

Working in Confined Spaces

Policy:

It is the policy of Pagoda Electrical, Inc. to protect the health and welfare of all employees whose work assignments may require entering or working in permit-required confined spaces. Only persons with appropriate aptitudes and physical competence shall be employed in confined space work. Training of selected persons to carry out confined space work shall include:

- Emergency entry and exit procedures
- Use of appropriate respiratory protective equipment
- First aid, including Cardio-Pulmonary Resuscitation (CPR)
- Lock Out and Isolation procedures
- The use of safety equipment
- Rescue drills
- Fire protection
- Communications
- Aspects essential for maintaining the safety of the breathing environment
- Recognition of any hazards specific to the operation/activity.

Purpose:

To establish the policy and procedures regarding Management and employee response and actions to a working in confined spaces. Working in confined spaces can lead to injury or even death if adequate precautions are not taken. Only trained persons may enter or work in confined spaces.

Confined spaces can include storage tanks, process vessels, boilers, silos, storage bins, pits, and pipes, sewers, tunnels and shafts. Any place of work where the atmosphere is liable to be contaminated at any time by dust, fumes, mist, vapor, gas or other harmful substance, or is liable at any time to be oxygen deficient is defined as a confined space. When any work area is not subject to good natural ventilation, people can be readily exposed to harmful vapors. They can then suffer lack of oxygen, and collapse as a result. People entering the same space to rescue colleagues may become the next victims.

Pagoda Electrical, Inc. will ensure that our employees are protected from the potential hazards involved in entering confined spaces. We will make every effort to comply with the OSHA Permit-Required Confined Space Standard (CFR 1910.146) and to exceed those requirements when necessary to ensure the safety of our workers.

For the purposes of this program the following definitions will apply:

- Confined Space - A confined space has limited or restricted means of entry or exit, is large enough for an employee to enter and perform assigned work, and is not designed for

continuous occupancy by the employee. These spaces may include, but are not limited to, underground vaults, manholes, tanks, storage bins, pit areas, vessels, and silos.

- **Permit-Required Confined Space** - A "permit-required confined space" is one that meets the definition of a confined space and has one or more of these characteristics:
 - (1) Contains or has the potential to contain a hazardous atmosphere
 - (2) Contains a material that has the potential for engulfing an entrant
 - (3) Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section
 - (4) Contains any other recognized serious safety or health hazards.

Definitions:

a. **Acceptable entry conditions** means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

b. **Attendant** means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in Pagoda Electrical, Inc.'s permit space program.

c. **Authorized entrant** means an employee who is authorized by Pagoda Electrical, Inc. to enter a permit space.

d. **Blanking or blinding** means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

e. **Confined space** means that:

- It is large enough and so configured that an employee can bodily enter and perform assigned work; and
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- Is not designed for continuous employee occupancy.

f. **Double block and bleed** means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

g. **Emergency** means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.



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h. Engulfment means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

i. Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

j. Entry permit (permit) means the written or printed document that is provided by Pagoda Electrical, Inc. to allow and control entry into a permit space and that contains the information specified in paragraph (g) of this section.

k. Entry supervisor means the person (such as Pagoda Electrical, Inc., foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

l. Hazardous atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

2. Airborne combustible dust at a concentration that meets or exceeds its LFL;

NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less.

l. Hazardous atmosphere means (continued)

3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

NOTE: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

4. Any other atmospheric condition that is immediately dangerous to life or health.

NOTE: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information such as Material Safety Data Sheets that comply with the Hazard Communication Standard, §1910.1200, published information and internal documents can provide guidance in establishing acceptable atmospheric conditions.



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m. Host employer means any employer who arranges to have the employees of another employer (contractor) perform work for them. Our Company is the host employer for the on-site Operations Maintenance Contractor who may also be a host employer.

n. Hot work permit means Pagoda Electrical, Inc.'s written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

o. Immediately dangerous to life or health (IDLH) means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

NOTE: Some materials - hydrogen fluoride gas and cadmium vapor, for example - may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possible fatal collapse 12 - 72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

p. Inerting means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

NOTE: This procedure produces an IDLH oxygen-deficient atmosphere.

q. Isolation means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

r. Line breaking means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

s. Non-permit confined space means a confined space that does not contain, or with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

t. Oxygen-deficient atmosphere means an atmosphere containing less than 19.5 percent oxygen by volume.

u. Oxygen-enriched atmosphere means an atmosphere containing more than 23.5 percent oxygen by volume.

v. Permit-required confined space (permit space) means a confined space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere.

2. Contains a material that has the potential for engulfing an entrant;

3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-sections; or

4. Contains any other recognized serious safety or health hazard.



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w. Permit-required confined space program (permit space program) means Pagoda Electrical, Inc.'s overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

x. Permit system means Pagoda Electrical, Inc.'s written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

y. Prohibited condition means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

z. Rescue service means the personnel designated to rescue employees from permit spaces.

aa. Retrieval system means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

ab. Testing means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

NOTE: Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

References:

American National Standards Institute "Safety Requirements for Working in Tanks and other Confined Spaces", Z 117.1 - 1977 New York, N.Y.

NIOSH "Criteria for a Recommended Standard...Working in Confined Spaces."

U.S. Department of Labor, OSHA regulations, 29 CFR 1910.146, "Permit-Required Confined Spaces."

Identification and Evaluation of Confined Spaces:

An inspection of Pagoda Electrical, Inc.'s premises has identified the following spaces as confined spaces and permit-required confined spaces:

Confined Spaces: (Insert a list of all spaces below meeting the definition of a confined space)

Permit-Required Confined Spaces: (Insert a list of all spaces below that meet the definition of a permit-required confined space)

All Permit-Required Confined Spaces have been marked with warning signs reading:

"Danger - Permit-Required Confined Space - Authorized Entrants Only".

Procedure:

Work involving entry to a confined space must be planned. An assessment of likely hazards should be made prior to commencing the work. Precautions must be taken to avoid exposure to harmful substances or oxygen deficient atmospheres. Some thought should also be given to handling possible emergencies.

ENTRY INTO PERMIT-REQUIRED CONFINED SPACES:

Prior to entry into any permit-required confined space, the employee's supervisor will issue a permit that specifies the location, type, and duration of the work to be done, and the date. The permit will certify that all existing hazards have been evaluated by the supervisor and that necessary protective measures have been taken for the safety of workers. It will provide documentation of the atmospheric testing that has been done. It will assign entry and attendant duties to specific persons.

Before issuing an entry permit, the employee's supervisor will be responsible for the following:

- Identify all hazards and potential hazards associated with the confined space, such as the danger of explosion, asphyxiation, toxic gases/fumes, engulfment or entrapment, electrical or mechanical hazards, etc.
- Isolate the space from potential hazards, if possible, to provide for safe entry.
- Purge, inert, flush, ventilate to eliminate atmospheric hazards.
- Provide external barriers and warning signs.
- Perform pre-entry oxygen, flammable gas and toxicity air tests. All test results are to be recorded on the entry permit. If potential hazards cannot be isolated, continuous monitoring is required. If potential hazards can be isolated, periodic monitoring is required.

- Provide at least one trained attendant outside of each confined space that will be entered.
- Ensure that rescue and emergency services and equipment are in place as noted in this policy.
- Ensure that all required equipment is provided, maintained and properly used. This includes air monitoring equipment, forced air ventilation equipment, communications equipment, personal protective equipment (PPE), lighting, external barriers and warning signs, ladders, and rescue equipment.

If hazardous conditions are detected during entry, employees will immediately leave the space and the supervisor will determine the cause of the hazardous atmosphere and take corrective actions before allowing re-entry.

RESCUE & EMERGENCY SERVICES:

If proper protective measures are taken to eliminate and control any possible hazards in the confined space (i.e., ventilation, purging, monitoring, lock out/tag out, etc.), rescue operations should not be necessary. Nonetheless, Pagoda Electrical, Inc. will be prepared for the worst case scenario.

An attendant for the confined space will have access to a telephone and know the proper procedure for alerting the proper personnel in the event of an emergency, including the fire department, paramedics, police, and others as necessary.

Provisions will be made and equipment provided to ensure timely extraction of an unconscious or injured worker from the confined space. This will include a body harness with a lifeline attached to a tripod and rescue winch. Under no circumstances is the attendant to enter the space to effect rescue; rescue operations must be left to trained personnel.

Training:

Employees involved with permit-required confined space work will be trained to assure the knowledge, understanding, and skills necessary for the safe performance of their duties. Foremen will be trained in the identification and evaluation of confined space hazards and in the proper precautions to be taken to assure safe entry and work in confined spaces. Employees entering confined spaces will be trained in the hazards and potential hazards involved and how to protect themselves from those hazards. They will be trained to never enter a confined space until a permit is issued and they have been authorized to enter by the foreman. Attendants will be trained in their duties and responsibilities and the actions to be taken in the event of an emergency.



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Employees will receive a written certification following their training to document that they have been properly trained in their respective duties and the hazards and safety precautions involved in confined space entry.

Pagoda Electrical, Inc. shall provide training so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this section.

Training shall be provided to each affected employee:

Before the employee is first assigned duties under this section;

Before there is a change in assigned duties;

Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;

Whenever Pagoda Electrical, Inc. has reason to believe either that there are deviations from the permit space entry procedures required by or that there are inadequacies in the employee's knowledge or use of these procedures.

Pagoda Electrical, Inc. shall develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:

- Specifying acceptable entry conditions;
- Providing each authorized entrant or that employee's authorized representative with the opportunity to observe any monitoring or testing of permit spaces;
- Isolating the permit space;
- Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards;
- Providing pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards; and
- Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.



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The training shall establish employee proficiency in the duties required by this section and shall introduce new or revised procedures, as necessary, for compliance with this section.

Pagoda Electrical, Inc. shall certify and document that the training required by this training section has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

(CNF3 Line Item #3)

If Pagoda Electrical, Inc. decides that its employees will enter permit spaces, Pagoda Electrical, Inc. shall develop and implement a written permit space program that complies with this section in order to protect employees. The written program shall be available for inspection by employees and their authorized representatives.

Permit-required confined space program (permit space program). Under the permit space Pagoda Electrical, Inc. shall:

Implement the measures necessary to prevent unauthorized entry;

Identify and evaluate the hazards of permit spaces before employees enter them;

Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:

Specifying acceptable entry conditions;

Providing each authorized entrant or that employee's authorized representative with the opportunity to observe any monitoring or testing of permit spaces;

Isolating the permit space;

Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards;

Providing pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards; and

Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.



Provide the following equipment at no cost to employees, maintain that equipment properly, and ensure that employees use that equipment properly:

Testing and monitoring equipment needed to comply with this section;

Ventilating equipment needed to obtain acceptable entry conditions;

Communications equipment necessary for compliance with following:

Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space

Attendants shall communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space as necessary. See the attendant duties.

Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately. Please see duties of the Attendants (two (2) pages following)

Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees;

Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency;

Barriers and shields as required for purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards;

Equipment, such as ladders, needed for safe ingress and egress by authorized entrants;

Rescue and emergency equipment needed to comply with developing and implementing procedures for summoning rescue and emergency services, for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue, except to the extent that the equipment is provided by rescue services; and

Any other equipment necessary for safe entry into and rescue from permit spaces.

Pagoda Electrical, Inc. shall provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations.

NOTE: Attendants may be assigned to monitor more than one permit space provided the duties described in Duties of Attendants section, and can be effectively performed for each permit space that is monitored. Likewise, attendants may be stationed at any location outside the permit space to be monitored as long as the duties described in Duties of Attendants section can be effectively performed for each permit space that is monitored

Multiple spaces shall not be monitored by a single attendant. Doing so could interfere with the attendants ability to respond to an emergency affecting 1 or more of the spaces.

Pagoda Electrical, Inc. shall designate the persons who are to have active roles (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training required.

Duties of Authorized Entrants, Attendants and Entry Supervisors

Duties of Authorized Entrants. Pagoda Electrical, Inc. shall ensure that all authorized entrants:

Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

Properly use equipment as required (described two (2) pages previously)

Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space.

Alert the attendant whenever:

The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or

Exit from the permit space as quickly as possible whenever:

An order to evacuate is given by the attendant or the entry supervisor,

The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,

The entrant detects a prohibited condition, or

An evacuation alarm is activated.

Duties of Attendants. Pagoda Electrical, Inc. shall ensure that each attendant:

Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

Is aware of possible behavioral effects of hazard exposure in authorized entrants;

Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants. The authorized entrants within the permit space, by name or by such other means (for example, through the use of rosters or tracking systems) as will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized entrants are inside the permit space and accurately identifies who is in the permit space;

NOTE: This requirement may be met by inserting a reference on the entry permit as to the means used, such as a roster or tracking system, to keep track of the authorized entrants within the permit space.

Remains outside the permit space during entry operations until relieved by another attendant;

NOTE: When Pagoda Electrical, Inc.'s permit entry program allows attendant entry for rescue, attendants may enter a permit space to attempt a rescue if they have been trained and equipped for rescue operations as required by the rescue and emergency service section (next page) and if they have been relieved.

Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space;

Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions;

- If the attendant detects a prohibited condition;
- If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;
- If the attendant detects a situation outside the space that could endanger the authorized entrants; or
- If the attendant cannot effectively and safely perform all the duties required under of this section;

Duties of Attendants. Pagoda Electrical, Inc. shall ensure that each attendant:

Summon rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards;

Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:

Warn the unauthorized persons that they must stay away from the permit space;

Advise the unauthorized persons that they must exit immediately if they have entered the permit space; and

Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space;

Performs non-entry rescues as specified by Pagoda Electrical, Inc.'s rescue procedure; and

Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

Duties of Entry Supervisors. Pagoda Electrical, Inc. shall ensure that each entry supervisor:

Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin;

Terminates the entry and cancels the permit as required by paragraph (e)(5) of this section;

Verifies that rescue services are available and that the means for summoning them are operable;

Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations; and

Determines, whenever 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.

Rescue and Emergency Services.

Pagoda Electrical, Inc. will develop and implement procedures for summoning rescue and emergency services, for rescuing entrants from permit spaces, for providing first aid and necessary emergency services to rescued employees, and for preventing unauthorized personnel from entering the space or attempting a rescue. Procedures may vary from job to job as circumstances dictate.

Rescue services must either be :

- a) Provided by the Host facility, or
- b) Provided by an outside service which is also given an opportunity to examine the entry site, practice rescue, and decline, as appropriate, or
- c) Provided by Pagoda Electrical, Inc. by selecting a rescue team that is equipped and trained to perform the needed rescue services

Pagoda Electrical, Inc. shall:

Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified;

Note: What will be considered “timely” will vary according to the specific hazards involved in each entry. For example, §1910.134, Respiratory Protection, requires that employers provide a standby person or persons capable of immediate action to rescue employee(s) wearing respiratory protection while in work areas defined as IDLH atmospheres.

Evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified;

Select a rescue team or service from those evaluated that:

Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified;

Is equipped for and proficient in performing the needed rescue services;

Inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site; and

Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.

Pagoda Electrical, Inc. will not enter any space that is considered Immediately Dangerous to Life and Health. Pre-entry air monitoring must show zero readings outside of acceptable parameters in order for an entry to be approved.

Employees have been designated to provide permit space rescue and emergency services shall take the following measures:

Provide affected employees with the personal protective equipment (PPE) needed to conduct permit space rescues safely and train affected employees so they are proficient in the use of that PPE, at no cost to those

Train affected employees to perform assigned rescue duties. Pagoda Electrical, Inc. must ensure that such employees successfully complete the training required to establish proficiency as an authorized entrant, as provided by earlier sections

Train affected employees in basic first-aid and cardiopulmonary resuscitation (CPR). Pagoda Electrical, Inc. shall ensure that at least one member of the rescue team or service holding a current certification in first aid and CPR is available; and

Ensure that affected employees practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems shall meet the following requirements.

Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which Pagoda Electrical, Inc. can establish presents a profile small enough for the successful removal of the entrant. Wristlets may be used in lieu of the chest or full body harness if Pagoda Electrical, Inc. can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.

The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep

If an injured entrant is exposed to a substance for which a Material Safety Data Sheet (MSDS) or other similar written information is required to be kept at the worksite, that MSDS or written information shall be made available to the medical facility treating the exposed entrant.

If outside services are to be used for rescue services, they will be given the opportunity to examine the entry site, practice rescue, and decline as appropriate. No entry shall be attempted until trained



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personnel are at the entry site. If there is a reliance on the client Host rescue services for use, this **MUST** be stated and agreed to in contract language. IDLH conditions require trained rescuers on site while work is being performed. Employees must have PPE at no cost, training, and practice rescues at least every 12 months

Pagoda Electrical, Inc. will develop and implement a system for the preparation, issuance, use, and cancellation of entry permits as required by this section. See Entry Permit Samples 1 and 2 located at the end of this Section.

Pagoda Electrical, Inc. will develop and implement procedures to coordinate entry operations when employees of more than one employer are working simultaneously as authorized entrants in a permit space, so that employees of one employer do not endanger the employees of any other employer;

Pagoda Electrical, Inc. requires that when an entry concludes, the permit is “canceled” with the time of completion and the initial of person canceling the permit. No additional entries may be made without the issuance of a new permit once an entry concludes.

Pagoda Electrical, Inc. will review entry operations when Pagoda Electrical, Inc. has reason to believe that the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized; and

Pagoda Electrical, Inc. will review the permit space program, using the canceled permits retained within 1 year after each entry and revise the program as necessary, to ensure that employees participating in entry operations are protected from permit space hazards. NOTE: Pagoda Electrical, Inc. will perform a single annual review covering all entries performed during a 12-month period. If no entry is performed during a 12-month period, no review is necessary.

Appendix C to section 1910.146 presents examples of permit space programs that are considered to comply with the requirements of paragraph (d) of this section.

See our Appendix B at the end of this Confined Space chapter for the examples.

Air Monitoring:

The following monitoring shall be conducted during initial site entry when the site evaluation produces information that shows the potential for ionizing radiation or IDLH conditions, or when the site information is not sufficient reasonably to eliminate these possible conditions:

- (i) Monitoring with direct reading instruments for hazardous levels of ionizing radiation.
- (ii) Monitoring the air with appropriate direct reading test equipment (i.e., combustible gas meters, detector tubes) for IDLH and other conditions that may cause death or serious harm (combustible or explosive atmospheres, oxygen deficiency, toxic substances).
- (iii) Visually observing for signs of actual or potential IDLH or other dangerous conditions.
- (iv) An ongoing air monitoring program shall be implemented after site characterization has determined the site is safe for the start-up of operations.

Entrants and their representatives shall be given the opportunity to participate in and review calibrated air monitoring data before entry. Ventilation must be used and testing must be conducted before entry and during work.

Continuous force air ventilation shall be used as follows:

An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere;

The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space;

The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee who enters the space, or that employee's

authorized representative, shall be provided with an opportunity to observe the periodic testing required by this paragraph.

If a hazardous atmosphere is detected during entry:

Each employee shall leave the space immediately.

The space shall be evaluated to determine how the hazardous atmosphere developed; and

Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

Evaluate permit space conditions as follows when entry operations are conducted:

Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin, except that, if isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), pre-entry testing shall be performed to the extent feasible before entry is authorized and, if entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working;

Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations; and

When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

Provide each authorized entrant or that employee's authorized representative an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces.

Reevaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who requests that Pagoda Electrical, Inc. conduct such reevaluation because the entrant or representative has reason to believe that the evaluation of that space may not have been adequate.

Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted. Employees and their representatives are entitled to request additional monitoring at any time.

NOTE: Atmospheric testing conducted in accordance with Appendix B to section 1910.146 would be considered as satisfying the requirements of this paragraph. For permit space operations in sewers, atmospheric testing conducted in accordance with Appendix B, as supplemented by Appendix E to section 1910.146, would be considered as satisfying the requirements of this paragraph.

Contractors:

a. When Pagoda Electrical, Inc. arranges to have employees of another employer (contractor) perform work that involves permit space entry, the host employer shall:

- i. Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the OSHA regulations;
- ii. Apprise the contractor of the elements, including the hazards identified and the host employer's experience with the space, that make the space in question a permit space;
- iii. Apprise the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces where contractor personnel will be working;
- iv. Coordinate entry operations with all contractors (including on-site contractors), when any combination of host employer personnel and/or contractor personnel will be working in or near permit spaces, as required by paragraph (f-8); and
- v. Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.

b. In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit space entry operations shall:

- i. Obtain any available information regarding permit space hazards and entry operations from the host employer;
- ii. Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required; and
- iii. Inform the host employer of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

May 22, 2019

Safety Policy & Procedures Outline
CONFINED SPACE ENTRY

1. All crew members to enter Confined Space Entry should be provided with proper safety equipment. Following should be used:
 - a. Approved gas detector (check for valid calibration date)
 - b. Fresh air blower. Shall be used to provide “Alternate Space” environment.
 - c. Tripod Safety System, harness.
 - d. Manhole Entrance Guardrail.
 - e. Hardhat, safety glasses, cut resistant gloves.
 - f. Other devices as determined by the Confined Space Supervisor/Competent person onsite.
2. Pre-evaluation Meeting with all parties involved to assess safety hazards and scope of work. This should take place prior to any work to be performed. Ensure information regarding Confined Space(s) has been received from Host Employer and Controlling Contractor.
3. Employees shall follow the following procedures **BEFORE ENTERING THE CONFINED SPACE**:
 - a. Set up-install Confined Space Barrier at entrance.
 - b. Any conductors or cables shall be de-energized by Owner’s Representative.
 - c. LOTO shall be performed and documented by Pagoda Personnel with Owner.
 - d. If existing conductors/cables are unable to be de-energized then the Owner’s Representative will perform installation of insulating blankets and or barriers.
 - e. Before allowing anyone inside the Confined Space, test the space, using the Confined Space Gas Detector, for all 3 atmospheric conditions (**reference Confined Space Entry Handout Item#1**): **Each level must be tested for minimum 60 seconds.**
 - f. Oxygen content must be at least between 19.5% - 23.5% measured at all levels (bottom, middle, top). Do not enter the Confined Space if the Oxygen levels are not within this range. Due to extreme danger of suffocation in Confined Spaces, constant & continuous Oxygen Monitoring shall be required at all times. Oxygen levels above 23% can cause explosions or vigorous burning of flammable materials, including hair and clothing. Document on provided form.
 - g. Flammability Level shall be measured at all levels (bottom, middle, top). Lower Flammable Limit (LFL) or Lower Explosive Limit (LEL) should be less than 10%. Document on provided form.
 - h. Last, test the atmosphere for any Toxic Concentrations of Vapors < 10 PPM H₂S (Hydrogen Sulfide) & <35PPM CO (Carbon Monoxide). Toxicity is measured in terms of Threshold Limit Value (TLV) or Parts per Million. Measure at all levels (bottom, middle, top). Document on provided form.
 - i. **Gas detection monitor & retrieval harness shall be worn at all times while inside Confined Space.**

4. **Fill out Confined Space Form:**

- a. Confined Space Entry Permit – if hazardous voltages, serious safety hazards or potential atmospheric conditions are present. Must always have Harness/Tripod Retrieval System in use.
- b. Confined Space Entry Form – if entering Confined Space where all physical (such as electrical) or atmospheric hazards are not present and/or have been eliminated or isolated through engineering controls.

5. **Alternate Confined Space:** All Physical Hazards in the space are eliminated through engineering controls so that the only hazard posed by the permit space is a potential hazardous atmosphere.

- a. The use of Continuous Forced Air Ventilation alone is sufficient to maintain the permit space safe for entry. In the event the ventilation system stops working, entrants must exit the space safely.
- b. Set up Fresh Air Blower. Direct clean, fresh air into the Confined Space. Check Atmospheric Levels with Gas Detector.

6. **Under Confined Space requirements** the Operator shall be equipped with safety harness and lifeline which is attached to Tripod/Retrieval System.

7. **Under Alternate Confined Space:** Tripod Retrieval System with Harness shall be set up adjacent to the Confined Space Entry in the event that employee retrieval is necessary.

8. Perform work required within Confined Space. At a minimum, one person shall be stationed above ground for support purposes whenever a Confined Space is entered.

9. Once work is completed and all personnel have safely exited the space, notify Owner Representative. Insulated blankets and safety barriers should be removed by Owner.

10. LOTO shall be removed and Circuits can be re-energized by Owner Rep.

EMERGENCY ACTION PLAN: No person shall enter a confined space (manhole, underground vault, wet well, dry well) to retrieve someone who is unconscious without having required personnel above ground to assist. The person entering the Confined Space for rescue purposes must be equipped with the required rescue equipment and follow the specific steps previously in the outline. If atmospheric or hazardous conditions are present no one shall make a rescue attempt until hazardous conditions have been eliminated.

ENTRY SUPERVISOR/COMPETENT PERSON: shall inspect all safety devices and instruct all involved employees on proper Confined Space Safety Procedures. All defective safety devices shall be taken out of service. Marked “Out of Service” and returned to Pagoda’s Warehouse for replacement. It is the Foreman’s responsibility to insure that employees assigned to enter Confined Spaces have the required safety devices in their possession. The Foreman must assure the assigned employees are trained & instructed to operate all safety equipment and understands all safety procedures.

Confined Space Entry: Permit Form

Date and Time Issued: _____

Date and Time Expires _____

Address: _____

Job Site/Space I.D.#: _____

Emergency Contact (WORKNET, EMERG.RM, 9-1-1): _____

Desc. Of Work: _____

1. Atmospheric Checks: Test Bottom, Middle, Top, Min. 60 Sec. and every 2 hours minimum.

Time____Oxygen____% -Flammability____% LEL - H2S____PPM - CO____PPM - Initials____
(19.5%-23.5%) (< 10%) (< 10 PPM) (<35PPM) Tester

Time____Oxygen____% -Flammability____% LEL - H2S____PPM - CO____PPM - Initials____

Time____Oxygen____% -Flammability____% LEL - H2S____PPM - CO____PPM - Initials____

Time____Oxygen____% -Flammability____% LEL - H2S____PPM - CO____PPM - Initials____

Time____Oxygen____% -Flammability____% LEL - H2S____PPM - CO____PPM - Initials____

Time____Oxygen____% -Flammability____% LEL - H2S____PPM - CO____PPM - Initials____

Time____Oxygen____% -Flammability____% LEL - H2S____PPM - CO____PPM - Initials____

2. Tester's Signature: _____

3. Source isolation (No Entry):	N/A	Yes	No
Pumps or lines blinded,	()	()	()
Disconnected or blocked	()	()	()
Electrical-conductors	()	()	()

4. Ventilation Modification:	N/A	Yes	No
Mechanical	()	()	()
Natural Ventilation Only	()	()	()

5. Communication Procedures: (e.g.- crawl spaces use 2 way radios);



- 6. Entry, standby, and back up persons: Yes No
- Successfully completed required training: () ()
- Current Certification: () ()

- 7. Equipment: **N/A** **Yes** **No**
- Direct reading gas monitor- Tested/Certification date () () ()
- Safety Harnesses and lifelines for entry and standby persons () () ()
- Hoisting equipment () () ()
- Powered communications () () ()
- SCBA's for entry and standby Persons () () ()
- Protective clothing () () ()
- All electric Equipment listed Class I, Division I, Group D And Non-sparking tools () () ()

8. **EMERGENCY ACTION PLAN:** No person shall enter a confined space (manhole, underground vault, wet well, dry well) to retrieve someone who is unconscious without having required personnel above ground to assist. The person entering the Confined Space for rescue purposes must be equipped with the required rescue equipment and follow the specific steps previously in the outline. If atmospheric or hazardous conditions are present no one shall make a rescue attempt until hazardous conditions have been eliminated.

9. **Employee Signature:** (signature indicates Competent Person has reviewed all aspects of Confined Space Entry, the potential hazards, proper procedures, retrieval process and that you understand all information presented.)

Sign _____ Print _____ Date _____

Permit Prepared By: (Competent / Qualified Person) –

Sign _____ Print _____ Date _____

This confined space form is to be kept at the job site. Return job site copy to Safety Office following job completion.