Concrete, Masonry & Confined Spaces,

23. The name of the person responsible for overseeing your facility's employee training program. **Safety & Compliance Manager**
24. The names of the persons responsible for assisting with your employee training program. **Human Resources**

TRAINING METHODS

Training presentations make use of several training techniques including, but not limited to:

- Classroom type atmosphere with personal instruction
- Video programs.
- Training manuals/employee handouts
- Employee review sessions

Because we feel that employees need an opportunity to ask questions and interact with their instructors, time is specifically allotted for these activities in each training session.

Concrete and Mason Construction

Definitions applicable to this subpart:

In addition to the definitions set forth in 1926.32, the following definitions apply to this subpart.

"Bull float" means a tool used to spread out and smooth concrete.

"Formwork" means the total system of support for freshly placed or partially cured concrete, including the mold or sheeting (form) that is in contact with the concrete as well as all supporting members including shores, reshores hardware, braces, and related hardware.

"Lift slab" means a method of concrete construction in which floor, and roof slabs are cast on or at ground level and, using jacks, lifted into position.

"Limited access zone" means an area alongside a masonry wall, which is under construction, and which is clearly demarcated to limit access by employees.

"Precast concrete" means concrete members (such as walls, panels, slabs, columns, and beams) which have been formed, cast, and cured prior to final placement in a structure.

"Reshoring" means the construction operation in which shoring equipment (also called reshores or reshoring equipment) is placed, as the original forms and shores are removed, in order to support partially cured concrete and construction loads.

"Shore" means a supporting member that resists a compressive force imposed by a load.

"Vertical slip forms" means forms which are jacked vertically during the placement of concrete.

Jacking operation means the task of lifting a slab (or group of slabs vertically from one location to another (e.g., from the casting location to a temporary (parked) location, or to its final location in the structure), during the construction of a building/structure where the lift-slab process is being used.

Construction Loads

No construction loads shall be placed on a concrete structure or portion of a concrete structure unless the employer determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.

Reinforcing Steel

All protruding reinforcing steel, onto and into which employees could fall, shall be guarded to eliminate the hazard of impalement.

Post-Tensioning Operations

No employee (except those essential to the post-tensioning operations) shall be permitted to be behind the jack during tensioning operations.

Signs and barriers shall be erected to limit employee access to the post-tensioning area during tensioning operations.

Riding Concrete Buckets

No employee shall be permitted to ride concrete buckets.

Working Under Loads

No employee shall be permitted to work under concrete buckets while buckets are being elevated or lowered into position.

To the extent practical. elevated concrete buckets shall be routed so that no employee, or the fewest number of employees, are exposed to the hazards associated with falling concrete buckets.

Personal Protective Equipment

No employee shall be permitted to apply a cement, sand, and water mixture through a pneumatic hose unless the employee is wearing protective head and face equipment.

Bulk Cement Storage

Bulk storage bins, containers, and silos shall be equipped with the following: Conical or tapered bottoms; and Mechanical or pneumatic means of starting the flow of material.

No employee shall be permitted to enter storage facilities unless the ejection system has been shut down, locked out, and tagged to indicate that the ejection system is not to be operated.

Concrete Mixers

Concrete mixers with one cubic yard (8 mÂ³) or larger loading skips shall be equipped with the following:

A mechanical device to clear the skip of materials; and guardrails installed on each side of the skip.

Power Concrete Trowels

Powered and rotating type concrete troweling machines that are manually guided shall be equipped with a control switch that will automatically shut off the power whenever the hands of the operator are removed from the equipment handles.

Concrete Buggies

Concrete buggy handles shall not extend beyond the wheels on either side of the buggy.

Concrete Pumping Systems

Concrete pumping systems using discharge pipes shall be provided with pipe supports designed for 100 percent overload.

Compressed air hoses used on concrete pumping system shall be provided with positive fail-safe joint connectors to prevent separation of sections when pressurized.

Concrete Buckets

Concrete buckets equipped with hydraulic or pneumatic gates shall have positive safety latches or similar safety devices installed to prevent premature or accidental dumping.

Concrete buckets shall be designed to prevent concrete from hanging up on top and the sides.

Tremies

Sections of Tremies and similar concrete conveyances shall be secured with wire rope (or equivalent materials) in addition to the regular couplings or connections.

Bull Floats

Bull float handles used where they might contact energized electrical conductors, shall be constructed of nonconductive material or insulated with a nonconductive sheath that's electrical and mechanical characteristics provide the equivalent protection of a handle constructed of nonconductive material.

Masonry Saws

Masonry saw shall be guarded with a semicircular enclosure over the blade.

A method for retaining blade fragments shall be incorporated in the design of the semicircular enclosure.

Lockout/Tagout procedures

No employee shall be permitted to perform maintenance or repair activity on equipment (such as compressors mixers, screens or pumps used for concrete and masonry construction activities) where the inadvertent operation of the equipment could occur and cause injury, unless all potentially hazardous energy sources have been locked out and tagged.

Tags shall read "Do Not Start" or similar language to indicate that the equipment is not to be operated.

General Requirements for Formwork

Formwork shall be designed, fabricated, erected, supported, braced, and maintained so that it will be capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork. Formwork, which is designed, fabricated, erected, supported, braced, and maintained in conformance with the Appendix to this section will be deemed to meet the requirements of this paragraph.

Drawings or plans, including all revisions, for the jack layout, formwork (including shoring equipment), working decks, and scaffolds, shall be available at the jobsite.

Shoring and Re-shoring

All Shoring equipment (including equipment used in reshoring operations) shall be inspected prior to erection to determine that the equipment meets the requirements specified in the formwork drawings.

Shoring equipment found to be damaged such that its strength is reduced to less than that required by 1926.703(a) (1) shall not be used for shoring.

Erected shoring equipment shall be inspected immediately prior to, during, and immediately after concrete placement.

Shoring equipment that is found to be damaged or weakened after erection, such that its strength is reduced to less than that required by 1926.703(a)(1), shall be immediately reinforced.

The sills for shoring shall be sound, rigid, and capable of carrying the maximum intended load.

All base plates, shore heads, extension devices, and adjustment screws shall be in firm contact, and secured, when necessary, with the foundation and the form.

Eccentric loads on shore heads and similar members shall be prohibited unless these members have been designed for such loading.

Whenever single post shores are used one on top of another (tiered), the employer shall comply with the following specific requirements in addition to the general requirements for formwork:

The design of the shoring shall be prepared by a qualified designer and the erected shoring shall be inspected by an engineer qualified in structural design.

The single post shores shall be vertically aligned.

Precast concrete wall units, structural framing, and tilt-up wall panels shall be adequately supported to prevent overturning and to prevent collapse until permanent connections are completed.

Lifting inserts which are embedded or otherwise attached to tilt-up precast concrete members shall be capable of supporting at least two times the maximum intended load applied or transmitted to them.

Lifting inserts which are embedded or otherwise attached to precast concrete members, other than the tilt-up members, shall be capable of supporting at least four times the maximum intended load applied or transmitted to them.

Lifting hardware shall be capable of supporting at least five times the maximum intended load applied transmitted to the lifting hardware.

No employee shall be permitted under precast concrete members being lifted or tilted into position except those employees required for the erection of those members.

Lift-slab operations

Lift-slab operations shall be designed and planned by a registered professional engineer who has experience in lift-slab construction. Such plans and designs shall be implemented by the employer and shall include detailed instructions and sketches indicating the prescribed method of erection. These plans and designs shall also include provisions for ensuring lateral stability of the building/structure during construction.

Jacks/lifting units shall be marked to indicate their rated capacity as established by the manufacturer.

Jacks/lifting units shall not be loaded beyond their rated capacity as established by the manufacturer.

Jacking equipment shall be capable of supporting at least two and one-half times the load being lifted during jacking operations and the equipment shall not be overloaded. For the purpose of this provision, jacking equipment includes any load bearing component which is used to carry out the lifting operation(s). Such equipment includes, but is not limited, to the following: threaded rods, lifting attachments, lifting nuts, hook-up collars, T-caps, shear-heads, columns, and footings.

Jacks/lifting units shall be designed and installed so that they will neither lift nor continue to lift when they are loaded more than their rated capacity.

Jacks/lifting units shall have a safety device installed which will cause the jacks/lifting units to support the load in any position in the event any jack lifting unit malfunctions or loses its lifting ability.

Jacking operations shall be synchronized in such a manner to ensure even and uniform lifting of the slab. During lifting, all points at which the slab is supported shall be kept within 1/2 inch of that needed to maintain the slab in a level position.

If leveling is automatically controlled, a device shall be installed that will stop the operation when the 1/2-inch tolerance is exceeded or where there is a malfunction in the jacking (lifting) system.

If leveling is maintained by manual controls, such controls shall be located in a central location and attended by a competent person whole lifting is in progress. In addition to meeting the definition in 1926.32(f), the competent person must be experienced in the lifting operation and with the lifting equipment being used.

Limited access zone

A limited access zone shall be established whenever a masonry wall is being constructed. The limited access zone shall conform to the following:

The limited access zone shall be established prior to the start of construction of the wall.

The limited access zone shall be equal to the height of the wall to be constructed plus four feet and shall run the entire length of the wall.

The limited access zone shall be established on the side of the wall which will be un-scaffolded.

The limited access zone shall be restricted to entry by employees actively engaged in constructing the wall. No other employees shall be permitted to enter the zone.

The limited access zone shall remain in place until the wall is adequately supported to prevent overturning and to prevent collapse unless the height of wall is over eight feet, in which case, the limited access zone shall remain in place until the requirements of paragraph (b) of this section have been met.

All masonry walls over eight feet in height shall be adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. The bracing shall remain in place until permanent supporting elements of the structure are in place.

(This appendix is non-mandatory)

In paragraph 1926.705(k), OSHA requires employees to be removed from the building/structure during jacking operations unless an independent registered professional engineer, other than the engineer who designed and planned the lifting operation, has determined that the building/structure has been sufficiently reinforced to insure the integrity of the building/structure. One method to comply with this provision is for the employer to ensure that continuous bottom steel is provided in every slab and in both directions through every wall or column head area. (Column head area means the distance between lines that are one and one-half times the thickness of the slab or drop panel. These lines are located outside opposite faces of the outer edges of the shear-head sections - See Figure 1). The amount of bottom steel shall be established by assuming loss of support at a given lifting jack and then determining the steel necessary to carry, by catenary action over the span between surrounding supports, the slab service dead load plus any service dead and live loads likely to be acting on the slab during jacking. In addition, the surrounding supports must be capable of resisting any additional load transferred to them because of the loss of support at the lifting jack considered.

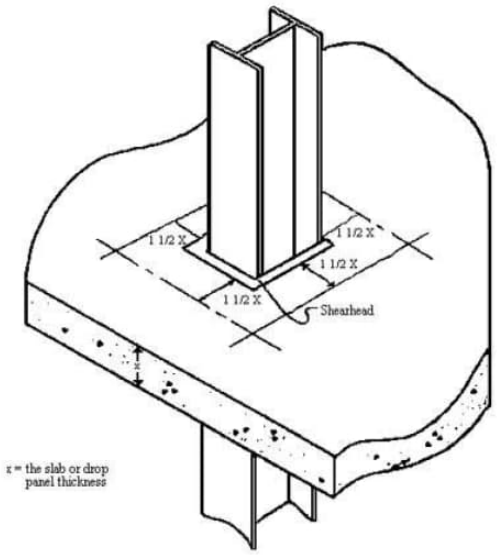


Figure 1- - Column Head Area

Confined Spaces

Purpose

To ensure that all *S.C. Swiderski, LLC* personnel are protected from those hazards and risks associated with entry into and work within confined spaces.

Work in a confined space may require a Hot Work Program, a Lockout-Tagout Program or a Respirator Program.

Objectives

The primary objectives of this policy are as follows:

1. Establish minimum procedures to use in determining the safe condition of the atmosphere within any confined space prior to and during any entry.
2. Establish minimum procedures to use in the event of an emergency and for personnel rescue.
3. Define minimum standards for personnel training and medical surveillance.
4. Establish criteria for the selection, use and maintenance of equipment required for this work.
5. Provide procedures for the issuance and use of Confined Space Entry Permit.

Scope

This policy covers all employees of *S.C. Swiderski, LLC* in accordance with the requirements of OSHA in 29 CFR 1910.146 and 1926.21. It applies to any and all operations and/or activities where entry into a confined space occurs. The most frequent type of confined space entries are done under contractual agreements with other companies. The most commonly entered confined spaces are aboveground storage tanks, crawl spaces, sewers, pipelines, trenches, and manholes.

All confined spaces into which *S.C. Swiderski, LLC* employees will enter will be classified as permit required confined spaces, unless they can be characterized as Low-Hazard (non-permit) Confined Spaces.

Responsibilities

This program outlines your rights and responsibilities as an employee as well as the rights and responsibilities of *S.C. Swiderski, LLC*

1. The Safety & Compliance Manager is responsible for enforcing and periodically reviewing this program and the use of the confined space entry equipment.

Periodic site visits will be conducted at various job sites to ensure compliance with established guidelines, procedures, and applicable regulations.

2. **Managers, Supervisors, and/or Foremen** shall be responsible for ensuring compliance with the provisions of this plan by ensuring that:
    1. Those employees under their direct control are properly trained.
    2. All necessary equipment is present at the job site and is in safe working order.
    3. All employees follow all procedures outlined in this plan.
    4. A complete site hazard assessment is completed prior to commencement of work to ensure that adequate safety precautions and equipment are taken.
    5. Will report unknown/new exposure situations to the Safety Manager.
3. **Employees** have the responsibility to have awareness of the protection requirements for their work areas. Employees are responsible for wearing the appropriate protective equipment according to proper instructions and maintaining the equipment in a clean, sanitary and operable condition. It is also the responsibility of the employee to follow all established and communicated safety guidelines.
4. **The On-Site Supervisor** will be responsible for obtaining the sub-contractor's Confined Space Entry Program where applicable.
5. **Any employee** that willfully disregards company and/or governmental regulations may be subject to disciplinary actions, up to and including termination.

CONFINED SPACE DEFINITION

Entry into a confined space is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the confined space. For the purpose of this program, Confined Space Entry (CSE) shall mean entry for the purpose of performing any type of work activities into any space or area. A confined space meets the following criteria:

1. *Is large enough and so configured that an employee can bodily enter and perform assigned work.*
2. *Has limited means of entry and exit.*
3. *Is not designed for continuous employee occupancy.*

Examples:

Attics, Boilers, Degreasers, Equipment Rooms, Furnaces, Pipelines, Pits, Pumping Stations, Reaction or Process Vessels, Mills, Septic Tanks, Sewage Digesters, Silos, Storage Tanks, Barges, Sewers, Utility Vaults, Shafts, Caissons.

A **permit-required confined space** will also have one or more of the following characteristics:

1. Does not have adequate natural or mechanical ventilation and contains or has the potential to contain a hazardous atmosphere by the presence of flammable vapors/gases in excess of the OSHA PEL (or less than 19.5% or over 23.5% oxygen).
2. Contains material with the potential for engulfment of an entrant.
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or a floor, which slopes downward and tapers to a smaller cross-section.
4. Contains any other recognized safety or health hazards to the entrant.

Note: This may be the physical or chemical hazard that the entrant brings into the confined space. Examples would be cutting, welding or brazing operations, power tools, methyl ethyl ketone solvent (MEK) used for PVC cleaning, degreasers, etc.

CONFINED SPACE ENTRY PERMIT PROCEDURES

The Confined Space Entry Permit (Exhibit "A") is used to authorize entry and to ensure that proper precautions are taken before entry. **The Entry Supervisor is responsible for filling out the permit.** A written confined space entry permit must be completed, and all specified conditions satisfied before anyone can enter a confined space. The permit must be filled out completely and posted near the confined space until the job is complete and shall be made available for review by authorized entrants. Turn in the permit with the project's paperwork.

The Safety & Compliance Manager shall retain each cancelled entry permit for at least one year to facilitate review of any problems encountered during an entry operation. Problems encountered shall be noted so that revisions to the confined space entry permit program can be made if appropriate.

The duration of the permit may not exceed the time required to complete the assigned task identified on the permit and will at no time exceed a 24-hour period.

The permit expires when any of the following conditions are met:

1. A change in work conditions introduces a new hazard.
2. The time period of the permit has elapsed.
3. Any other change in the existing condition occurs that may cause a new hazard, or casts doubt upon the ability to continue safely in the same fashion.

After the permit is expired and work must continue, a new permit must be completed following the same procedures.

REQUIREMENTS FOR THE ENTRANT

A confined space is entered when any part of the body crosses the plane of the space opening.

1. Recognize the hazards that may be faced during entry, including information on the route of entry, signs or symptoms and consequences of exposure.
2. Properly use all safety and personal protection equipment.
3. Maintain communication 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. Communication procedures must be established before entering the space.
4. Keep lifelines orderly and untangled within the confined space.
5. May wear on his/her person an air monitor and perform continuous atmospheric monitoring in the confined space for oxygen content, presence of a flammable atmosphere and the presence of toxic when applicable.
6. Alert the attendant whenever:
    1. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
    2. The entrant detects a prohibited condition.
    3. Exit from the permit space as quickly as possible whenever:
        a. An order to evacuate is given by the attendant or the entry supervisor.
        b. The entrant recognizes any warning sign to a dangerous situation.
        c. The entrant detects a prohibited condition.
        d. An evacuation alarm is sounded.

REQUIREMENTS FOR THE ATTENDANT

1. Must be aware of the hazards that may be faced during entry, including information on the route of entry, signs or symptoms and consequences of the exposure such as behavioral effects to the entrants.
2. Post warning signs at the confined space to warn of the dangers involved, e.g. **“DANGER - PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER”.**
3. Continuously maintain an accurate count and identification of authorized entrants in the permit space.
4. **Does not leave the confined space entrance while the entrants are in the space**. If the attendant must leave the opening of the confined space, another properly trained attendant must replace the attendant, or the entrant must leave the confined space.
5. **Must maintain visual and/or verbal communication with authorized entrants** as necessary to monitor entrant’s status and to alert entrants of the need to evacuate the space.

6. May continuously monitor the atmosphere of the confined space for oxygen content, presence of a flammable atmosphere, and the presence of a toxic when applicable.
7. 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:
    1. Detects a prohibited condition.
    2. Detects the behavioral effects of hazard exposure in authorized entrants.
    3. Detects a situation outside the space that could endanger the authorized entrants.
    4. Cannot effectively and safely perform all the duties required.
8. Keep lifeline orderly, untangled and the end secured outside of the confined space.
9. **Performs non-entry rescues.**
10. Summon rescue and other emergency services as soon as the attendant determines that entrants may need assistance to escape from permit space hazards.
11. Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway.
12. Warn the unauthorized persons that they must stay away from the permit space.
13. Advise the unauthorized persons that they must exit immediately if they have entered the permit space.
14. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
15. Performs no duties that might interfere with the attendant's primary duty to monitor and protect authorized entrants.

REQUIREMENTS OF THE ENTRY SUPERVISOR

Note: The entry supervisor may also be the attendant if all duties can be satisfied.

1. Must be aware of the hazards that may present during entry, including the route of entry, signs or symptoms and consequences of exposure.
2. **Verify** 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 in the permit are in place before endorsing the permit and allowing entry to begin. The supervisor must sign the entry permit.
3. Shall terminate the entry and cancel the permit upon job completion or if conditions change within the confined space.
4. **Verifies** that rescue services are available and that the communication method for summoning them is operable.

5. Keeps all unauthorized individuals away from the confined spaces during entry operations.
6. 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

Only *S.C. Swiderski, LLC* personnel that have been trained in **Confined Space Rescue may enter permit spaces to perform rescue operations.** *S.C. Swiderski, LLC* will use the retrieval systems to remove personnel in confined spaces. Emergency services will be contacted immediately to assist *S.C. Swiderski, LLC* personnel.

To facilitate non-entry rescue, retrieval systems (body harness, or wristlets and lifeline) shall be used whenever an entrant is within a confined space. Retrieval systems shall meet the following requirements:

1. Each entrant shall use a chest or full body harness with a retrieval line attached at the center of the entrants back near shoulder level, or above the entrant's head. Wristlets may be used when the use of a body harness would create an additional hazard or interfere with the retrieval through a small man-way entrance.
2. 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 attendant becomes aware that rescue is necessary. A mechanical device shall be made available to retrieve personnel from a vertical entry permit space more than five feet in depth.

MINIMUM ENTRY REQUIREMENTS

The minimum entry requirements for any CSE are listed as follows. Additional requirements may be necessary due to site specific requirements and are also to be used when making any entry.

1. **Physical entry shall not be made into an unknown atmosphere.** All such areas must be checked prior to entry using an appropriate monitoring instrument(s). Air monitoring is to continue during all entries. All areas of the confined space must be monitored for oxygen, combustibility (% LEL), and toxins. ***Record the findings on the Entry Permit***.

Safe atmospheric parameters for entry into a confined space without requiring the use of respiratory protection:

Oxygen:	19.5% to 23.5%
Combustibility:	< 10% LEL
CO:	< 35 PPM
H2S:	< 10 PPM
Other Toxics:	<= PEL/TLV

2. All areas of a confined space shall be monitored, and the hazards characterized prior to commencement of work activities.
3. Employees authorized to work in confined spaces shall receive appropriate training in confined space entry. Persons to be trained include attendants, authorized entrants, rescuers, and personnel authorizing or in charge of entry.
4. **No entry is to be made into a confined space where a flammable atmosphere**

(=> 10% of the LEL exists or oxygen levels in excess of 23.5% in the presence of flammable vapors/gases) until ventilation or other means have been used to make the atmosphere safe. In a dust environment, a potentially explosive condition exists when visibility is obscured at a distance of 5 feet.

5. **No entry is to be made unless an attendant person is stationed on the outside of the entryway.** This person is to remain in constant communications with the person making the entry for the entire duration of the entry and **may not be used for any other tasks.**
6. When toxic levels exceed (or have the potential to exceed) PEL's/TLV's, but remain below the IDLH level, have adequate warning concentrations, can be specifically monitored, and oxygen is 19.5% to 23.5%, an air-purifying cartridge respirator (APR) with the proper assigned protection factor (APF) can be worn using the correct cartridge.

Entries shall be made using an approved supplied air respirator (SAR) or self-contained breathing apparatus (SCBA) system when oxygen levels are below 19.5%. When a SAR is used, it must be equipped with an emergency supply of air for escape purposes.

7. All entries are to be made using appropriate chemical protective clothing as determined by the results of area characterization results.
8. **All confined space areas are to be isolated with lockout/tagout and blanking prior to any entry.** Isolation shall be confirmed by a person knowledgeable in the design of the area prior to entry. (NOTE: *S.C. Swiderski, LLC* employees are not to remove any pipe insulation or coverings during isolation efforts as they may

contain asbestos, unless specifically instructed to do so by the Program Coordinator or his/her designated representative.)

9. **No entry is to be made without a completed, signed entry permit form,** placed or posted in close proximity to the entryway so that it is visible to entry personnel and can be checked immediately for completeness prior to entry (refer to permit procedures and Low-Hazard Confined Space section as shown below).
10. **Retrieval systems (lifelines) are always to be used in permitted confined space entries.**
11. A ladder or other appropriate means are to be used to ensure the safe entry and exit from a confined space when applicable.

CUTTING, WELDING AND BRAZING REQUIREMENTS

Cutting, welding, and brazing operations in confined spaces are specifically referenced in Subpart Q, Welding, Cutting and Brazing, 1910.252 (a) (4) Confined Spaces, 1920.252 (b) (4) Work in Confined Spaces, 1910.252 (c) (2) (i) (c) Ventilation for general welding and cutting, and in subpart J, Welding and Cutting, 1926.353 (b).

Mechanical ventilation shall be provided in confined spaces and the ventilation shall be at the minimum rate of 2,000 cubic feet per minute per welder except where an approved supplied air respirator is provided and used. All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of a toxic atmosphere or possible oxygen deficiency. This applies not only to the welder, but also to helpers and other personnel in the immediate area. All air replacing that is withdrawn shall be clean and respirable. **Oxygen shall never be used for ventilation.**

Welding or cutting involving flux, coverings, or other materials that contain fluorine compounds; zinc-bearing base or filler metals or metals coated with zinc-bearing compounds and metals containing lead or involving metals coated with lead-bearing materials, including paint, requires that local exhaust ventilation or supplied air respirators or self-contained breathing apparatus shall be used to protect the workers performing the operation and those in the immediate area.

S.C. Swiderski, LLC does not have the air monitoring equipment available to perform atmospheric tests for the following compounds to determine that the worker's exposure is within the acceptable concentrations defined by 1910.1000, beryllium-containing base or filler metals, cadmium-bearing or cadmium-coated base metals and mercury-bearing materials including paint.

Any welding or cutting operations involving these 1910.1000 compounds will require the employee to wear a supplied air respirator, SAR or SCBA (Confined Space Hot Work Permit, Exhibit "B").

LOW-HAZARD (NON-PERMIT) CONFINED SPACE

For the purpose of this document, a low hazard confined space will mean any confined space of less than four feet in depth that is ***known not to have contained any hazardous material and* AIR MONITORING *indicates that the atmosphere is safe for entry.*** Entry into these areas for inspections or minor maintenance (i.e. adjustments, tightening of fittings, etc.) may be made without the use of retrieval systems or standby personnel.

CONTRACTOR'S ENTRY

All contractor or sub-contractor personnel acting under the control of *S.C. Swiderski, LLC* must comply with all applicable provisions of these procedures or show proof that their procedures and employee training are at least as effective as these procedures.

Contractors will be responsible for the permit space entry of their own personnel. They will be informed of *S.C. Swiderski, LLC* safety-procedures. They will not be permitted to enter space(s) until a supervisor from *S.C. Swiderski, LLC* has determined that they have a permit space entry program, and that the contractor's program does not endanger *S.C. Swiderski, LLC* employees.

When a contractor's personnel and *S.C. Swiderski, LLC* personnel perform permit space entry operations in the same permit space at the same time, both the contractor and *S.C. Swiderski, LLC* will provide the entry supervisor. One or both parties may provide the attendant(s). The entry supervisors will coordinate the work so neither crew endangers the other.

Entrants will be instructed to comply with each other's evacuation orders and evacuation alarms. Attendants will be instructed to immediately inform the other attendant if an evacuation order is issued or if an evacuation alarm is activated. This means the entrants of all employers will evacuate the permit space if any attendant, any entry supervisor, or any entrant issues an evacuation order. If there is a dispute over the necessity to evacuate, all entrants will evacuate and will remain outside of the permit space until the dispute is settled.

When contractors perform work that involves permit space entry, then:

1. 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 requirements of the OSHA standard.
2. Apprise the contractor of the hazards identified for the confined space.

3. Apprise the contractor of any precautions or procedures that *S.C. Swiderski, LLC* has implemented for the protection of employees in or near the permit spaces where contractor personnel will be working.
4. Coordinate entry operations with the contractor(s) when both *S.C. Swiderski, LLC* personnel and contractor(s) personnel will be working in or near permit spaces.
5. *S.C. Swiderski, LLC* on-site supervisor will debrief the contractor at the conclusion of the entry operations regarding the procedures followed and regarding any hazards confronted.

UNAUTHORIZED ENTRY

Only trained and authorized personnel may enter a confined space. S.C. Swiderski, LLC shall ensure that only qualified *S.C. Swiderski, LLC* employees make any entry into a confined space.

In addition, reasonable measures are to be taken to ensure that no unqualified individuals enter the confined space while it is under *S.C. Swiderski, LLC* control and responsibility. This includes securing hatchways, replacing manholes and placing of warning signs.

TRAINING

All employees must be trained to be able to recognize hazardous conditions, properly use monitoring equipment, space preparation, entry and work procedures, the permit system and emergency response actions.

Training shall be provided to each affected employee:

1. Before the employee is first assigned duties covered under this plan.
2. Before there is a change in assigned duties.
3. Whenever there is a change in permit space operations that present a hazard about which an employee has not previously been trained for.
4. Whenever the on-site supervisor has reason to believe that there may be a deviation required from the entry procedures required by this plan or that there are inadequacies in the employee's knowledge or use of the requirements of this plan.
5. Annually, a refresher program will be provided to all affected employees.

Confined space-entry training will include:

1. The written program and its requirements.
2. The proper use of air monitoring equipment.

3. The proper use and limitations of body harnesses, lifelines, retrieval systems, and other personal protective equipment.
4. The proper use of all respiratory equipment.
5. The typical hazards that may be encountered and the consequences of exposure to hazards.
6. Recognizing the signs and symptoms of exposure to hazards.
7. Understanding the duties specific to their role in confined space entry work as well as the duties of others that are involved as provided in this plan.
8. Evaluating and preparing a confined space for entry.
9. The proper use of the permit system.
10. The importance and methods of maintaining communications between entrants and attendants.
11. Conditions that require evacuation of the confined space.
12. The importance and requirements for maintaining site control.
13. The requirements for concluding an entry and terminating the permit.
14. Proper confined space non-entry rescue procedures.
15. Welding, cutting, and brazing in a confined space.
16. Adult CPR and basic first aid training provided by the American Red Cross, American Heart Association or Medic First Aid.

EQUIPMENT

Only tools and equipment supplied by or approved for use by *S.C. Swiderski, LLC* are to be used to conduct work activities associated with confined space entry activities.

All air monitors, lighting devices, power tools, communications devices and all other electrical devices must be intrinsically safe for use in class 1, Group B, C, and D atmospheres and

Division 1 Hazardous Locations, Ground Fault Circuit Interrupter (GFCI) devices are to be used with all electrical devices.

All ventilation devices and air movers must be provided with grounding and bonding as necessary.

PPE and respiratory systems used in confined space work must comply with all federal, state and industry standards. All equipment must conform to the requirements of *(S.C. Swiderski, LLC's)* PPE and respiratory protection programs as published elsewhere in this manual.

PERMIT SPACE ENTRY PROGRAM REVIEW

The Safety & Compliance Manager will review the confined space entry program annually or whenever there is a change required or a deficiency corrected to ensure the safety of the employees.

The confined space entry permit and all cancelled entry permits will be reviewed annually to ensure that employees are using the permit system correctly and that all the necessary information on the permit exists and is properly being completed.

Employees are encouraged to report any deficiencies, program improvements, etc., to the attention of the Safety Manager.

- Visit the OSHA web page on Confined Spaces
- OSHA Compliance Guide (.pdf)

Confined Spaces Permit Requirements

Scope & Application

This section contains requirements for practices and procedures to protect employees from the hazards of entry into permit-required confined spaces.

Definitions

Acceptable entry conditions mean 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.

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 the employer's permit space program.

Authorized entrant means an employee who is authorized by the employer to enter a permit space.

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.

Confined space means a space that:

(1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and

(2) 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

(3) Is not designed for continuous employee occupancy.

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.

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.

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.

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.

Entry permit (permit) means the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in subsection (f).

Entry supervisor means the person (such as the employer, 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 the entry supervisor may be passed from one individual to another during the course of an entry operation.

Hazardous atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of the 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% 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 (1.52 M) or less.

(3) Atmospheric oxygen concentration below 19.5% or above 23.5%.

(4) The atmospheric concentration of any substance for which a dose is published in Group 14 for Radiation and Radioactivity or a permissible exposure limit is published in section 5155 for Airborne contaminants and which could result in employee exposure in excess of its dose or permissible exposure limit;

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

(5) Any other atmospheric condition that is immediately dangerous to life or health.

Note: For air contaminants for which a dose is not published in Group 14 for Radiation and Radioactivity or a permissible exposure limit is not published in section 5155 for Airborne contaminants, other sources of information such as: Safety Data Sheets, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

A **"hot" work permit** means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediate Danger 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, possibly 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.

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

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

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.

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.

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.

Oxygen deficient atmosphere means an atmosphere containing less than 19.5% oxygen by volume.

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

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-section; or

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

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

Permit system means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

A **prohibited condition** means any condition in a permit space that is not allowed by the permit during the period when an entry is authorized.

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

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.

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. If electronic or thermal equipment is used to perform such tests, and the possibility exists of an explosive substance or a hazardous atmosphere due to flammable gases and vapors, then the testing equipment must be approved for use in such explosive or flammable conditions.

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.

(c) General requirements

(1) The employer shall evaluate the workplace to determine if any spaces are permit-required confined spaces.

Note: Proper application of the decision flow chart in Appendix A (Appendix A .pdf, size=49kb) would facilitate compliance with this requirement.

(2) If the workplace contains permit spaces, the employer shall inform exposed employees and other employees performing work in the area, by posting danger signs or by any other equally effective means, of the existence, location of and the danger posed by the permit spaces.

*Note: A sign reading "**DANGER — PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER**" or using other similar language would satisfy the requirement for a sign.*

(3) If the employer decides that its employees and other employees performing work in the area will not enter permit spaces, the employer shall take effective measures to prevent all such employees from entering the permit spaces.

(4) If the employer decides that its employees will enter permit spaces, the employer shall develop and implement a written permit space program that complies with this section. The written program shall be available for inspection by employees and their authorized representatives.

(5) An employer may use the alternative procedures specified in subsection (c)(5)(B) for entering a permit space under the conditions set forth in subsection (c)(5)(A)

(A) An employer whose employees enter a permit space need not comply with subsections (d) through (f) and (h) through (k), provided that:

1. The employer can demonstrate that the only hazard posed by the permit space is an actual or potentially hazardous atmosphere.

2. The employer can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry.

3. The employer develops monitoring and inspection data that supports the demonstrations required by subsections (c)(5)(A)1. and 2.

4. If an initial entry of the permit space is necessary to obtain the data required by subsection (c)(5)(A)3., the entry is performed in compliance with subsections (d) through (k);

5. The determinations and supporting data required by subsections (c)(5)(A)1., 2. and 3. are documented by the employer and are made available to each employee who enters the permit space under the terms of subsection (c)(5) or to that employee's authorized representative; and

6. Entry into the permit space under the terms of subsection (c)(5)(A) is performed in accordance with the requirements of subsection (c)(5)(B).

Note: See subsection (c)(7) for reclassification of a permit space after all hazards within the space have been eliminated.

(B) The following requirements apply to entry into permit spaces that meet the conditions set forth in subsection (c)(5)(A).

1. Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed.

2. When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barriers that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.

3. Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:

a. Oxygen content,

b. Flammable gases and vapors, and

c. Potential toxic air contaminants.

4. There may be no hazardous atmosphere within the space whenever any employee is inside the space.

5. Continuous forced air ventilation shall be used, as follows:

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

b. 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.

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

6. 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.

7. If a hazardous atmosphere is detected during entry:

a. Each employee shall leave the space immediately.

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

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

8. The employer shall verify that the space is safe for entry and that the pre-entry measures required by subsection (c)(5)(B) have been taken, through a written certification that contains the date, the location of the space, and the signature of the person providing the certification. The certification shall be made before entry and shall be made available to each employee entering the space or to that employee's authorized representative.

9. Any employee who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing required by subsections (c)(5)(B)3. and 6.

(6) When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, the employer shall reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

(7) A space classified by the employer as a permit-required confined space may be reclassified as a non-permit confined space under the following procedures:

(A) If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.

(B) If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed under subsections (d) through (k). If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.

Note: Control of atmospheric hazards through forced air ventilation does not constitute the elimination of the hazards. Subsection (c)(5) covers permit space entry where the employer can demonstrate that forced air ventilation alone will control all hazards in the space.

(C) The employer shall document the basis for determining that all hazards in a permit space have been eliminated through a certification that contains the date, the location of the space, and the signature of the person making the determination. The certification shall be made available to each employee entering the space or to that employee's authorized representative.

(D) If hazards arise within a permit space that has been declassified to a non-permit space under subsection (c)(7), each employee in the space shall exit the space. The employer shall then reevaluate the space and determine whether it must be reclassified as a permit space, in accordance with other applicable provisions of this section.

(8) When an employer (host employer) arranges to have employees of another employer (contractor) perform work that involves permit space entry or confined space entries covered by sections 5158 or 8355, the host employer shall:

(A) 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 requirements of this section, section 5158 or section 8355, depending on which section applies to the contractor.

(B) 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.

(C) 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.

(D) Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by subsection (d)(11); and

(E) Debrief the contractor at the conclusion of the entry operations regarding the permit spaced program followed and regarding any hazards confronted or created in permit spaces during entry operations.

(9) 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:

(A) Obtain any available information regarding permit space hazards and entry operations from the host employer.

(B) 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 by subsection (d)(11); and

(C) 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.

(d) Permit-required confined space program (permit space program)
Under the permit-required confined space program required by subsection (c)(4), the employer shall:

(1) Implement the measures necessary to prevent unauthorized entry.

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

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

(A) Specifying acceptable entry conditions.

(B) Isolating the permit space;

(C) Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards.

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

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

(4) Provide the following equipment (specified in subsections (A) through (I), below) at no cost to employees, maintain that equipment properly, and ensure that employees use that equipment properly:

(A) Testing and monitoring equipment needed to comply with subsection (d)(5);

(B) Ventilating equipment needed to obtain acceptable entry conditions.

(C) Communications equipment necessary for compliance with subsections (h)(3) and (i)(5);

(D) Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees.

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

(F) Barriers and shields as required by subsection (d)(3)(D);

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

(H) Rescue and emergency equipment needed to comply with subsection (d)(9), except to the extent that the equipment is provided by rescue services; and

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

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

(A) 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;

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

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

(D) 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;

(E) Reevaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who requests that the employer conduct such reevaluation because the entrant or representative has reason to believe that the evaluation of that space may not have been adequate;

(F) Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted in accord with subsection (d).

Note: Atmospheric testing conducted in accordance with Appendix B would be considered as satisfying the requirements of this subsection. For permit space operations in sewers, atmospheric testing conducted in accordance with

Appendix B, as supplemented by Appendix E, would be considered as satisfying the requirements of this subsection,

(6) 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 subsection (i) 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 subsection (i) can be effectively performed for each permit space that is monitored.

(7) If multiple spaces are to be monitored by a single attendant, include in the permit program the means and procedures to enable the attendant to respond to an emergency affecting one or more of the permit spaces being monitored without distraction from the attendant`s responsibilities under subsection (i);

(8) 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 by subsection (g);

(9) Develop and implement procedures for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, for summoning additional rescue and emergency services, and for preventing unauthorized personnel from attempting a rescue;

(10) Develop and implement a system for the preparation, issuance, use, and cancellation of entry permits as required by this section;

(11) 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. If the requirements of sections 5158 or 8355 apply to one or more of the other employers, then the procedures shall also ensure coordination with those employers, so as not to endanger any exposed employees;

(12) Develop and implement procedures (such as closing off a permit space and canceling the permit) necessary for concluding the entry after entry operations have been completed;

(13) Review entry operations when the employer 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

Note: Examples of circumstances requiring the review of the permit space program are: any unauthorized entry of a permit space, the detection of a permit space hazard not covered by the permit, the detection of a condition prohibited by the permit, the occurrence of an injury or near-miss during entry, a change in the use or configuration of a permit space, and employee complaints about the effectiveness of the program.

(14) Review the permit space program, using the canceled permits retained under subsection (e)(6) 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: Employers may 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 presents examples of permit space programs that are considered to comply with the requirements of subsection (d).

(e) Permit system

(1) Before entry is authorized, the employer shall document the completion of measures required by subsection (d)(3) by preparing an entry permit.

Note: Appendix D presents examples of permits whose elements are considered to comply with the requirements of this section.

(2) Before entry begins, the entry supervisor identified on the permit shall sign the entry permit to authorize entry.

(3) The completed permit shall be made available at the time of entry to all authorized entrants or their authorized representatives, by posting it at the entry portal or by any other equally effective means, so that the entrants can confirm that pre-entry preparations have been completed.

(4) The duration of the permit may not exceed the time required to complete the assigned task of the job identified on the permit in accordance with subsection (f)(2).

(5) The entry supervisor shall terminate entry and cancel the entry permit when:

(A) The entry operations covered by the entry permit have been completed; or

(B) A condition that is not allowed under the entry permit arises in or near the permit space.

(6) The employer shall retain each canceled entry permit for at least 1 year to facilitate the review of the permit space program required by subsection (d)(14). Any problems encountered during an entry operation shall be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.

(f) Entry permits
The entry permits that document compliance with this section and authorizes entry to a permit space shall identify:

(1) The permit space to be entered;

(2) The purpose of the entry;

(3) The date and the authorized duration of the entry permit;

(4) 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;

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

(5) The personnel, by name, currently serving as attendants;

(6) The individual, by name, currently serving as entry supervisor, with a space for the signature or initials of the entry supervisor who originally authorized entry;

(7) The hazards of the permit space to be entered;

(8) The measures used to isolate the permit space and to eliminate or control permit space hazards before entry;

Note: Those measures can include the lockout or tagging of equipment and procedures for purging, inerting, ventilating, and flushing permit spaces

(9) The acceptable entry conditions;

(10) The results of initial and periodic tests performed under subsection (d)(5) accompanied by the names or initials of the testers and by an indication of when the tests were performed;

(11) The rescue and emergency services that can be provided on-site and additional service that can be summoned and the means such as the equipment to use and the numbers to call) for summoning those services;

(12) The communication procedures used by authorized entrants and attendants to maintain contact during the entry;

(13) Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided for compliance with this section;

(14) Any other information whose inclusion is necessary, given the circumstances of the particular confined space, in order to ensure employee safety, and

(15) Any additional permits, such as for hot work, that have been issued to authorize work in the permit space.

(g) Training

(1) The employer 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.

(2) Training shall be provided to each affected employee:

(A) Before the employee is first assigned duties under this section;

(B) Before there is a change in assigned duties;

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

(D) Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures required by subsection (d)(3) or that there are inadequacies in the employee's knowledge or use of these procedures.

(3) 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

(4) The employer shall certify that the training required by subsections (g)(1) through (g)(3) 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.

(h) Duties of authorized entrants
The employer shall ensure that all authorized entrants:

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

(2) Properly use equipment as required by subsection (d)(4);

(3) 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 as required by subsection (i)(6);

(4) Alert the attendant whenever:

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

(B) The entrant detects a prohibited condition; and

(5) Exit from the permit space as quickly as possible whenever:

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

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

(C) The entrant detects a prohibited condition, or

(D) An evacuation alarm is activated.

(i) Duties of attendants
The employer shall ensure that each attendant:

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

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

(3) Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants under subsection (f)(4) accurately identifies who is in the permit space;

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

Note: When the employer'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 subsection (k)(1) and if they have been relieved as required by subsection (i)(4).

(5) Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space under subsection (i)(6);

(6) 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;

(A) If the attendant detects a prohibited condition;

(B) If the attendant detects the behavioral effects of hazards exposure in an authorized entrant;

(C) If the attendant detects a situation outside the space that could endanger the authorized entrants; or

(D) If the attendant cannot effectively and safely perform all the duties required under subsection (i);

(7) Initiate on-site rescue procedures and, if necessary, summon additional rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards;

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

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

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

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

(9) Performs non-entry rescues or other rescue services as part of the employer's on-site rescue procedure; and

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

(j) Duties of entry supervisors
The employer shall ensure that each entry supervisor:

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

(2) 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;

(3) Terminates the entry and cancels the permit as required by subsection (e)(5);

(4) Verifies that rescue services are available and that the means for summoning additional services are operable;

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

(6) 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.

(k) Rescue and Emergency Services
The employer shall ensure that at least one standby person at the site is trained and immediately available to perform rescue and emergency services.

(1) The following requirements apply to employers who have employees enter permit spaces to perform rescue services.

(A) The employer shall ensure that each member of the rescue service is provided with, and is trained to use properly, the personal protective equipment and rescue equipment necessary for making rescues from permit spaces.

(B) Each member of the rescue service shall be trained to perform the assigned rescue duties. Each member of the rescue service shall also receive the training required of authorized entrants under subsections (g) and (h).

(C) Each member of the rescue service shall 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.

(D) Each member of the rescue service shall be trained in basic first aid and in cardiopulmonary resuscitation (CPR). At least one member of the rescue service holding current certification in first aid and in CPR shall be available.

(2) When an employer (host employer) arranges to have persons other than the host employer's employees perform permit space rescue, the host employer shall:

(A) Inform the rescue service of the hazards they may confront when called on to perform a rescue at the host employer's facility, and

(B) Provide the rescue service 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.

(3) To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permitted 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:

(A) Each authorized entrant shall use a chest or full-body harness, with a retrieval line attached at a suitable point so that when rescued, the entrant presents the smallest possible profile (for example at the center of the entrant's back near shoulder level, or above the entrant's head). Wristlets may be used in lieu of the chest or full-body harness if the employer 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.

(B) 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 deep.

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

(l) Employee Participation

(1) Employers shall consult with affected employees and their authorized representatives on the development and implementation of all aspects of the permit space program required by subsection (c).

(2) Employers shall make available to affected employees and their authorized representatives all information required to be developed by this section.

(m) Appendices. Appendices A through E serve to provide information and non-mandatory guidelines to assist employers and employees in complying with the appropriate requirements of this section.

Appendix A
Appendix B
Appendix C
Appendix D
Appendix E

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

Other Confined Space Operations

(a) Scope
For industries and operations specified in section 5156(b)(2) this section prescribes minimum standards for preventing employee exposure to dangerous air contamination, oxygen enrichment, and/or oxygen deficiency in confined spaces, as defined in subsection (b).

Note: Implementing a permit-required confined space program in accordance with section 5157 shall meet the requirements of this section.

(b) Definitions

(1) Confined Space. A space defined by the concurrent existence of the following conditions:

(A) Existing ventilation is insufficient to remove dangerous air contamination, oxygen enrichment, and/or oxygen deficiency which may exist or develop.

(B) Ready access or egress for the removal of a suddenly disabled employee is difficult due to the location and/or size of the opening(s).

(2) Dangerous Air Contamination. An atmosphere presenting a threat of causing death, injury, acute illness, or disablement due to the presence of flammable and/or explosive, toxic, or otherwise injurious or incapacitating substances.

(A) Dangerous air contamination due to the flammability of a gas or vapor is defined as an atmosphere containing the gas or vapor at a concentration greater than 20 percent of its lower explosive (lower flammable) limit.

(B) Dangerous air contamination due to a combustible particulate is defined as a concentration greater than 20 percent of the minimum explosive concentration of the particulate.

(C) Dangerous air contamination due to the toxicity of a substance is defined as the atmospheric concentration immediately hazardous to life or health.

Note: This definition of dangerous air contamination due to the toxicity of a substance does not preclude the requirement to control harmful exposures, under the provisions of Article 107, to toxic substances at concentrations less than those immediately hazardous to life or health

(3) Oxygen Deficiency. An atmosphere containing oxygen at a concentration of less than 19.5 percent by volume.

(4) Oxygen Enrichment. An atmosphere containing more than 23.5 percent oxygen by volume.

(c) Operation Procedures and Employee Training
The employer shall implement the provisions of this subsection before any employee is permitted to enter a confined space.

(1) Operating Procedures.

(A) Written, understandable operating and rescue procedures shall be developed and shall be provided to affected employees.

(B) Operating procedures shall conform to the applicable requirements of this section and shall include provision for the surveillance of the surrounding area to avoid hazards such as drifting vapors from tanks, piping and sewers.

(C) For multi-employer worksites, the procedures shall address how all the affected employers will coordinate their work activities, so that operations of one employer will not endanger the employees of any other employer. If the permit-required confined space requirements of section 5157 or the requirements of section 8355 apply to one or more of the other employers, then the procedures shall also include coordination with those employers;

(2) Employee Training. Employees, including standby persons required by subsection (e)(1)(D), shall be trained in the operating and rescue procedures, including instructions as to the hazards they may encounter.

(d) Pre-entry

The applicable provisions of this subsection shall be implemented before entry into a confined space.

(1) Lines that may convey flammable, injurious, or incapacitating substances into the space shall be disconnected, blinded, or blocked off by other positive means to prevent the development of dangerous air contamination, oxygen enrichment and/or oxygen deficiency within the space. The disconnection or blind shall be so located or done in such a manner that inadvertent reconnection of the line or removal of the blind is effectively prevented.

Exception: This subsection does not apply to public utility gas distribution systems.

NOTE: This subsection does not require blocking of all laterals to sewers or storm drains. Where experience or knowledge of industrial use indicates materials resulting in dangerous air contamination may be dumped into an occupied sewer, all such laterals shall be blocked.

(2) The space shall be emptied, flushed, or otherwise purged of flammable, injurious or incapacitating substances to the extent feasible.

(3) The air shall be tested with an appropriate device or method to determine whether dangerous air contamination, oxygen enrichment and/or an oxygen deficiency exists. A written record of such testing results shall be made and kept at the work site for the duration of the work. Affected employees and/or their representatives shall be afforded an opportunity to review and record the testing results. If an electronic or thermal device is used to test a confined space that contains or is likely to develop dangerous air contamination due to flammable and/or explosive substances, then the device must be approved for use in such explosive or flammable conditions as required by section 2540.2.

(4) Where interconnected spaces are blinded off as a unit, each space shall be tested and the results recorded, in accordance with subsection (d)(3), and the most hazardous condition so found shall govern procedures to be followed.

(5) If dangerous air contamination, oxygen enrichment and/or oxygen deficiency does not exist within the space, as demonstrated by tests performed in accordance with subsection (d)(3), entry into and work within the space may proceed subject to the following provisions:

> (A) Testing, in accordance with subsection (d)(3), shall be conducted with sufficient frequency to ensure that the development of dangerous air contamination, oxygen enrichment and/or oxygen deficiency does not occur during the performance of any operation.
>
> (B) If the development of dangerous air contamination, oxygen enrichment and/or an oxygen deficiency is imminent, the requirements prescribed by subsection (e) shall also apply.

(6) Where the existence of dangerous air contamination, oxygen enrichment and/or oxygen deficiency is demonstrated by tests performed in accordance with subsection (d)(3), existing ventilation shall be augmented by appropriate means.

(7) When additional ventilation provided in accordance with subsection (d)(6) has removed dangerous air contamination, oxygen enrichment and/or oxygen deficiency as demonstrated by additional testing conducted (and recorded) in accordance with subsection (d)(3), entry into and work within the space may proceed subject to the provisions of subsection (d)(5).

(8) No source of ignition shall be introduced until the implementation of appropriate provisions of this section have ensured that dangerous air contamination due to oxygen enrichment, flammable and/or explosive substances do not exist.

(9) Whenever oxygen-consuming equipment such as salamanders, plumbers' torches or furnaces, and the like, are to be used, measures shall be taken to ensure adequate combustion air and exhaust gas venting.

(10) To the extent feasible, a provision shall be made to permit ready entry and exit.

(11) Where it is not feasible to provide for ready exit from spaces equipped with automatic fire suppression systems employing harmful design concentrations of toxic or oxygen-displacing gases, or total foam flooding, such systems shall be deactivated. Where it is not practical or safe to deactivate such systems, the provisions of subsection

(e) related to the use of respiratory protective equipment shall apply during entry into and work within such spaces.

(e) Confined Space Operations

(1) Entry Into and Work Within Confined Spaces. The requirements of this subsection apply to entry into and work within a confined space whenever an atmosphere free of dangerous air contamination, oxygen enrichment and/or oxygen deficiency cannot be ensured through the implementation of the applicable provisions of subsection (d), or whenever, due to the existence of an emergency, it is not feasible to ensure the removal of dangerous air contamination, oxygen enrichment and/or an oxygen deficiency through the implementation of the applicable provisions of subsection (d).

(A) Tanks, vessels, or other confined spaces with side and top openings shall be entered from side openings when practicable.

Note: For the purposes of this Order, side openings are those within 3 1/2 feet of the bottom.

(B) Appropriate, approved respiratory protective equipment, in accordance with Section 5144, shall be provided and worn.

(C) An approved safety belt with an attached line shall be used. The free end of the line shall be secured outside the entry opening. The line shall be at least 1/2-inch diameter and 2,000-pounds test.

Exception: Where it can be shown that a safety belt and attached line would further endanger the life of the employee.

(D) At least one employee shall stand by on the outside of the confined space ready to give assistance in case of emergency. At least one additional employee who may have other duties shall be within sight or call of the standby employee(s).

1. The standby employee shall have appropriate, approved, respiratory protective equipment, including an independent source of breathing air which conforms with Section 5144(e), available for immediate use.

2. A standby employee (or employees) protected as prescribed by subsection (e)(1)(D) 1. may enter the confined space but only in case of emergency and only after alerting at least one additional employee outside of the confined space of the existence of an emergency and of the standby employee's intent to enter the confined space.

(E) When entry must be made through a top opening, the following requirements shall also apply.

1. The safety belt shall be of the harness type that suspends a person in an upright position.

2. A hoisting device or other effective means shall be provided for lifting employees out of the space.

(F) Work involving the use of flame, arc, spark, or other source of ignition is prohibited within a confined space (or any adjacent space having common walls, floor, or ceiling with the confined space) which contains, or is likely to develop, oxygen enrichment or dangerous air contamination due to flammable and/or explosive substances.

(G) Whenever gases such as nitrogen are used to provide an inert atmosphere for preventing the ignition of flammable gases or vapors, no flame, arc, spark, or other source of ignition shall be permitted unless the oxygen concentration is maintained at less than 20 percent of the concentration which will support combustion.

1. Testing of the oxygen content shall be conducted with sufficient frequency to ensure conformance with this paragraph.

2. A written record of the results of such testing shall be made and kept at the work site for the duration of the work.

3. Affected employees and/or their representative shall be provided an opportunity to review and record the testing results.

(H) Only approved lighting and electrical equipment, in accordance with the Low-Voltage Electrical Safety Orders, shall be used in confined spaces subject to oxygen enrichment or dangerous air contamination by flammable and/or explosive substances.

(I) Employees working in confined spaces which have last contained substances corrosive to the skin or substances which can be absorbed through the skin shall be provided with, and shall be required to wear, appropriate personal protective clothing or devices in accordance with Article 10.

(J) When an employer (host employer) arranges to have employees of another employer (contractor) perform work that involves a confined space entry covered by this standard or by sections 5157 or 8355, the host employer shall:

1. Inform the contractor that the workplace contains a confined space and that confined space entry is allowed only through compliance with a confined space program meeting the requirements of this section, section 5157 or section 8355, depending on which section applies to the contractor;

2. Apprise the contractor of the elements, including the hazards identified and the host employer's experience with the confined space, that make the space in question a confined space;

3. Apprise the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near the confined space where the contractor's personnel will be working;

4. Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel will be working in or near the confined space, as required by subsection (c)(1)(C); and

5. Debrief the contractor at the conclusion of the confined space operation regarding the confined space program followed and any hazards confronted or created in the confined space during entry operations.

(K) In addition to complying with the confined space requirements that apply to all employers, each contractor who is retained to perform confined space entry operations shall:

1. Obtain any available information regarding confined space hazards and entry operations from the host employer;

2. Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near a confined space, as required by subsection (c)(1)(C); and

3. Inform the host employer of the confined space program that the contractor will follow and of any hazards confronted or created in the confined space, either through a debriefing or during the entry operation.

(2) Precautions for Emergencies Involving Work in Confined Spaces.

(A) At least one person trained in first aid and cardiopulmonary resuscitation (CPR) shall be immediately available whenever the use of respiratory protective equipment is required subsection (e)(1). Standards for CPR training shall follow the principles of the American Heart Association or the American Red Cross.

(B) An effective means of communication between employees inside a confined space and a standby employee shall be provided and used whenever the provisions of subsection (e)(1) require the use of respiratory protective equipment or whenever employees inside a confined space are out of sight of the standby employee(s). All affected employees shall be trained in the use of such a communication system and the system shall be tested before each use to confirm its effective operation

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

Exhibit A - Entry Permits

CONFINED SPACE ENTRY PERMIT **Page 1 of 3**

***INSTRUCTIONS* (Nobody will enter a confined space until permit is complete)**

1) Complete permit before entry begins. 2) Post permit at entrance to confined space until work in the confined space is complete. 3) Send permit to Safety Manager for review within 24 hours of completion of the work in the confined space.

GENERAL INFOMRATION

JOBSITE:

PERMIT BEGINS: Date: _____ Time: _____ AM/PM

PERMIT EXPIRES: Date: _____ Time _____ LOCATION & DESCRIPTION OF CONFINED SPACE:

PURPOSE OF ENTRY:

***NAMES OF AUTHORIZED INDIVIDUALS* (Please Print)**

AUTHORIZED PERSON IN CHARGE: WILL HE/SHE SUPERVISE ENTRY: YES NO

AUTHORIZED ATTENDANTS	AUTHORIZED ENTRANTS
1)	1)
2)	2)
3)	3)
4)	4)

METHOD OF COMMUNICATION

DESCRIBE:

EQUIPMENT REQUIRED FOR ENTRY

Hard Hats	YES	NO
Coveralls	YES	NO
Boots	YES	NO
Safety Glasses	YES	NO
Safety Goggles	YES	NO
Face Shield	YES	NO
Ear Protection	YES	NO
Encapsulated Suite	YES	NO
Gloves	YES	NO
Safety Lights	YES	NO
Lockout Devices	YES	NO
Warning Signs	YES	NO
Fire Extinguisher	YES	NO
Ventilator/Blower	YES	NO
Non-Spark Tools	YES	NO
Fall Protection	YES	NO
Rescue Equipment	YES	NO
Harness/Lifeline		YES NO
Other: _____	YES	NO
Other: _____	YES	NO
Winch	YES	NO

Phone number_____

RESPIRATORS REQUIRED FOR ENTRY

ARE RESPIRATORS REQUIRES? YES NO If Yes, What type:

AIR PURIFYING: Half-Mask _____ Full-Face _____

Type of Filters: _____

AIR SUPPLIED: Air Bottles____ Compressor ____ Egress Bottles ____

SELF-CONTAINED BREATHING APPARATUS (SCBA): _____

NOTE: Air-supplied respirators with egress bottle or SCBA respirators are required for atmospheres that are Immediately Dangerous To Life Or Health (IDLH).

RESCUE EQUIPMENT REQUIRED FOR ENTRY

SCBA	YES	NO	EMERGENCY SERVICES:
NO Phone Numbers			
Wristlets	YES	NO	
Tripod/Man-Lift	YES	NO	
First-Aid Kit	YES	NO	
Stretcher	YES	NO	

ISOLATION REQUIREMENTS **(Please circle appropriate method, check YES or NO, and initial)**

	YES	NO	COMPLETED BY
Electrical: DISCONNECT – LOCKOUT – TAGGED – Other _____	___	___	___ _____
Mechanical Moving Parts: LATCH – CHAIN – CHOCK – BLOCK – Other _____	___	___	_____
Hydraulics: BLANKED – BLEED – DISCONNECT – Other _____	___	___	_____
Pipelines: BLANKED – BLEED – DISCONNECT – Other _____	___	___	_____
Valves: LOCKOUT – DISCONNECT – TAG – Other _____	___	___	_____
Belt Drives: DISCONNECT – TAG – Other _____	___	___	_____
Chain Drives: DISCONNECT – TAG – Other _____	___	___	_____
Shaft Drives: DISCONNECT – TAG – Other _____	___	___	_____
Space Purged: INERT GAS – WATER – Other _____	___	___	_____
Other _____	___	___	_____
Other _____	___	___	_____

ACCEPTABLE ENTRY CONDITIONS

OXYGEN: _____%	FLAMMABLE COMBUSTIBLES: _____ %LEL	OTHER:
HYDROGEN SULFIDE: _____PPM	CARBON MONOXIDE: _____PPM	OTHER:

TESTING AND MONITORING CHECKLIST

MAKE, MODEL & SERIAL # OF TESTING EQUIPMENT:

DATE EQUIPMENT CALIBRATED: INTERMITTENT TESTING: CONTINUOUS MONITORING:

	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5	TEST 6	TEST 7
Date:	_____	_____	_____	_____	_____	_____	_____
Time:	_____am/pm	_____am/pm	_____am/pm	_____am/pm	_____am/pm	_____am/pm	_____am/pm
Oxygen:	_____%	_____%	_____%	_____%	_____%	_____%	_____% LEL:
	_____%	_____%	_____%	_____%	_____%	_____%	_____
CO:	_____ppm	_____ppm	_____ppm	_____ppm	_____ppm	_____ppm	_____ppm
H2O:	_____ppm	_____ppm	_____ppm	_____ppm	_____ppm	_____ppm	_____ppm
Tox:	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____
Tested by:	_____	_____	_____	_____	_____	_____	_____
(Initials):	_____						

CONFINED SPACE HAZARDS CHECKLIST ***(Please check*** **YES** ***or*** **NO)**

	YES	NO	IF YES, HOW IS HAZARD CONTROLLED:
Oxygen Deficiency (<19.5%	___	___	_____
Oxygen Enriched (>22%)	___	___	_____
Toxic Atmosphere	___	___	_____
Flammable/Combustible Atmosphere	___	___	_____
Electrical	___	___	_____
Entrapment	___	___	_____
Pipelines	___	___	_____
Bacteria/Infectious	___	___	_____
Insects/Rodents	___	___	_____
Temperature	___	___	_____
Falls	___	___	_____
Other:	___	___	_____

HOT WORK PERMIT					
IS A HOT WORK PERMIT REQUIRED?	YES	NO	IF YES, IS IT ATTACHED TO THIS PERMIT?	YES	NO

SIGNATURE OF ATTENDANTS AND ENTRANTS					
The confined space job and its safety aspects have been explained to us, and we have read and understand the above permit. We consider it safe to proceed with the confined space entry work. (Please sign, date and initial below.)					
ATTENDANTS			ENTRANTS		
1)	Date	Initials	1)	Date	Initials
2)	Date	Initials	2)	Date	Initials
3)	Date	Initials	3)	Date	Initials
4)	Date	Initials	4)	Date	Initials

SIGNATURE OF PERSON AUTHORIZING ENTRY		
SIGNATURE:	DATE:	TIME: AM / PM

CANCELLATION OF PERMIT		
DATE CANCELED:	TIME CANCELED: AM / PM	CANCELED BY: (Signature)
REASON PERMIT WAS CANCELED:		

EVALUATION (Review within 24 hours of completion of the work in the confined space).		
EVALUATED BY: (Signature)	DATE:	TIME: AM / PM

Exhibit B - Hot Work Permit

Exhibit B

Welding & Cutting Hot Work Permit

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