CHAPTER 30 - FACILITIES

Contents

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31 - FACILITIES CONSTRUCTION WORK. "Construction work" in this Handbook refers to work projects and activities for general construction, maintenance, alteration, and repair.

31.01 - Authority. The authority for personal protective equipment (PPE) is in Title 29, Code of Federal Regulations (29 CFR), section 1910.132.

The authority for material handling equipment, excavations, concrete and masonry construction, and rollover protective structures (ROPS) is in 29 CFR 1926.602, 1926.650-1926.652, 1926.700-1926.706, and 1926.1000-1926.1001.

31.06 - References.

1. U.S. Department of Agriculture, Forest Service. Guidelines for Forest Signs and Posters. EM-7100-15. U.S. Government Printing Office, Washington, DC.

2. U.S. Department of Transportation, Federal Highway Administration. Manual on Uniform Traffic Control Devices. U.S. Government Printing Office, Washington, DC.

31.1 - Qualifications. Besides having the applicable training and certification listed in section 21.11, employees shall be competent in the necessary construction and maintenance skills before beginning work.

31.11 - Procedures. The first-line supervisor and employees shall prepare a job hazard analysis (JHA) and discuss it before beginning any construction or maintenance work projects or activities (sec. 21.1). The JHA shall include:

1. Name of employees and emergency phone numbers.

2. Emergency evacuation procedures and communications plan.

3. Other information pertinent to the project. (Some items required for the JHA are available in other documents, such as a district or project safety and health plan, and may be included by reference.)

If employees fail to report or return on schedule, the supervisor shall take those actions required by the JHA.

31.12 - Safety Practices.

1. Ensure contract and force-account construction adjacent to a highway or street is marked with signs and barricades that comply with Forest Service standards (sec. 31.06). Make sure construction is well lit when adjacent to roads with nighttime traffic.

2. Read and follow manufacturer's recommendations, including use of PPE, ventilation, preparation of surfaces and materials, application of materials and components, and use of flammables/combustibles.

3. Clean up the area after each work shift.

4. Mark with signs and barricade all work that may be potentially hazardous to the public and employees in the area.

5. Obtain the material safety data sheet (MSDS) and discuss it with employees. Apply the MSDS information and direction as required.

31.2 - Excavation.

31.21 - Qualifications. Shoring and soil stability are key points of concern in excavation work. Because of variable soil conditions, load pressure, vibrations, and other factors, excavation is difficult to cover with absolute requirements that fit all excavation situations. After consultation with competent engineering personnel, the first-line supervisor, work leader, or both shall complete the project design and work plan.

Instruct workers to report at once any signs of weakness in excavations and shoring. Make available the necessary training and certification for employees to reach competency in this area (sec. 21.11).

31.22 - Personal Protective Equipment. Required PPE for excavation includes:

1. First aid kit (refer to the Glossary).

2. Hardhat.

3. Safety-toed or equally effective footwear (ANSI Z41 1991).

4. Gloves.

5. Eye protection.

6. Hearing protection (85 dB and above).

7. Other PPE as identified in the JHA.

31.23 - Procedures. Before excavation begins, a competent person shall inspect the site for conditions requiring special precautions. This is especially important in unstable soils and in the vicinity of roadways or utility structures. Conduct daily inspections of excavations, adjacent areas, and protective systems for evidence of potential hazards.

31.24 - Safety Practices. Employees working in excavations shall be observed at all times by a competent person who is not in the excavation. Be aware of the following hazards:

1. Variable soil conditions and the effect of ground water. Inspect banks hourly or more often if it rains or freezes.

a. Comply with mandatory requirements that sides of excavations in unstable or soft material 5 feet (1-1/2 m) or more in depth be shored, sheeted, braced, sloped, or otherwise supported by means of sufficient strength.

b. Locate a stairway, ladder, ramp, or other safe means of egress in trench excavations 4 feet (1-1/4 m) or deeper so employees have to travel laterally no more than 25 feet (7-1/2 m).

2. Work in the area of excavating equipment.

a. Keep employees clear of all equipment working in the area.

b. Where vehicles are required to back up to open pits, provide an 8-inch (200-mm) wheel stop and anchor it on a firm bearing.

3. Improper storage of excavation materials and equipment.

a. Remove surface material that may fall into an excavation.

b. Place excavation materials and equipment at least 2 feet (1/2 m) from the edge of excavations, or use retaining devices or a combination of both methods if necessary.

4. Failure to erect guardrails, barricades, or fences to prevent accidents and injuries.

a. When employees or equipment are required to cross over excavations, provide walkways or bridges with standard guardrails.

b. Provide physical barrier protection at all remote excavations.

5. Powerlines in the work area (sec. 36.13, para.13).

31.3 - Concrete and Masonry. Concrete, masonry, and steel construction requires accomplished, professional skills. Safety and health must be a prime consideration when planning these work projects and activities.

31.31 - Qualifications. In addition to having the applicable training and certification listed in section 31.1, employees shall be trained and possess the skills necessary to perform concrete/masonry work.

31.32 - Personal Protective Equipment. No employee shall be permitted to place or tie reinforcing steel more than 6 feet (1-4/5 m) above any adjacent working surface unless the employee is using a safety belt or equivalent fall protection.

Required PPE for concrete and masonry work includes:

1. First aid kit (refer to the Glossary).

2. Hardhat.

3. Gloves.

4. Eye protection.

5. Respirator for cement and lime dust (NIOSH-approved).

6. Appropriate footwear.

7. Other PPE as identified in the JHA.

31.33 - Procedures. A competent engineer, such as a structural engineer, shall prepare the design, work plan, and, with the involved employees, the JHA for concrete construction projects.

31.34 - Safety Practices.

31.34a - General.

1. Assign enough people to the job to accomplish the heavy work safely.

2. Have ample supplies of wash water, soap, towels, protective creams, and first aid supplies available.

3. Have the project engineer or other competent person inspect the forms before pouring the concrete.

4. Do not change or remove forms without engineering approval.

31.34b - Concrete Mixer Use.

1. Keep the working area around mixers free of waste material or slippery surfaces caused by water spillage.

2. Inspect belts, belt guards, cables, electrical cord and connections, hoist, and brake mechanisms daily. Belts and pulleys shall have guards.

3. Wear eye and/or face protection and appropriate gloves when loading mixer.

4. Block and level all mixing equipment before operating.

31.34c - Associated Hazards.

1. Working on and around forms and scaffolds.

2. Elevated runways and ramps.

3. Lifting and working with heavy loads.

4. Protruding reinforcement steel.

5. Large, bulky, heavy concrete forms.

6. Protruding nails, wire ties, and form accessories.

7. Slippery walking and working surfaces.

8. Lime burns to the skin and eye exposure.

9. Poor or inadequate design without regard to safe concrete load factors.

10. Fire danger from stored lime if it is allowed to become moist.

11. Working close to materials handling equipment.

32 - WALKING AND WORKING SURFACES.

32.01 - Authority. The authority for walking and working surfaces is in Title 29, Code of Federal Regulations (29 CFR), sections 1910.21 - 1910.24.

The authority for signs, signals, and barricades and fall protection is in 29 CFR 1926.200 - 1926.203 and 1926.500.

32.06 - References.

1. National Fire Protection Association. NFPA 70: National Electrical Code. Quincy, MA.

2. U.S. Department of Agriculture, Forest Service. Guidelines for Forest Signs and Posters. EM-7100-15. U.S. Government Printing Office, Washington, DC.

3. U.S. Department of Transportation, Federal Highway Administration. Manual on Uniform Traffic Control Devices. U.S. Government Printing Office, Washington, DC.

32.1 - Qualifications. Besides having the applicable training and certification listed in section 21.11, employees shall be trained to recognize and correct or abate hazards

associated with walking/working surfaces. Supervisor training should stress housekeeping and the need to monitor the work area for improper use of equipment and to inspect work surfaces for damage.

32.11 - Procedures. Prepare and discuss the JHA with employees (sec. 31.11). The JHA shall address all associated hazards pertaining to walking/working surface and corrective action or abatement (sec. 39.13, para.2).

32.12 - Safety Practices.

1. Use properly secured ladders, scaffolding, or lifts for activities above floor or ground level.

2. Lockout and tag all electrical panel boards when inspecting components of electrical-driven motors, appliances, and circuitry (sec. 38.3).

3. Provide the proper clearances in front of all electrical service panels and disconnects as required by the National Electrical Code (sec. 32.06).

4. Always follow the equipment manufacturer's recommendations.

5. Provide ample lighting and ensure that ingress/egress are available at all times (sec. 37.2 and 34).

6. Keep workrooms and storerooms clean and orderly and free of tripping hazards. Keep aisles and passageways clear of materials and well lit for safe access by employees and equipment. Clearly mark permanent aisles and passageways.

7. Wipe up spills immediately.

   a. Never leave wet floors unmarked and unattended.

   b. Maintain drainage in areas where wet processes are used. If a dry standing work station cannot be provided, supply appropriate waterproof footwear.

32.2 - Guarding Openings.

32.21 - Qualifications. Employees shall be trained to recognize and deal with hazards associated with working near floor openings and excavations.

32.22 - Procedures. The JHA shall address hazards associated with guarding floor openings and excavations.

32.23 - Safety Practices.

1. Guard every wall and floor opening from which there is a drop of more than 4 feet (1-1/4 m) with a standard railing, toeboard, or equivalent barrier.

2. Equip flights of stairs with four or more risers with hand railings. Consider flights with less than four risers on a case-by-case basis.

3. Provide covers and/or guardrails to protect employees from open pits, tanks, vats, and ditches.

4. When excavations or unguarded openings must be left between work shifts, fence them off with standard construction fencing.

33 - FALL PROTECTION.

33.01 - Authority. The authority for walking and working surfaces, ladders, and electrical work practices is in Title 29, Code of Federal Regulations (29 CFR), sections 1910.21 - 1910.23, 1910.25 - 1910.29, and 1910.333.

The authority for fall protection equipment, rigging equipment for material handling, scaffolding, and ladders is in 29 CFR 1926.104 - 1926.107, 1926.251, 1926.451, 1926.500 - 1926.503, and 1926.1053.

The authority for safety requirements for portable wood, metal, and reinforced plastic ladders is the American National Standards Institute (ANSI) Standards A14.1, A14.2, and A14.5.

33.06 - Qualifications. Employees shall be trained in hazard recognition and procedures on how to use, inspect, and maintain fall protection equipment, including ladders, scaffolding, fall arrest systems, safety net systems, and guardrail systems. Fall protection training requirements can be found in 29 CFR 1926.503.

33.07 - Personal Protective Equipment. The JHA shall identify specific PPE for utilizing equipment.

33.1 - Ladders. Improper use of ladders may result in serious accidents. Accident analysis reveals four principal causes:

1. Ascending or descending improperly.

2. Failing to secure the ladder at the top, bottom, or both.

3. Holding objects while ascending or descending.

4. Structural failing of the ladder.

33.11 - Safety Practices. Ladders are for temporary use only. Replace ladders with stairways, proper guardrails, and landings whenever possible. Select a ladder that meets applicable OSHA/ANSI standards and is right for the job.

33.11a - Prior to Use. Inspect ladders for defects before use each day and after any occurrence that could damage the ladder. Inspect and test any ladder that has been accidentally dropped, exposed to heat, or otherwise damaged. Consider designating a qualified inspector to check all ladders at a centralized storage area on a regular basis. The following are examples of what to look for:

1. Evidence of makeshift repairs, such as tape or wire.

2. Grease, oil, or burns from welding on the rungs and rails. Never paint a ladder; painting covers structural defects.

3. Condition of ladder feet and all hardware needed for coupling extensions. Carefully check all metal fittings.

4. Ladders that have developed defects. Defective ladders must be withdrawn from service for repair or destruction and marked as "DANGEROUS, DO NOT USE."

5. Loose or cracked rungs and split rails on wood ladders. Wood ladders must be free of splinters and must have smooth edges. Periodically treat wood ladders with clear preservative, such as varnish, shellac, or linseed oil. Never treat rungs with a preservative that becomes slippery when wet.

6. Wear, corrosion, and structural failure on metal ladders. Metal ladders are electrical conductors and shall not be used around electrical circuits or for electrical arc welding operations.

33.11b - Use.

1. Ladders are meant for one person only.

a. Never overload ladders.

b. Never apply a side load or push or pull anything while on a ladder.

c. Never drop or apply an impact load to ladder.

2. Avoid dangerous overreaching. Move the ladder to a new location when you must lean more than 1 foot (1/3 m) to the side.

3. Never "walk" a ladder (stilt fashion) while standing on it.

4. Set the ladder on firm, level ground. Use nonskid ladder feet for added safety, especially when working on ice or snow. For proper set up:

a. Step Type.

(1) Ensure that the ladder is fully opened and locked, with the pail shelf in position.

(2) Make sure nuts and bolts are tight, steps and rungs are secure and clear of slippery material or loose items, and lock braces and pail workshelf properly.

b. Extension Type. Make sure ladder extension locks work as intended. Ensure that rope and other accessories are properly affixed and in good condition.

(1) Ensure that the distance from the ladder base to the vertical support equals one-quarter of the ladder's working length.

(2) Erect the ladder at about a 75^{o} angle from the ground line, with a minimum of 3 feet (1 m) extending above the roofline.

(3) Raise the ladder to vertical and stand to one side. Hold the rope with one hand and the far rail with the other hand. Raise two or three rungs at a time until the proper height is acquired. Adjust the ladder length only when it is unoccupied. Never use temporary supports to increase length or to adjust for uneven surfaces. Do not fasten different ladders together to increase length. Apply these rules for overlap (ex. 01).

33.11b - Exhibit 01

(4) If repeated climbing or long use is planned or if the ladder is leaned against a pole, tree trunk, or post, secure the top of the ladder to a support point with rope, chain, or angle brace.

5. Never:

a. Step, stand, or sit on the ladder top, braces, or back section.

b. Straddle the top or stand on the top two steps of ladders.

c. Use a ladder where strenuous action by the worker is required.

d. Use a ladder as a platform, plank, hoist, or scaffold.

e. Use a ladder on a scaffold or during high winds.

f. Place a ladder in front of door openings.

6. Keep rungs free of grease, oil, and other materials that might destroy nonslip surfaces.

7. Discourage use of makeshift ladders unless they clearly meet the requirements of 29 CFR 1926.450.

33.11c - Climbing.

1. Securely engage ladder locks; spread braces before climbing.

2. Ensure that ladder feet are firmly supported. Have a person on the ground firmly hold the ladder to prevent slipping, or secure a board to the floor against which the foot of the ladder can rest.

3. Always face the ladder when ascending or descending; use both hands.

4. Do not step from one ladder to another.

5. Do not climb above the third rung from the top of an extension ladder or above the upper support point.

33.11d - Storage.

1. Protect ladders from inclement weather. Store them in a dry location, away from excessive heat and possible physical damage.

2. Store ladders vertically. Wooden ladders stored horizontally should be supported at both ends and in the middle to prevent sagging. Sagging tends to loosen the rungs and warp rails.

3. Never store materials on ladders.

4. Properly secure ladders while in transit.

5. For information related to fixed ladders, refer to 29 CFR 1910.27, which includes design requirements, specific features, clearance, special requirements, pitch, and maintenance.

33.2 - Scaffolding.

33.21 - Procedures. Wood scaffolds and supports shall be designed by a structural engineer. The structural engineer shall also prepare the work plan. Complete a JHA and discuss it with all employees before using the scaffolding.

33.22 - Safety Practices.

1. Ensure that a competent person supervises the building, installing, moving, dismantling, and altering of any scaffolding.

2. Have an engineer or other designated, competent person inspect all scaffolds before each work day. Do not allow a scaffold built by one crew to be used by another crew until it has been inspected and pronounced safe by a competent person.

3. Prohibit the use of shore or lean-to scaffolds.

4. Prohibit work on scaffolds during storms or high winds.

5. Install guardrails and toeboards at all open sides on all scaffolds more than 10 feet (3 m) above the ground or floor, except needlebeam scaffolds and floats.

6. Where persons are required to work or pass under the scaffold, provide a screen, consisting of no. 18 gauge U.S. Standard wire 1/2 inch (12-3/4 mm) mesh or equivalent, between the toeboard and the guardrail that extends along the entire opening.

33.3 - Body Harnesses, Lifelines, and Lanyards.

33.31 - Definitions.

Body harness. A safety strap device which may be secured about a person in a manner that distributes the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders and that, by reason of its attachment to a lanyard and lifeline or a structure, prevents the wearer from falling to the ground or lower level.

Lanyard. A flexible line of rope or webbing strap made from synthetic fibers which generally has a connector at each end for connecting a body harness to a deceleration device, lifeline, or anchorage.

Lifeline. A component consisting of a flexible line of rope for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Personal fall arrest system. A system used to arrest a person in a fall from a working level. The system consists of an anchorage, connectors, and a body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these; use of body belts for fall arrest is prohibited (sec. 33.32).

33.32 - General.

1. Provide employees with personal fall arrest systems, safety net systems, or guardrail systems as standard fall protection when working 6 feet (1-3/4 m) or more above the ground and 6 feet (1-3/4 m) or more above lower levels, moving machinery, or when working over water. Also use this equipment on steep slopes or other areas as warranted. Select the system that matches the particular work situation. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

2. Provide safety net systems when workplaces are more than 25 feet (7-1/2 m) above the ground, water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or body harnesses is impractical. Refer

to section 22.49 for direction on tree climbing and section 26.6 for direction on telecommunications.

33.33 - Use.

1. Personal fall arrest systems.

   a. Thorough employee training in the selection and use of personal fall arrest systems is imperative. Careless or improper use of the equipment can result in serious injury or death.

   b. Inspect personal fall arrest system components prior to each use for wear, damage, and other deterioration. Defective components shall be removed from service and tagged unusable, or destroyed.

   c. Personal fall arrest system components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.

2. Safety Ropes.

   a. Inspect safety ropes before and after every use and carefully store them. Check ropes daily during periods of use for broken fibers. To check, twist the strands back. Immediately destroy any rope that shows signs of damage or wear.

   b. Secure lifeline and climbing ropes above the point of operation to a structural member able to support 5,400 pounds (2,449 kg) or more.

   c. Make sure lifelines used for rock climbing or which are subject to abrasion are, at a minimum, 7/8-inch (23-mm) wire core manila rope or 3/4-inch (19-mm) wire core manila rope with a minimum breaking strength of 5,400 pounds (2,449 kg).

3. Safety Nets. Ensure that safety nets:

   a. Extend 8 feet (2-1/2 m) beyond the edge of the work.

   b. Are never lower than 25 feet (7-1/2 m) below the level of work.

   c. Are hung to prevent the user's contact with surface below.

   d. Are impact-load tested before use.

34 - MEANS OF EGRESS AND FIRE PREVENTION.

34.01 - Authority. The authority for means of egress is in Title 29, Code of Federal Regulations (29 CFR), sections 1910.35 - 1910.37; National Fire Protection Association (NFPA) 101: Life Safety Code; and Uniform Federal Accessibility Standards (UFAS) 1984.

34.1 - Fire Prevention and Emergency Evacuation Planning.

34.11 - Procedures. Prepare fire prevention/evacuation plans for all buildings and administrative sites as part of an Emergency Action Plan.

Post a scale (or near-scale) plan of the buildings or administrative sites in conspicuous location(s) at the installation.

1. Make sure plans are correctly oriented and identify:

   a. Fire safety features at a glance, such as building exits, hydrants, extinguishers, and other fire equipment. Also include:

   (1) Electrical power shutoff switches.

   (2) Escape routes.

   (3) Individual responsibilities.

   (4) Chain of command.

   b. Safety areas for evacuation. Such areas may include parking lots, open fields, or streets that are located away from the emergency. Instruct employees to avoid congregating close to the building where they may hamper emergency operations.

2. Ensure that all personnel, including families in Government-furnished quarters, are familiar with the plan and participate in fire drills at least twice a year.

3. Ensure that every Forest Service installation has a "system" in its fire prevention/evacuation plan to accommodate physically disabled persons.

4. Ensure that fire alarms are audible and/or visible in dead-end rooms.

5. Have at least two identified emergency escape routes for all dwellings, crew quarters, offices, and basements.

6. Clearly mark exits so that they are conspicuous from all directions.

   a. Post doors, stairways, or any passageway that could be confused as an exit with "Not an Exit" or similar designation indicating its actual character, such as "To Basement" or "Storeroom."

b. Ensure that exits, other than in residences, are not through rooms subject to locking. Ensure that all identified and required exits can be opened from the inside.

c. Remove snow and ice regularly so that exits are always clear.

d. Where a fire exit is through double-leaf doors, equip each leaf with a quick-release bar lever that is kept unlocked and operable when the building is occupied.

e. Ensure that fire exits and other traffic ways have a minimum ceiling height of 7 feet 6 inches (2-1/3 m) with no projection lowering clearance to less than 6 feet 8 inches (2 m). Fire exits must comply with the Uniform Federal Accessibility Standards (UFAS) 1984 (sec. 34.01).

34.2 - Fire Prevention. Safe work habits and compliance with safety procedures are critical in preventing fires. Be especially careful around heat sources, such as chimneys, stoves, and appliances.

1. Fire/Smoke Detection Equipment. In every building or structure of such size, arrangement, or occupancy that a fire may go undetected, fire alarms and/or smoke detectors shall be provided. Post and enforce smoking restrictions.

a. Ensure that:

(1) Electrical smoke detection systems are backed up with a battery-operated detection system.

(2) Smoke detector batteries are replaced at least annually (if battery type).

(3) Detection equipment is tested at least monthly, is clean and serviceable, and is maintained to operate reliably.

2. Electrical Systems. Have a licensed journeyman-level electrician inspect electrical systems in Forest Service buildings periodically (sec. 36.1).

a. Ensure that all electrical systems comply with local, State, and National electrical codes.

b. Do not overload circuits. Maintain circuits in good repair and protect them from damage. Overheating before circuit breakers trip off causes conductor insulation to deteriorate. Inspect ceiling light wiring annually.

c. Check for damaged plugs and frayed wires. Do not use extension cords as substitutes for permanent wiring circuits.

d. Investigate all "hot" smells and odors from fluorescent ballasts and oversized light bulbs. Heated metal and heated paint surfaces can be sources of possible trouble. When disposing of fluorescent tubes, take extra precaution to prevent accidental breakage. Wear gloves and eye protection and be aware that tubes may contain toxic substances.

3. Appliances. Do not locate appliances where heat buildup may occur. Provide annual preventive maintenance for all electrical equipment and fuel-fired appliances.

a. Inspect appliance cords and plugs regularly for defects that may cause electrical shock and/or fire.

b. Be aware of friction buildup in machines and electric motors; provide manufacturer's recommended lubricants to reduce wear and heat.

c. Do not enclose coffee pots and other electrical appliances in cabinets.

d. Provide adequate air circulation around electrical appliances.

e. Ensure that portable electric heaters are grounded and are provided with automatic tip over shut-off safety devices.

4. Flammables/Combustibles. Use such materials only in ventilated and fire-safe areas. Never start fires with flammable liquids. Store flammables and combustibles only in containers, cabinets, and buildings specifically approved for this purpose (sec. 38.12c). Refer to section 61.5 for further direction.

5. Heating Systems.

a. Inspect and clean fire boxes, chimneys, and stove pipes at least annually.

b. Use approved lighting procedures (sec. 37.2).

c. Do not allow curtains, furniture, or other materials to cover or block the discharge from baseboard heaters, wall heaters, or registers. Provide for adequate air circulation.

6. Design Review.

a. Review the original design, purpose, and personnel limits of buildings each year to ensure that uses have not reduced or compromised employee safety or health by increasing the fire hazard.

b. Ensure that engineers and architects review modifications to buildings and their use. Minor changes can make subtle but important impacts on fire safety.

7. Furnishings. Evaluate building furnishings, finished surfaces, and decorative materials for flame-spread and smoke toxicity.

8. Storage. Do not allow materials that create fire and explosion hazards to accumulate in storage areas.

34.3 - Chimneys and Vent Stacks. Soot and carbon deposit are common in all furnaces. Pitch and creosote deposits from wood can cause flue fires. Regularly scheduled maintenance is important to prevent poor ventilation and fire.

34.31 - Qualifications. Employees shall be trained in proper use and maintenance techniques before working on chimneys and vent stacks.

34.32 - Procedures.

1. Ensure that any chimney flue is of adequate size and complies with the manufacturer's installation instructions where provided.

2. Ensure that a qualified engineer approves any connections added to chimney flues. Never connect more than one appliance (stove, furnace) to each flue. Add another flue if a second appliance is installed.

34.33 - Safety Practices. Basic safety practices for the care of chimney flues and vent stacks include:

1. Clean and inspect chimneys and vents annually.

2. Check metal flues twice yearly for cracks, clearances, soundness, support, and freedom from deposits.

3. Maintain tight mortar joints on masonry chimney flues.

4. Maintain chimney flues at regular intervals and always keep combustible materials a safe distance away.

5. Maintain rotating vents and chimney caps to keep them free turning.

35 - FIRE PROTECTION.

35.01 - Authority. The authority for portable fire extinguishers is in Title 29, Code of Federal Regulations (29 CFR), section 1910.157; the authority for fire protection is in 29 CFR 1926.150.

35.06 - Reference. National Fire Protection Association. NFPA 10: Standard for Portable Fire Extinguishers. Quincy, MA.

35.1 - Structural Fire Suppression. At Forest Service administrative sites outside the jurisdiction of State and local fire departments, limit fire protection measures to:

1. Prevention;

2. Use of fire extinguishers on incipient stage fires;

3. Safe evacuation of personnel;

4. Containment by exterior attack; and

5. Protection of exposed improvements.

35.11 - Safety Practices. Basic safety and health practices to follow in case of fire:

1. Turn in an alarm at once. Have persons designated by fire prevention/evacuation plan check the building and account for all occupants. Conduct rescue procedures and give first aid.

2. Shut off electricity and gas.

3. Use the fire extinguisher closest to your location.

4. Never delay. If fire cannot be controlled, get out of the building immediately and go to a predetermined safety area.

5. If the fire is controlled, make certain it is completely extinguished.

6. Be sure equipment is quickly made ready for reuse.

35.11a - Fire Extinguishers. Fire extinguishers are designed for use in emergencies; therefore it is vital that they operate effectively. Only fire extinguishers that are tested in accordance with ANSI standards (8, 154, 299, 626, 711, 1093, 1803) should be purchased. Forest Service employees shall be familiar with different types of fire extinguishers and trained to use them based on the Emergency Action Plan (ex. 01).

35.11a - Exhibit 01

All types of fire extinguishers are rated for the class or classes of fires on which they can be used and the amount of fire that they can be expected to control. Selecting the proper extinguisher for the anticipated fire is of primary importance. There is not a single extinguisher that is equally suitable and desirable for all classes of fire (ex. 02).

35.11a - Exhibit 02

36 - ELECTRICAL STANDARDS. Maintaining the strictest electrical safety standards pays dividends in reduced property loss due to fire and, more importantly, preventing employee injury and death from electrical hazards.

36.01 - Authority. The authority for the control of hazardous energy (lockout/tag-out), welding, and electrical requirements is in Title 29, Code of Federal Regulations (29 CFR), sections 1910.147, 1910.253, and 1910.301 - 1910.399.

The authority for electrical safety and power transmission/distribution standards is in 29 CFR 1926.400, 1926.402 - 1926.408, 1926.416, 1926.417, 1926.431, 1926.432, 1926.441, 1926.449, and 1926.950 - 1926.957.

36.1 - Qualifications. Employees shall receive the applicable training listed in section 21.11 and additional training as warranted.

Only a State-licensed electrician, a qualified Forest Service electrical inspector, or a State-licensed contractor shall be permitted to perform or inspect electrical wiring and maintenance work.

1. Prohibit employees from working in areas where an electrical hazard exists unless they are trained or qualified.

2. Ensure that employees engaged in electrical work are trained to administer CPR and first aid treatment for burns and traumatic shock to victims of electrical shock.

36.11 - Personal Protective Equipment.

1. Rubber insulating gloves for specific tasks as identified in the JHA.

2. The appropriate Forest Service-approved hardhat (impact and penetration-resistant, and also providing electrical protection from high-voltage conductors).

36.12 - Procedures. All installations and maintenance involving wiring, fixtures, equipment, appliances, techniques, and practices shall comply with:

1. National electrical codes (NEC).

   a. Building wiring installed according to the NEC at the time of construction does not have to be brought up to current NEC standards unless it has been modified.

   b. If a wiring system is deteriorated, overloaded, or modified, or if usage has changed, wiring shall be upgraded to comply with the current NEC and other applicable standards.

2. State and local electrical codes.

3. Regional, Station, Area, or Institute standards and policies.

36.13 - Safety Practices. Follow these basic safety practices for activities involving electrical circuitry and appliances:

1. Electrical Shock. Electrical shock is an indicator of an electrical hazard.

a. Report and promptly investigate electrical shock incidents.

b. Unplug or disconnect the equipment or appliance and put it out of service until it has been repaired.

c. Inspect electrical extension cords, tools, and appliances at least twice a year for wear or damage.

2. Ground-Fault Circuit Interrupter (GFCI or GFI).

a. Equip with GFI circuit protection:

(1) All 15- and 20-ampere receptacle outlets for single-phase circuits located outside of buildings and in damp areas (such as kitchens serving countertop surfaces, bathrooms, unfinished basements, shops, and garages).

(2) All electrical devices and handtools used outside or in construction areas.

b. Where GFI protection has not been provided, ground motor frames and portable electrical tools before using them or use double-insulated electrical equipment.

c. Ensure that GFIs are used as required for all field (portable) generators not specifically grounded and bonded by positive means. Exception: receptacles on a 2-wire, single-phase portable or vehicle-mounted generator rated not more than 5 kW, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces.

3. Wet Hands. Never touch electrical appliances or electrical tools with wet hands while grounded or while touching plumbing pipes or faucets.

4. Defective Components. Promptly repair or replace defective switches, outlets, and light fixtures.

5. Exposed Circuitry. Cover exposed electrical circuitry, open light sockets, and junction boxes properly. Replace broken cover plates to eliminate accidental contact.

6. Extension Cords. Locate extension cords away from heat sources and protect them from abrasion, crushing, kinking, and pulling.

a. Do not use extension cords as a substitute for permanently installed wiring for lighting and stationary electrical appliances.

b. Do not enclose extension and appliance cords inside walls or otherwise install them in a manner that prevents inspection.

c. Disconnect cords only by grasping the plug; do not jerk or pull them.

d. Connect flexible cords to devices and fittings to provide strain relief, which prevents pull from being directly transmitted to joints or terminal screws.

e. Never permit splices in flexible electrical cords (ex. 01).

36.13 - Exhibit 01

7. Current Test. Conduct periodic current leakage tests on electrical tools and maintain a record of the test results.

8. Repairs. Perform scheduled preventive maintenance on motor or generator windings, brushes, bushings, and switches according to manufacturers' recommendations. Ensure that electrical safety is not compromised by unsealed appliances, improper wiring methods, or unauthorized operations.

9. Motorized Equipment.

a. Ensure that small tools, fans, blowers, and appliances driven by an electric motor are provided with a grounding-type connection plug, or that they have approved double-insulated construction.

b. Never remove ground connections on appliance or extension cord plugs.

c. Never use an appliance, tool, or cord from which the ground connection has been removed.

10. Power Supply.

a. Shut off power before working on electrical circuits. Exception: An authorized electrician, in an emergency, may work on a live line not exceeding 220 volts.

b. Switches supplying current to lines being repaired must be locked in the "off" position. Attach a warning tag indicating that work is in progress.

11. Circuit Breakers. Ensure that circuit breakers and disconnecting means are legibly marked to indicate their purpose.

12. Accessible Work Area.

a. Provide easy access and working clearances around all electrical power panels and safety switches.

b. Ensure that building modifications and equipment and fixture installation and operations do not interfere with required access and clearances (ex. 02).

36.13 - Exhibit 02

13. Work Near Powerlines. ***Do not touch loose or downed wires hanging from buildings or poles until it is certain they are not "hot." Never assume any wire is de-energized. Treat all wires and guy wires as if they are hot*.**

a. Have the power company make all changes or repairs to power company-owned lines leading to the master service switch.

b. Before handling a telephone line that passes in the vicinity of a powerline, ensure that it is not in contact with the powerline.

c. Notify the power company before using machinery in and around powerlines or any high-voltage installation.

d. Always inspect proposed excavation work areas for underground powerlines. Check with the power company and review site plans for underground lines.

e. Never use metal poles for pruning, window washing, or other activities near electrical lines. A metal pole or piece of equipment does not need to touch a powerline to become energized; coming in proximity can cause the conductor to become energized.

f. When near powerlines, move power shovels, booms, telephone wire, pipe, drills, well casing, and other such machinery and materials with extreme care. Clearance should be at least 1-1/2 times the length of the boom plus the materials being handled or as required by State law.

g. Ensure that any felling in the vicinity of a high-voltage line is done by professional certified fallers under the direction of a power company representative.

h. Thoroughly plan and coordinate with the power company any brush burning close to powerlines. Flame is a conductor of electricity.

i. Never direct a stream of water at or near an electrical line.

j. Low hanging powerlines. Identify low hanging powerlines that may contact radio antennas or equipment and have the power company raise them.

k. Bare powerline conductors. Ensure that powerline conductors are handled only by power company employees.

14. Low and High Voltage Rescue. Ensure that only personnel from the power company or other emergency services with the necessary training and equipment shall attempt such rescue operations.

15. Lockout/tag-out (sec. 38.3).

37 - OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROLS.

37.01 - Authority. The authority for means of egress, flammable/combustible liquids, air receivers, welding, and electrical requirements is in Title 29, Code of Federal Regulations (29 CFR), sections 1910.37, 1910.106, 1910.169, 1910.253, 1910.301, and 1910.303.

The authority for illumination is in 29 CFR 1926.26 and 1926.404.

The authority for hazardous materials is in 49 CFR Parts 171-173 and 176-178. Additional direction is in FSM 2160 and 6740.

37.1 - Heating, Ventilating, and Air Conditioning Equipment. Improper operation of such equipment can cause health and safety problems. Give high priority to maintaining this equipment.

37.11 - Qualifications. In addition to having the applicable training listed in section 21.11, only individuals trained for such work shall repair, adjust, and operate heating, ventilating, and air conditioning equipment. A competent person shall inspect equipment at least annually.

37.12 - Procedures. Follow these basic requirements and procedures for installation and maintenance work.

1. Verify that all heating equipment is approved by a nationally recognized laboratory and is being used according to the condition of approval.

2. Refer to local fire codes and manufacturers' recommendations before installing heating appliances.

3. Perform preventive maintenance as recommended by the manufacturer. Keep maintenance records with the equipment.

4. Where liquid petroleum (LP) gas is used in mobile (or stationary) homes, install LP gas detectors.

5. Ensure that automatic gas appliances have a 100 percent automatic shutoff valve should the pilot light go out or auto ignition system fail.

6. Provide accessible manual shutoff valves for all gas- and oil-fired furnaces and appliances.

7. Inspect air filters monthly and change as needed or as recommended by the manufacturer.

8. Inspect air conditioning blower fans, shafts, and motors as recommended by the manufacturer to prevent damage due to loosening by vibration.

37.13 - Safety Practices. Basic safety and health practices include:

1. Heaters and Furnaces. Type of work and location determine the selection of heaters and furnaces.

a. Provide all heaters with adequate ventilation.

(1) Do not use heaters in areas involving flammables/combustibles, woodworking dust, or any potentially explosive atmosphere.

(2) Never use catalytic heaters in airtight locations.

(3) Never use nonvented kerosene, LP, or natural gas furnaces/space heaters in Forest Service-owned residences, sleeping trailers, or dormitories.

b. Be aware of existing ventilation needs before altering an area by insulating, sealing, caulking, or installing storm windows.

(1) Check and ensure ventilation is adequate before lighting LP gas appliances.

(2) Investigate gas odors promptly.

(3) Shut off gas lines at the tank and notify the local LP gas distributor.

2. Air Conditioning Equipment.

a. Ground window air conditioners either through an electrical ground in the wiring system or by grounding the frame with a separate ground wire.

b. Make sure fan blade guards/shields have openings no larger than 1/2 inch (12-3/4 mm).

3. Fuel Oil and Solid Fuels.

a. Make sure fuel oil tanks are adequately vented. Do not allow vents to become blocked by snow, ice, or vegetation.

b. Mount above-ground tanks on sturdy stands or frames, on a firm base secured from tipping.

c. Do not use gravity systems on oil-fire furnaces. Remove empty underground fuel oil tanks or fill them with sand or other suitable material as required by Environmental Protection Agency (EPA) or State regulations.

d. Do not install solid fuel burning appliances where gasoline or any other flammable vapors or gases are likely to be present.

e. Use gloves for handling solid fuel.

f. Be alert for insects, snakes, and rodents in wood piles.

g. Store solid fuels in a well-ventilated area in a neat, orderly fashion. Stack wood to prevent collapse, at least 6 inches (153 mm) away from all building walls.

h. Locate coal piles in a manner to prevent spontaneous combustion.

37.2 - Lighting. When using lighting to enhance safety and security, consider these factors: light quality, contrast, glare, shadow effects, and eye perception.

37.21 - Personal Protective Equipment. The following PPE is required for installing and maintaining lighting:

1. Gloves and eye protection, as needed.

2. Other PPE as identified in the JHA.

37.22 - Procedures. Have engineers or architects determine lighting requirements.

37.23 - Safety Practices. Eliminate glare and deceptive shadows on walking and working surfaces. Follow basic safety methods when installing and maintaining light fixtures:

37.23a -Interior.

1. Provide overhead light fixtures within 7 feet (2-1/2 m) of the floor with shields or lens covers to prevent accidental breakage, shock, or fire hazard. This requirement does not include portable, table, or floor lamps.

2. Make sure replacement bulbs do not exceed the fixture's watt rating.

3. Provide emergency exit signs and fire exits with both normal and emergency lighting along the entire travel route. Install exit signs so they are visible from point to point leading out of the building to safety.

37.23b -Exterior. Ensure that all administrative sites have sufficient night lighting in:

1. Building entrances.

2. Parking lots and garages.

3. Loading docks.

4. Fueling areas.

5. Designated stairways.

37.3 - Pressure Vessels. Pressure vessels include air, nitrogen, hot water, oxygen, and acetylene tanks. They may be categorized as low pressure if rated below 60 pounds per square inch (PSI) (409 kPa) and high pressure if rated above 60 PSI. Pressure vessels have highly explosive capabilities and can become extremely dangerous. Refer to 29 CFR 1910.253 for further requirements.

37.31 - Qualifications.

1. Employees shall be experienced and competent to operate and perform maintenance on pressure vessels. For example, in the operation of Class A and B boilers, individuals shall be State certified and licensed.

2. Employees shall be familiar with reference material concerning all aspects of pressure vessels.

37.32 - Personal Protective Equipment. The JHA shall identify required PPE for employees working with and around pressure vessels.

37.33 - Procedures.

1. Use only ASME-approved vessels and materials stamped and designated for the purpose.

2. When preparing the JHA, take into consideration vessel location and associated hazards.

3. Follow the manufacturer's or inspector's guidelines concerning maintenance of vessels, tubes, gauges, hoses, and valves. Post inspection certificates and other required records and test results near the pressure vessel. Required inspections and maintenance include:

a. Hydrostatically test pressure vessels every 5 years.

b. Have boilers inspected annually by a certified licensed boiler inspector.

c. At a minimum, drain hot water heaters annually.

d. Drain condensation from air compressor tanks often enough to prevent excessive amounts of liquid accumulation in the receiver.

e. Inspect steam-cleaning vessels before each use. Repair or replace damaged hoses, fittings, connections, gauges, and valves.

37.34 - Safety Practices. Basic safety practices related to pressure vessels include:

1. Make sure all pressure vessels are stamped with maximum allowable pressure or have an allowable pressure rating plate permanently attached.

2. Never exceed the stamped allowable pressure.

3. Equip all pressure vessels with pressure relief valves. Inspect valves regularly and ensure that they are functional and operational. Verify that relief valves show correct pressure settings and capacity for the specific gas or fluid being used.

4. Locate pressure vessels where physical damage is avoided. Regularly inspect pressure cylinders and containers for damage, and replace them when damaged.

5. Protect valves with cover caps when the vessel is not in use.

38 - GENERAL ENVIRONMENTAL CONTROLS.

38.01 - Authority. The authority for scaffolding, flammable and combustible liquids, hazardous waste procedures, PPE, safety color coding, specifications for accident prevention signs and tags, confined spaces, lockout/tag-out, and hazard communication is in Title 29, Code of Federal Regulations (29 CFR), sections 1910.28, 1910.106, 1910.120, 1910.132 - 1910.134, 1910.144 - 1910.147, and 1910.1200.

The authority for safety training, signs/signals/barricades, and environmental deterioration of equipment is in 29 CFR 1926.21, 1926.200 - 1926.202, and 1926.432.

38.1 - Safety Color(s) for Marking Physical Hazards. Signs and tags draw attention to safety equipment and identify relative degrees and types of hazards. Employees shall be trained in the identification of accident prevention signs and tags.

38.11 - Procedures. The unit sign coordinator shall approve all signing.

38.12 - Safety Practices. Use specific colors and signs for identification as set out in sections 38.12a to 38.12c.

38.12a - Vehicle Marking. Use the slow-moving vehicle emblem only on vehicles designed to move at 25 mph (40-1/4 km) or less on public roads (ex. 01).

38.12a - Exhibit 01

38.12b - Piping Systems. Use proper pipe identification to inform employees of potential hazards in accordance with the latest edition of ANSI A13.1-1981.

38.12c - Safety Signs.

1. Red. Use red as the basic color to identify:

a. Fire protection equipment and apparatus, including fire alarm stations, hydrants, standpipe valves, fire extinguishers or boards on which they are mounted, hose boxes, pumps, fire-tool and ladder markings, buckets, pails, and water barrels.

b. Safety cans and other portable containers of flammable liquids. Use additional visible identification in yellow, such as a yellow band around the can or the name of the contents clearly painted or stenciled on the can in yellow.

c. Emergency stop bars, stop buttons, and electrical stop switches.

2. Yellow. Use yellow as the basic color to designate caution and for marking physical hazards. Parallel diagonal bars of yellow and black have strong attention-getting values. Examples include:

a. Physical hazards, such as striking against, stumbling, falling, tripping, slipping, and caught between.

b. Edges of unguarded platforms, wells, open pits, and aisle markings around hazards.

c. Projections, protruding parts, low beams and pipes, low or impaired clearances, and coverings or guards for guy wires.

d. Conveyor parts or other fixtures suspended at hazardous levels from the ceiling or walls and extending into normal operating areas.

e. Elevation changes, such as stairway approaches, top and bottom steps, risers on nonstandard steps, raised doorsills, and curbings.

f. Pillars, posts, columns, and aisle obstructions that may be hazards if located in or near passageways.

g. Frames of elevator doors and gates; lips of horizontally closing doors.

h. Handrails and guardrails in storage areas.

38.2 - Confined Spaces. A competent person shall evaluate the workplace to determine confined spaces as defined in 29 CFR 1910.146 and 29 CFR 1910.147, The Control of Hazardous Energy. Employees working in or around confined spaces shall be aware of the associated hazards. These include dangerous atmospheric conditions, existing mechanical or structural conditions, and work-zone safety and health hazards.

Examples of confined spaces are sewers, storage tanks, utility vaults, tunnels, pipelines, cisterns, underground wellheads, manhole shafts, and lift stations. In some rare cases, attics and crawlspaces may have characteristics warranting treatment as confined spaces.

38.21 - Definitions.

Attendants. Employees stationed outside one or more permit-required spaces who monitor the authorized entrants and who perform all duties assigned in the confined space entry program.

Entrants. Authorized employees who may enter a permit-required space.

Entry. The point at which any part of the entrant's body breaks the plane of an opening into the permit-required confined space.

Entry Supervisor. The competent person (such as a crew supervisor) responsible for determining if acceptable entry conditions are present, for authorizing entry, for overseeing entry operations, and for terminating entry at a permit-required confined space where entry is planned.

Confined Space. Any space having a limited or restricted means of egress that is large enough for an employee to enter and perform assigned work and is not designed for continuous occupancy. Confined spaces can be further defined as permit-required or nonpermit-required.

Nonpermit Required Confined Space. A confined space that does not contain (or with respect to atmospheric hazards, does not have the potential to contain) any hazard capable of causing death or serious physical harm.

Permit-Required Confined Space. A confined space that has one or more of the following characteristics and that requires a written entry permit (including a pre-entry checklist) before entering: a hazardous atmosphere or the potential to contain a hazardous atmosphere; potential for engulfment; internal configuration hazard; and other recognized serious safety or health hazard.

Rescuers. Personnel designated to rescue employees from permit-required confined spaces.

38.22 - Qualifications.

1. Through training, employees shall acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned. Training shall include use of safety equipment, hazard communication, rescue operations, traffic control, and lockout/tag-out methods.

2. Upon completion of training for permit-required confined spaces, employees shall receive a certificate that includes their name, signature or initials of trainer, and dates of training. Certification must be current and available for inspection.

3. Additional training is necessary when there are changes in assigned duties, operations, or procedures, and when an employee's job performance shows deficiencies.

4. Rescue-service personnel are required to have annual refresher training, including hands-on practice rescues.

38.23 - Personal Protective Equipment. After considering all factors, such as specific activity and project location, identify required PPE in the JHA.

38.24 - Procedures. Prohibit entry into confined spaces where the hazardous atmosphere cannot be controlled by forced ventilation. Use the isolation process to remove a permit-required confined space from service by various means described in 29 CFR 1910.146. Lock-out/tag-out is one method (sec. 38.3).

Prepare a JHA and discuss it with employees and other personnel working in the immediate area before beginning work in any confined space. Procedures include:

1. Evaluating the work area to determine if confined spaces are present and if they are permit-required or nonpermit required.

2. Reevaluating nonpermit-required confined spaces when there are changes in their use or configuration and reclassifying them to permit-required, if necessary.

3. Setting up and maintaining records for all confined spaces that identify the uses of each confined space and the hazards it contains.

4. Notifying employees of the location of confined spaces and the dangers they pose.

5. Posting MSDSs or similar written information for existing hazardous chemicals at the work site.

6. Following OSHA regulations in developing and implementing a written permit-required confined-space program. The program shall include policies, procedures, and employee training needs.

7. Developing and implementing an alternative entry program for nonpermit-required confined spaces as specified in 29 CFR 1910.146.

38.25 - Safety Practices. Basic safety practices for confined space entry are:

1. Ensure that qualified personnel conduct all planning sessions.

2. Follow requirements of written entry permit for permit-required confined spaces, 29 CFR 1910.146(f), or follow alternative entry procedures for nonpermit-required confined spaces, 29 CFR 1910.146(c) (5)(ii) as determined by a written alternative entry program.

3. Identify hazards.

a. The quality of the atmosphere is questionable. Growth of bacteria, fungi, and other microorganisms can result in the buildup of toxic gases.

b. Unexpected electrical or mechanical energy releases. Wet or damp conditions can cause electrical problems.

c. A high chance of slips, trips, and falls; for example, due to rusted and deteriorated or slippery metal surfaces.

4. Apply safeguards.

a. Always assume a safety and health hazard exists.

b. Ensure that a second person is present to act as an attendant who does not enter the space under any circumstances.

c. Always sample the atmosphere before entering or allowing entry into the confined space.

d. Isolate sources of energy before entry.

e. Do not use incompatible chemicals or flammable/combustible chemicals for disinfecting and cleaning in the confined space.

38.3 - Control of Hazardous Energy (Lockout/Tag-out). Where applicable, units shall establish a hazardous energy control program. The purpose of the program is to communicate a basic awareness of the procedures and skills that employees are required to possess, including those employees who may work near affected machines but not directly with them (29 CFR 1910.147).

1. Provide training to ensure that employees understand the purpose and function of the energy control program and that they acquire the knowledge and skills required for safe application, usage, and removal of the energy controls.

a. Provide training for each authorized employee in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation control.

b. Instruct each affected employee in the purpose and use of the energy control procedure.

c. Instruct all other employees, whose jobs are or may be in the area where energy control procedures may be used, about the procedures and the prohibition against attempts to restart or re-energize machines or equipment that are locked or tagged out.

2. Use lockout/tag-out devices for isolating, securing, or blocking machines or equipment from energy sources. Such devices shall be durable, standardized, substantial, and identifiable. The placement of a lockout device on an energy-isolating device indicates that the device and the equipment being controlled may not be operated until the lockout device is removed.

a. When an energy-isolating device cannot be locked out, securely fasten a prominent warning tag to it.

b. Where a tag cannot be affixed directly to the energy-isolating device, locate the tag as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device (29 CFR 1910.147(d) (4) (iii) (B)).

For more direction on "Application of Control" refer to 29 CFR 1910.147(d).

39 - FACILITIES. In this Handbook, "facilities" refers to the operation and maintenance of buildings and their associated grounds. As such, this chapter provides direction on a variety of specific practices and potential hazards concerning structures.

39.01 - Authority. The authority for walking and working surfaces, means of egress, emergency and fire prevention plans, flammable/combustible liquids, blasting, storage and handling of liquefied petroleum gases (LPG), PPE, sanitation, temporary labor camps, safety color coding, fire protection, handling materials, hoists, machine guarding, hand tools, guarding of portable powered tools, electrical requirements, and asbestos is in Title 29, Code of Federal Regulations (29 CFR), sections 1910.21 - 1910.27, 1910.35 - 1910.38, 1910.106, 1910.109 and 1910.110, 1910.132, 1910.134, 1910.141 and 1910.142, 1910.144, 1910.151, 1910.155, 1910.157, 1910.164 and 1910.165, 1910.176 and 1910.177, 1910.179, 1910.212, 1910.242 and 1910.243, 1910.301 - 1910.303, and 1910.1001.

The authority for housekeeping, illumination, jacks, electrical requirements, batteries and battery charging, motor vehicles and mechanized equipment, and ladders is in 29 CFR 1926.25, 1926.26, 1926.305, 1926.403, 1926.441, 1926.600 and 1926.601, and 1926.1053.

39.06 - Reference. Manufactured Housing Institute Standards (MHI).

39.1 - Qualifications. In addition to having the applicable training and certification listed in section 21.11, employees must be given the training required to safely and efficiently perform specific work projects or activities.

39.11 - Personal Protective Equipment. The JHA shall identify PPE for the specific work project or activity.

39.12 - Procedures. The work supervisor and employee(s) shall prepare and discuss a JHA for facility and office work projects or activities before beginning any work project or activity. The JHA shall include:

1. Emergency Evacuation Plan.

    a. Name of employees and emergency phone numbers.

    b. Other information pertinent to the work project or activity.

2. Procedures for Bomb Threats and Other Security Issues.

    a. Receptionists shall be briefed on the specific procedures to follow in the event of a bomb threat.

    b. The facility security checklist shall include procedures to guard against theft and assaults against employees.

3. Availability of First Aid Supplies.

    a. In the absence of an infirmary, clinic, or hospital in near proximity to the workplace, a person or persons shall be trained to render first aid, including CPR.

    b. A competent person shall check first aid supplies and equipment at regular intervals and restock as needed, paying particular attention to those items with expiration dates.

    c. The remoteness from medical facilities and chances of severe injury shall dictate the type and quantity of first aid supplies available at the worksite.

    d. Where employees may be exposed to injurious corrosive materials, facilities for quick drenching or flushing of the eyes shall be provided at the work area.

4. Safety and Health Sessions. Conduct and document facility/office safety and health "tailgate" sessions to increase the safety and health awareness of office employees.

39.13 - Safety Practices. The Occupational Safety and Health Act of 1970 promises job safety and health protection for workers by providing safe and healthful working conditions.

1. Smoking. Environmental tobacco smoke, also termed second-hand smoke, is classified as a known human carcinogen by the Environmental Protection Agency. To protect employees, contractors, and visitors, smoking is prohibited inside all USDA facilities and motor vehicles.

Follow these basic practices for maintaining safe and healthful facilities.

2. Walking and Working Surfaces.

a. Keep walking and working surfaces free of obstacles that create tripping and slipping hazards (sec. 32).

b. Repair or replace as soon as possible any damaged floor surfaces, such as splintered wood, broken tile, or pitted concrete. Mark hazards that are not readily repairable.

c. Maintain floors of every facility in a clean, well-lighted, and as far as possible, dry condition. Provide rubber, nonskid mats at entrances to buildings, especially during winter months. Use cones or other warning devices if repairs are delayed or cleaning is in progress (ex. 01).

39.13 - Exhibit 01

d. Coat highly polished surfaces, like linoleum or tile, with a slip-resistant finish.

e. Examine floor coverings, such as carpets and rugs, periodically for loose cords and other surface irregularities. Repair or replace them promptly.

2. Aisles, Passageways, and Storerooms. Keep work areas, living space, storerooms, and other buildings clean and neat, with all materials properly stored.

a. Appropriately mark permanent aisles and passageways.

b. Keep aisles and passageways between cabinets, desks, and work benches free of obstructions that could create a hazard.

c. Keep passageways to electrical service equipment, switches, fire extinguishers, fire hydrants, stairways, and exits clear of obstructions at all times.

d. Avoid collisions by installing convex mirrors in blind spot areas.

3. Movable Equipment and Materials. Store and secure movable equipment in an assigned location when not in use.

a. Prevent back injury by using correct lifting and carrying techniques (sec. 39.64). When the load is too big, bulky, or heavy, do not move it alone. Ask for help or use mechanical aids.

b. Clean debris from service/equipment repair areas before beginning a work project or activity. Clean up the work area after completing the job.

4. Floor Elevation. Where possible, eliminate abrupt changes in floor elevation. Identify abrupt changes by marking, blocking, or barriers.

5. Openings. Guard openings in floors, porches, and abrupt edges of loading docks with guardrails, mid-rails, and toeboards (sec. 32.2).

6. Stairways.

a. Install nonskid treads on stairs.

b. Keep stairways free of defects, rubbish, slippery substances, loose materials, or obstructions that may cause slips, trips, or falls.

c. Equip stairways having four or more risers with standard stair railings or handrails.

d. Ensure that stair risers are uniform and well lit. Provide adequate lighting in and around work areas, passageways, ladders, stairways, and other areas used by employees.

39.2 - Living Quarters. Require employees to keep Government-provided quarters clean, sanitary, and free of hazards.

39.21 - Procedures.

1. Have unit managers review occupancy rules and the operation of all heating and cooling appliances with new occupants.

2. Inspect all Government-owned or -leased quarters annually to ensure occupant health and safety. Require each occupant of Forest Service quarters to report any unsanitary, hazardous, or unsafe conditions to the appropriate line officer. Ensure immediate action is taken to correct any such condition. The sample Facilities Safety

Inspection Checklist form can be used to document unsafe facility conditions and corrective actions (sec. 39.9, ex. 01).

3. Authorize no structural modifications, plumbing, or electrical alterations (or additions) to Government facilities, except as approved through the administrative process. Allow only qualified persons to perform these modifications (sec. 34.2, para. 6).

4. Equip all facilities serving as quarters, such as family residences, trailers, sleeping areas (including hallways), crew quarters, and other dwellings, with photo cell or ionization-type smoke detectors/alarms.

a. Provide fire extinguishers and locate them in conspicuous areas where they are readily accessible (sec. 55.1). Ensure extinguishers receive annual maintenance inspection.

b. Provide a fire prevention/evacuation plan and make sure it is understood by occupants.

c. Conduct fire drills at least twice annually and more often if the local line officer or other competent person(s) deems it necessary (sec. 34.11).

39.22 - Safety Practices.

39.22a -Permanent Crew Quarters. Employees are responsible for keeping their living areas clean and sanitary. Floors are to be swept, beds made, and personal articles organized or stored in an orderly manner. Horseplay is not permitted in crew quarters.

1. Inform employees that bunkhouse quarters are subject to inspections by appropriate Forest Service officers. The employees' privacy shall be honored.

2. Clean and sanitize washroom and shower areas and, when provided, refrigeration units, cook stoves, and other appliances.

3. Unless specially provided for, never keep perishable food in living quarters. Cooking is not permitted unless proper equipment is provided.

39.22b -Residences. Residents of Government-owned or -leased housing are responsible for minor maintenance of quarters and grounds (FSM 6445.3).

1. Conduct safety and health surveys at least annually to identify potential hazards or safety concerns. Basic surveys should include but are not limited to:

a. Stoves, furnaces, and fireplaces, to detect obstructed stovepipes and chimneys and improperly functioning heating systems. If malfunctioning equipment is suspected, have a qualified person examine the suspected problem area and make the necessary repairs.

b. Electrical wiring. If outlets require multiple plug-in adapters to provide enough receptacles, assess the residence for wiring inadequacy. Fuses blowing frequently or circuit breakers being thrown are indicators of electrical deficiencies.

c. Appliances. Ensure all appliances are vented to prevent overheating and fire. Follow the manufacturers' recommended venting procedures.

d. Incidental storage of flammable/combustible materials. Keep paints and petroleum products in closed, approved containers (sec. 61.51) and identify their contents (sec. 38.12). Dispose of cleaning rags after use in approved waste cans.

2. Keep walkways and roof areas over entries free from accumulation of ice, snow, and leaves.

3. Take steps to prevent carbon monoxide buildup. Carbon monoxide is a poisonous gas that is odorless, tasteless, textureless, and undetectable by human senses. Carbon monoxide results from incomplete combustion and can be produced by any flame-fueled device, including gas ranges; ovens with pilot lights; clothes dryers; gas or oil furnaces; fireplaces; coal stoves; wood-burning stoves; charcoal grills; hot water heaters; and space heaters fueled by propane, natural gas, or oil. Carbon monoxide can also be produced by all gasoline-powered equipment, such as generators, engines, chain saws, power boats, cars, and trucks. Carbon monoxide is also emitted from combustion of forest and range fuels (sec. 25.13a, para. 8).

a. To prevent carbon monoxide poisoning:

(1) Install carbon monoxide detectors near the door that leads out to the garage and in the workplace, lookouts, mobile homes, house/office trailers, and especially sleeping areas, such as the sleeping cabin of boats.

(2) Do not run gasoline or propane engines inside closed garages.

(3) Operate charcoal grills outdoors only.

(4) Keep stoves and furnaces properly adjusted.

(5) Do not use space heaters without proper venting.

b. Symptoms of carbon monoxide poisoning include:

(1) Initially, the symptoms are flu-like: headache, fatigue, nausea, dizzy spells, and irritability.

(2) As carbon monoxide blood-levels rise, symptoms such as confusion occur, followed by unconsciousness, brain damage, and ultimately death.

39.3 - Lookouts. Employees working in lookouts are often isolated for long periods of time under primitive conditions. Supervisors shall ensure that the employees' overall health and welfare is not being compromised.

39.31 - Personal Protective Equipment. The JHA shall identify PPE for specific work projects or activities associated with lookout duties.

39.32 - Procedures. Prepare and discuss a JHA with employees (sec. 31.11 and 39.12). In the JHA, emphasize check-in procedures and identify specific hazards related to the duties of lookout personnel. Address safe work practices and emergency evacuation procedures, as well as public safety and health considerations.

39.33 - Safety Practices.

39.33a - General.

1. Have a competent person inspect lookout structures and take any necessary corrective action before occupancy.

2. Conspicuously post occupancy load limits on lookout structures. The lookout occupant is responsible for ensuring load limits are not exceeded.

39.33b - Structure Safety.

1. Keep walking areas free of obstructions. Walking surfaces exposed to the weather must have nonskid surfaces.

2. Keep trap doors closed when not in use. Guard open trap doors. Check trap doors frequently for soundness.

3. Maintain railings in safe condition, free of splinters and protruding nails. Ensure that railings are 42 inches (1 m) from the upper surface of top rail to floor, platform, runway, or ramp level. Install nonclimbable wire mesh between railings and cat walks. Wire mesh shall be grounded.

4. Have a sag chart for each tower with structural guy wires. Consult engineering personnel for the chart and additional specific direction.

   a. Tighten guy wires during occupancy and loosen them when the tower is not occupied.

   b. Use proper guy wire hardware and keep guy wires clean and lubricated to prevent corrosion.

39.33c - Personal Safety and Health.

1. Store food to prevent spoilage and protect against contamination and pests.

2. Consider all natural water sources as contaminated. Regularly test natural water supplies. If water is brought in, mark the containers as "Drinking Water." Keep water containers securely closed when not in use (sec. 55.11a).

3. Inspect outdoor toilet facilities annually and maintain them in a sanitary and structurally sound condition.

4. Provide lookouts with:

a. AC-line powered or battery type ionization smoke detectors.

b. Carbon monoxide detectors (sec. 39.22b), if the lookout contains a fuel burning stove, heater, or lights.

c. First aid kit (refer to the Glossary).

d. Fire extinguisher(s).

5. When using flammable fuel lanterns, always:

a. Shut off lanterns and allow them to cool before fueling.

b. Fuel them outside the building and only during daylight hours.

6. Do not start wood stove fires with flammable/combustible liquids.

7. When a liquefied petroleum (LP) gas system or equipment is used in a lookout, ensure that a qualified person completes and certifies all testing, adjustment, repairs, or alterations. Document the servicing and post the documentation near the appliance in plain view of users.

a. Pressure and leak test all fuel gas systems that have not been used for more than a month.

b. Make sure each system has containers, valve(s), connectors, manifold valve assemblies, and regulators of an approved type.

c. Mount containers upright on firm foundations. Secure them to prevent tipping or falling. Do not attach container(s) directly to the lookout structure.

d. Protect connections and containers from physical damage.

e. Test connections with a soapy water or bubble solution.

f. Vent stove and refrigeration units according to manufacturer's recommendations.

g. Do not store LP gas containers inside buildings. Locate containers at least 25 feet (7-1/2 m) from structures or lightning grounding systems.

h. Locate gas lines away from downleads of lightning protection systems.

8. Provide radio or telephone communication at all times. Consider a backup system, such as a personal portable radio or portable phone.

39.34 - Lightning Protection. Do not occupy a lookout until the required lightning protection system is in place, all connections are tight, and downleads are continuous. Post the following instructions for telephones and radio use during electrical storms in exposed structures:

1. When the storm is 1 mile (1-1/2 km) or more away, and it is necessary to use the telephone:

a. Sit or stand on an insulated stool; keep feet off the floor.

b. Do not hold the receiver tightly against ear.

c. Do not touch any metal part of the telephone or building.

2. When the storm is less than 1 mile (1-1/2 km) away:

a. Stay away from the telephone. Remain in the building, as far as possible from windows, doors, metal objects, or electrical conductors.

b. Shut off the radio and telephone during storms. Reestablish communications only after the storm has passed.

3. Avoid entering or leaving lookout towers during high winds.

a. If the lookout tower entry way is exposed to prevailing winds, consider installing a wind shield or screen to allow the doors to be opened and closed without difficulty.

b. Shut off electrical appliances and extinguish all open flames, such as lanterns and LP gas stoves, during lightning storms.

39.34a - Inspections and Maintenance of Lightning Protection System.

1. Determine the frequency of inspections by such factors as:

a. Classification of the structure or area protected.

b. Level of protection afforded by the system.

c. Immediate environment (corrosive atmospheres).

d. Materials from which components are made.

e. The type of surface to which the lightning protection system components are attached.

39.4 - Mobile Homes and House/Office Trailers. This section includes safety standards for vehicular units used for residences, crew quarters, offices, and similar activities. Examples of these are mobile homes, trailers, and recreational vehicles.

39.41 - Qualifications. Trailers and storage of materials must comply with Manufactured Housing Institute (MHI) Standards (sec. 39.06).

39.42 - Safety Practices.

1. Provide mobile homes and house/office trailers with:

a. First aid kits (refer to the Glossary).

b. Ionization-type smoke detectors.

c. Carbon monoxide detectors, if fuel-burning furnaces or appliances are used in the structure (sec. 39.22b, para. 3).

d. LP gas detectors, where LP gas is used.

e. Mounted fire extinguishers (minimum 10 BC) that are located and identified so that they are readily accessible (sec. 35.11a).

2. Because trailer framing and roofs have limited load-bearing capacity, before beginning repair work, have a competent person determine the safe working loads.

3. Provide trailers in heavy snow country with separate sloped roofs or remove snow accumulation daily.

4. Before moving, blocking, and anchoring trailers, thoroughly inspect tires, lug nuts, hitches, lights, and frames.

a. Check carefully for tire deterioration and frame damage.

b. Lubricate wheel bearings.

5. Ensure trailer pads are as level as possible to provide uniform support for blocking.

6. Anchor trailers that will remain in one location for more than 2 months:

a. Use standard trailer tie down anchors or utility company screw augers.

b. If no anchor straps are provided on the trailer frame, use nylon straps or another approved strapping system that extends over the trailer body in a continuous piece to the anchor points.

c. Install a minimum of three anchor sets per trailer. (Nylon tends to deteriorate when exposed to the sun, so periodic inspections are necessary.)

39.43 - Trailer Utility Connections.

1. Water. Use National Sanitation Foundation approved piping for water supply connections. Never use garden hoses.

2. Sewer. Tightly fit sewer connections to reduce or eliminate fumes and odors. Protect sewer connections from damage.

3. Electrical. Use the trailer manufacturer's service cord or other Underwriters Laboratory (UL)-approved cord from a weather-tight, grounded receptacle that is mounted on a post or stand, and has a rain-tight breaker panel (ground-fault circuit interrupter protected).

a. Ensure the disconnect is accessible at all times.

b. Install service masts on adjacent poles, when feasible. They may be installed on trailers.

c. Have a licensed electrician inspect electrical wiring modifications or additions.

d. Ground the metal frame and skin of trailers through the electrical service panel only.

e. Require that each 120-volt, single-phase, 15- or 20-ampere receptacle outlet have a ground fault circuit interrupter in the following locations:

(1) Adjacent to a bathroom lavatory.

(2) Within 6 feet (1-3/4 m) of any lavatory or sink.

(3) In the area occupied by a toilet, shower, tub, or any combination.

(4) On the exterior of the vehicle.

4. Liquid Petroleum (LP) Gas. Make LP gas connections with blacksteel or hard copper piping designed specifically for this purpose.

a. Leak test the fuel piping system and appliances of all trailers used to house and shelter employees.

b. Pressure and leak test all trailer fuel gas systems that have not been used for more than a month.

c. Do not deliver fuel to the system unless the system and appliances are leak-free and the LP gas regulator provides correct pressure control.

d. Test the regulator for correct pressure regulation immediately before use.

e. Have all testing, adjustment, repairs, or alterations of these facilities completed and certified by a qualified person.

f. Use bubble soap for leak testing fuel piping.

g. Electrically bond gas connections before disconnecting appliances or moving gas lines (ex. 01).

39.43 - Exhibit 01

39.44 - Trailer Heating Systems. Refer to section 61.62 for inspection of LP gas fuel systems.

1. Ventilation. Unit heating systems normally found in trailers use inside air for combustion. Additional ventilation may be needed to ensure proper combustion; open windows if necessary.

2. Oil-Fired Furnaces.

a. Remove soot build-up in oil-fired flues at least every 2 months.

b. Prohibit the use of gravity-fuel-feed systems with oil-fired furnaces.

c. Provide shut-off valves at the heating appliance and the fuel storage tank.

39.45 - Entrances and Exits. Exits for trailers, mobile homes, recreation vehicles, and other similar units used as offices, crew quarters, and similar occupancy shall meet the following standards:

1. Exterior Exit Doors. All units 32 feet (9-3/4 m) and longer shall have two exterior exit doors.

a. The doors shall not be located in the same room or less than 12 feet (3-1/2 m) apart in single-wide units or 20 feet (6 m) in double wide units.

b. Two exits are required for all units less than 32 feet (9-3/4 m) in length, and one exit may be an approved exit window.

c. All rooms used for sleeping purposes shall have at least one exit, either a door or approved window exit.

d. Use of external padlocks on the outside of exit doors is prohibited.

2. Window Exits. Window exits shall open to the outside.

a. The bottom of the window opening shall be 3 feet (3/4 m) or less above the floor.

b. Locks, latches, operating handles, and other devices required to permit exiting shall be located 5 feet (1 1/2 m) or less from the finished floor.

3. Entry Structures. Doorways shall be provided with substantially constructed landings, stairs, and handrails.

39.5 - Offices. To ensure work safety, employee health, and productivity, design or adapt offices to meet the needs of employees.

39.51 - Safety Practices. Each office supervisor is responsible for the development of a job hazard analysis (JHA). The JHA shall include information pertinent to specific office duties and responsibilities. Refer to section 39.12 for direction on the JHA information, section 39.13 for safety and health practices, and 29 CFR 1910.22 for housekeeping regulations.

39.51a - Furniture and Equipment Use. Provide employees with instructions to ensure that they understand the tools, machines, and equipment they will be working with and that they understand any associated hazards.

1. Bookcases and file cabinets.

a. Do not allow materials and debris to accumulate on top of bookcases and file cabinets.

b. Store heavier items in the lower drawers of file cabinets. Poor distribution of materials can cause cabinets to tip over if they are not secured to a wall. Open one drawer at a time and never leave an open drawer unattended. Adequately brace any free-standing book shelves over four shelves high. Fasten file cabinets and steel shelves together and to the wall.

2. Chairs and Desks. Avoid injuries when turning in swivel chairs. Keep all legs of the chair on the floor. Inspect chairs and desks frequently. Replace or repair defective parts. Do not stand on chairs or desks.

3. Ladders. Ladders present a major work hazard. Always follow the manufacturer's recommendations when using ladders (sec. 33.1). The JHA shall address procedures for the care and use of ladders.

4. Video display terminals (VDT). Use of a VDT may cause musculoskeletal disorders. Symptoms can include back pain; muscle fatigue; soreness in arms, wrists, or hands; stiffness in the neck or shoulders; tingling in the fingers; and loss of gripping control in extreme cases. Workstations should be designed to adjust to meet the needs of all employees (sec. 52.4).

a. Position the screen, key board, and computer accessories to fit the employee.

b. To maintain correct seated posture, position the top of the display screen at or just below eye level. The screen should tilt up slightly and be approximately 1-1/2 to 1-3/4 feet (1/2 m) from your face. Adjust the VDT controls (brightness, contrast) for more comfortable viewing.

c. The National Institute of Occupational Safety and Health (NIOSH) recommends that pregnant women spend no more than 4 hours per day working at a VDT.

5. Office machines. The JHA shall include the use of office machines and where applicable, the use, storage, and disposal of flammables, combustibles, hazardous chemicals, material safety data sheets (MSDS), and other similar products.

a. Only trained experienced people shall clear paper jams from office machines. Follow the manufacturer's recommendations for clearing paper jams.

b. Manual paper cutters are provided with finger guards that shall not be removed. After use, return the cutting knife to the closed position and lock.

39.6 - Storage and Warehousing.

39.61 - Qualifications. In addition to having the applicable training and certification listed in section 21.11, employees shall be competent or receive training in the necessary skills to become competent before beginning work activities.

39.62 - Personal Protective Equipment. The variety of materials associated with storage and warehousing activities are too detailed to address individually. Supervisors are to ensure that a hazard assessment and PPE selection are conducted and identified in the JHA for the site-specific storage and/or warehousing activity. The general and specific requirements for PPE are in 29 CFR 1910.132 - 1910.138.

39.63 - Procedures.

1. Ensure workers understand and use proper lifting techniques (sec. 39.64).

2. Use mechanical assist devices, such as handtrucks, for moving equipment and supplies.

39.64 - Safety Practices. Basic safety and health practices for storage and warehousing activities include:

1. Housekeeping (sec. 39.13).

2. Lifting Techniques.

a. Bend and gently stretch to warm muscles.

b. Check the intended route and the point of placement before moving load.

c. ***Ask for help if the load is heavy. Do not try to lift or otherwise move material beyond your ability***.

d. If the load blocks your vision, get help.

e. Evaluate the load. Before lifting, check for nails, splinters, rough strapping, and sharp edges. Test the load by tipping it to one side. Use a handtruck or other mechanical aid whenever possible.

f. Stand close to the load with feet apart to lift.

g. To improve balance, keep your heels down and turn your feet slightly out.

h. Bend your knees, keeping your back as straight as possible.

i. Center your body over your feet, get a firm grip under the load, and pull it close to you. Test the load.

j. Lift gradually and smoothly. Lift with legs, arms, and shoulders. Keep the load close to your body. Rise slowly, straighten knees, and stand.

k. Avoid quick, jerky, and twisting motions. Do not change the position of your feet before the load is fully raised.

l. Face the spot where the load is to be placed. Point your feet in the direction of the move or turn; don't twist.

m. Bend your knees, keep load close to your body, and slowly lower the load to waist level. Keep your back straight. Support the load with your legs, arms, and shoulders (ex. 01).

n. Protect your fingers and hands from pinching and scraping.

o. In tight places, set the load down close to the final location and slide it into place.

p. When lifting a load from a table, shelf, or similar elevated surface, slide the load toward the edge. Support the load with the edge of the elevated surface and lift it as previously described. In placing the load on a raised surface, reverse this procedure.

q. Avoid lifting above shoulder height. Use a step stool or platform to reach areas above the shoulders.

r. Do not take "short cuts" or engage in "show-off" demonstrations of strength.

3. General Storage Practices. Calculate the maximum allowable load limits of shelves, bins, and racks for storage within buildings. Post limits conspicuously.

a. Never store materials on supports not designed for such loading. This applies especially to the bottom boards of light-framed trusses.

b. Always store tools or materials away from:

(1) Unguarded windows or scaffolds.

(2) Heat sources, if flammable.

(3) Aisles, fire exits, fire equipment, electric switches, panels, stairways, floor openings, and hoistways.

c. When differences in road or working levels exist, use ramps, blocking, or grading to ensure safe movement of vehicles between the two levels. Guard other changes in level by railings, barriers, or painted markings.

d. Ensure materials in compounds or storage areas are secured, display proper signage, and are adequately lit.

e. Segregate materials by kind, size, and length. Stack them neatly.

f. Secure all materials stored in tiers by stacking, blocking, interlocking, cross-piling, or cross-tying.

(1) Limit the height of the tiers so that they are stable and secure against sliding or collapse.

(2) Stack bagged materials by stepping back the layers and cross-keying the bags at least every 10 layers.

g. Post the outside of buildings to warn fire personnel of open shafts, lofts, drying towers, windows, blocked doorways, and hazardous materials.

4. Specific Storage Practices. Store grass, seed, hay, straw, and baled excelsior in separate buildings that are well-ventilated.

5. General Practices for Handling Materials.

a. Use appropriate PPE when handling heavy or sharp-edged objects and rough lumber.

b. When unpacking materials, immediately pull or clinch protruding nails and staples in boards and boxes. Remove nails and staples from opened boxes and kegs used for storage or material carrying.

c. Clearly label contents and special handling requirements on all containers.

d. To avoid injury while stacking materials, use mechanical or ergonomically designed devices, such as skids, rollers, handtrucks, lift trucks, hoists, wheelbarrows, tongs, cant hooks, peaveys, haypoles, and hand spikes.

e. Ensure that lift trucks and other mechanical lifting devices are operated only by trained (certified where applicable) and authorized workers (sec. 44.62).

6. Specific Practices for Handling Materials.

a. Steel products. Stack and block structural steel, poles, pipes, bar stock, culverts and other cylindrical materials, unless they are racked or banded.

b. Bricks. Never stack bricks more than 7 feet (2 m) high. Taper back stacks 2 inches (51 mm) for every 1 foot of height above the 4-foot (1-1/4-m) level.

c. Masonry Blocks. Taper masonry blocks stacked higher than 6 feet (1-4/5 m) back one-half block per tier above the 6-foot level.

d. Short tiles. Stack in a vertical position to keep tiles dry for ease of handling.

e. Lumber.

(1) Remove nails from used lumber before stacking.

(2) Stack lumber on level and solid supports. Use cross strips or piling where the pile is more than 4 feet (1-1/4 m) high.

(3) Ensure that stacks are stable and self-supporting.

(4) Keep the top of lumber stacks as level as possible when lumber is removed.

f. Glass.

(1) Carry glass on the outside of your arm, with the palm of your hand facing outward and the other hand reaching across the body and grasping the glass top.

(2) Keep your shirt sleeves buttoned around your wrists.

(3) Protect your wrists by gloves with gauntlets.

(4) Wear eye protection.

(5) Handle large panes one at a time.

(6) Store glass on edge in protected areas.

(7) Place cross tape on the surface to make the glass pane visible and mark "Glass" on it with felt pen.

39.7 - Shops.

39.71 - Qualifications. In addition to having the applicable training and certification listed in section 21.11, employees shall receive training in the use of power tools, machines, welders, and other hazardous equipment before operating them.

39.72 - Personal Protective Equipment. Wear PPE appropriate for the specific work project or activity. Identify PPE not routinely provided for in shop operations in the JHA.

Provide, use, and maintain protective equipment (including PPE for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers) in a sanitary and reliable condition.

39.73 - Procedures.

1. Prepare and discuss a JHA with employees involved in work projects and activities.

2. Operate power tools and machines according to the manufacturer's instructions. Keep instructions where they are readily available to the operator.

3. Post or tag an "Out of Order" warning sign, identifying when the tool or machine became inoperative and your name, until repairs are completed.

39.74 - Safety Practices.

1. Ensure that all PPE is available, is in good condition, and is in use before starting any power-driven machines.

2. Inspect tools before each use to assure optimum working condition or proper adjustment.

3. Ensure that extension cords have adequate current-carrying capacity. Inspect extension cords regularly for damage and remove damaged cords from service when appropriate.

4. Anchor machines securely to the floor or other appropriate surface such as a workbench or table if they are not designated as portable.

5. Clear working surfaces of obstructions or unnecessary articles to allow for safe operations.

6. Ensure that guards and safety devices are functional, adjusted, and in place.

7. Ensure that all parts, such as cutting tools, tool holders, chucks, centers, guides, and clamps, are firmly adjusted for the work and are set to clear all moving parts.

8. Always stop a machine before servicing, adjusting, oiling, or repairing. Remove chuck wrenches and adjustment tools from machines immediately.

9. Exercise particular care that shop ventilation is adequate when running engines, welding, or working with chemicals.

39.74a - Automotive and Equipment Repair. Install a carbon monoxide detector(s) in garage areas where internal combustion engines are repaired (sec. 39.22).

1. Ensure that ventilation systems are specifically designed for the purpose.

   a. Vent engine exhaust to the outside.

   b. Construct battery charging areas so fumes are vented to the outside. Wiring switches, lights, and exhaust fans must be explosion-proof.

c. When applying body putty, sanding, and finishing, keep the work area well ventilated. Some operations may require explosion-proof wiring.

2. When working on brakes and clutches that may create exposure to asbestos (sec. 61.8), follow these procedures:

a. Always vacuum dust from the brake or clutch assembly when first opened. Vacuum around the worksite when the work is finished. Use vacuum cleaners specifically designed to collect and retain asbestos dust/fibers. Employees involved with brake or clutch assemblies, where asbestos is present, must be trained in respirator and vacuum use. Refer to section 61.8 for further direction on asbestos.

b. Never blow dust from the assemblies or worksite with compressed air.

3. For further direction on welding operations, see section 27.23.

4. Do not leave creepers on the working or walking surface when not in use. Store them on end or hang them on a wall.

5. Allow catalytic converters to cool before working on them or in their proximity. Keep flammables/combustibles and cleaning materials away from the converter.

6. Legibly mark the manufacturer's rated load capacity on support stands and jacks and do not exceed them. Never work on or under a raised vehicle unless it is properly supported (sec. 42.1).

a. When using jacks, block and secure the vehicle from movement.

b. Use bumper jacks with extreme caution.

c. Never use cement blocks or bricks as blocking material.

d. Keep the area under jacks, support stands, and hoists clean and free of oil and grease.

7. ***Before starting any work or adjusting the chassis of a dump truck with the bed in an elevated position, secure the bed by a permanently attached positive means of support in the locked position. Place a sign drawing attention to this requirement at eye level near both rear corners of the cab***.

8. Do not permit employees to service tires mounted on split-rim wheels unless they have been trained and instructed in the correct procedures (CFR 1910.177(c)).

9. Never use gasoline for cleaning. Cleaning solvents must have a flashpoint of 140 ^{O}F (60 ^{O}C) or higher. When possible, substitute organic nontoxic cleaning solvents.

10. Never park vehicles containing dangerous or flammable materials in repair shops, or perform maintenance work while a vehicle is loaded.

39.74b - Woodworking. Inspect woodworking shops regularly to ensure that:

1. Workers are not exposed to excessive amounts of dust;

2. PPE is available and is being used;

3. Guards and safety devices are adjusted and in place;

4. Employees are trained and understand the hazards associated with different pieces of machinery, and they know proper operating procedures; and

5. The work area is clean and free of debris or of any materials that could prove to be hazardous to those working there. For additional direction, refer to section 43.5.

The JHA shall identify the required PPE.

39.74c - Metal Working. Make sure supervisors and managers regularly inspect metal shops to ensure that appropriate PPE (including goggles or safety glasses, leather gloves, safety-toed boots, leather aprons, and specialized equipment associated with welding) is provided and used (sec. 27.23). The JHA shall identify the required PPE for the specific work project or activity.

Before starting any power-driven machine, check to see that:

1. The working surface is clear.

2. Guards and safety devices are in place and correctly adjusted.

3. The machine or tool is in safe operating condition, with all parts operating freely.

39.8 - Grounds Maintenance. Work duties include activities such as installing and maintaining traffic control devices, pruning, lawn mowing, weed/grass trimming, removing snow, and collecting garbage.

39.81 - Qualifications. In addition to having the applicable training listed in section 21.11, employees involved in sign installation and maintenance shall be skilled in using hand and power tools, such as motorized pruning, mowing, and snow removal equipment. The JHA shall identify the specific training required.

39.82 - Personal Protective Equipment. The following PPE is recommended for grounds maintenance:

1. Eye protection.

2. Hearing protection (85 dB and above).

3. Appropriate footwear.

4. Gloves.

5. Dust mask (when applicable).

6. Other PPE as identified in the JHA and/or MSDS.

39.83 - Safety Practices. Basic safety and health practices for grounds maintenance include:

1. After a site review and/or engineering study to determine needs, display a sign or identify the following situations accordingly:

a. One-way roads; road restrictions.

b. Public and employee hazard areas.

c. Speed limits.

d. Work zone (workers).

e. Non-potable water.

f. Legal and off-limits parking, crosswalks, children playing, and firewalks. Provide parking space delineators, striping, arrows, gates, central refuse bins, physical barriers, stanchions, or cones.

2. Follow these suggested safety steps for pruning, mowing, and snow removal:

a. Prune brush and trees for best visibility near access roads, intersections, and buildings. Refer to section 22.42 for further direction.

(1) Have the power company do all tree pruning for powerline clearances. Inspection of trees and landscaping is generally a Forest Service responsibility.

(2) Trim around pipes, markers, and monuments.

(3) Never leave lawn tools and work materials lying about.

b. Keep LP gas bottles or tanks and connecting pipes free of grass or other vegetation and guarded to prevent physical damage.

c. Follow the manufacturer's safety recommendations for the operation of rotary mowers/tractors and snow blowers. Keep walkways, roads, and parking areas free of ice/snow buildup.

(1) Inspect the work area before beginning a work project or activity. Remove objects that may be run over, thrown by, or cause damage or injury to people, equipment, or property.

(2) Remove ice/snow as it accumulates on eaves and roofs.

(3) Maintain equipment in top mechanical condition. Inspect equipment before and after use to ensure safe operating conditions.

(4) Start and refuel mowers/tractors and other fuel-burning engines outdoors. Cool the engine for 5 minutes before refueling. Move at least 10 feet (3 m) from the fueling point before restarting.

(5) Restrict vehicles from parking in the work area. Clear the area of all people and pets for 100 feet (30-1/2 m). While people are passing, stop. Start only after people are out of the hazard zone.

(6) The center of gravity for equipment varies greatly. Be familiar with the machine's capabilities and limitations. Follow the manufacturer's recommendations.

(7) Turn off the motor when making adjustments or repairs.

3. In the JHA address the hazards associated with performing garbage and debris collection tasks. Address personal hygiene and engineering controls for prevention and protection against personal injury and illness. Use the following methods in collecting garbage and debris:

a. Use appropriate PPE, such as a litter/sanitation picker and gloves, when picking up trash.

(1) Wear disposable gloves for protection, even under leather gloves.

(2) Practice universal precautions when encountering suspected infectious or hazardous waste (refer to the Glossary).

(3) Be familiar with established unit procedures for handling and disposing of known or suspected infectious or hazardous waste.

b. Store garbage in tight containers and secure them against upset or access by animals/insects.

c. Use caution when disposing of razor blades, broken glass, and other sharps.

d. Place central refuse bins on a hard surface. Ensure that refuse bins are stable and secure.

39.9 - Exhibits. A sample of the suggested format for a facilities safety inspection checklist is set out in exhibit 01.

39.9 - Exhibit 01

33.11b - Exhibit 01

EXHIBITS ARE IN A SEPARATE DOCUMENT.

35.11a - Exhibit 01

EXHIBITS ARE IN A SEPARATE DOCUMENT.

35.11a - Exhibit 02

EXHIBITS ARE IN A SEPARATE DOCUMENT.

36.13 - Exhibit 01

EXHIBITS ARE IN A SEPARATE DOCUMENT.

36.13 - Exhibit 02

EXHIBITS ARE IN A SEPARATE DOCUMENT.

38.12a - Exhibit 01

EXHIBITS ARE IN A SEPARATE DOCUMENT.

39.13 - Exhibit 01

EXHIBITS ARE IN A SEPARATE DOCUMENT.

39.43 - Exhibit 01

EXHIBITS ARE IN A SEPARATE DOCUMENT.

39.64 - Exhibit 01

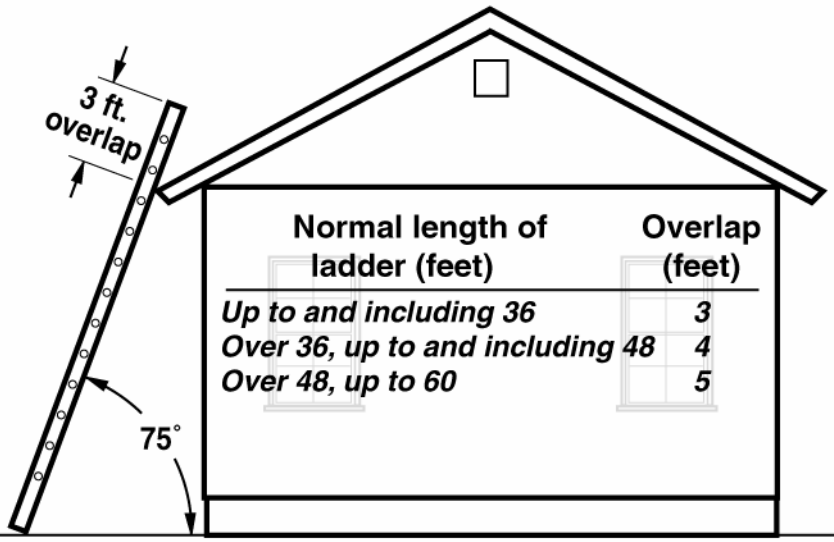
EXHIBITS ARE IN A SEPARATE DOCUMENT.

39.9 - Exhibit 01

EXHIBITS ARE IN A SEPARATE DOCUMENT.

33.11b - Exhibit 01

TWO-SECTION EXTENSION LADDER MINIMUM OVERLAP

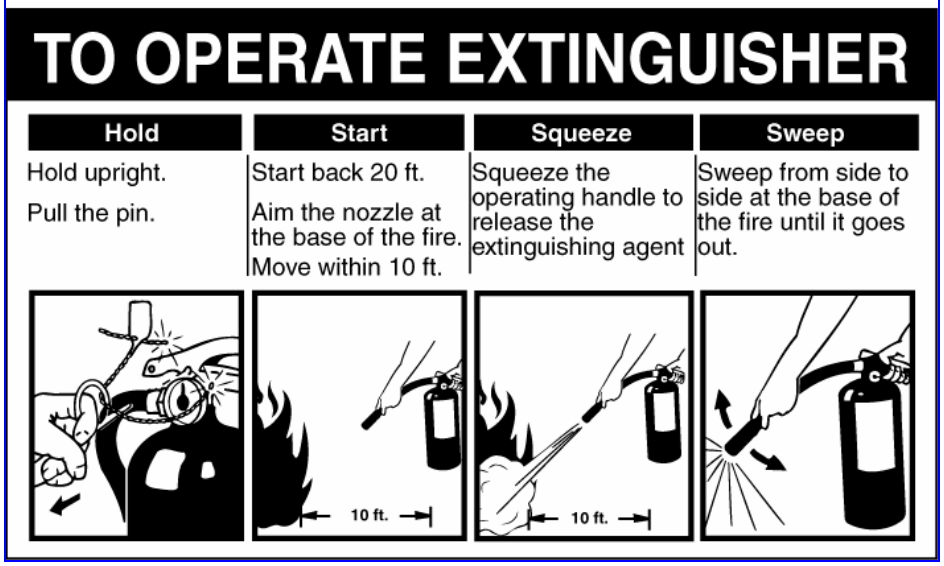


Normal length of ladder (feet)	Overlap (feet)
Up to and including 36	*3*
Over 36, up to and including 48	*4*
Over 48, up to 60	*5*

One foot = 0.30 meters

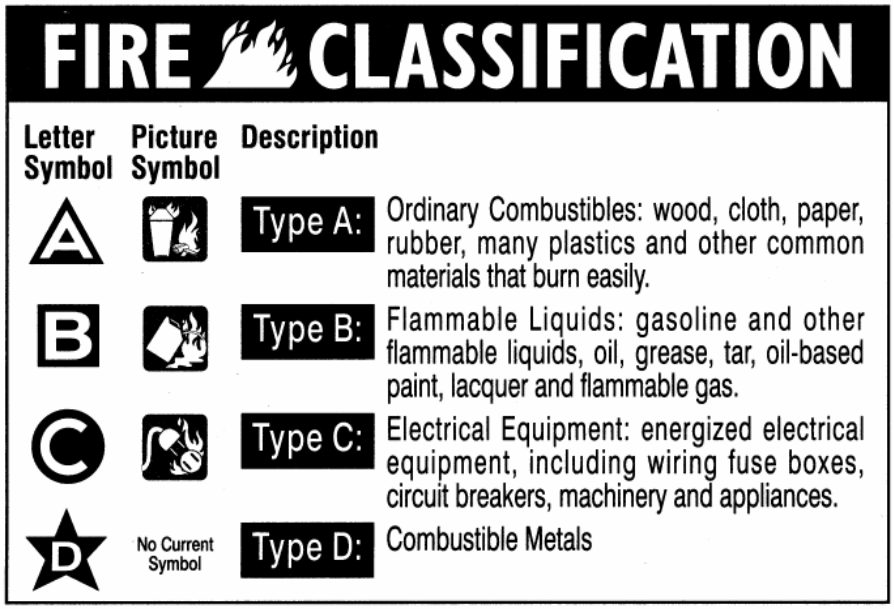
35.11a - Exhibit 01

EXTINGUISHER OPERATION

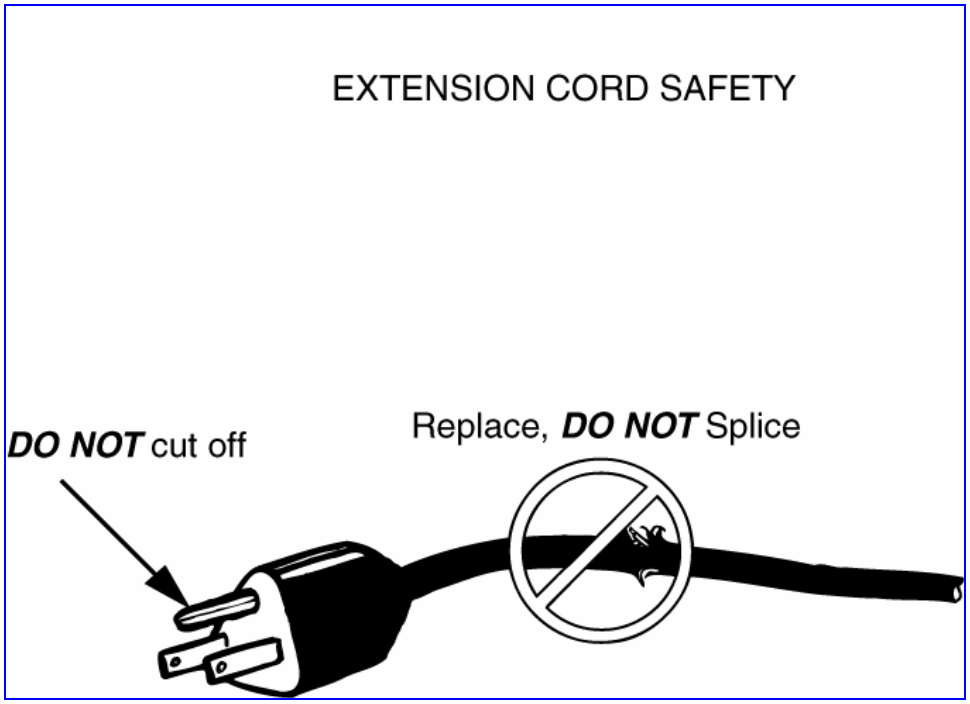


35.11a - Exhibit 02

FIRE CLASSIFICATION



36.13 - Exhibit 01



36.13 - Exhibit 02

WORKING CLEARANCES

	Conditions Minimum Clear Distance (feet)		
Nominal Voltage to Ground	1 **(Feet)**	2 **(Feet)**	3 **(Feet)**
0-150	3	3	3
151-600	3	3-1/2	4

For Sl units: 1 ft = 0.3048 m

Where the conditions are as follows:

1. Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by suitable wood or other insulating materials. Insulated wire or insulated busbars operating at not over 300 volts shall not be considered live parts.

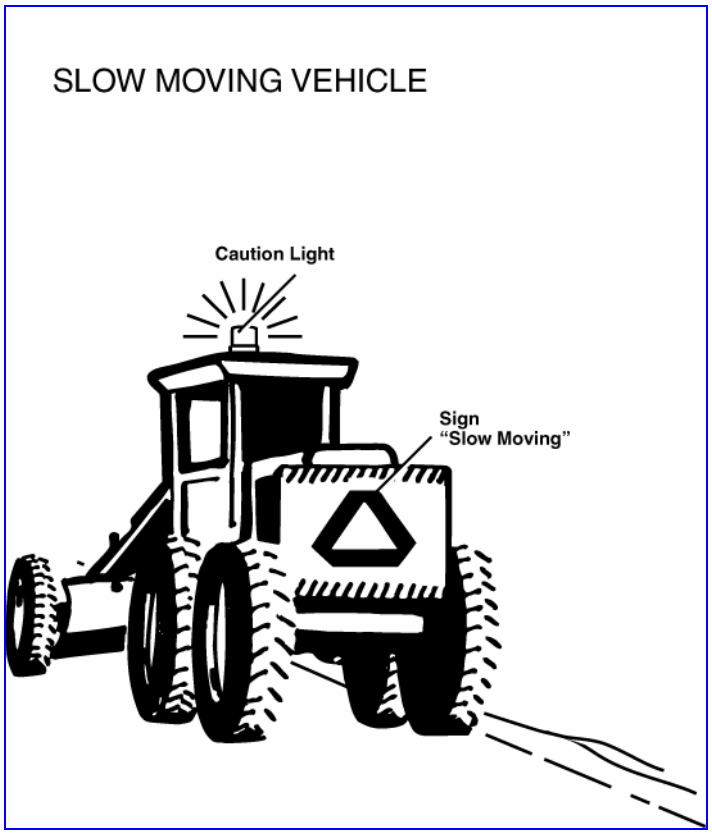
2. Exposed live parts on one side and grounded parts on the other side.

3. Exposed live parts on both sides of the work space (not guarded as provided in Condition 1) with the operator between.

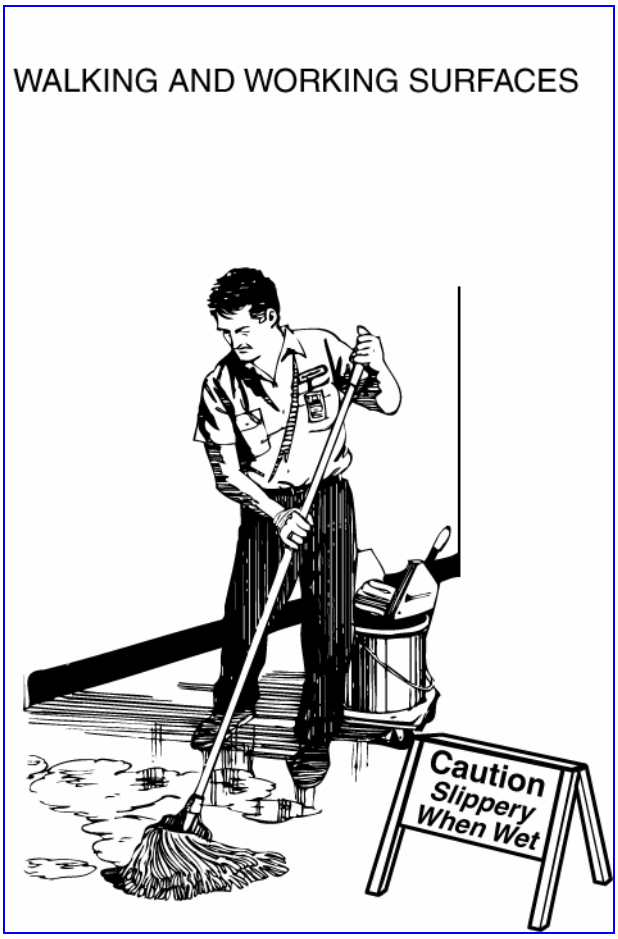
Exception No. 1: Working space shall not be required in back of assemblies such as dead-front switchboards or motor control centers where there are no renewable or adjustable parts such as fuses or switches on the back and where all connections are accessible from locations other than the back. Where rear access is required to work on de-energized parts on the back of enclosed equipment, a minimum working space of 30 in. (762 mm) horizontally shall be provided.

Source: *National Electrical Code Handbook.* 1996

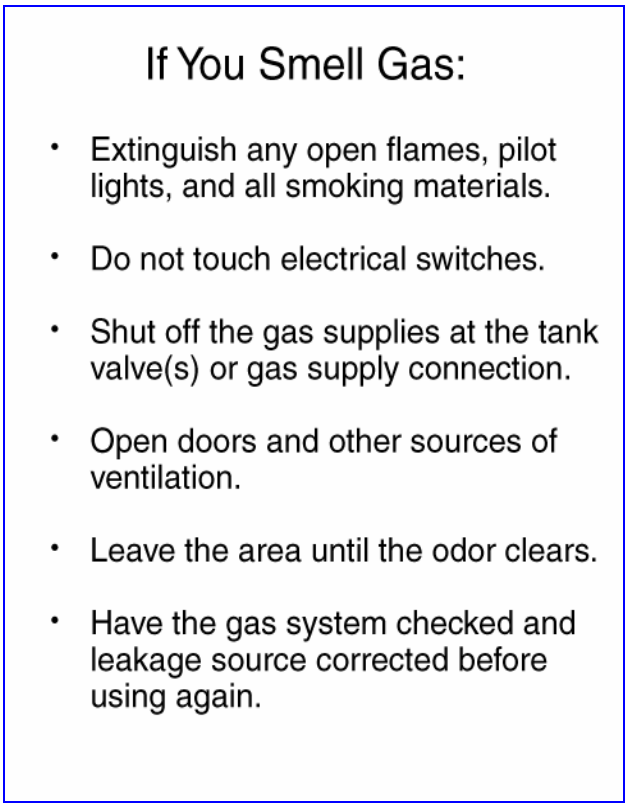
38.12a - Exhibit 01



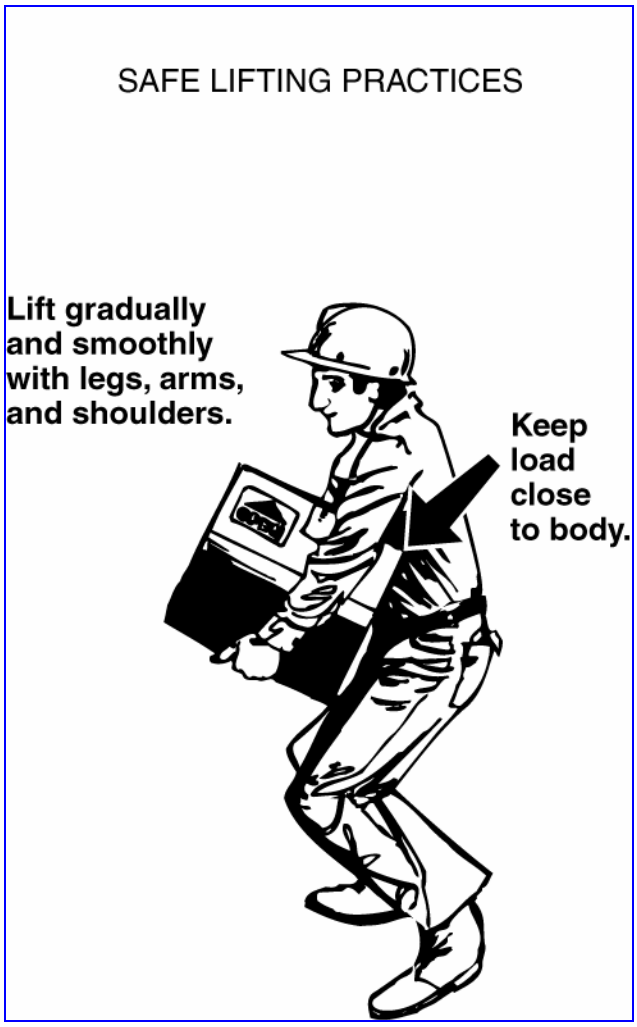
39.13 - Exhibit 01



39.43 - Exhibit 01



39.64 - Exhibit 01



39.9 - Exhibit 01

SUGGESTED FORMAT FOR FACILITIES SAFETY INSPECTION CHECKLIST

District: Missoula Inspector: C. Enstruom Date: _____

Site: Shop Building Name: N/A Number: _____

Official in Charge of Facility: Duane Lumpry — Present During Inspection: Yes X No ___

Employees' Representative: _____ — Yes ___ No **X**

	A[1]	U[1]	N/A[1]	Remarks
1. **Housekeeping**				
a. Clean and free of hazards	__	__	__	
b. Grounds free of weeds and debris	__	__	__	
c. Equipment/furnace/electrical panel rooms	__	__	__	
d. Material storage	__	__	__	
e. Other _____	__	__	__	
2. **Walking and Working Surfaces**				
a. Railings and toeboards	__	__	__	
b. Stairs	__	__	__	
c. Ladders	__	__	__	
d. Safe loadings of shelves, lofts	__	__	__	
e. Free of tripping hazards	__	__	__	
f. Other _____	__	__	__	
3. **Exits and Related Features**				
a. Exit construction, width, number	__	__	__	
b. Exits unobstructed-UFAS[2] compliant	__	__	__	
c. Exit signing and emergency lighting	__	__	__	
d. Interior finishes	__	__	__	
e. Evacuation plan posting and adequacy	__	__	__	
f. Furnishings	__	__	__	
g. Other _____	__	__	__	
4. **Fire Protection**				
a. Fire extinguisher types	__	__	__	
b. Fire extinguisher spacing	__	__	__	
c. Fire extinguisher annual check	__	__	__	
d. Fire ladders	__	__	__	
e. Smoke detectors	__	__	__	
f. Other _____	__	__	__	
5. **Machine Guarding**				
a. Saws, grinders, and other machinery	__	__	__	
b. Eye and face protective devices	__	__	__	
c. Other _____	__	__	__	

6. **Electrical**

a. Service/building main disconnect	__ __ __
b. Circuit breaker identification and size	__ __ __
c. Working space adequate	__ __ __
d. Live parts guarded	__ __ __
e. System grounded	__ __ __
f. Receptacles and polarity	__ __ __
g. Cords, cord connectors, and caps	__ __ __
h. Lighting fixtures, lampholders, lamps	__ __ __
i. Conduit system intact/supported	__ __ __
j. Boxes/cover plates	__ __ __
k. Appliances, motors	__ __ __
l. GFCI[3] protection in proper locations	__ __ __
m. Other _____	__ __ __

7. **Gas Appliances**

a. Gas appliances not used where flammable vapors likely to be present (minimum 18" or 0.46 m above garage floor)	__ __ __
b. Appliances and connectors protected from physical damage	__ __ __
c. Appliances accessible for service	__ __ __
d. Clearance from combustibles	__ __ __
e. Combustion air openings unobstructed	__ __ __
f. Appliance connectors	__ __ __
g. Appliance shut-off valves accessible	__ __ __
h. Vents and vent connectors	__ __ __
i. Return air filters	__ __ __
j. Other _____	__ __ __

8. **LP[4] Gas**

a. Location of containers	__ __ __
b. Clearance from combustibles	__ __ __
c. Protection from vehicles	__ __ __
d. "No Smoking" signs	__ __ __
e. Condition of regulator and pig tail	__ __ __
f. Regulator placement	__ __ __
g. Tank valving	__ __ __
h. Rain cap on pressure relief	__ __ __
i. Tank condition	__ __ __
j. Painting of the tank	__ __ __
k. Other _____	__ __ __

9. **Water Heaters**

a. Pressure and temperature relief valve	__ __ __
b. Water heater anchored or strapped	__ __ __
c. Full way shut off valve	__ __ __
d. 18" (0.46 m) above floor if in garage	__ __ __
e. Appliance and connectors protected from physical damage	__ __ __
f. Clearance from combustibles	__ __ __
g. Combustion air	__ __ __
h. Appliance connector	__ __ __
i. Appliance shut off valve accessible	__ __ __
j. Draft hood in place	__ __ __
k. Vents and vent connectors	__ __ __
l. Other _____	__ __ __

10. **Compressed Gases**

a. Cylinder condition	__ __ __
b. Cylinders secured	__ __ __
c. Other _____	__ __ __

11. **Flammable and Combustible Liquids**

a. Storage containers	__ __ __
b. Storage cabinets	__ __ __
c. Emergency power cutoff (for dispenser)	__ __ __
d. Ignition sources out of hazardous areas	__ __ __
e. Other _____	__ __ __

12. **Roads, Walkways, and Grounds**

a. Sight distance at intersections	__ __ __
b. Vegetation encroachment	__ __ __
c. Signing	__ __ __
d. Hazards in parking areas	__ __ __
e. Speed bumps and water diverters	__ __ __
f. Walkways, ramps and stairs hazard free	__ __ __
g. Drainage around buildings	__ __ __
h. Garbage and trash storage areas	__ __ __
i. Other _____	__ __ __

13. **Plumbing and Water Systems**

a. Cross connections:	
(1) Irrigation systems	__ __ __
(2) Other _____	__ __ __
b. Chlorination	__ __ __
c. Signing and fencing around tanks	__ __ __
d. Toilet ballcocks	__ __ __
e. Other _____	__ __ __

14. **Miscellaneous**

a. First aid supplies readily available	__ __ __
b. Woodstove chimneys properly maintained	__ __ __
c. Woodstove clearance from combustibles	__ __ __
d. OSHA posters	__ __ __
e. Personal protective equipment	__ __ __
f. "Caution, Danger" signs	__ __ __
g. Bookcases, tall cabinets anchored	__ __ __
h. Noise levels	__ __ __
i. Hazardous materials	__ __ __
j. Other _____	__ __ __

[1]A = Acceptable; U = Unacceptable (provide explanation); N/A = Not Applicable.

[2]UFAS: Uniform Federal Accessibility Standards

[3]GFCI: Ground-fault circuit interrupter

[4]LP: Liquid petroleum