DEPARTMENT OF ~~CONSUMER AND INDUSTRY SERVICES~~ **LICENSING AND REGULATORY AFFAIRS**

~~BUREAU OF SAFETY AND REGULATION~~ **DIRECTOR'S OFFICE**

GENERAL INDUSTRY SAFETY STANDARDS ~~COMMISSION~~

FILED WITH THE SECRETARY OF STATE ON JUNE 5, 2013

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

~~These rules take effect 15 days after filing with the Secretary of State~~

(By authority conferred on the **director of the department of licensing and regulatory affairs** ~~general industry safety standards commission~~ by sections 16 and 21 of **1974 PA** ~~Act No.~~ 154 **and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4, MCL 445.2001, 445.2011, 445.2025, and 445.2030)** ~~of the Public Acts of 1974, as amended~~, ~~being SS408.1016 and 408.1021 of the Michigan Compiled Laws)~~

R 408.11203, R 408.11211, R 408.11213, R 408.11221, R 408.11222, R 408.11224, R 408.11241, R 408.11243, R 408.11262, R 408.11275, R 408.11293, and R 408.11294 are of the Michigan Administrative Code are amended and R 408.11202 is added, as follows:

PART 12. WELDING AND CUTTING

R 408.11202. Adoption of standards by reference; access to other MIOSHA rules.

Rule 1202. (1) The following standards are adopted by reference in these rules and are available from IHS Global, 15 Inverness Way East, Englewood, Colorado, 80112, USA; telephone number: 1-800-854-7179; or via the internet at web-site: http://global.ihs.com; a cost as of the time of adoption of these rules as stated in this subrule.

(a) American National Standards Institute ANSI B31.1 "Industrial Gas and Air Piping Systems," 1967 edition. Cost: $96.00.

(b) ANSI B57.1 "Compressed Gas Cylinder Valve Outlet and Inlet Connections," 1965 edition. Cost: $29.00.

(c) American Petroleum Institute API 1104 "Standard for Welding Pipe Lines and Related Facilities," 1973 edition. Cost: $125.00.

(d) API PSD 2201 "Welding or Hot Tapping on Equipment Containing Flammables," 1963 edition. Cost: $125.00.

(e) American Society of Mechanical Engineers ASME A13.1 "Identification of Piping Systems," 1956 edition. Cost: $60.00.

(2) The following standards are adopted by reference in these rules and are available from NFPA, 1 Batterymarch Park, Quincy, Massachusetts, USA, 02169-7471; telephone number: 1-617-770-3000; or via the internet at website: www.nfpa.org; at a cost as of the time of adoption of these rules as stated in this subrule.

(a) National Fire Protection Association (NFPA) Standard 50 "Bulk Oxygen Systems," 1971 edition. Cost: $27.00.

(b) NFPA 80 "Standard for the Installation of Fire Doors and Windows," 1974 edition. Cost: $27.00.

(3) The following standard is adopted by reference in these rules, "The Fire Resistance Directory." This directory is available from Underwriters' Laboratory, 2600 NW Lake Road, Camas, Washington, 98607-8542, USA; telephone number: 1-877-854-3577; or via the internet at website: www.ul.com/directories; at a cost as of the time of adoption of these rules of $150.00.

(4) The standards adopted in subrules (1), (2), and (3) of this rule are also available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Standards Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48909-8143.

(5) Copies of the standards adopted in subrules (1), (2), and (3) of this rule may be obtained from the publisher or may also be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA Standards Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost charged in this rule, plus $20.00 for shipping and handling.

(6) The following standard is referenced in these rules, General Industry Safety Standard Part 33 'Personal Protective Equipment,' R 408.13301 to R 408.13398. Up to 5 copies of this standard may be obtained at no charge from the Michigan Department of licensing and regulatory affairs, MIOSHA standards section, 7150 Harris Drive, P.O. Box 30643, Lansing, MI, 48909-8143 or via the internet at 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.

R 408.11203. Definitions; A to C.

Rule 1203. (1) "AC" means alternating current.

(2) "Arc welding" means a process for joining metals by heating with an electric arc with or without the use of pressure with or without a filler material.

(3) "Brazing" means a process of joining metals without melting them with a filler metal melting above 800 degrees F.

(4) "Confined space" means a small or restricted space without proper life supporting atmosphere or in which mobility is restricted.

(5) "Cutting" means a process in which the severing or removing of metal is effected by the use of an arc or flame.

(6) "Cylinders" means containers for storing compressed gases manufactured, labeled, and periodically tested in accordance with specifications of the department of transportation regulations. ~~or manufactured in accordance with specifications of the national fire protection association, which are hereby incorporated by reference and are available for inspection at the Lansing office of the Michigan Department of Consumer and Industry Services. These regulations, Department of Transportation regulations on transporting dangerous articles--tariff no. 14, 1970, may be purchased from the American Trucking Association, H.J. Sonnenberg, Issuing Officer, 1616 P Street N.W., Washington, D.C. 20036, at a cost of $11.00 each, and the National Fire Code, Volume 2, Gases 1970 -71 may be purchased from the National Fire Protection Association, 60 Batterymarch Street, Boston, Massachusetts 02110, at a cost of $5.00 each, or from the Michigan State Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.~~

R 408.11211. Employer and employee responsibilities.

Rule 1211. (1) An employer shall do all of the following:

(a) Give each employee training or a test before allowing him or her to use equipment for arc and gas welding and cutting.

(b) Provide face and eye protection and foot protection as prescribed in general industry safety standard Part 33 "Personal Protective Equipment," **as referenced in R 408.11202.** ~~being R 408.13301 et seq. of the Michigan Administrative Code.~~

(c) Provide other personal protective clothing or equipment, such as gloves, aprons, hearing protection devices, respirators, lifelines, safety belts, and lanyards required to protect the employee from injury likely to be caused by the assigned task of welding and cutting. Except for long sleeve shirts required to protect the employee from ultraviolet rays to the arms and ankle length trousers, the personal protective clothing and equipment shall be provided without expense to the employee.

(d) Provide to an employee, at no expense to the employee, protective devices such as, but not limited to, curtains, safety glasses, or face shields to reduce the risk of flash burn, sparks, and foreign bodies to all employees in the area.

(e) Provide ventilation where necessary to protect an employee against toxic materials as prescribed by the **Michigan Occupational Safety and Health Administration (MIOHSA) standards.** ~~state department of public health.~~

(2) An employee shall comply with all of the following:

(a) Use welding and cutting equipment as trained and authorized.

(b) Use the protective equipment required by the employer or the hazard.

(c) Not tamper with safety devices.

(3) An employee in charge of the operation of oxygen or fuel-gas supply equipment, of oxygen or fuel-gas systems, including generators, shall be instructed and judged competent by the employer for this work before being left in charge. Rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems shall be readily available.

R 408.11213. Working in confined spaces.

Rule 1213. (1) When working in a confined space, the torch valves and the gas supply valve and oxygen valve outside the confined space shall be shut off during lunch, overnight, or for any other prolonged period. Where practicable, the torch and hose shall be removed from the confined space.

(2) When stick electrodes are used in a confined space, and welding is suspended during lunch, overnight, or for any other prolonged period, the electrode shall be removed from the holder and the machine shut off.

(3) The air in a confined space shall be tested with an approved device and purged, if necessary, before any entry. Ventilation shall be provided in the confined space~~d~~ when an employee is present.

(4) A cylinder or welding power source used in a confined space shall be placed and secured on the outside of the space where work is being performed.

(5) An employee who is trained in rescue procedures, and with such equipment as is necessary to effect a rescue, if needed, shall be stationed outside the confined space during welding or cutting operations. An employer shall ensure that an effective means of communication is established between employees in the confined space and the attendant. When safety belts and lifelines are used, they shall be provided and used as prescribed in ~~rule 3390 of~~ general industry **safety** standard Part 33 "Personal Protection Equipment," **as referenced in R 408.11202,** ~~being R 408.13390 of the Michigan Administrative Code~~, and attached to the welder's body so that his or her body cannot be jammed in a small exit opening.

(6) After welding operations are completed in a confined space, a sign or other warning shall be used to mark the hot metal.

R 408.11221. Cylinder marking.

Rule 1221. (1) **Compressed gas** cylinders shall be legibly marked, **for the purpose of identifying the gas content,** with either the chemical or trade name **of the gas. Such m**arking shall be by **means of** stenciling, stamping, or labeling~~,~~ and shall not be ~~tampered with or~~ readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder.

(2) Unlabeled cylinders shall not be used.

(3) Empty cylinders shall be so marked at time of depletion.

R 408.11222 Storage.

Rule 1222. (1) An oxygen cylinder shall be stored not less than 20 feet from fuel gas cylinders or a highly combustible material, such as, but not limited to, oil, grease, excelsior, flammable gas, or a source of ignition, or shall be separated from the material by a noncombustible wall, not less than 5 feet (1.6 meters) high, having a fire-resistance rating of 1/2 hour. An oxygen cylinder shall not be stored in an acetylene generator compartment.

The underwriters' laboratory fire resistance directory may be used as a guide to determine fire resistance, **as adopted in R 408.11202.** ~~The fire resistance directory is available from Underwriters' Laboratories Inc., 333 Pfingsten Road, Northbrook, Illinois 60062, at a cost of $7.60, or from the Michigan Department of Consumer and Industry Services, Safety Standards Division, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.~~

(2) A cylinder shall be stored away from heat in excess of 125 degrees Fahrenheit.

(3) A cylinder, including an empty cylinder, which is in storage, being shipped, or has the regulator removed shall have the cap secured in place, if a cap is provided in the design, or shall be otherwise protected.

(4) Storage shall be set up to ensure first**-**in, first**-**out usage.

(5) A cylinder storage area shall be posted with the names of the individual gases stocked, and a warning shall be posted against tampering by an unauthorized employee. An assigned storage area shall be located where a cylinder will not be knocked over or struck by a passing or falling object.

(6) Where different gases are stored, they shall be grouped by types. Groupings shall separate the flammable gases from the oxidizing gases as in subrule (1) of this rule.

(7) A storage area for cylinders shall be well ventilated. A cylinder shall not be stored in basements or pits, except where ventilation as specified by the **Michigan Occupational Safety and Health Administration (MIOSHA) standards** ~~department of public health~~ is furnished to keep the area purged of any accumulation of gases.

(8) Storage of fuel gas in a building in 1 area within 100 feet (30 meters) of another fuel gas storage area and not protected by an automatic sprinkler system shall be limited to a total gas capacity of 2,000 cubic feet (56 cubic meters approximately) or 11.8 cubic feet (.33 cubic meters) of liquefied gas, which is 735 pounds (333 kilograms) water capacity. Storage in excess of this amount shall be in a separate room or compartment with an exterior wall and on the top floor of the building, outside**,** or in a special building. All walls, floors, and ceilings shall be constructed of noncombustible material having a fire-resistance rating of 1 hour. The walls shall be continuous from the floor to the ceiling and shall be securely anchored. The separate room, compartment, or special building shall have no open flame for heat or light and shall be well ventilated. Openings from the separate storage room to other parts of the building shall be protected by a self-closing fire door for a class B opening and shall have a fire-resistance rating of not less than 1 hour. Windows in partitions shall be wired glass and approved metal frames with a fixed sash. Installation shall be in accordance with ~~the~~ **NFPA 80** "Standard for the Installation of Fire Doors and Windows," ~~National Fire Protection Association Standard 80~~,1974 **edition**, **as adopted in R 408.11202.** ~~which is incorporated herein by reference and which is available for inspection at the Lansing office of the department of consumer and industry services. This standard may be purchased at a cost of $3.75 from the National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.~~

(9) Where a liquid or gaseous oxygen system is used to supply gaseous oxygen for welding and cutting and the system has a storage capacity of more than 20,000 cubic feet (560 cubic meters), measured at 14.7 psia (101.34 kPa) and 70 degrees Fahrenheit (21.1 degrees Celsius), including unconnected reserves at the site, the system shall be as prescribed in **NFPA** ~~National Fire Protection Association Standard~~ 50 ~~-1971,~~ "Bulk Oxygen Systems," **1971 edition, as adopted in R 408.11202.** ~~which is incorporated herein by reference and which may be inspected at the Lansing office of the department of consumer and industry services. This standard may be purchased from the National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909, at a cost of $1.00 each.~~

(10) A cylinder used for methylacetylene-propadiene, stabilized, shall be constructed of materials suitable for this fuel gas in the gaseous or liquid phases.

R 408.11224. General rules for cylinders--II.

Rule 1224. (1) Gases shall not be mixed within a cylinder except by the supplier.

(2) A cylinder shall not be placed where it will become a part of the electrical circuit by accidental grounding or where it may be burned by electric welding arc. A cylinder shall not be placed so that hot slag or flame will reach it or it shall be protected by a fire resistant shield. An electrode shall not be tapped against a cylinder to strike an arc.

(3) A regulator, gauge**,** or hose shall not be interchangeable between fuel gas, oxidizing gas or inert gas. Connections for compressed gas cylinders shall be as prescribed in **ANSI** ~~ASA~~ B57.1-~~1965,~~ "Compressed Gas Cylinder Valve Outlet and

Inlet Connections," **1965 edition, as adopted in R 408.11202.** ~~which is incorporated herein by reference and may be inspected at the Lansing office of the department of consumer and industry services. This standard may be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909 at a cost of $4.00 each.~~

(4) A cylinder valve shall be opened slightly for an instant and then closed before connecting to a regulator or manifold to clear the valve of dust and dirt. This shall not be done near a source of ignition. Pressure to a regulator shall be introduced by slowly opening the cylinder valve. An acetylene cylinder valve shall not be opened more than 1 1/2 turns of the spindle.

(5) Acetylene shall not be utilized or piped, except in cylinder manifolds, at a pressure in excess of 15 psig.

(6) Only the owner of the cylinder, if the owner is qualified, or a person trained, qualified, and authorized by the owner, shall refill a cylinder.

MANIFOLDING - SERVICE PIPING

R 408.11241. Piping material.

Rule 1241. (1) Piping for acetylene shall be limited to steel and ductile iron.

(2) Piping for other gases shall be compatible with the gas.

(3) Oxygen at pressures of more than 700 psig shall be run in stainless steel or copper alloy piping.

(4) Gray or white cast iron fittings shall not be used.

(5) Pipe and fittings shall be as prescribed in section 2 of the ANSI B31.1 ~~-1967 standard,~~ "Industrial Gas and Air Piping Systems," **1967 edition, as adopted in R 408.11202, except for the following:** ~~which is incorporated herein by reference and may be inspected at the Lansing office of the department of consumer and industry services, except that:~~

(a) Pipe shall be not less than schedule 40 and fittings not less than standard weight in sizes up to and including 6**-**inch nominal.

(b) Copper tubing shall be type K or L.

(6) ~~This standard may be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909 at a cost of $8.00.~~

~~(7)~~ A hose connection and hose complying with **R 408.11233** ~~rule 1233~~ may be used to connect the outlet of a manifold pressure regulator to piping if the working pressure of the piping is 250 p.s.i.g. or less, and the length of the hose does not exceed 5 feet.

R 408.11243. Installation and identification of piping.

Rule 1243. (1) Above ground piping, station outlet, and section valves shall be identified as to contents by color or name, or both, as prescribed in **ASME** ~~ASA standard~~ A13.1 ~~-1956,~~ "Identification of Piping Systems," **1956 edition, as adopted in R 408.11202.** ~~which is incorporated herein by reference and may be inspected at the Lansing office of the department of consumer and industry services. This standard may be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909, at a cost of $2.00.~~

(2) A cylinder manifold shall be installed under the supervision of **an individual** ~~someone~~ experienced in the proper practices with reference to **its** ~~their~~ installation and use.

R 408.11262. Welding drums, barrels, tanks, or other containers.

Rule 1262. (1) Welding or cutting shall not be performed on drums, barrels, tanks, or other containers until they have been cleaned of all flammable combustible or toxic materials or fumes.

(2) All pipe lines or other connections to drums, barrels, or tanks shall be disconnected or blanked.

(3) Hollow spaces or cavities shall be vented and either filled with water or purged with an inert gas before preheating, cutting**,** or welding.

(4) An opening shall be maintained during welding and cutting to vent gases or vapors.

(5) The welded construction of a transmission pipeline shall be conducted in accordance with ~~the~~ **API 1104** "Standard for Welding Pipe Lines and Related Facilities," ~~API Standard 1104-~~ 1973 **edition**, **as adopted in R 408.11202.** ~~which is incorporated herein by reference and is available for inspection at the Lansing office of the department of consumer and industry services. This standard may be purchased at a cost of $1.00 from the American Petroleum Institute, 1801 K Street, N.W., Washington, D.C. 20006, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.~~

(6) The connection, by welding, of branches to a pipeline carrying a flammable substance shall be performed in accordance with **API PSD 2201** ~~the publication~~ "Welding or Hot Tapping on Equipment Containing Flammables," ~~API Standard PSD No. 2201 -~~ 1963 **edition**, **as adopted in R 408.11202.** ~~which is incorporated herein by reference, and is available for inspection at the Lansing office of the department of consumer and industry services. This standard may be obtained at no charge from the American Petroleum Institute, 1801 K Street, N.W., Washington, D.C. 20006, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.~~

R 408.11275. Operation.

Rule 1275. (1) Engine fuel, cooling water, or shielding gas shall not be allowed to leak.

(2) A welding machine shall be disconnected when being moved and turned off when not in use.

(3) Electrodes shall be retracted or removed when not in use. Electrode holders not in use shall be placed so that they cannot make electrical contact with an employee, fuel or gas tanks**,** or conducting objects.

(4) A welder shall not let live electrodes or holders touch his **or her** bare skin or damp clothing. When arc welding is performed in wet conditions or under a condition of high humidity, the welder shall be protected against electric shock.

(5) Electrode holders shall not be cooled by immersion in water.

(6) Welding shall not be permitted where fumes of chlorinated hydrocarbons are present unless specific ventilation and personal protective equipment is provided as specified by the **Michigan Occupational Safety and Health Administration (MIOSHA) standards.** ~~department of public health.~~

(7) Before starting an arc welding operation, the welder shall **do all of the following**:

(a) Make sure the work lead is secured to the work.

(b) Make sure the magnetic work clamps are free of spatter on the contact surfaces.

(c) Spread out the welding cable, if necessary, to prevent overheating and damage.

(d) Make sure grounding connections are secured to a good ground.

(e) Make sure the required switching equipment for shutting down the machine has been provided.

(8) A welder shall not curl or loop welding cable around his **or her** body.

R 408.11293. Gas holders.

Rule 1293. (1) A gas holder shall be constructed on the gasometer principle, the bell being suitably guided. The gas bell shall move without a tendency to bind and shall have a clearance of not less than 2 inches (5.08 cm) from the shell.

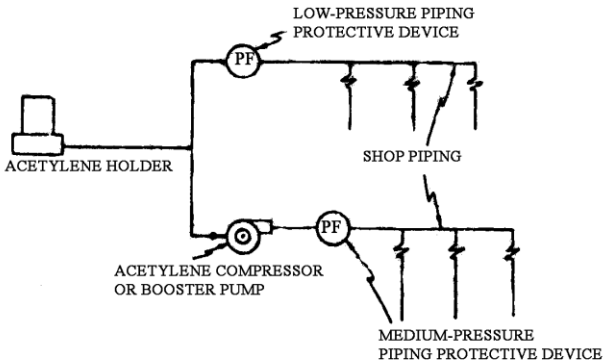
(2) The compressor or booster cutoff of a gas holder shall be located 12 inches above the landing point of the gas bell to prevent collapse of the bell.

(3) A gas holder shall be located in a heated and ventilated room as prescribed in **R 408.11292(2)** ~~subrule (2) of rule 1292~~ and the **Michigan Occupational Safety and Health Administration (MIOSHA) standards.** ~~division of occupational health of the department of consumer and industry services.~~ When heat is not supplied, the gas holder seals shall be protected from freezing.

(4) A means shall be provided to stop the generator feeding mechanism before the gas holder reaches the upper limit of its travel. A gas holder connected to only 1 generator shall have a capacity of not less than 1/3 of the hourly rating of the generator.

(5) Protective devices shall be installed in each supply line when acetylene is used from a gas holder without an increase in pressure at some points but with increased pressure by a compressor or booster pump at other points. A low pressure protective device shall be installed between the gas holder and the shop piping, and a medium pressure protective device shall be installed between the compressor or booster pump and the shop piping (see figure 2). Approved protective equipment is used to prevent **all of the following**:

Figure 2



(a) Backflow of oxygen into a fuel gas supply system.

(b) Passage of a flashback into a fuel gas supply system.

(c) Excessive back pressure of oxygen in the fuel gas supply system. The 3 functions may be combined in 1 device or may be provided by separate devices.

(6) A compressor or booster pump shall be located in a ventilated area away from sources of ignition.

(7) A compressor or booster pump shall be provided with a pressure relief valve which will relieve at not more than 15 psig (103.5 kPa gage) as prescribed in **R 408.11292(5).** ~~subrule (5) of rule 1292.~~ The discharge outlets of a compressor or booster pump shall be provided protective equipment as prescribed in **R 408.11252.** ~~rule 1252.~~

R 408.11294. Stationary acetylene generators; outside houses and inside rooms.

Rule 1294. (1) An opening in an outside acetylene generator house shall not be located within 5 feet (1.6 meters) of an opening in another building. The walls, floor, and roof shall be of noncombustible construction with a 1-hour, fire-resistance rating.

(2) Where part of a generator house is used for storage or manifolding of oxygen cylinders, the space to be occupied shall be separated from the generator or carbide storage section by construction partition walls continuous from floor to ceiling, gastight, constructed as prescribed in subrule (1) of this rule, securely anchored and with not less than 1 exterior wall. Separation walls shall be without openings. Exit doors shall be located so as to be accessible in an emergency.

(3) Explosion venting for generator houses and rooms shall be provided in the exterior wall or roof. The venting area shall be equal to not less than 1 square foot (.092 square meters) per 50 cubic feet (1.42 cubic meters) of room volume and may consist of 1 or any combination of the following:

(a) Walls of light, noncombustible material, preferably single-thickness, single-strength glass.

(b) Lightly fastened hatch covers.

(c) Lightly fastened swinging doors on exterior walls which swing outward.

(d) Lightly fastened walls or roof designed to relieve at a pressure of not more than 25 pounds (11.35 kilograms) per square foot.

(4) The installation of an acetylene generator within a building shall be restricted to a 1-story building or roof or top floor of a multistory building. A generator installed inside a building shall be enclosed in a separate room and constructed as prescribed in subrule (2) of this rule.

~~(5) An opening from an inside generator room to another part of the building shall be protected by a swinging-type, self-closing class "B" fire door having a 1-hour, fire-resistance rating. A window in the partition shall be wired glass in metal frames as prescribed in NFPA-80-1973 standard, installation of fire doors and windows, which is incorporated herein by reference and is available for inspection at the Lansing office of the department of consumer and industry services. This standard may be purchased from the National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909, at a cost of $2.25.~~

(5)~~(6)~~ A generator room or house shall be equipped with vents located at ceiling and floor levels.

(6)~~(7)~~ Illumination during daylight hours shall be by natural light. Where artificial lighting is necessary, it shall be from explosion-proof fixtures and controls. Wiring shall run through rigid conduit with threaded connectors. Telephone and other electrically powered apparatus either shall be designed for an explosive atmosphere or located outside the generator room or house.