



DEPARTMENT OF LABOR AND ECONOMIC OPPORTUNITY

CONSTRUCTION STANDARD

Filed with the Secretary of State on January 1, 1975 (as amended November 19, 2014)
(as amended December 12, 2018)

These rules become effective immediately upon filing with the secretary of state unless adopted under section 33, 44, or 45a(6) of the administrative procedures act of 1969, 1969 PA 306, MCL 24.233, 24.244, or 24.245a.

Rules adopted under these sections become effective 7 days after filing with the secretary of state.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 14, 16, 19, 21, and 24 of the Michigan occupational safety and health act, 1974 PA 154, MCL 408.1014, 408.1016, 408.1019, 408.1021, and 408.1024, and Executive Reorganization Order Nos. 1996-1, 1996-2, 2003-1, 2008-4, and 2011-4, MCL 330.3101, 445.2001, 445.2011, 445.2025, and 445.2030)

R 325.62102 of the Michigan Administrative Code is amended, and R 325.62104, R 325.62105, R 325.62106, R 325.62107, R 325.62108, R 325.62109, R 325.62110, R 325.62115, R 325.62116, R 325.62117, R 325.62118, R 325.62119, R 325.62120, R 325.62125, R 325.62126 are rescinded, as follows:

**PART 621, HEALTH HAZARD CONTROL FOR SPECIFIC EQUIPMENT
AND OPERATIONS FOR CONSTRUCTION**

Table of Contents:

R 325.62102 Adoption And Availability Of Standards	2	1926.350(f) Hose.....	13
		1926.350(g) Torches.....	13
		1926.350(h) Regulators and Gauges.....	13
		1926.350(i) Oil and Grease Hazards.....	13
		1926.350(j) Additional Rules.....	14
1926.154 - Temporary Heating Devices	4	1926.353 - Ventilation and Protection In Welding, Cutting, and Heating	15
1926.154(a) Ventilation.....	4	1926.353(a) Mechanical Ventilation.....	15
1926.154(b) Clearance and Mounting.....	4	1926.353(b) Welding, Cutting, and Heating in Confined Spaces.....	15
1926.154(c) Stability.....	4	1926.353(c) Welding, Cutting, or Heating of Metals of Toxic Significance.....	15
1926.154(d) Solid Fuel Salamanders.....	4	1926.353(d) Inert-Gas Metal-Arc Welding.....	16
1926.154(e) Oil-Fired Heaters.....	4	1926.353(e) General Welding, Cutting, and Heating.....	16
1926.300 - General Requirements	5	1926.354 - Welding, Cutting, and Heating In Way Of Preservative Coatings	17
1926.300(a) Condition Of Tools.....	5	1926.400 – Introduction	18
1926.300(b) Guarding.....	5	1926.400(a) Installation Safety Requirements.....	18
1926.300(c) Personal Protective Equipment.....	9	1926.400(b) Safety-Related Work Practices.....	18
1926.300(d) Switches.....	9	1926.400(c) Safety-Related Maintenance and Environmental Considerations.....	18
1926.302 - Power-Operated Hand Tools	10	1926.400(d) Safety Requirements For Special Equipment.....	18
1926.302(a) Electric Power-Operated Tools.....	10	1926.400(e) Definitions.....	18
1926.302(b) Pneumatic Power Tools.....	10	1926.403 - General Requirements	19
1926.302(c) Fuel Powered Tools.....	10	1926.403(a) Approval.....	19
1926.302(d) Hydraulic Power Tools.....	10	1926.403(b) Examination, Installation, and Use Of Equipment.....	19
1926.302(e) Powder-Actuated Tools.....	10		
1926.350 - Gas Welding and Cutting	12		
1926.350(a) Transporting, Moving, and Storing Compressed Gas Cylinders.....	12		
1926.350(b) Placing Cylinders.....	12		
1926.350(c) Treatment Of Cylinders.....	12		
1926.350(d) Use Of Fuel Gas.....	12		
1926.350(e) Fuel Gas and Oxygen Manifolds.....	13		

1926.403(c) Interrupting Rating.....	19
1926.403(d) Mounting and Cooling Of Equipment.	19
1926.403(e) Splices.....	19
1926.403(f) Arcing Parts.....	19
1926.403(g) Marking.....	19
1926.403(h) Identification Of Disconnecting Means and Circuits.	19
1926.403(i) 600 Volts, Nominal, Or Less.....	20
1926.403(j) Over 600 Volts, Nominal.	21

1926.600 – Equipment	23
1926.600(a) General Requirements.	23
1926.605 - Marine Operations and Equipment	24
1926.605(a) Material Handling Operations.....	24
1926.605(b) Access To Barges.....	24
1926.605(c) Working Surfaces Of Barges.	24
1926.605(d) First-Aid and Lifesaving Equipment....	24
1926.605(e) Commercial Diving Operations.....	24
1926.850 - Preparatory Operations	25
1926.910 - Inspection After Blasting	26
1926.914 - Definitions Applicable To This Subpart	27
1926.950 - General	29
1926.950(a) Application.	29
1926.950(b) Training.	29
1926.950(c) Information Transfer.	30
1926.950(d) Existing Characteristics and Conditions.	31

R 325.62102. Adoption and availability of standards

Rule 62102. (1) The following federal Occupational Safety and Health Administration (OSHA) regulations are adopted by reference in these rules:

(a) 29 CFR 1926.154 “Temporary heating devices,” as in effect as of the effective date of these rules.

(b) 29 CFR 1926.300 “General requirements,” as amended March 7, 1996.

(c) 29 CFR 1926.302 “Power-operated hand tools,” as amended June 30, 1993.

(d) 29 CFR 1926.350 “Gas welding and cutting,” as amended June 30, 1993.

(e) 29 CFR 1926.353 “Ventilation and protection in welding, cutting, and heating,” as amended June 30, 1993.

(f) 29 CFR 1926.354 “Welding, cutting, and heating in way of preservative coatings,” as in effect as of the effective date of these rules.

(g) 29 CFR 1926.400 “Introduction,” as in effect as of the effective date of these rules.

(h) 29 CFR 1926.403 “General requirements,” as amended February 13, 1996.

(i) 29 CFR 1926.600 “Equipment,” as amended August 9, 2010.

(j) 29 CFR 1926.605 “Marine operations and equipment,” as amended July 22, 1977.

(k) 29 CFR 1926.850 “Preparatory operations,” as in effect as of the effective date of these rules.

(l) 29 CFR 1926.910 “Inspection after blasting,” as in effect as of the effective date of these rules.

(m) 29 CFR 1926.914 “Definitions applicable to this subpart,” as amended June 30, 1993.

(n) 29 CFR 1926.950 “General,” as amended October 5, 2015.

(2) A reference to 29 CFR part 1926 subpart D “Occupational Health and Environmental Controls,” means the following MIOSHA standards:

(a) Construction Safety Standard Part 1. “General Rules.”

(b) Construction Safety Standard Part 42. “Hazard Communication.”

(c) Occupational Health Standard Part 601. “Air Contaminants for Construction.”

(d) Construction Safety and Health Standard Part 603. “Lead Exposure in Construction.”

(e) Construction Safety and Health Standard Part 620. “Ventilation Control for Construction.”

(f) General Industry Safety Standard Part 76. “Spray Finishing Using Flammable and Combustible Materials.”

(g) General Industry Safety and Health Standard Part 303. “Methylenedianiline (MDA) in General Industry.”

(h) General Industry and Construction Safety and Health Standard Part 432. “Hazardous Waste Operations and Emergency Response.”

(i) Occupational Health Standard Part 430. “Hazard Communication.”

(j) Occupational Health Standard Part 591. “Process Safety Management of Highly Hazardous Chemicals.”

(k) Occupational Health Standard Part 680. “Noise Exposure.”

(l) Occupational Health Standard Part 681. “Radiation in Construction: Ionizing and Nonionizing.”

(3) A reference to 29 CFR part 1926 subpart E “Personal Protective and Life Saving Equipment,” means the following standards:

(a) Construction Safety and Health Standard Part 6. “Personal Protective Equipment.”

(b) Occupational Health Standard Part 451. “Respiratory Protection.”

(c) Occupational Health Standard Part 680. “Noise Exposure.”

(4) A reference to 29 CFR part 1926 subpart K “Electrical,” means Construction Safety Standard Part 17. “Electrical Installations.”

(5) A reference to 29 CFR 1926.901 means Construction Safety Standard Part 27. “Blasting and Use of Explosives.”

(6) A reference to 29 CFR 1910.269 means General Industry Safety and Health Standard Part 86. “Electric Power Generation, Transmission, and Distribution.”

(7) A reference to 29 CFR part 1910 subpart T “Commercial Diving Operations,” means Occupational Health Standard Part 504. “Diving Operations.”

(8) The adopted federal regulations have the same force and effect as a rule promulgated under the Michigan occupational safety and health act, 1974 PA 154, MCL 408.1001 to 408.1094.

(9) The OSHA regulations adopted in these rules are available from the United States Department of Labor, Occupational Safety and Health Administration website, www.osha.gov, at no charge, as of the time of adoption of these rules.

(10) The regulations adopted in these rules are available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143.

(11) The regulations adopted in these rules may be obtained from the publisher or the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost charged in this rule, plus \$20.00 for shipping and handling.

(12) The following Michigan Occupational Safety and Health Administration (MIOSHA) standards are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143 or via the internet at the following website: www.michigan.gov/mioshastandards. For quantities greater than 5, the cost, at the time of adoption of these rules, is 4 cents per page.

(a) Construction Safety Standard Part 1. “General Rules,” R 408.40101 to R 408.40134.

(b) Construction Safety Standard Part 17. “Electrical Installations,” R 408.41701 to R 408.41734.

(c) Construction Safety Standard Part 27. “Blasting and Use of Explosives,” R 408.42701 to R 408.42799.

(d) Construction Safety Standard Part 42. “Hazard Communication,” R 408.44201 to R 408.44204.

(e) Construction Safety and Health Standard Part 6. “Personal Protective Equipment,” R 408.40601 to R 408.40660.

(f) Occupational Health Standard Part 601. “Air Contaminants for Construction,” R 325.60151 to R 325.60161.

(g) Construction Safety and Health Standard Part 603. “Lead Exposure in Construction,” R 325.51983 to R 325.51993.

(h) Construction Safety and Health Standard Part 620. “Ventilation Control for Construction,” R 325.62001 to R 325.62006.

(i) General Industry Safety Standard Part 76. “Spray Finishing Using Flammable and Combustible Materials,” R 408.17601 to R 408.17699.

(j) General Industry Safety and Health Standard Part 86. “Electric Power Generation, Transmission, and Distribution,” R 408.18601 to R 408.18610.

(k) General Industry Safety and Health Standard Part 303. “Methylenedianiline (MDA) in General Industry,” R 325.50051 to R 325.50076.

(l) General Industry and Construction Safety and Health Standard Part 432. Hazardous Waste Operations and Emergency Response,” R 325.52101 to R 325.52137.

(m) Occupational Health Standard Part 430. “Hazard Communication,” R 325.77001 to R 325.77004.

(n) Occupational Health Standard Part 451. “Respiratory Protection,” R 325.60051 to R 325.60052.

(o) Occupational Health Standard Part 504. “Diving Operations,” R 325.50301 to R 325.50348.

(p) Occupational Health Standard Part 591. “Process Safety Management of Highly Hazardous Chemicals,” R 325.18301 to R 325.18303.

(q) Occupational Health Standard Part 680. “Noise Exposure,” R 325.60131 to R 325.60131.

(r) Occupational Health Standard Part 681. “Radiation in Construction: Ionizing and Nonionizing,” R 325.68101 to R 325.68102.

R 325.62104 Rescinded. R 325.62116 Rescinded.

R 325.62105 Rescinded. R 325.62117 Rescinded.

R 325.62106 Rescinded. R 325.62118 Rescinded.

R 325.62107 Rescinded. R 325.62119 Rescinded.

R 325.62108 Rescinded. R 325.62120 Rescinded.

R 325.62109 Rescinded. R 325.62125 Rescinded.

R 325.62110 Rescinded. R 325.62126 Rescinded.

R 325.62115 Rescinded.

1926.154 - TEMPORARY HEATING DEVICES

1926.154(a) Ventilation.

1926.154(a)(1) Fresh air shall be supplied in sufficient quantities to maintain the health and safety of workmen. Where natural means of fresh air supply is inadequate, mechanical ventilation shall be provided.

1926.154(a)(2) When heaters are used in confined spaces, special care shall be taken to provide sufficient ventilation in order to ensure proper combustion, maintain the health and safety of workmen, and limit temperature rise in the area.

1926.154(b) Clearance and mounting.

1926.154(b)(1) Temporary heating devices shall be installed to provide clearance to combustible material not less than the amount shown in Table F-4.

1926.154(b)(2) Temporary heating devices, which are listed for installation with lesser clearances than specified in Table F-4, may be installed in accordance with their approval.

TABLE F-4			
	Minimum clearance, (inches)		
Heating appliances	Sides	Rear	Chimney Connector
Room heater, circulating type	12	12	18
Room heater, radiant type	36	36	18

1926.154(b)(3) Heaters not suitable for use on wood floors shall not be set directly upon them or other combustible materials. When such heaters are used, they shall rest on suitable heat insulating material or at least 1-inch concrete, or equivalent. The insulating material shall extend beyond the heater 2 feet or more in all directions.

1926.154(b)(4) Heaters used in the vicinity of combustible tarpaulins, canvas, or similar coverings shall be located at least 10 feet from the coverings. The coverings shall be securely fastened to prevent ignition or upsetting of the heater due to wind action on the covering or other material.

1926.154(c) Stability.

Heaters, when in use, shall be set horizontally level, unless otherwise permitted by the manufacturer's markings.

1926.154(d) Solid fuel salamanders.

Solid fuel salamanders are prohibited in buildings and on scaffolds.

1926.154(e) Oil-fired heaters.

1926.154(e)(1) Flammable liquid-fired heaters shall be equipped with a primary safety control to stop the flow of fuel in the event of flame failure. Barometric or gravity oil feed shall not be considered a primary safety control.

1926.154(e)(2) Heaters designed for barometric or gravity oil feed shall be used only with the integral tanks.

1926.154(e)(3) [Reserved]

1926.154(e)(4) Heaters specifically designed and approved for use with separate supply tanks may be directly connected for gravity feed, or an automatic pump, from a supply tank.

1926.300 - GENERAL REQUIREMENTS

1926.300(a) Condition of tools.

All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition.

1926.300(b) Guarding.

1926.300(b)(1) When power operated tools are designed to accommodate guards, they shall be equipped with such guards when in use.

1926.300(b)(2) Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating or moving parts of equipment shall be guarded if such parts are exposed to contact by employees or otherwise create a hazard. Guarding shall meet the requirements as set forth in American National Standards Institute, B15.1-1953 (R1958), Safety Code for Mechanical Power-Transmission Apparatus.

1926.300(b)(3) "Types of guarding." One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks. Examples of guarding methods are - barrier guards, two-hand tripping devices, electronic safety devices, etc.

1926.300(b)(4) "Point of operation guarding."

1926.300(b)(4)(i) Point of operation is the area on a machine where work is actually performed upon the material being processed.

1926.300(b)(4)(ii) The point of operation of machines whose operation exposes an employee to injury, shall be guarded. The guarding device shall be in conformity with any appropriate standards therefor, or, in the absence of applicable specific standards, shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle.

1926.300(b)(4)(iii) Special hand tools for placing and removing material shall be such as to permit easy handling of material without the operator placing a hand in the danger zone. Such tools shall not be in lieu of other guarding required by this section, but can only be used to supplement protection provided.

1926.300(b)(4)(iv) The following are some of the machines which usually require point of operation guarding:

1926.300(b)(4)(iv)(a) Guillotine cutters.

1926.300(b)(4)(iv)(b) Shears.

1926.300(b)(4)(iv)(c) Alligator shears.

1926.300(b)(4)(iv)(d) Powered presses.

1926.300(b)(4)(iv)(e) Milling machines.

1926.300(b)(4)(iv)(f) Power saws.

1926.300(b)(4)(iv)(g) Jointers.

1926.300(b)(4)(iv)(h) Portable power tools.

1926.300(b)(4)(iv)(i) Forming rolls and calenders.

1926.300(b)(5) "Exposure of blades." When the periphery of the blades of a fan is less than 7 feet (2.128 m) above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than 1/2 inch (1.27 cm).

1926.300(b)(6) "Anchoring fixed machinery." Machines designed for a fixed location shall be securely anchored to prevent walking or moving.

1926.300(b)(7) "Guarding of abrasive wheel machinery - exposure adjustment." Safety guards of the types described in paragraphs (b)(8) and (9) of this section, where the operator stands in front of the opening, shall be constructed so that the peripheral protecting member can be adjusted to the constantly decreasing diameter of the wheel. The maximum angular exposure above the horizontal plane of the wheel spindle as specified in paragraphs (b)(8) and (9) of this section shall never be exceeded, and the distance between the wheel periphery and the adjustable tongue or the end of the peripheral member at the top shall never exceed 1/4 inch (0.635 cm). (See Figures I-1 through I-6.)

Figure I-1 and I-2

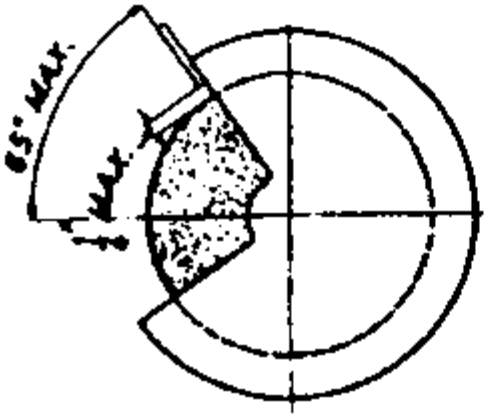


Figure I-1

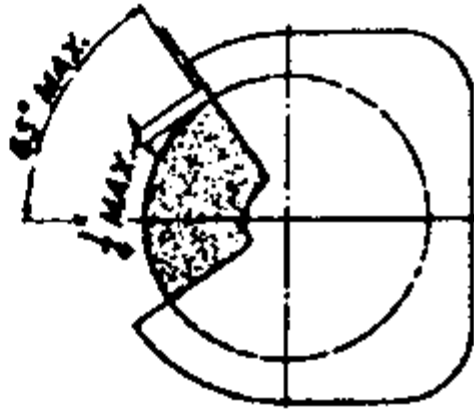


Figure I-2

Correct

Showing adjustable tongue giving required angle protection for all sizes of wheel used.

Figure I-3 and I-4

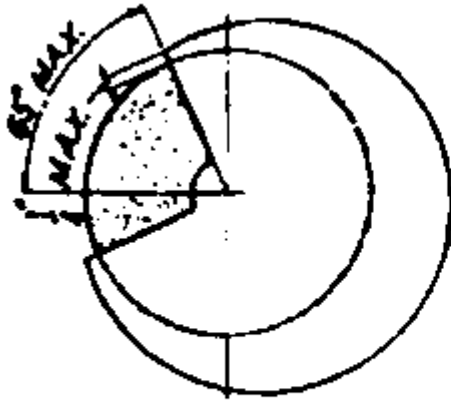


Figure I-3

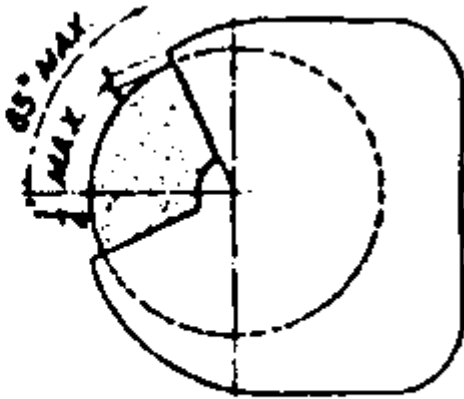


Figure I-4

Correct

Showing movable guard with opening small enough to give required protection for the smallest size wheel used.

Figure I-5 and I-6

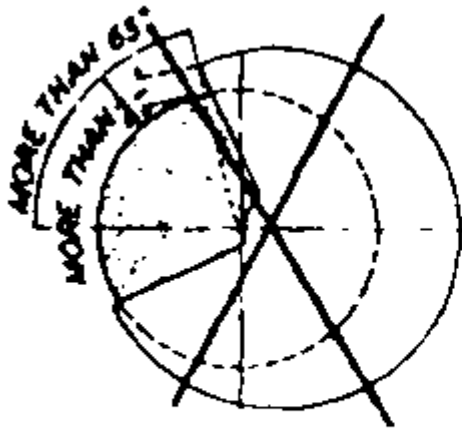


Figure I-5

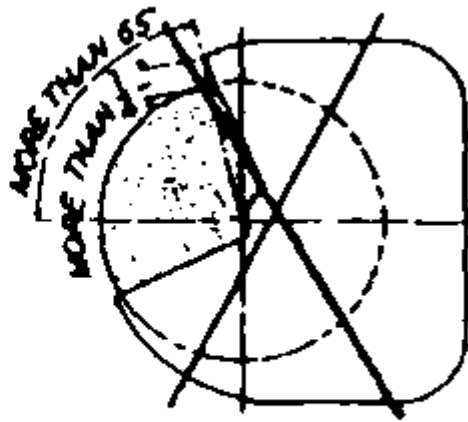


Figure I-6

Incorrect

Showing movable guard with size of opening correct for full size wheel but too large for smaller wheel.

1926.300(b)(8) Bench and floor stands. The angular exposure of the grinding wheel periphery and sides for safety guards used on machines known as bench and floor stands should not exceed 90 deg. or one-fourth of the periphery. This exposure shall begin at a point not more than 65 deg. above the horizontal plane of the wheel spindle. (See Figures I-7 and I-8 and paragraph (b)(7) of this section.)

Figure I-7 and I-8

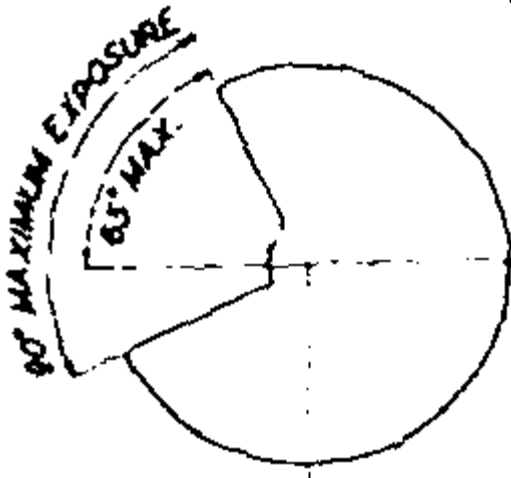


Figure I-7

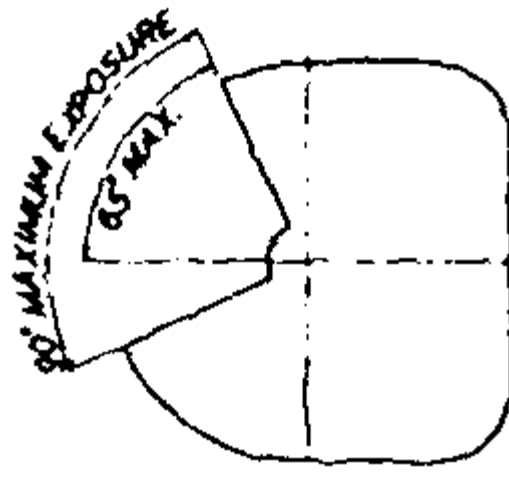


Figure I-8

Whenever the nature of the work requires contact with the wheel below the horizontal plane of the spindle, the exposure shall not exceed 125 deg. (See Figures I-9 and I-10.)

Figure I-9 and I-10

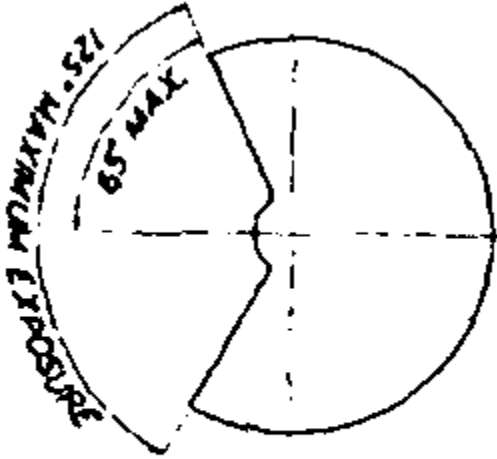


Figure I-9

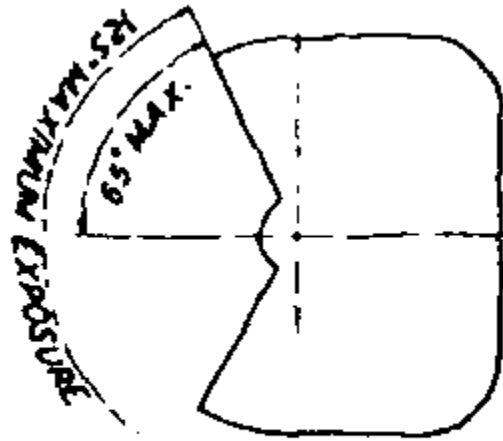


Figure I-10

1926.300(b)(9) Cylindrical grinders. The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on cylindrical grinding machines shall not exceed 180 deg.. This exposure shall begin at a point not more than 65 deg. above the horizontal plane of the wheel spindle. (See Figures I-11 and I-12 and paragraph (b)(7) of this section.)

Figure I-11 and I-12)

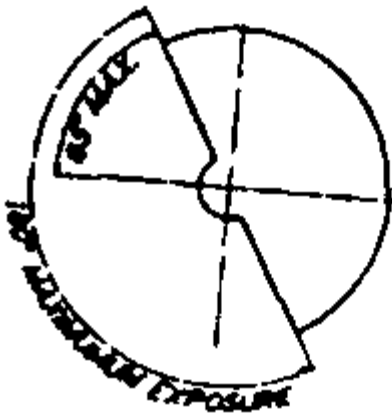


Figure I-11

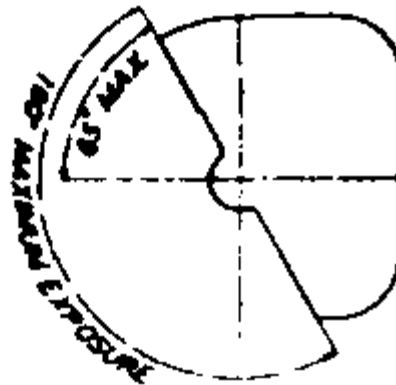


Figure I-12

1926.300(c) Personal protective equipment.

Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases shall be provided with the particular personal protective equipment necessary to protect them from the hazard. All personal protective equipment shall meet the requirements and be maintained according to Subparts D and E of this part.

1926.300(d) Switches.

1926.300(d)(1) All hand-held powered platen sanders, grinders with wheels 2-inch diameter or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws, and jigsaws with blade shanks one-fourth of an inch wide or less may be equipped with only a positive "on-off" control.

1926.300(d)(2) All hand-held powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches in diameter, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar operating powered tools shall be equipped with a momentary contact "on-off" control and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

1926.300(d)(3) All other hand-held powered tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means, shall be equipped with a constant pressure switch that will shut off the power when the pressure is released.

1926.300(d)(4) The requirements of this paragraph shall become effective on July 15, 1972.

1926.300(d)(5) Exception: This paragraph does not apply to concrete vibrators, concrete breakers, powered tampers, jack hammers, rock drills, and similar hand operated power tools.

[58 FR 35175, June 30, 1993; 61 FR 9227, March 7, 1996]

1926.302 - POWER-OPERATED HAND TOOLS

1926.302(a) Electric power-operated tools.

1926.302(a)(1) Electric power operated tools shall either be of the approved double-insulated type or grounded in accordance with Subpart K of this part.

1926.302(a)(2) The use of electric cords for hoisting or lowering tools shall not be permitted.

1926.302(b) Pneumatic power tools.

1926.302(b)(1) Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

1926.302(b)(2) Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

1926.302(b)(3) All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 p.s.i. pressure at the tool shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.

1926.302(b)(4) Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment which meets the requirements of Subpart E of this part. The 30 p.s.i. requirement does not apply for concrete form, mill scale and similar cleaning purposes.

1926.302(b)(5) The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded,

1926.302(b)(6) The use of hoses for hoisting or lowering tools shall not be permitted.

1926.302(b)(7) All hoses exceeding 1/2-inch inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.

1926.302(b)(8) Airless spray guns of the type which atomize paints and fluids at high pressures (1,000 pounds or more per square inch) shall be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger to prevent release of the paint or fluid until the safety device is manually released.

1926.302(b)(9) In lieu of the above, a diffuser nut which will prevent high pressure, high velocity release, while the nozzle tip is removed, plus a nozzle tip guard which will prevent the tip from coming into contact with the operator, or other equivalent protection, shall be provided.

1926.302(b)(10) "Abrasive blast cleaning nozzles." The blast cleaning nozzles shall be equipped with an operating valve which must be held open manually. A support shall be provided on which the nozzle may be mounted when it is not in use.

1926.302(c) Fuel powered tools.

1926.302(c)(1) All fuel powered tools shall be stopped while being refueled, serviced, or maintained, and fuel shall be transported, handled, and stored in accordance with Subpart F of this part.

1926.302(c)(2) When fuel powered tools are used in enclosed spaces, the applicable requirements for concentrations of toxic gases and use of personal protective equipment, as outlined in Subparts D and E of this part, shall apply.

1926.302(d) Hydraulic power tools.

1926.302(d)(1) The fluid used in hydraulic powered tools shall be fire-resistant fluids approved under Schedule 30 of the U.S. Bureau of Mines, Department of the Interior, and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed.

1926.302(d)(2) The manufacturer's safe operating pressures for hoses, valves, pipes, filters, and other fittings shall not be exceeded.

1926.302(e) Powder-actuated tools.

1926.302(e)(1) Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool.

1926.302(e)(2) The tool shall be tested each day before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer's recommended procedure.

1926.302(e)(3) Any tool found not in proper working order, or that develops a defect during use, shall be immediately removed from service and not used until properly repaired.

1926.302(e)(4) Personal protective equipment shall be in accordance with Subpart E of this part.

1926.302(e)(5) Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any employees. Hands shall be kept clear of the open barrel end.

1926.302(e)(6) Loaded tools shall not be left unattended.

1926.302(e)(7) Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.

1926.302(e)(8) Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the other side.

1926.302(e)(9) No fastener shall be driven into a spalled area caused by an unsatisfactory fastening.

1926.302(e)(10) Tools shall not be used in an explosive or flammable atmosphere.

1926.302(e)(11) All tools shall be used with the correct shield, guard, or attachment recommended by the manufacturer.

1926.302(e)(12) Powder-actuated tools used by employees shall meet all other applicable requirements of American National Standards Institute, A10.3-1970, Safety Requirements for Explosive-Actuated Fastening Tools.

[53 FR 36009, Sept. 16, 1988; 58 FR 35175, June 30, 1993]

1926.350 - GAS WELDING AND CUTTING

1926.350(a) Transporting, moving, and storing compressed gas cylinders.

1926.350(a)(1) Valve protection caps shall be in place and secured.

1926.350(a)(2) When cylinders are hoisted, they shall be secured on a cradle, slingboard, or pallet. They shall not be hoisted or transported by means of magnets or choker slings.

1926.350(a)(3) Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dropped, struck, or permitted to strike each other violently.

1926.350(a)(4) When cylinders are transported by powered vehicles, they shall be secured in a vertical position.

1926.350(a)(5) Valve protection caps shall not be used for lifting cylinders from one vertical position to another. Bars shall not be used under valves or valve protection caps to pry cylinders loose when frozen. Warm, not boiling, water shall be used to thaw cylinders loose.

1926.350(a)(6) Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators shall be removed and valve protection caps put in place before cylinders are moved.

1926.350(a)(7) A suitable cylinder truck, chain, or other steadying device shall be used to keep cylinders from being knocked over while in use.

1926.350(a)(8) When work is finished, when cylinders are empty, or when cylinders are moved at any time, the cylinder valve shall be closed.

1926.350(a)(9) Compressed gas cylinders shall be secured in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried.

1926.350(a)(10) Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet (6.1 m) or by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.

1926.350(a)(11) Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 feet (6.1 m) from highly combustible materials such as oil or excelsior. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways. Assigned storage places shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

1926.350(a)(12) The in-plant handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tankcars, or motor vehicle cargo tanks shall be in accordance with Compressed Gas Association Pamphlet P-1-1965.

1926.350(b) Placing cylinders.

1926.350(b)(1) Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them. When this is impractical, fire resistant shields shall be provided.

1926.350(b)(2) Cylinders shall be placed where they cannot become part of an electrical circuit. Electrodes shall not be struck against a cylinder to strike an arc.

1926.350(b)(3) Fuel gas cylinders shall be placed with valve end up whenever they are in use. They shall not be placed in a location where they would be subject to open flame, hot metal, or other sources of artificial heat.

1926.350(b)(4) Cylinders containing oxygen or acetylene or other fuel gas shall not be taken into confined spaces.

1926.350(c) Treatment of cylinders.

1926.350(c)(1) Cylinders, whether full or empty, shall not be used as rollers or supports.

1926.350(c)(2) No person other than the gas supplier shall attempt to mix gases in a cylinder. No one except the owner of the cylinder or person authorized by him, shall refill a cylinder. No one shall use a cylinder's contents for purposes other than those intended by the supplier. All cylinders used shall meet the Department of Transportation requirements published in 49 CFR Part 178, Subpart C, Specification for Cylinders.

1926.350(c)(3) No damaged or defective cylinder shall be used.

1926.350(d) Use of fuel gas.

The employer shall thoroughly instruct employees in the safe use of fuel gas, as follows:

1926.350(d)(1) Before a regulator to a cylinder valve is connected, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve shall stand to one side of the outlet, not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work, sparks, flame, or other possible sources of ignition.

1926.350(d)(2) The cylinder valve shall always be opened slowly to prevent damage to the regulator. For quick closing, valves on fuel gas cylinders shall not be opened more than 1 1/2 turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

1926.350(d)(3) Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

1926.350(d)(4) Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.

1926.350(d)(5) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, and it shall be properly tagged and removed from the work area. In the event that fuel gas should leak from the cylinder valve, rather than from the valve stem, and the gas cannot be shut off, the cylinder shall be properly tagged and removed from the work area. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat, the cylinder need not be removed from the work area.

1926.350(d)(6) If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the work area.

1926.350(e) Fuel gas and oxygen manifolds.

1926.350(e)(1) Fuel gas and oxygen manifolds shall bear the name of the substance they contain in letters at least 1-inch high which shall be either painted on the manifold or on a sign permanently attached to it.

1926.350(e)(2) Fuel gas and oxygen manifolds shall be placed in safe, well ventilated, and accessible locations. They shall not be located within enclosed spaces.

1926.350(e)(3) Manifold hose connections, including both ends of the supply hose that lead to the manifold, shall be such that the hose cannot be interchanged between fuel gas and oxygen manifolds and supply header connections. Adapters shall not be used to permit the interchange of hose. Hose connections shall be kept free of grease and oil.

1926.350(e)(4) When not in use, manifold and header hose connections shall be capped.

1926.350(e)(5) Nothing shall be placed on top of a manifold, when in use, which will damage the manifold or interfere with the quick closing of the valves.

1926.350(f) Hose.

1926.350(f)(1) Fuel gas hose and oxygen hose shall be easily distinguishable from each other. The contrast may be made by different colors or by surface characteristics readily distinguishable by the sense of touch. Oxygen and fuel gas hoses shall not be interchangeable. A single hose having more than one gas passage shall not be used.

1926.350(f)(2) When parallel sections of oxygen and fuel gas hose are taped together, not more than 4 inches out of 12 inches shall be covered by tape.

1926.350(f)(3) All hose in use, carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter into combustion, or be in any way harmful to employees, shall be inspected at the beginning of each working shift. Defective hose shall be removed from service.

1926.350(f)(4) Hose which has been subject to flashback, or which shows evidence of severe wear or damage, shall be tested to twice the normal pressure to which it is subject, but in no case less than 300 p.s.i. Defective hose, or hose in doubtful condition, shall not be used.

1926.350(f)(5) Hose couplings shall be of the type that cannot be unlocked or disconnected by means of a straight pull without rotary motion.

1926.350(f)(6) Boxes used for the storage of gas hose shall be ventilated.

1926.350(f)(7) Hoses, cables, and other equipment shall be kept clear of passageways, ladders and stairs.

1926.350(g) Torches.

1926.350(g)(1) Clogged torch tip openings shall be cleaned with suitable cleaning wires, drills, or other devices designed for such purpose.

1926.350(g)(2) Torches in use shall be inspected at the beginning of each working shift for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall not be used.

1926.350(g)(3) Torches shall be lighted by friction lighters or other approved devices, and not by matches or from hot work.

1926.350(h) Regulators and gauges.

Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use.

1926.350(i) Oil and grease hazards.

Oxygen cylinders and fittings shall be kept away from oil or grease. Cylinders, cylinder caps and valves, couplings, regulators, hose, and apparatus shall be kept free from oil or greasy substances and shall not be handled with oily hands or gloves. Oxygen shall not be directed at oily surfaces, greasy clothes, or within a fuel oil or other storage tank or vessel.

1926.350(j) Additional rules.

For additional details not covered in this subpart, applicable technical portions of American National Standards Institute, Z49.1-1967, Safety in Welding and Cutting, shall apply.

[44 FR 8577, Feb. 9, 1979; 44 FR 20940, Apr. 6, 1979, as amended at 55 FR 42328, Oct. 18, 1990; 58 FR 35179, June 30, 1993]

1926.353 - VENTILATION AND PROTECTION IN WELDING, CUTTING, AND HEATING

1926.353(a) Mechanical ventilation.

For purposes of this section, mechanical ventilation shall meet the following requirements:

1926.353(a)(1) Mechanical ventilation shall consist of either general mechanical ventilation systems or local exhaust systems.

1926.353(a)(2) General mechanical ventilation shall be of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fumes and smoke within safe limits, as defined in Subpart D of this part.

1926.353(a)(3) Local exhaust ventilation shall consist of freely movable hoods intended to be placed by the welder or burner as close as practicable to the work. This system shall be of sufficient capacity and so arranged as to remove fumes and smoke at the source and keep the concentration of them in the breathing zone within safe limits as defined in Subpart D of this part.

1926.353(a)(4) Contaminated air exhausted from a working space shall be discharged into the open air or otherwise clear of the source of intake air.

1926.353(a)(5) All air replacing that withdrawn shall be clean and respirable.

1926.353(a)(6) Oxygen shall not be used for ventilation purposes, comfort cooling, blowing dust from clothing, or for cleaning the work area.

1926.353(b) Welding, cutting, and heating in confined spaces.

1926.353(b)(1) Except as provided in paragraph (b)(2) of this section, and paragraph (c)(2) of this section, either general mechanical or local exhaust ventilation meeting the requirements of paragraph (a) of this section shall be provided whenever welding, cutting, or heating is performed in a confined space.

1926.353(b)(2) When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space shall be protected by air line respirators in accordance with the requirements of Subpart E of this part, and an employee on the outside of such a confined space shall be assigned to maintain communication with those working within it and to aid them in an emergency.

1926.353(b)(3) "Lifelines." Where a welder must enter a confined space through a manhole or other small opening, means shall be provided for quickly removing him in case of emergency. When safety belts and lifelines are used for this purpose they shall be so attached to the welder's body that his body cannot be jammed in a small exit opening. An attendant with a pre-planned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.

1926.353(c) Welding, cutting, or heating of metals of toxic significance.

1926.353(c)(1) Welding, cutting, or heating in any enclosed spaces involving the metals specified in this subparagraph shall be performed with either general mechanical or local exhaust ventilation meeting the requirements of paragraph (a) of this section:

1926.353(c)(1)(i) Zinc-bearing base or filler metals or metals coated with zinc-bearing materials;

1926.353(c)(1)(ii) Lead base metals;

1926.353(c)(1)(iii) Cadmium-bearing filler materials;

1926.353(c)(1)(iv) Chromium-bearing metals or metals coated with chromium-bearing materials.

1926.353(c)(2) Welding, cutting, or heating in any enclosed spaces involving the metals specified in this subparagraph shall be performed with local exhaust ventilation in accordance with the requirements of paragraph (a) of this section, or employees shall be protected by air line respirators in accordance with the requirements of Subpart E of this part:

1926.353(c)(2)(i) Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials;

1926.353(c)(2)(ii) Cadmium-bearing or cadmium-coated base metals;

1926.353(c)(2)(iii) Metals coated with mercury-bearing metals;

1926.353(c)(2)(iv) Beryllium-containing base or filler metals. Because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air line respirators.

1926.353(c)(3) Employees performing such operations in the open air shall be protected by filter-type respirators in accordance with the requirements of Subpart E of this part, except that employees performing such operations on beryllium-containing base or filler metals shall be protected by air line respirators in accordance with the requirements of Subpart E of this part.

1926.353(c)(4) Other employees exposed to the same atmosphere as the welders or burners shall be protected in the same manner as the welder or burner.

1926.353(d) Inert-gas metal-arc welding.

1926.353(d)(1) Since the inert-gas metal-arc welding process involves the production of ultra-violet radiation of intensities of 5 to 30 times that produced during shielded metal-arc welding, the decomposition of chlorinated solvents by ultraviolet rays, and the liberation of toxic fumes and gases, employees shall not be permitted to engage in, or be exposed to the process until the following special precautions have been taken:

1926.353(d)(1)(i) The use of chlorinated solvents shall be kept at least 200 feet, unless shielded, from the exposed arc, and surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is permitted on such surfaces.

1926.353(d)(1)(ii) Employees in the area not protected from the arc by screening shall be protected by filter lenses meeting the requirements of Subpart E of this part. When two or more welders are exposed to each other's arc, filter lens goggles of a suitable type, meeting the requirements of Subpart E of this part, shall be worn under welding helmets. Hand shields to protect the welder against flashes and radiant energy shall be used when either the helmet is lifted or the shield is removed.

1926.353(d)(1)(iii) Welders and other employees who are exposed to radiation shall be suitably protected so that the skin is covered completely to prevent burns and other damage by ultraviolet rays. Welding helmets and hand shields shall be free of leaks and openings, and free of highly reflective surfaces.

1926.353(d)(1)(iv) When inert-gas metal-arc welding is being performed on stainless steel, the requirements of paragraph (c)(2) of this section shall be met to protect against dangerous concentrations of nitrogen dioxide.

1926.353(e) General welding, cutting, and heating.

1926.353(e)(1) Welding, cutting, and heating, not involving conditions or materials described in paragraph (b), (c), or (d) of this section, may normally be done without mechanical ventilation or respiratory protective equipment, but where, because of unusual physical or atmospheric conditions, an unsafe accumulation of contaminants exists, suitable mechanical ventilation or respiratory protective equipment shall be provided.

1926.353(e)(2) Employees performing any type of welding, cutting, or heating shall be protected by suitable eye protective equipment in accordance with the requirements of Subpart E of this part.

[44 FR 8577, Feb. 9, 1979; 44 FR 20940, Apr. 6, 1979, as amended at 55 FR 42328, Oct. 18, 1990; 58 FR 35179, June 30, 1993]

1926.354 - WELDING, CUTTING, AND HEATING IN WAY OF PRESERVATIVE COATINGS

1926.354(a) Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

1926.354(b) Precautions shall be taken to prevent ignition of highly flammable hardened preservative coatings. When coatings are determined to be highly flammable, they shall be stripped from the area to be heated to prevent ignition.

1926.354(c) Protection against toxic preservative coatings:

1926.354(c)(1) In enclosed spaces, all surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least 4 inches from the area of heat application, or the employees shall be protected by air line respirators, meeting the requirements of Subpart E of this part.

1926.354(c)(2) In the open air, employees shall be protected by a respirator, in accordance with requirements of Subpart E of this part.

1926.354(d) The preservative coatings shall be removed a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heating area may be used to limit the size of the area required to be cleaned.

1926.400 – INTRODUCTION

This subpart addresses electrical safety requirements that are necessary for the practical safeguarding of employees involved in construction work and is divided into four major divisions and applicable definitions as follows:

1926.400(a) Installation safety requirements.

Installation safety requirements are contained in 1926.402 through 1926.408. Included in this category are electric equipment and installations used to provide electric power and light on jobsites.

1926.400(b) Safety-related work practices.

Safety-related work practices are contained in 1926.416 and 1926.417. In addition to covering the hazards arising from the use of electricity at jobsites, these regulations also cover the hazards arising from the accidental contact, direct or indirect, by employees with all energized lines, above or below ground, passing through or near the jobsite.

1926.400(c) Safety-related maintenance and environmental considerations.

Safety-related maintenance and environmental considerations are contained in 1926.431 and 1926.432.

1926.400(d) Safety requirements for special equipment.

Safety requirements for special equipment are contained in 1926.441.

1926.400(e) Definitions.

Definitions applicable to this Subpart are contained in 1926.449.

1926.403 - GENERAL REQUIREMENTS

1926.403(a) Approval.

All electrical conductors and equipment shall be approved.

1926.403(b) Examination, installation, and use of equipment.

1926.403(b)(1) Examination. The employer shall ensure that electrical equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees. Safety of equipment shall be determined on the basis of the following considerations:

1926.403(b)(1)(i) Suitability for installation and use in conformity with the provisions of this subpart. Suitability of equipment for an identified purpose may be evidenced by listing, labeling, or certification for that identified purpose.

1926.403(b)(1)(ii) Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided.

1926.403(b)(1)(iii) Electrical insulation.

1926.403(b)(1)(iv) Heating effects under conditions of use.

1926.403(b)(1)(v) Arcing effects.

1926.403(b)(1)(vi) Classification by type, size, voltage, current capacity, specific use.

1926.403(b)(1)(vii) Other factors which contribute to the practical safeguarding of employees using or likely to come in contact with the equipment.

1926.403(b)(2) Installation and use. Listed, labeled, or certified equipment shall be installed and used in accordance with instructions included in the listing, labeling, or certification.

1926.403(c) Interrupting rating.

Equipment intended to break current shall have an interrupting rating at system voltage sufficient for the current that must be interrupted.

1926.403(d) Mounting and cooling of equipment.

1926.403(d)(1) Mounting. Electric equipment shall be firmly secured to the surface on which it is mounted. Wooden plugs driven into holes in masonry, concrete, plaster, or similar materials shall not be used.

1926.403(d)(2) Cooling. Electrical equipment which depends upon the natural circulation of air and convection principles for cooling of exposed surfaces shall be installed so that room air flow over such surfaces is not prevented by walls or by adjacent installed equipment. For equipment designed for floor mounting, clearance between top surfaces and adjacent surfaces shall be provided to dissipate rising warm air. Electrical equipment provided with ventilating openings shall be installed so that walls or other obstructions do not prevent the free circulation of air through the equipment.

1926.403(e) Splices.

Conductors shall be spliced or joined with splicing devices designed for the use or by brazing, welding, or soldering with a fusible metal or alloy. Soldered splices shall first be so spliced or joined as to be mechanically and electrically secure without solder and then soldered. All splices and joints and the free ends of conductors shall be covered with an insulation equivalent to that of the conductors or with an insulating device designed for the purpose.

1926.403(f) Arcing parts.

Parts of electric equipment which in ordinary operation produce arcs, sparks, flames, or molten metal shall be enclosed or separated and isolated from all combustible material.

1926.403(g) Marking.

Electrical equipment shall not be used unless the manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product may be identified is placed on the equipment and unless other markings are provided giving voltage, current, wattage, or other ratings as necessary. The marking shall be of sufficient durability to withstand the environment involved.

1926.403(h) Identification of disconnecting means and circuits.

Each disconnecting means required by this subpart for motors and appliances shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident. Each service, feeder, and branch circuit, at its disconnecting means or overcurrent device, shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident. These markings shall be of sufficient durability to withstand the environment involved.

1926.403(i) 600 Volts, nominal, or less.

This paragraph applies to equipment operating at 600 volts, nominal, or less.

1926.403(i)(1) Working space about electric equipment. Sufficient access and working space shall be provided and maintained about all electric equipment to permit ready and safe operation and maintenance of such equipment.

1926.403(i)(1)(i) Working clearances. Except as required or permitted elsewhere in this subpart, the dimension of the working space in the direction of access to live parts operating at 600 volts or less and likely to require examination, adjustment, servicing, or maintenance while alive shall not be less than indicated in Table K-1. In addition to the dimensions shown in Table K-1, workspace shall not be less than 30 inches (762 mm) wide in front of the electric equipment. Distances shall be measured from the live parts if they are exposed, or from the enclosure front or opening if the live parts are enclosed. Walls constructed of concrete, brick, or tile are considered to be grounded. Working space is not 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.

TABLE K-1 Working Clearances			
Nominal voltage to ground	Minimum clear distance for conditions⁽¹⁾		
	(a)	(b)	(c)
	Feet⁽²⁾	Feet⁽²⁾	Feet⁽²⁾
0-150	3	3	3
151-600	3	3 ½	4

Footnote(1) Conditions (a), (b), and (c) are as follows:
[a] 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 insulating material. Insulated wire or insulated busbars operating at not over 300 volts are not considered live parts.
[b] Exposed live parts on one side and grounded parts on the other side.
[c] Exposed live parts on both sides of the workplace [not guarded as provided in Condition (a)] with the operator between.

Footnote(2) Note: For International System of Units (SI): one foot=0.3048m.

1926.403(i)(1)(ii) Clear spaces. Working space required by this subpart shall not be used for storage. When normally enclosed live parts are exposed for inspection or servicing, the working space, if in a passageway or general open space, shall be guarded.

1926.403(i)(1)(iii) Access and entrance to working space. At least one entrance shall be provided to give access to the working space about electric equipment.

1926.403(i)(1)(iv) Front working space. Where there are live parts normally exposed on the front of switchboards or motor control centers, the working space in front of such equipment shall not be less than 3 feet (914 mm).

1926.403(i)(1)(v) Headroom. The minimum headroom of working spaces about service equipment, switchboards, panelboards, or motor control centers shall be 6 feet 3 inches (1.91 m).

1926.403(i)(2) Guarding of live parts.

1926.403(i)(2)(i) Except as required or permitted elsewhere in this subpart, live parts of electric equipment operating at 50 volts or more shall be guarded against accidental contact by cabinets or other forms of enclosures, or by any of the following means:

1926.403(i)(2)(i)(A) By location in a room, vault, or similar enclosure that is accessible only to qualified persons.

1926.403(i)(2)(i)(B) By partitions or screens so arranged that only qualified persons will have access to the space within reach of the live parts. Any openings in such partitions or screens shall be so sized and located that persons are not likely to come into accidental contact with the live parts or to bring conducting objects into contact with them.

1926.403(i)(2)(i)(C) By location on a balcony, gallery, or platform so elevated and arranged as to exclude unqualified persons.

1926.403(i)(2)(i)(D) By elevation of 8 feet (2.44 m) or more above the floor or other working surface and so installed as to exclude unqualified persons.

1926.403(i)(2)(ii) In locations where electric equipment would be exposed to physical damage, enclosures or guards shall be so arranged and of such strength as to prevent such damage.

1926.403(i)(2)(iii) Entrances to rooms and other guarded locations containing exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter.

1926.403(j) Over 600 volts, nominal.

1926.403(j)(1) General. Conductors and equipment used on circuits exceeding 600 volts, nominal, shall comply with all applicable provisions of paragraphs (a) through (g) of this section and with the following provisions which supplement or modify those requirements. The provisions of paragraphs (j)(2), (j)(3), and (j)(4) of this section do not apply to equipment on the supply side of the service conductors.

1926.403(j)(2) Enclosure for electrical installations. Electrical installations in a vault, room, closet or in an area surrounded by a wall, screen, or fence, access to which is controlled by lock and key or other equivalent means, are considered to be accessible to qualified persons only. A wall, screen, or fence less than 8 feet (2.44 m) in height is not considered adequate to prevent access unless it has other features that provide a degree of isolation equivalent to an 8-foot (2.44-m) fence. The entrances to all buildings, rooms or enclosures containing exposed live parts or exposed conductors operating at over 600 volts, nominal, shall be kept locked or shall be under the observation of a qualified person at all times.

1926.403(j)(2)(i) Installations accessible to qualified persons only. Electrical installations having exposed live parts shall be accessible to qualified persons only and shall comply with the applicable provisions of paragraph (j)(3) of this section.

1926.403(j)(2)(ii) Installations accessible to unqualified persons. Electrical installations that are open to unqualified persons shall be made with metal-enclosed equipment or shall be enclosed in a vault or in an area, access to which is controlled by a lock. Metal-enclosed switchgear, unit substations, transformers, pull boxes, connection boxes, and other similar associated equipment shall be marked with appropriate caution signs. If equipment is exposed to physical damage from vehicular traffic, guards shall be provided to prevent such damage. Ventilating or similar openings in metal-enclosed equipment shall be designed so that foreign objects inserted through these openings will be deflected from energized parts.

1926.403(j)(3) Workspace about equipment. Sufficient space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment. Where energized parts are exposed, the minimum clear workspace shall not be less than 6 feet 6 inches (1.98 m) high (measured vertically from the floor or platform), or less than 3 feet (914 mm) wide (measured parallel to the equipment). The depth shall be as required in Table K-2. The workspace shall be adequate to permit at least a 90-degree opening of doors or hinged panels.

1926.403(j)(3)(i) Working space. The minimum clear working space in front of electric equipment such as switchboards, control panels, switches, circuit breakers, motor controllers, relays, and similar equipment shall not be less than specified in Table K-2 unless otherwise specified in this subpart. Distances shall be measured from the live parts if they are exposed, or from the enclosure front or opening if the live parts are enclosed. However, working space is not required in back of equipment such as dead-front switchboards or control assemblies 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 inches (762 mm) horizontally shall be provided.

TABLE K-2			
Minimum Depth of Clear Working Space in Front of Electric Equipment			
Nominal voltage to ground	Conditions⁽¹⁾		
	(a)	(b)	(c)
	Feet⁽²⁾	Feet⁽²⁾	Feet⁽²⁾
601 to 2,500	3	4	5
2,501 to 9,000	4	5	6
9,001 to 25,000	5	6	9
25,001 to 75 kV	6	8	10
Above 75kV	8	10	12

Footnote(1) Conditions (a), (b), and (c) are as follows:
1926.403(j)(3)(i)(a) 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 insulating materials. Insulated wire or insulated busbars operating at not over 300 volts are not considered live parts.
1926.403(j)(3)(i)(b) Exposed live parts on one side and grounded parts on the other side. Walls constructed of concrete, brick, or tile are considered to be grounded surfaces.
1926.403(j)(3)(i)(c) Exposed live parts on both sides of the workspace [not guarded as provided in Condition (a)] with the operator between.

Footnote(2) NOTE: For SI units: one foot=0.3048 m.

1926.403(j)(3)(ii) Lighting outlets and points of control. The lighting outlets shall be so arranged that persons changing lamps or making repairs on the lighting system will not be endangered by live parts or other equipment. The points of control shall be so located that persons are not likely to come in contact with any live part or moving part of the equipment while turning on the lights.

1926.403(j)(3)(iii) Elevation of unguarded live parts. Unguarded live parts above working space shall be maintained at elevations not less than specified in Table K-3.

TABLE K-3	
Elevation of Unguarded Energized Parts Above Working Space	
Nominal voltage between phases	Minimum Elevation
601-7,500	8 feet 6 inches. ^[1]
7,501-35,000	9 feet.
Over 35kV	9 feet+0.37 inches per kV above 35kV.

Footnote(1) NOTE: For SI units: one inch=25.4 mm; one foot=0.3048 m.

1926.403(j)(4) Entrance and access to workspace. At least one entrance not less than 24 inches (610 mm) wide and 6 feet 6 inches (1.98 m) high shall be provided to give access to the working space about electric equipment. On switchboard and control panels exceeding 48 inches (1.22 m) in width, there shall be one entrance at each end of such board where practicable. Where bare energized parts at any voltage or insulated energized parts above 600 volts are located adjacent to such entrance, they shall be guarded.

1926.600 – EQUIPMENT

1926.600(a) General Requirements.

1926.600(a)(1) All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment.

1926.600(a)(2) A safety tire rack, cage, or equivalent protection shall be provided and used when inflating, mounting, or dismounting tires installed on split rims, or rims equipped with locking rings or similar devices.

1926.600(a)(3) -

1926.600(a)(3)(i) Heavy machinery, equipment, or parts thereof, which are suspended or held aloft by use of slings, hoists, or jacks shall be substantially blocked or cribbed to prevent falling or shifting before employees are permitted to work under or between them. Bulldozer and scraper blades, end-loader buckets, dump bodies, and similar equipment, shall be either fully lowered or blocked when being repaired or when not in use. All controls shall be in a neutral position, with the motors stopped and brakes set, unless work being performed requires otherwise.

1926.600(a)(3)(ii) Whenever the equipment is parked, the parking brake shall be set. Equipment parked on inclines shall have the wheels chocked and the parking brake set.

1926.600(a)(4) The use, care and charging of all batteries shall conform to the requirements of Subpart K of this part.

1926.600(a)(5) All cab glass shall be safety glass, or equivalent, that introduces no visible distortion affecting the safe operation of any machine covered by this subpart.

1926.600(a)(6) All equipment covered by this subpart shall comply with the following requirements when working or being moved in the vicinity of power lines or energized transmitters, except where electrical distribution and transmission lines have been deenergized and visibly grounded at point of work or where insulating barriers, not a part of or an attachment to the equipment or machinery, have been erected to prevent physical contact with the lines:

1926.600(a)(6)(i) For lines rated 50 kV or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet;

1926.600(a)(6)(ii) For lines rated over 50 kV, minimum clearance between the lines and any part of the crane or load shall be 10 feet plus 0.4 inch for each 1 kV over 50 kV, or twice the length of the line insulator, but never less than 10 feet;

1926.600(a)(6)(iii) In transit with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50 kV, and 10 feet for voltages over 50 kV, up to and including 345 kV, and 16 feet for voltages up to and including 750 kV;

1926.600(a)(6)(iv) A person shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means;

1926.600(a)(6)(v) Cage-type boom guards, insulating links, or proximity warning devices may be used on cranes, but the use of such devices shall not alter the requirements of any other regulation of this part even if such device is required by law or regulation;

1926.600(a)(6)(vi) Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded;

1926.600(a)(6)(vii) Prior to work near transmitter towers where an electrical charge can be induced in the equipment or materials being handled, the transmitter shall be deenergized or tests shall be made to determine if electrical charge is induced on the crane. The following precautions shall be taken when necessary to dissipate induced voltages:

1926.600(a)(6)(vii)(A) The equipment shall be provided with an electrical ground directly to the upper rotating structure supporting the boom; and

1926.600(a)(6)(vii)(B) Ground jumper cables shall be attached to materials being handled by boom equipment when electrical charge is induced while working near energized transmitters. Crews shall be provided with nonconductive poles having large alligator clips or other similar protection to attach the ground cable to the load.

1926.600(a)(6)(vii)(C) Combustible and flammable materials shall be removed from the immediate area prior to operations.

1926.600(a)(7) Rolling railroad cars. Derail and/or bumper blocks shall be provided on spur railroad tracks where a rolling car could contact other cars being worked, enter a building, work or traffic area.

1926.600(b) Specific requirements. [Reserved]

[44 FR 8577, Feb. 9, 1979; 44 FR 20940, Apr, 6, 1979, as amended at 58 FR 35183, June 30, 1993; 75 FR 48134, Aug. 9, 2010]

1926.605 - MARINE OPERATIONS AND EQUIPMENT

1926.605(a) Material handling operations.

1926.605(a)(1) Operations fitting the definition of "material handling" shall be performed in conformance with applicable requirements of Part 1918, "Safety and Health Regulations for Longshoring" of this chapter. The term "longshoring operations" means the loading, unloading, moving, or handling of construction materials, equipment and supplies, etc. into, in, on, or out of any vessel from a fixed structure or shore-to-vessel, vessel-to-shore or fixed structure or vessel-to-vessel.

1926.605(b) Access to barges.

1926.605(b)(1) Ramps for access of vehicles to or between barges shall be of adequate strength, provided with side boards, well maintained, and properly secured.

1926.605(b)(2) Unless employees can step safely to or from the wharf, float, barge, or river towboat, either a ramp, meeting the requirements of paragraph (b)(1) of this section, or a safe walkway, shall be provided.

1926.605(b)(3) Jacob's ladders shall be of the double rung or flat tread type. They shall be well maintained and properly secured.

1926.605(b)(4) A Jacob's ladder shall either hang without slack from its lashings or be pulled up entirely.

1926.605(b)(5) When the upper end of the means of access rests on or is flush with the top of the bulwark, substantial steps properly secured and equipped with at least one substantial hand rail approximately 33 inches in height, shall be provided between the top of the bulwark and the deck.

1926.605(b)(6) Obstructions shall not be laid on or across the gangway.

1926.605(b)(7) The means of access shall be adequately illuminated for its full length.

1926.605(b)(8) Unless the structure makes it impossible, the means of access shall be so located that the load will not pass over employees.

1926.605(c) Working surfaces of barges.

1926.605(c)(1) Employees shall not be permitted to walk along the sides of covered lighters or barges with coamings more than 5 feet high, unless there is a 3-foot clear walkway, or a grab rail, or a taut handline is provided.

1926.605(c)(2) Decks and other working surfaces shall be maintained in a safe condition.

1926.605(c)(3) Employees shall not be permitted to pass fore and aft, over, or around deckloads, unless there is a safe passage.

1926.605(c)(4) Employees shall not be permitted to walk over deckloads from rail to coaming unless there is a safe passage. If it is necessary to stand at the outboard or inboard edge of the deckload where less than 24 inches of bulwark, rail, coaming, or other protection exists, all employees shall be provided with a suitable means of protection against falling from the deckload.

1926.605(d) First-aid and lifesaving equipment.

1926.605(d)(1) Provisions for rendering first aid and medical assistance shall be in accordance with Subpart D of this part.

1926.605(d)(2) The employer shall ensure that there is in the vicinity of each barge in use at least one U.S. Coast Guard-approved 30-inch lifeline with not less than 90 feet of line attached, and at least one portable or permanent ladder which will reach the top of the apron to the surface of the water. If the above equipment is not available at the pier, the employer shall furnish it during the time that he is working the barge.

1926.605(d)(3) Employees walking or working on the unguarded decks of barges shall be protected with U.S. Coast Guard-approved work vests or buoyant vests.

1926.605(e) Commercial diving operations.

Commercial diving operations shall be subject to Subpart T of Part 1910, 1910.401-1910.441, of this chapter.

[39 FR 22801, June 24, 1974, as amended at 42 FR 37674, July 22, 1977]

1926.850 - PREPARATORY OPERATIONS

1926.850(a) Prior to permitting employees to start demolition operations, an engineering survey shall be made, by a competent person, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The employer shall have in writing evidence that such a survey has been performed.

1926.850(b) When employees are required to work within a structure to be demolished which has been damaged by fire, flood, explosion, or other cause, the walls or floor shall be shored or braced.

1926.850(c) All electric, gas, water, steam, sewer, and other service lines shall be shut off, capped, or otherwise controlled, outside the building line before demolition work is started. In each case, any utility company which is involved shall be notified in advance.

1926.850(d) If it is necessary to maintain any power, water or other utilities during demolition, such lines shall be temporarily relocated, as necessary, and protected.

1926.850(e) It shall also be determined if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. When the presence of any such substances is apparent or suspected, testing and purging shall be performed and the hazard eliminated before demolition is started.

1926.850(f) Where a hazard exists from fragmentation of glass, such hazards shall be removed.

1926.850(g) Where a hazard exists to employees falling through wall openings, the opening shall be protected to a height of approximately 42 inches.

1926.850(h) When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above. Signs, warning of the hazard of falling materials, shall be posted at each level. Removal shall not be permitted in this lower area until debris handling ceases above.

1926.850(i) All floor openings, not used as material drops, shall be covered over with material substantial enough to support the weight of any load which may be imposed. Such material shall be properly secured to prevent its accidental movement.

1926.850(j) Except for the cutting of holes in floors for chutes, holes through which to drop materials, preparation of storage space, and similar necessary preparatory work, the demolition of exterior walls and floor construction shall begin at the top of the structure and proceed downward. Each story of exterior wall and floor construction shall be removed and dropped into the storage space before commencing the removal of exterior walls and floors in the story next below.

1926.850(k) Employee entrances to multistory structures being demolished shall be completely protected by sidewalk sheds or canopies, or both, providing protection from the face of the building for a minimum of 8 feet. All such canopies shall be at least 2 feet wider than the building entrances or openings (1 foot wider on each side thereof), and shall be capable of sustaining a load of 150 pounds per square foot.

1926.910 - INSPECTION AFTER BLASTING

1926.910(a) Immediately after the blast has been fired, the firing line shall be disconnected from the blasting machine, or where power switches are used, they shall be locked open or in the off position.

1926.910(b) Sufficient time shall be allowed, not less than 15 minutes in tunnels, for the smoke and fumes to leave the blasted area before returning to the shot. An inspection of the area and the surrounding rubble shall be made by the blaster to determine if all charges have been exploded before employees are allowed to return to the operation, and in tunnels, after the muck pile has been wetted down.

1926.914 - DEFINITIONS APPLICABLE TO THIS SUBPART

1926.914(a) "American Table of Distances" (also known as Quantity Distance Tables) means American Table of Distances for Storage of Explosives as revised and approved by the Institute of the Makers of Explosives, June 5, 1964.

1926.914(b) "Approved storage facility"-A facility for the storage of explosive materials conforming to the requirements of this part and covered by a license or permit issued under authority of the Bureau of Alcohol, Tobacco and Firearms. (See 27 CFR part 55.)

1926.914(c) "Blast area" - The area in which explosives loading and blasting operations are being conducted.

1926.914(d) "Blaster" - The person or persons authorized to use explosives for blasting purposes and meeting the qualifications contained in 1926.901.

1926.914(e) "Blasting agent" - A blasting agent is any material or mixture consisting of a fuel and oxidizer used for blasting, but not classified an explosive and in which none of the ingredients is classified as an explosive provided the furnished (mixed) product cannot be detonated with a No. 8 test blasting cap when confined. A common blasting agent presently in use is a mixture of ammonium nitrate (NH₄NO₃) and carbonaceous combustibles, such as fuel oil or coal, and may either be procured, premixed and packaged from explosives companies or mixed in the field.

1926.914(f) "Blasting caps" - A metallic tube closed at one end, containing a charge of one or more detonating compounds, and designed for and capable of detonation from the sparks or flame from a safety fuse inserted and crimped into the open end.

1926.914(g) "Block holing" - The breaking of boulders by firing a charge of explosives that has been loaded in a drill hole.

1926.914(h) "Conveyance" - Any unit for transporting explosives or blasting agents, including but not limited to trucks, trailers, rail cars, barges, and vessels.

1926.914(i) "Detonating cord" - A flexible cord containing a center core of high explosives which when detonated, will have sufficient strength to detonate other cap - sensitive explosives with which it is in contact.

1926.914(j) "Detonator" - Blasting caps, electric blasting caps, delay electric blasting caps, and nonelectric delay blasting caps.

1926.914(k) "Electric blasting cap" - A blasting cap designed for and capable of detonation by means of an electric current.

1926.914(l) "Electric blasting circuitry" -

1926.914(l)(1) Bus wire. An expendable wire, used in parallel or series, in parallel circuits, to which are connected the leg wires of electric blasting caps.

1926.914(l)(2) Connecting wire. An insulated expendable wire used between electric blasting caps and the leading wires or between the bus wire and the leading wires.

1926.914(l)(3) Leading wire. An insulated wire used between the electric power source and the electric blasting cap circuit.

1926.914(l)(4) Permanent blasting wire. A permanently mounted insulated wire used between the electric power source and the electric blasting cap circuit.

1926.914(m) "Electric delay blasting caps" - Caps designed to detonate at a predetermined period of time after energy is applied to the ignition system.

1926.914(n) "Explosives"

1926.914(n)(1) Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion; that is, with substantially instantaneous release of gas and heat, unless such compound, mixture or device is otherwise specifically classified by the U.S. Department of Transportation.

1926.914(n)(2) All material which is classified as Class A, Class B, and Class C Explosives by the U.S. Department of Transportation.

1926.914(n)(3) Classification of explosives by the U.S. Department of Transportation is as follows:

Class A Explosives. Possessing detonating hazard, such as dynamite, nitroglycerin, picric acid, lead azide, fulminate of mercury, black powder, blasting caps, and detonating primers.

Class B Explosives. Possessing flammable hazard, such as propellant explosives, including some smokeless propellants.

Class C Explosives. Include certain types of manufactured articles which contain Class A or Class B explosives, or both, as components, but in restricted quantities.

1926.914(o) "Fuse lighters" - Special devices for the purpose of igniting safety fuse.

1926.914(p) "Magazine" - Any building or structure, other than an explosives manufacturing building, used for the storage of explosives.

1926.914(q) "Misfire" - An explosive charge which failed to detonate.

1926.914(r) "Mud-capping" (sometimes known as bulldozing, adobe blasting, or doying). The blasting of boulders by placing a quantity of explosives against a rock, boulder, or other object without confining the explosives in a drill hole.

1926.914(s) "Nonelectric delay blasting cap" - A blasting cap with an integral delay element in conjunction with and capable of being detonated by a detonation impulse or signal from miniaturized detonating cord.

1926.914(t) "Primary blasting" - The blasting operation by which the original rock formation is dislodged from its natural location.

1926.914(u) "Primer" - A cartridge or container of explosives into which a detonator or detonating cord is inserted or attached.

1926.914(v) "Safety fuse" - A flexible cord containing an internal burning medium by which fire is conveyed at a continuous and uniform rate for the purpose of firing blasting caps.

1926.914(w) "Secondary blasting" - The reduction of oversize material by the use of explosives to the dimension required for handling, including mudcapping and blockholing.

1926.914(x) "Stemming" - A suitable inert incombustible material or device used to confine or separate explosives in a drill hole, or to cover explosives in mud-capping.

1926.914(y) "Springing" - The creation of a pocket in the bottom of a drill hole by the use of a moderate quantity of explosives in order that larger quantities or explosives may be inserted therein.

1926.914(z) "Water gels, or slurry explosives" - A wide variety of materials used for blasting. They all contain substantial proportions of water and high proportions of ammonium nitrate, some of which is in solution in the water. Two broad classes of water gels are:

1926.914(z)(1) Those which are sensitized by a material classed as an explosive, such as TNT or smokeless powder, and

1926.914(z)(2) those which contain no ingredient classified as an explosive; these are sensitized with metals such as aluminum or with other fuels. Water gels may be premixed at an explosives plant or mixed at the site immediately before delivery into the bore hole.

1926.914(aa) "Semi-conductive hose." Semi-conductive hose - a hose with an electrical resistance high enough to limit flow of stray electric currents to safe levels, yet not so high as to prevent drainage of static electric charges to ground; hose of not more than 2 megohms resistance over its entire length and of not less than 5,000 ohms per foot meets the requirement.

1926.950 – GENERAL

1926.950(a) Application.

1926.950(a)(1) Scope.

1926.950(a)(1)(i) This subpart, except for paragraph (a)(3) of this section, covers the construction of electric power transmission and distribution lines and equipment. As used in this subpart, the term "construction" includes the erection of new electric transmission and distribution lines and equipment, and the alteration, conversion, and improvement of existing electric transmission and distribution lines and equipment.

Note to paragraph (a)(1)(i): An employer that complies with § 1910.269 of this chapter will be considered in compliance with requirements in this subpart that do not reference other subparts of this part. Compliance with § 1910.269 of this chapter will not excuse an employer from compliance obligations under other subparts of this part.

1926.950(a)(1)(ii) Notwithstanding paragraph (a)(1)(i) of this section, this subpart does not apply to electrical safety-related work practices for unqualified employees.

1926.950(a)(2) Other Part 1926 standards. This subpart applies in addition to all other applicable standards contained in this Part 1926. Employers covered under this subpart are not exempt from complying with other applicable provisions in Part 1926 by the operation of § 1910.5(c) of this chapter. Specific references in this subpart to other sections of Part 1926 are provided for emphasis only.

1926.950(a)(3) Applicable part 1910 requirements.

1926.950(a)(3)(i) Line-clearance tree trimming performed for the purpose of clearing space around electric power generation, transmission, or distribution lines or equipment and on behalf of an organization that operates, or that controls the operating procedures for, those lines or equipment shall comply with § 1910.269 of this chapter.

1926.950(a)(3)(ii) Work involving electric power generation installations shall comply with § 1910.269 of this chapter.

1926.950(b) Training.

1926.950(b)(1) All employees.

1926.950(b)(1)(i) Each employee shall be trained in, and familiar with, the safety-related work practices, safety procedures, and other safety requirements in this subpart that pertain to his or her job assignments.

1926.950(b)(1)(ii) Each employee shall also be trained in and familiar with any other safety practices, including applicable emergency procedures (such as pole-top and manhole rescue), that are not specifically addressed by this subpart but that are related to his or her work and are necessary for his or her safety.

1926.950(b)(1)(iii) The degree of training shall be determined by the risk to the employee for the hazard involved.

1926.950(b)(2) Qualified employees. Each qualified employee shall also be trained and competent in:

1926.950(b)(2)(i) The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,

1926.950(b)(2)(ii) The skills and techniques necessary to determine the nominal voltage of exposed live parts,

1926.950(b)(2)(iii) The minimum approach distances specified in this subpart corresponding to the voltages to which the qualified employee will be exposed and the skills and techniques necessary to maintain those distances,

1926.950(b)(2)(iv) The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment, and

1926.950(b)(2)(v) The recognition of electrical hazards to which the employee may be exposed and the skills and techniques necessary to control or avoid these hazards.

Note to paragraph (b)(2): For the purposes of this subpart, a person must have the training required by paragraph (b)(2) of this section to be considered a qualified person.

1926.950(b)(3) Supervision and annual inspection. The employer shall determine, through regular supervision and through inspections conducted on at least an annual basis, that each employee is complying with the safety related work practices required by this subpart.

1926.950(b)(4) Additional training. An employee shall receive additional training (or retraining) under any of the following conditions:

1926.950(b)(4)(i) If the supervision or annual inspections required by paragraph (b)(3) of this section indicate that the employee is not complying with the safety-related work practices required by this subpart, or

1926.950(b)(4)(ii) If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those which the employee would normally use, or

1926.950(b)(4)(iii) If he or she must employ safety related work practices that are not normally used during his or her regular job duties.

Note to paragraph (b)(4)(iii): The Occupational Safety and Health Administration considers tasks that are performed less often than once per year to necessitate retraining before the performance of the work practices involved.

1926.950(b)(5) Type of training. The training required by paragraph (b) of this section shall be of the classroom or on-the-job type.

1926.950(b)(6) Training goals. The training shall establish employee proficiency in the work practices required by this subpart and shall introduce the procedures necessary for compliance with this subpart.

1926.950(b)(7) Demonstration of proficiency. The employer shall ensure that each employee has demonstrated proficiency in the work practices involved before that employee is considered as having completed the training required by paragraph (b) of this section

Note 1 to paragraph (b)(7): Though they are not required by this paragraph, employment records that indicate that an employee has successfully completed the required training are one way of keeping track of when an employee has demonstrated proficiency

Note 2 to paragraph (b)(7): For an employee with previous training, an employer may determine that that employee has demonstrated the proficiency required by this paragraph using the following process: (1) Confirm that the employee has the training required by paragraph (b) of this section, (2) use an examination or interview to make an initial determination that the employee understands the relevant safety related work practices before he or she performs any work covered by this subpart, and (3) supervise the employee closely until that employee has demonstrated proficiency as required by this paragraph.

1926.950(c) Information transfer.

1926.950(c)(1) Host employer responsibilities. Before work begins, the host employer shall inform contract employers of:

1926.950(c)(1)(i) The characteristics of the host employer's installation that are related to the safety of the work to be performed and are listed in paragraphs (d)(1) through (d)(5) of this section;

Note to paragraph (c)(1)(i): This paragraph requires the host employer to obtain information listed in paragraphs (d)(1) through (d)(5) of this section if it does not have this information in existing records.

1926.950(c)(1)(ii) Conditions that are related to the safety of the work to be performed, that are listed in paragraphs (d)(6) through (d)(8) of this section, and that are known to the host employer;

Note to paragraph (c)(1)(ii): For the purposes of this paragraph, the host employer need only provide information to contract employers that the host employer can obtain from its existing records through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.

1926.950(c)(1)(iii) Information about the design and operation of the host employer's installation that the contract employer needs to make the assessments required by this subpart; and

Note to paragraph (c)(1)(iii): This paragraph requires the host employer to obtain information about the design and operation of its installation that contract employers need to make required assessments if it does not have this information in existing records.

1926.950(c)(1)(iv) Any other information about the design and operation of the host employer's installation that is known by the host employer, that the contract employer requests, and that is related to the protection of the contract employer's employees.

Note to paragraph (c)(1)(iv): For the purposes of this paragraph, the host employer need only provide information to contract employers that the host employer can obtain from its existing records through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.

1926.950(c)(2) Contract employer responsibilities.

1926.950(c)(2)(i) The contract employer shall ensure that each of its employees is instructed in the hazardous conditions relevant to the employee's work that the contract employer is aware of as a result of information communicated to the contract employer by the host employer under paragraph (c)(1) of this section.

1926.950(c)(2)(ii) Before work begins, the contract employer shall advise the host employer of any unique hazardous conditions presented by the contract employer's work

1926.950(c)(2)(iii) The contract employer shall advise the host employer of any unanticipated hazardous conditions found during the contract employer's work that the host employer did not mention under paragraph (c)(1) of this section. The contract employer shall provide this information to the host employer within 2 working days after discovering the hazardous condition.

1926.950(c)(3) Joint host- and contract-employer responsibilities. The contract employer and the host employer shall coordinate their work rules and procedures so that each employee of the contract employer and the host employer is protected as required by this subpart.

1926.950(d) Existing characteristics and conditions.

Existing characteristics and conditions of electric lines and equipment that are related to the safety of the work to be performed shall be determined before work on or near the lines or equipment is started. Such characteristics and conditions include, but are not limited to:

1926.950(d)(1) The nominal voltages of lines and equipment,

1926.950(d)(2) The maximum switching-transient voltages,

1926.950(d)(3) The presence of hazardous induced voltages,

1926.950(d)(4) The presence of protective grounds and equipment grounding conductors,

1926.950(d)(5) The locations of circuits and equipment, including electric supply lines, communication lines, and fire protective signaling circuits,

1926.950(d)(6) The condition of protective grounds and equipment grounding conductors,

1926.950(d)(7) The condition of poles, and

1926.950(d)(8) Environmental conditions relating to safety.

[79 FR 20696-20697, July 10, 2014; 80 FR 60040, October 5, 2015]



Michigan Occupational Safety and Health Administration
PO Box 30643
Lansing, Michigan 48909-8143
For technical questions of this standard – Ph: 517-284-7680 (CSHD) or 517-284-7720 (CETD)
To order copies of this standard – Ph: 517-284-7740

The Department of Labor and Economic Opportunity will not discriminate against any individual or group because of race, sex, religion, age, national origin, color, marital status, disability, or political beliefs. Auxiliary aids, services and other reasonable accommodations are available upon request to individuals with disabilities.