

Sample Fire/Smoke Barrier Penetration Label

Fire Stop Fire Rated Assembly	
Fire Stop Material/Brand:	UL System #:
Location/Utility System:	
Project #:	Purchase Order #:
Installation Information	
Company:	Technician:
Installation Date:	Contact #:
Repenetrated By	Date
1.)	1.)
2.)	2.)
3.)	3.)

Penetrations are affixed with a label on or directly adjacent to the repair indicating:

- (1) Date repair/penetration sealed.
- (2) Name of technician and company, as applicable.
- (3) Contact information, including phone number of technician, of the contractor completing the work.
- (4) Project number, if applicable.
- (5) Purchase order number, if applicable.
- (6) Type of utility or system installed, modified or repaired.
- (7) Brand of fire stop material used.
- (8) Alpha-alpha numeric fire resistant directory number/UL system number of specific fire stop system used for repairs. Numbers are brand specific.

Appendix C
Policy Memorandum No. 138-10

Final Fire/Smoke Barrier Inspection Checklist

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EXHIBIT 13 (cont.)
Fire/Smoke Barrier Permit

Contractor/Department/Service: _____

Responsible Party: _____

Location of Penetration(s): _____

Purpose: _____

Prior to issuing a fire/smoke barrier permit, Facilities Management Service, Engineering Section will review the following checklist with the responsible party:

	Yes	No	N/A
Did responsible party obtain blueprints from Engineering Service detailing hourly rated walls and identifying the scope of the fire stop work?			
Is the manufacturer's product (fire sealant) application guide containing UL listed fire stop systems available and approved?			
Has the responsible party prepared an itemized schedule of fire/smoke barriers to be penetrated?			

Materials utilized in repairs:

Fire Stopping _____

Wall board _____

Other _____

Approved/Disapproved: _____ Date: _____
(Approving Official)

After penetrations are sealed, Engineering Section and responsible party will inspect the area to ensure compliance with the required standards.

Inspected By: _____ Date: _____

COTR: _____ Date: _____

Note: A copy of this permit must be posted at the work location.

ELECTRICAL SAFETY

1. PURPOSE: To set forth requirements for employees dealing with specific hazards requiring special means of protection to prevent serious injury, impairment, or jeopardy to themselves and patients in the use of electricity and electrical devices.

2. POLICY: It is the policy of this medical center to provide the safest possible environment. Electrical equipment, appliances, and wiring systems are installed, maintained, and used in accordance with the National Electrical Code, VA directives, and other known electrical safety guides.

3. RESPONSIBILITY:

a. Facilities Management Service, Engineering Section, is responsible for the installation and testing of electrical equipment.

b. Each employee is responsible for adherence to regulations contained in this memorandum regarding use of electrical devices and for ensuring that patients under their direct care are properly supervised when using such devices. Employees are responsible for:

- (1) Using equipment for the intended purpose only.
- (2) Checking equipment before each use.
- (3) Removing unsafe or defective equipment from use.
- (4) Identifying defective equipment with a Do Not Use tag.
- (5) Reporting defective equipment to the supervisor.

4. PROCEDURES:

a. Areas of patient susceptibility to electricity are:

(1) Non-Patient Areas: Administrative areas and areas where patients have little or no direct contact with electrical and electronic equipment.

(2) Patient Areas: Areas where patients have or may have direct contact with non-invasive therapy and/or electrical or electronic monitoring equipment.

(3) Electrically Susceptible Patient Care Areas (ESPCAs): Areas such as operating rooms and special care units that have patients who are or may be subjected to

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invasive monitoring or therapy using direct pathways to the cardiac musculature.

b. The electrical distribution system is checked annually for deficiencies, such as worn equipment, worn relays, leakage, frayed cables, and loose connections. Receptacles in the Laboratory are tested for correct polarity, retention force, and Ground Fault Circuit Interrupter (GFCI) function, if provided. Only qualified Engineering Section personnel perform tests, repairs and/or modifications to any electrical equipment or devices.

c. Electrical distribution equipment is cleaned, inspected, tested, and adjusted every three years by a qualified company.

d. Equipment Guidelines:

(1) Prior to the local purchase of any equipment, the requisition is reviewed by Engineering Section to ensure that items such as allowable leakage current and ground lead resistance limits are incorporated into the technical requirements on the requisition.

(2) Upon receipt at the medical center, electrical equipment is inspected by Engineering Section for compliance with manufacturers' specifications and leakage current limits before delivery to the using area. If there are limitations as to use, this is noted on the equipment (restrictions from ESPCAs, anesthetizing location, etc.) before delivery. Information technology equipment is inspected by the Chief Information Office computer technicians for compliance with specifications before delivery to the users.

e. Equipment Testing Program:

(1) Equipment is entered in the VISTA equipment inventory and categorized by Logistics Service.

(2) Engineering Section assesses equipment categories to determine frequency of preventive maintenance and inspections.

(3) Results of the testing program are maintained in Engineering Section.

(4) If equipment is found to be defective, it is tagged and removed from service. Deficiencies and any actions taken are reported to the person responsible for the operation of the unit inspected.

(5) Personnel in ESPCAs inspect equipment before each use for such hazards as broken or damaged plugs, frayed line cords, abnormal operation, obvious chassis damage, overheating, or tingling sensations. If a hazard is suspected, that equipment is not used unless it is life support equipment, in which case, it is tagged by the using personnel and closely monitored until repaired or replaced.

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(6) Electronic equipment that is loaned to or rented by the medical center for medical care or for evaluation purposes is inspected for compliance with VA standards as well as leakage current and grounding resistance limits prior to its use and, thereafter, at a frequency determined by the area of usage. Engineering Section maintains inspection records.

f. Equipment Restrictions:

(1) Extension cords are not used unless authorized and made available by Engineering Section. A ground fault circuit interrupter protects extension cords used outside, in construction, maintenance, or in wet locations. Engineering Section accomplishes any modifications of the electrical distribution system.

(2) Three-to-two wire adapters are not used. Electrical plugs that do not match outlets are referred to Engineering Section for correction.

(3) Patient-owned, electrical line-operated devices are strictly prohibited from ESPCAs. In other areas of the medical center, written permission in the form of an inspection report signed by the Assistant Chief, Engineering Section, or designee, is obtained prior to their use. When permitted, they are inspected prior to use. Personal equipment resulting in nuisance breaker trips is removed by the owner.

(4) Electrical line-operated equipment used in the patient care vicinity is provided with a three-wire power cord and three-pin grounding hospital-grade plug.

(a) Double insulated appliances are permitted to have two conductor cords and plugs. Line-operated devices with two conductor cords and plugs are not used in psychiatric bedrooms. Receptacles in these areas are the safety type requiring grounding plug for operation.

(b) Electrical line-operated items donated or purchased are inspected by Engineering Section prior to use. The using service/care line personnel visually inspect these items for deficiencies, such as damaged cords, cracked housings, and the presence of an attached electrical safety inspection sticker prior to each use. If discrepancies are discovered, the item is removed from service until repairs are made.

(c) Engineering Section inspects non-Nutrition and Food Services coffee makers and microwave ovens and their location to determine the adequacy of electric circuitry and the safety of the coffee makers or microwave ovens prior to use. A request is submitted to Engineering Section for an inspection of newly procured coffee makers or microwave ovens. Once inspected, personal equipment that is authorized for use is labeled with an inspection sticker. Personal electrical equipment is not utilized without an attached electrical safety inspection sticker.

(5) The use of personally owned devices is discouraged. Personally owned

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devices used by medical center employees are inspected for electrical safety prior to use by contacting extension 6172. Personal equipment resulting in nuisance breaker trips is removed by the owner immediately. Once inspected, personal equipment that is authorized for use is labeled with an electrical safety inspection sticker.

(6) Line-operated devices such as televisions, radios, and electrical razors are prohibited in ESPCAs without written permission of the Assistant Chief, Engineering Section, or designee. This permission is requested by memorandum by the physician in charge of that area. If the physician has authorized such a device, it is mounted at such a distance that it cannot be reached by the patient or by an individual at the patient's bedside. Battery-operated radios are permitted at the patient's bedside with physician's authorization.

(7) Electric beds are prohibited from ESPCAs unless specifically suited for such areas. Electric beds placed in ESPCAs are approved for such use by the Assistant Chief, Engineering Section, or designee.

(8) Bedside lamps in ESPCAs are grounded and permanently affixed in the patient's bedside area.

(9) Line-operated devices used in close proximity to a sink or tub are protected with a ground fault circuit interrupter (GFCI).

(10) Portable space heating devices are prohibited in patient treatment and sleeping areas. Portable space heaters with enclosed elements that limit maximum surface temperatures to 212 degrees Fahrenheit are permitted in non-sleeping, employee-only areas, with the exception of nursing stations. A request for inspection is made by contacting extension 6172 prior to equipment use. Once inspected, personal equipment that is authorized for use is labeled with an electrical safety inspection sticker. Appliances with open heating elements, including toasters and toaster ovens, are prohibited in any building.

g. Employee Education:

(1) For informational purposes, a copy of High Voltage Systems - Methods, Products, and Code Rules is on file in Building T228 for employees working with this system.

(2) Annual training is conducted for medical center employees in equipment and utility use and safety. Training is documented in the Talent Management System (TMS).

(3) Personnel in ESPCAs receive instructions in electrical safety as applicable to their situation. This may include the grounding system, isolated power system, and dangers of high frequency current. Instruction is accomplished by scheduling safety

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training classes through TMS.

5. REFERENCES: NFPA 70-1996
NFPA 99-1996, Chapter 3
DM&S Supplemental, MP-3, Chapter 2.22
The Joint Commission Comprehensive Accreditation Manual for
Hospitals, 2012

6. RESCISSION: Policy Memorandum No. 138-15, Electrical Safety, dated June 11, 2010.

7. RESCISSION DATE: September 11, 2014

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Medical Center Director

Distribution: F
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FALL PROTECTION

1. PURPOSE: To establish procedures for minimizing hazards due to falls.
2. POLICY: Fall hazards are minimized through compliance with Occupational Safety and Health Administration (OSHA) requirements.
3. RESPONSIBILITY:
 - a. The Chief, Facilities Management Service (FMS), is responsible for ensuring that proper safeguards and personal protective equipment (PPE) are provided for fall protection.
 - b. Supervisors are responsible for ensuring employees are trained on the proper use of PPE and ensuring employees utilize safe work procedures.
 - c. Individual employees are responsible for adhering to fall protection procedures and properly utilizing appropriate PPE in accordance with safety requirements.
4. PROCEDURES:
 - a. Stairway floor openings are guarded by a standard railing on all exposed sides except at the entrance to the stairway. For infrequently used stairways where traffic across the opening prevents the use of a fixed standard railing, the guard consists of a hinged floor opening cover and removable standard railing on all exposed sides, except at the entrance to the stairway.
 - b. Ladder-way floor openings or platforms are guarded by a standard railing with a standard toe board on all exposed sides, except at the entrance to the opening, with the passage through the railing either provided with a swinging gate, or so offset that a person cannot walk directly into the opening.
 - c. Skylight floor openings and holes are guarded by a standard skylight screen or a fixed standard railing on all exposed sides.
 - d. Pit and trapdoor floor openings are guarded by a floor-opening cover. While the cover is not in place, the pit or trap opening is constantly attended/monitored or is protected on all exposed sides by a removable standard railing.

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e. Manhole floor openings are guarded by a standard manhole cover that need not be hinged in place. While the cover is not in place, the manhole opening is constantly attended/monitored or is protected by removable standard railings.

f. Temporary floor openings have standard railings or are constantly attended/monitored.

g. Wall openings from which there is a drop of more than 4 feet are guarded by a standard railing or equivalent barrier. Where there is exposure below to falling materials, a removable toe board or the equivalent is also provided. When the opening is not in use for handling materials, the guard is kept in place.

(1) Wall openings at a stairway landing, floor, platform, or balcony from which there is a drop of more than 4 feet, and where the bottom of the opening is less than 3 feet above the platform or landing, are protected with a standard railing or a wall opening screen capable of withstanding a load of at least 200 pounds applied horizontally at any point on the near side of the screen, with openings not more than 8 inches long or slat work with openings not more than 4 inches wide. Where the window opening is below the landing or platform, a standard toe board is provided.

(2) Temporary wall openings have adequate guards.

h. Open-sided floor or platforms 4 feet or more above adjacent floor or ground level are guarded by a standard railing or equivalent on all open sides, except where there is an entrance to a ramp, stairway, or fixed ladder. A toe board is provided to protect people, equipment, and moving machinery traveling beneath the open-sided floor where falling materials could create a hazard.

(1) Regardless of height, open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment is guarded with a standard railing and toe board.

i. Stairway Railings and Guards:

(1) Flights of stairs having four or more risers are equipped with standard stair railings or standard handrails. If the stair is 44 or more inches wide but less than 88 inches wide, one handrail on each enclosed side and one stair railing on each open side is required. Stair width is to be measured clear of all obstructions except handrails.

(2) Winding stairs are equipped with a handrail offset to prevent walking on all portions of the treads having widths less than 6 inches.

(3) Fixed industrial stairs are provided for access from one structure level to another where operations necessitate regular travel between levels and for access to operating platforms at any equipment that requires attention routinely during operations. Fixed stairs are provided where access to elevations is daily or at each shift for such purposes as gauging, inspections, regular maintenance, where such work may expose employees

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to harmful substances, or for purposes that require the carrying of tools or equipment by hand. Fixed stairs are installed at angles to the horizontal of between 30 degrees and 50 degrees. Any uniform combination of rise/tread dimensions may be used that will result in a stairway at an angle to the horizontal with permissible ranges.

(4) Stair treads are reasonably slip-resistant and the nosing is of non-slip finish. Riser height and tread run is uniform throughout any flights of stairs.

(5) Stairway platforms are no less than the width of a stairway and a minimum of 30 inches in length measured in the direction of travel.

(6) Standard railings are provided on the open sides of exposed stairways and stair platforms. Handrails are provided on at least one side of closed stairways, preferably of the right side descending.

(7) Vertical clearance above any stair tread to an overhead obstruction is at least 7 feet measured from the leading edge of the tread.

(8) Alternating tread-type stairs are designed, installed, used, and maintained in accordance with manufacturer recommendations and in accordance with the following requirements:

(a) The stair is installed at a 70-degree angle or less.

(b) The stair is capable of withstanding a minimum uniform load of 100 pounds per square foot with a design factor of 1.7 and the treads are capable of carrying a minimum concentrated load of 300 pounds at the center of any tread span with a design factor of 1.7. If intended for greater loading, construction must allow for that loading.

(c) The stair is equipped with a handrail on each side.

j. Ladders are maintained in a safe condition and are inspected regularly, with the intervals between inspections being determined by use and exposure.

(1) The distance between rungs, cleats, and steps does not exceed 12 inches and is uniform throughout the length of the ladder.

(2) The minimum clear length of rungs or cleats is 16 inches.

(3) Rungs, cleats, and steps are free of splinters, sharp edges, burrs, or projections that may be a hazard.

(4) Rungs are designed so that the foot may not slide off the end.

(5) If side rails are used, the rails are afford adequate gripping surface without sharp edges, splinters, or burrs.

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(6) Clearances:

(a) The perpendicular distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder is 36 inches for a pitch of 76 degrees and 30 inches for a pitch of 90 degrees.

(b) For ladders without cages or wells, a clear width of at least 15 inches is provided each way from the centerline of the ladder in the climbing space.

(c) The distance from the centerline of rungs, cleats, or steps to the nearest permanent object in back of the ladder is not less than 7 inches.

(d) The step-across distance from the nearest edge of ladder to the nearest edge of equipment or structure is not more than 12 inches, or less than 2-1/2 inches.

(e) Counterweighted hatch covers open a minimum of 60 degrees from the horizontal. The distance from the centerline of the rungs or cleats to the edge of the hatch opening on the climbing side is not less than 24 inches for offset wells or 30 inches for straight wells. There are no protruding potential hazards within 24 inches of the centerline of rungs or cleats. Any such hazard within 30 inches of the centerline of the rungs or cleats is fitted with deflector plates placed at an angle of 60 degrees from the horizontal.

(7) Cages or wells are provided on ladders of more than 20 feet to a maximum unbroken length of 30 feet.

(a) Cages extend a minimum of 42 inches above the top landing unless other acceptable protection is provided.

(b) Cages extend down the ladder to a point not less than 7 feet or more than 8 feet above the base of the ladder, with the bottom flared not less than 4 inches, or a portion of the cage opposite the ladder is carried to the base.

(c) Cages do not extend less than 27 inches nor more than 28 inches from the centerline of the rungs of the ladder. The cage is not less than 27 inches in width. Ladder wells have a clear width of at least 15 inches measured each way from the centerline of the ladder. Smooth-walled wells are a minimum of 27 inches from the centerline of the rungs to the well wall on the climbing side of the ladder.

(8) When ladders are used to ascend to heights exceeding 20 feet, landing platforms are provided for each 30 feet of height or fraction thereof. Where no cage, well, or ladder safety device is provided, landing platforms are provided for each 20 feet of height or fraction thereof.

(9) Ladder safety devices are used on tower, water tank, and chimney ladders over 20 feet in unbroken length in lieu of cage protection. No landing platform is required in

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these cases. Ladder safety devices meet the design requirements of the ladders that they serve.

(10) The preferred pitch of fixed ladders is in the range of 75 degrees and 90 degrees with the horizontal. Substandard pitch is considered within the range of 60 and 75 degrees with the horizontal. Substandard pitch ladders are permitted only where it is found necessary to meet conditions of installation. Ladders having a pitch in excess of 90 degrees with the horizontal are prohibited.

k. Scaffolds are constructed, used, and maintained as required by 29 CFR 1910.28 and 1926.450-454; are operated only by individuals who are trained in their use; are included in a comprehensive maintenance and inspection program; and are inspected by a designated competent person before every installation or use, with periodic inspections of scaffolds made while in use. Records of inspections are maintained.

(1) Unstable objects such as barrels, boxes, loose brick, or concrete blocks are not used to support scaffolds or planks.

(2) Any scaffold damaged or weakened from any cause is immediately repaired and is not used until repairs have been completed.

(3) Scaffolds are not loaded in excess of their intended working load.

(4) Planking is scaffold-grade.

(5) Planking or platforms are overlapped (minimum 12 inches) or secured from movement. An access ladder or equivalent safe access is provided.

(6) Scaffold planks extend over their end supports, not less than 6 inches or more than 18 inches.

(7) The poles, legs, and uprights of scaffold are plumb and securely and rigidly braced to prevent swaying and displacement.

(8) Materials being hoisted onto a scaffold have a tag line.

(9) Overhead protection is provided for employees on a scaffold exposed to overhead hazards.

(10) Scaffolds are provided with a screen between the toe board and the guardrail, extending along the entire opening, consisting of Number 18 gauge US Standard Wire one-half inch mesh or the equivalent, where persons are required to work or pass under the scaffolds.

(11) Employees are not permitted to work on scaffolds during storms or high winds.

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(12) Employees are not permitted to work on scaffolds that are covered with ice or snow unless all ice or snow is removed and planking sanded to prevent slipping.

(13) Tools, materials, and debris is not permitted to accumulate in quantities to cause a hazard.

(14) Only treated or protected fiber rope is used for or near any work involving the use of corrosive substances or chemicals.

(15) When acid solutions are used for cleaning buildings over 50 feet in height, wire rope-supported scaffold is used.

(16) The use of shore scaffolds or lean-to scaffolds is prohibited.

(17) Scaffolds are secured to permanent structures through use of anchor bolts, reveal bolts, or equivalent means. Window-cleaning anchor bolts are not used.

(18) Guardrails are not less than 2 by 4 inches or the equivalent, and not less than 36 inches or more than 42 inches high, with a midrail of 1 by 4 lumber or equivalent. Toe boards are installed at all open sides on scaffolds more than 10 feet above the ground or floor. Toe boards are a minimum of 4 inches in height.

(19) On two-point suspension scaffolds (swinging scaffolds), employees are protected by a safety harness attached to a life line. The life line is securely attached to substantial members of the structure (not to the scaffold) or to securely rigged lines that safely suspend the employee in case of a fall.

I. Roofs

(1) Low-Pitched Roofs (pitch less than 4 in 12)

(a) Low-pitched roofs with a ground to eave height greater than 6 feet are equipped with rails, warning lines, or other suitable markers located not less than 6 feet from the edge of the roof or employees engaged in activities on the roof are protected with a motion-stopping safety system.

(b) Warning lines are erected as follows:

(1) The warning line consists of a rope, wire, or chain and supporting stanchions. The rope, wire, or chain is rigged and supported so that its lowest point (including sag) is no less than 34 inches from the walking/working surface and its highest point is no more than 39 inches from the walking/working surface.

(2) The barrier is capable of resisting a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the roof surface, perpendicular to

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the warning line, without tipping over. The line has a minimum tensile strength of 500 pounds.


(3) The line is attached at each stanchion so that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

(4) Workers engaged in activities between the warning line and the edge of the roof are provided with appropriate fall protection equipment. Life lines are secured above the point of operation to an anchorage or structural member capable of supporting a minimum dead weight of 5,400 pounds. Life belts are used only as positioning devices.

(2) Roofs Having a Pitch of 4 in 12 or Greater (steep roofs): Employees working on pitched roofs with a pitch of 4 in 12 or greater and more than 6 feet above ground, are protected from falling by guardrail systems with toe boards, safety net systems, or personal fall arrest systems.

5. REFERENCES: 29 CFR 1910.23
29 CFR 1910.24 (e)
29 CFR 1910.27 (c)(4)
29 CFR 1910.28
29 CFR 1926.104
29 CFR 1926.450-454, Safety Belts, Life Lines, and Lanyards
29 CFR 1926.105, Safety Nets

6. RESCISSIONS: None



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Chief, Facilities Management Service

Dist: Engineering Supervisors

CONFINED SPACE ENTRY

1. **PURPOSE:** To establish guidelines and procedures for working in confined spaces.
2. **POLICY:** To provide maximum safety protection for employees and contractors who are performing work in confined spaces.

3. **RESPONSIBILITIES:**

- a. The Chief, Facilities Management Service (FMS), is responsible for ensuring projects, maintenance and repairs in confined spaces utilize only authorized entrants under properly executed Confined Space Entry Permits, Attachment A, and ensures permit spaces are identified.

- b. The Safety and Occupational Health (OSH) Manager, Industrial Hygienist, or designee, provides technical guidance to affected employees for entry into a confined space. Additional responsibilities include:

- (1) Inspecting the confined space prior to entry for compliance to this policy.

- (2) Performing atmospheric testing and completing the Confined Space Pre-Entry Checklist, Attachment B.

- (3) Providing confined space entry training.

- c. The Fire Department provides rescue services and emergency rescue personnel to be utilized as entry attendants for confined spaces that can present special hazards. Emergency rescue personnel are responsible for completing annual confined space rescue training.

- d. The entry supervisor is knowledgeable of the hazards associated with permit required spaces, including information on the mode, signs or symptoms, and consequences of the exposure. Additional responsibilities include:

- (1) Determining when responsibility for a permit space entry operation is transferred and, at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

- (2) Ensuring that equipment needed for safe entry into any permit required space is available and in proper working order.

- (3) Verifying that rescue services are available and that the means for summoning rescue services are operable.

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(4) Removing unauthorized individuals who enter or attempt to enter the permit space during entry operations.

(5) Verifying, by checking that appropriate entries are made on the permit, that tests specified by the permit are conducted and that procedures and equipment specified by the permit are in place prior to signing and approving the permit and allowing entry to begin.

(6) Terminating the entry and cancelling the permit following task completion.

e. Entry attendants are knowledgeable of permit space hazards, prohibited conditions, the role to remain outside and in communication with entrants, prevention of unauthorized entry, procedures to request rescue and emergency services, and performance of non-entry rescue. The entry attendants' primary duty is to monitor and protect authorized entrants. Entry attendants are trained on the procedures contained in this policy and are knowledgeable of the hazards associated with permit required spaces, including information on the mode, signs or symptoms, and consequences of the exposure.

f. Authorized entrants are trained on the procedures contained in this policy and are knowledgeable of the hazards associated with permit required spaces, including information on the mode, signs or symptoms, and consequences of the exposure. Additional responsibilities include:

(1) Maintaining proficiency in dealing with the hazards of permit required spaces, proper equipment use, communications systems, acceptable entry and prohibited conditions, immediate evacuation conditions, and safe work task performance.

(2) Alerting the attendant when a prohibited condition is detected or when any warning sign or symptom of exposure to a dangerous situation is recognized.

(3) Exiting the permit space as quickly as possible when:

(a) A prohibited condition is detected.

(b) An order to evacuate is given by the attendant or the entry supervisor.

(c) An evacuation alarm is activated.

(d) Any warning sign or symptom of exposure to a dangerous situation is recognized.

g. Contractors performing work in a confined space at this facility are required to adhere to the requirements of this SOP.

4. DEFINITIONS:

a. Confined Space: An enclosed space that is large enough and so configured that an employee can bodily enter and perform assigned work, has limited or restricted means for entry or exit, and is not designed for continuous employee occupancy. Examples of confined spaces are listed in Attachment C, Confined Spaces, and include storage pits,

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vats, tanks, boilers, ventilation/exhaust ducts, sewers, tunnels, manholes, underground utility vaults or pipelines, and excavations.

b. Permit Required Confined Space:

- (1) Contains or has a known potential to contain a hazardous atmosphere.
- (2) Contains material with the potential for engulfing of an entrant.
- (3) Has internal configurations that could trap or asphyxiate an entrant.
- (4) Contains any other recognized serious safety or health hazards.

c. Hazardous Environment/Atmosphere: An atmosphere presenting a potential for death, disablement, injury, or acute illness from one (1) or more of the following causes:

- (1) Less than 19.5 percent or more than 23.5 percent oxygen.
- (2) A flammable gas or vapor in excess of 10 percent of its lower explosive limit (LEL).
- (3) An airborne combustible dust at a concentration that obscures vision at a distance of five (5) feet or less.
- (4) An atmospheric concentration that exceeds the listed numerical value of any toxic, corrosive, or asphyxiant substance listed in the Threshold Limit Value (TLV) book by the American Conference of Governmental Industrial Hygienists (ACGIH) or the permissible exposure limit (PEL) that is reasonably expected to be present.
- (5) A biological or radiological hazard or one that is otherwise known to present a safety or acute health hazard.
- (6) Any condition immediately dangerous to life or health.

d. Entrapment: An area that contains material with the potential to engulf the entrance.

e. Lower Explosive Limit (LEL): The lowest concentration of gas or vapor (percent by volume in air) that will burn or explode if an ignition source is present.

f. Isolation: A process to remove a confined space from service and to completely protected against the inadvertent release of material by the following:

- (1) Blanking: The absolute closure of a pipe, line or duct by fastening a solid plate or cap across the pipe, line or duct capable of withstanding the maximum upstream pressure.
- (2) Double Block and Bleed: Isolating a confined space from a line, duct or pipe by locking and tagging two (2) closed in-line valves, and locking and tagging open a drain or bleed in the line between the two (2) closed valves to the outside atmosphere.

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(3) Lockout: The placement of a locking device on an energy-isolating device, in accordance with an established procedure, to ensure that the energy-isolating device and the machine or equipment being controlled cannot be operated until the locking device is removed. Lockout devices require a tagging device to be used in conjunction with the locking device unless specifically not required by a documented lockout/tagout procedure. Refer to Engineering Section SOP No. 30, Control of Hazardous Energy (Lockout/Tagout).

(4) Mechanical Isolation: Isolation achieved by disconnecting linkages or removing drive belts or chains of moving parts. Equipment with moving mechanical parts is also blocked in such a manner that there can be no accidental rotation.

g. Permissible exposure limit (PEL): Regulatory limits on the amount or concentration of a substance in the air, as established by the Occupational Safety and Health Administration (OSHA).

h. Purging and Ventilation Purging: The method by which gases, vapors or other airborne impurities are displaced from a confined space to adjust the atmosphere to acceptable standards. This is accomplished by using fluids or vapors (gas, water steam and/or cleaning solutions) or by forced air ventilation.

i. Ventilation: The movement or circulation of fresh air to keep hazards away after purging. Ventilation is used after entry is made into a space to:

- (1) Supply continuous fresh air for entrants inside to breathe.
- (2) Remove potentially hazardous conditions before they become hazardous.
- (3) Supply cool air for comfort.

5. PROCEDURES:

a. When entry to a confined space is necessary, the following procedures are followed on a daily basis:

(1) The area is inspected by the work supervisor and the OSH Manager or Industrial Hygienist to determine potential hazards, isolation requirements, types of equipment to be used, number of employees required to enter the space and standby personnel required.

(2) The equipment or area is isolated and allowed to ventilate. Confined entry points are posted with "Danger, Do Not Enter" signage until such time as requirements have been met.

(3) The Assistant Chief, Engineering Section, or designee, issues the Confined Space Entry Permit, Attachment A. The OSH Manager and Fire Department are notified of the proposed entry permit. Emergency standby equipment is available at the location of the confined space.

(4) The OSH Manager or Industrial Hygienist conduct atmospheric testing and inspect the job site for general safety, isolation, and standby equipment. Prior to entry, the OSH

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Manager or Industrial Hygienist completes and signs the Confined Space Pre-Entry Checklist, Attachment B, and documents test results.

- (5) Each point of entry must have a completed and signed entry permit posted.
 - (6) At the conclusion of the workday, the entry permit is removed and "Danger, Do Not Enter" signage is posted.
 - (7) Entry to a confined space is not permitted until it has been properly prepared, hazards have been identified, standby equipment has been placed on site, and an entry permit has been completed and posted.
 - (8) The entry permit details the requirements for entry into the confined space.
 - (9) Prior to entering the confined space, each employee reviews the entry permit for specific requirements, reviews emergency procedures, and inspects the confined space for location of entry and exit points.
 - (10) Retesting of the atmospheric conditions is completed at lunch break or at four-hour intervals.
 - (11) Every confined space is considered immediately dangerous to life and health until it is tested and proven otherwise.
 - (12) No compressed gas cylinders are permitted inside of the confined space.
 - (13) Portable electrical tools, equipment, and lighting are powered through a ground fault circuit interrupter.
- b. Entry attendants assigned to remain outside of the confined space are equipped with radios, harness, and lifeline. Entry attendants:
- (1) Maintain visual or verbal contact with those in the confined space at all times.
 - (2) Maintain safety lines, if in use.
 - (3) Summon rescue personnel, if necessary.
 - (4) Summon a supervisor if entry is made in violation of this policy.
 - (5) Review the conditions for entry into the space as indicated on the Confined Space Entry Permit, Attachment A.
 - (6) Do not enter or leave the confined space at any time, unless relieved of standby duties.
 - (7) Continuously maintain an accurate count of authorized entrants in the permit space.

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(8) During an emergency situation, make rescue attempts using lifelines from outside the confined space while awaiting the arrival of rescue personnel.

(9) Remain aware of possible behavioral effects of hazard exposure in authorized entrants.

c. Fire Department personnel accomplish rescue of persons from a confined space. Emergency rescue personnel are trained in rescue techniques, self-contained breathing apparatus (SCBA) use, use of rescue equipment, and the procedures contained in this policy. Emergency rescue personnel are utilized as entry attendants for confined spaces that can present special hazards, as determined by the supervisor and/or safety representative. Rescue equipment may include:

(1) Harness.

(2) Life line.

(3) SCBA.

(4) Stokes litter.

(5) Tripod retrieval system.

(6) Standard firefighter clothing and personnel protective equipment.

e. Isolating equipment for entry is accomplished by blinding or air gapping lines to and from the equipment. Small screwed lines are disconnected and plugged. Isolation is made as close in proximity as possible to the equipment to be entered.

(1) Double blocks and bleeders are not permitted as a substitute for blinding, except when approved by the OSH Manager or Industrial Hygienist.

(2) Where several pieces of equipment are isolated as a unit, each piece of interconnected equipment is open to the atmosphere and made safe for entry.

(3) Equipment entered is electrically isolated in accordance with Engineering Section SOP No. 30, Control of Hazardous Energy (Lockout/Tagout). Tagging without locking out equipment is not sufficient for confined space entry.

(4) A record is maintained of blinds, plugs and/or other types of isolation for each entry. Records are used to validate the removal of any type of isolation device. Removing one point of isolation voids the entry permit.

h. Authorized entrants communicate with the attendant, as necessary, to enable the attendant to monitor entrant status and to alert entrants should the need to evacuate the space arise.

6. REFERENCES: Engineering Section SOP No. 30, Control of Hazardous Energy (Lockout/Tagout)

7. Engineering Section SOP No. 20

7. RESCISSION: Engineering Section SOP No. 20, Confined Space Entry, dated February 29, 2012.

RYAN JETER, PE, PS
Acting Chief, Facilities Management Service

Attachments: 3

Dist: Engineering Section Supervisors (138)
Safety and Occupational Health Manager (001S)
Industrial Hygienist (001S)
Fire Department (07F)