stuck by the car or related equipment:

(1) With elevators operating, it is generally safe to enter the pit to perform brief visual inspections, to walk from one pit to another to make observations, or to retrieve dropped items at the front side of the hoistway (e.g. keys, money, jewelry, small tools, etc.).
(2) For brief work activities such as minor adjustments or adding oil to buffers, the unit to be serviced must have two circuits tested and verified that the elevator will not run to ensure sufficient safe control.
(3) For repair work, the unit shall be locked and tagged out.

(b) When working on elevated buffer stands (more than 6 ft. [1.8 m] off the pit floor) fall protection (guardrails or Personal Fall Protection) is required.

8.2.4 Safety precautions when working in pits:

(a) Locate a safe refuge area and be prepared to enter same at a moment's notice.
(b) Ensure that all portable lights and tools are connected through a Ground Fault (GFCI).
(c) Take care to protect all lighting from damage.
(d) Do not work in a pit with standing water.
(e) Never "jump" into a pit – always use the access ladder or a portable ladder.
(f) Always check your shoes for oil/grease prior to climbing.
(g) Use both hands when using ladders entering or exiting the pit.
(h) Be aware of moving equipment (i.e., counterweights, pumps, motors, belts, and sheaves) and ensure that clothing and hands can't get caught in them.

(i) Avoid smoking or open flames while in the pit.
(j) Use proper hand protection while cleaning pit.
(k) Never place your body under the car and have the car lowered to or below the bottom landing. This does not apply to walk-in pits.
(l) Never stand in counterweight runway, under compensating chains or straddle over the traveling cable(s) loop.
(m) Never use wooden timbers to support car or counterweights.
(n) Do not leave parts, lubricants, cleaning equipment, etc in the pit. This is a violation of the ASME A17.1 Code. Pipe stands may be stored in the pit.

8.2.5 Additional safety precautions to be taken when working under hydraulic units:

(a) DO NOT stand on the hydraulic piping.
(b) DO NOT work on the hydraulic system (i.e., repacking a jack, work on oil supply lines, pipe fittings or any portion of system that may be under pressure) unless the elevator is "landed" on pipe supports.
(c) Avoid pinch points that a plunger or piston may present. The plunger or piston may not react normally, especially after repacking.

8.3 Hoistway Screening

Where an elevator is operating in a multiple hoistway, and construction or modernization work is to be performed in an adjacent portion of that multiple hoistway, that portion of the elevator's hoistway where the work is to be performed shall be fully separated. The material used for this separation shall:

(a) be equal to or stronger than 0.0437 in. (1.118 mm) dia. wire;
(b) have openings not exceeding 1 in. (25 mm);

(c) be so supported and braced so as to not deflect into the code required running clearance of the adjacent car; and
(d) be in accordance with local code.

8.4 Overhead Protection

(a) Overhead protection shall be provided in the hoistway and in any other work area where there is exposure to falling objects. This protection is to prevent all parts of the body from being struck by falling tools, debris, small parts, etc.
(b) In general, overhead protection can be achieved by *one or a combination of the following examples*:
    (1) False cars with roofs/netting designed and selected by the company.
    (2) Installation of an overhead barrier directly above the work area which covers all areas where field personnel have to stand or reach to install hoistway components
    (3) Protection of all hoistway openings above the work area (e.g.: installation of hoistway doors or protective screening)
    (4) Sealing off corridors to prevent other trades from working near or passing by wall openings
    (5) Walls are in place and all hoistway doors closed
    (6) Guarding all holes in the machine room and secondary levels
    (7) Prohibiting simultaneous work in hoistway and machine room with unguarded holes
    (8) Prohibiting simultaneous work in common hoistways where no hoistway screening exists between hoistways
    (9) Prohibiting storage of materials within 6ft. (1.8m) of hoistway openings.
(c) All cases where objects have fallen down the hoistway must be immediately investigated and reported by the mechanic

in charge. Once the cause for this occurrence has been identified, it will be mitigated by the company or the MIC.

8.5 Machine Room Safety

Access to machine rooms, as well as working in the machine room itself, can be hazardous if proper precautions are not taken. It is very important that you have the ability to recognize potential hazards and are aware of the proper precautions to take when they exist. Machine rooms shall be secured from unauthorized access.

8.5.1 Access to the machine room

Just getting to a machine room can be hazardous, so recognizing potential hazards and taking steps to correct or avoid them is very important. Some of the more common hazards are:

(a) Lighting
    (1) If the stairwell or hallway area is not well lit, use a flashlight or other temporary lighting until the situation can be corrected – Don't just "feel your way" in the dark.
(b) Unsafe ladders
    (1) Many machine rooms can only be accessed through the use of fixed ladders. Always check the condition of the ladder before climbing.
    (2) Never climb a ladder with tools in your hands. Use a rope to pull tools up.
(c) Machine room doors are typically self-closing and/or self-locking. The ASME A17.1 requires the door to be operable from inside the machine room without the need to use a key.