

CONFINED SPACE PROGRAM

GENERAL

CONFINED SPACE DEFINITION

1. A **confined space** is a space having all of the following criteria: (1) is large enough and so configured that an employee can bodily enter, (2) has a limited or restricted means for entry and exit, and (3) is not designed for continuous employee occupancy.

Examples of locations where confined spaces may occur include, but are not limited to, storage tanks, manholes, sewers, water mains, storm drains, underground utility vaults, concrete pier columns, precast concrete manhole units, drilled shafts, pipelines, gatewells, ducts, catch basins and open top spaces such as pits, tubs, vaults, and vessels.

CONFINED SPACE CLASSIFICATIONS

1. **Non-Permit Space** is a confined space that does not contain existing or potential physical or atmospheric hazards. A space having only *physical hazard(s)* that have been isolated or eliminated can be reclassified as a non-permit space. Reclassifying is not allowed when a space contains an existing or potential *atmospheric hazard(s)* (i.e. existing sewers, manholes, and other similar locations).
2. **Alternate Entry Space** is a permit space that contains no physical hazards (or the physical hazards have been eliminated or isolated); the existing or potential atmospheric hazards can be controlled by continuous mechanical forced air ventilation; and, in the event the ventilation system stops working, entrants can exit the space safely. Alternate entry procedures are less stringent than full permit space procedures.
3. **Full Permit Space** is a permit space that contains existing or potential physical and/or atmospheric hazards. Full permit space entry procedures are required when workers enter the space.

MIOSHA STANDARD REFERENCES

1. The requirements for confined spaces in construction are covered in Construction Safety Standard (CS) [Part 35 – Confined Space in Construction](#). Additional requirements for welding activities are covered in CS [Part 7 – Welding and Cutting](#) and General Industry Standard [Part 12 – Welding and Cutting](#).

Part 35 – Confined Space in Construction does not apply to certain construction work activities such as diving, excavations, and underground construction (i.e. tunnels, shafts, cofferdams, and caissons). The requirements for these activities are covered in CS [Part 9 – Excavation Trenching & Shoring](#) and [Part 14 – Tunnels, Shafts, Cofferdams, and Caissons](#); and Occupational Health Standards [Part 504 - Diving Operations](#) and [Part 665 - Underground Construction, Caissons, Cofferdams, and Compressed Air](#).

EMPLOYEE RESPONSIBILITIES

1. Employees must not enter a confined space until properly trained and authorized by the supervisor/foreman. If unsure whether an area or space is considered a confined space, contact your supervisor or foreman.

EMPLOYEE TRAINING

1. Every employee shall receive training and instruction as to the existence, location, and dangers posed by permit spaces and that they must not enter such spaces without authorization by the supervisor/foreman.
2. Employees who are involved in alternate entry and full permit space entry work operations shall receive specific training to ensure they have the knowledge, understanding and skills to perform their duties safely; understand the hazards in the permit spaces and the methods used to isolate, control or protect workers; and the dangers of attempting entry rescue unless authorized.
3. Employee names, trainer names, specific duties training, and dates of training shall be recorded and maintained at the office. The training records shall be made available to employees upon request.

FIRST STEP: INITIAL WORK SITE EVALUATION

1. Before work begins, the competent person (typically the foreman) must evaluate the worksite to determine if there are any spaces that workers may enter into that meet the definition of a confined space.
2. Employees are not authorized to enter a confined space until the foreman has determined which of the following classifications and entry procedures will be used to enter the space:
 - a. [Non-Permit Space Entry](#)
 - b. [Alternate Entry Space](#)
 - c. [Full Permit Space Entry](#)

Use the **Classifying Confined Spaces** flowchart ([See Appendix A](#)) for assistance in determining classification and entry procedures.

3. Each confined space must be evaluated for existing and/or potential physical and atmospheric hazards. Whenever possible, the initial evaluation shall be completed without entering the space. If entry into the space is necessary to complete an initial evaluation, full permit space entry procedures are required.
4. The atmosphere in the space must be tested prior to changing the space's natural ventilation. Direct-reading instruments must be calibrated per manufacturers' specification and used to test for oxygen content, flammable gases and vapors, and potential toxic air contaminants, **in this order**. The testing will determine whether the following hazards are present or could be introduced by the work operation:

- a. Oxygen deficiency (concentration less than 19.5 %) or excess (concentration above 23.5 %).
 - b. Concentration of any flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL).
 - c. Airborne combustible dust at a concentration equal to or greater than its lower explosive limit.
 - d. Atmospheric concentration of any substance that can cause death, incapacitation, impairment of ability to self-rescue, injury or acute illness.
5. **Section 1** of the **Pre Entry Checklist** ([See Appendix B](#)) must be completed for each confined space that employees may enter into and kept available at the job site. The Pre-Entry Certification (PEC) is necessary to document the results of the initial evaluation and atmospheric testing; and is the rationale used to classify the space and the entry procedures.

NON-PERMIT SPACE ENTRY

1. If a space does not have an existing or potential physical or atmospheric hazard, it is classified as a non-permit space, and employees may enter. **Danger signs are not required for non-permit spaces.**
2. If a space contains an existing or potential physical hazard(s) only, the space can be reclassified as a non-permit space if the physical hazards have been eliminated or isolated. The rationale must be documented in **Section 1** on the Pre Entry Certification (PEC). Reclassifying is not allowed when a space contains an existing or potential atmospheric hazard (i.e. existing sewers, manholes, and other similar locations). In this situation, go to the [Alternate Entry Space](#) section.
3. Periodic atmospheric testing and evaluations may be necessary to ensure employee safety in a non-permit space, especially when a work operation (i.e. welding, cutting, using toxic materials) could introduce a new hazard into the space. Anytime a periodic or subsequent atmospheric test is conducted, the results must be documented and kept at the work site. ([See Appendix C](#)): **Confined Space Atmospheric Testing Data Sheet**. Atmospheric test results are not required to be documented if *continuously monitoring* the atmosphere within the space.
4. Employees must exit the space immediately if a hazard is introduced or detected. The space is then reclassified as a full permit space until additional testing and evaluation demonstrate that the space is safe for re-entry. The event, hazards, and steps taken to eliminate or isolate the hazard in order to prevent another occurrence must be documented in **Section 3** on the PEC. The foreman must include his/her signature authorizing re-entry into the space. In addition, the GC must be informed of any hazards that occurred or were created in the space during entry.

ALTERNATE ENTRY SPACE

1. Alternate entry space procedures are less stringent requirements that may be used in lieu of the full permit space procedures, provided **all** of the following criteria can be obtained:

- a. All physical hazards in the space are eliminated or isolated;
 - b. The only hazard is an actual or potential hazardous atmosphere that can be made safe for entry using continuous forced air ventilation; and
 - c. In the event the ventilation system stops working, entrants can exit the space safely.
2. Prior to entry, the foreman must inform the controlling contractor of the existence, location, and hazards likely to be confronted or created during entry, and that alternate entry procedures will be used to enter the space. When another employer's employee(s) is working in the space at the same time, or when work activities that could result in a hazard are performed in the space at the same time, the alternate entry procedures must be coordinated with the controlling contractor and the other affected employer.
3. DANGER – PERMIT-REQUIRED CONFINED SPACE – DO NOT ENTER signs must be posted at each alternative entry space location to prevent unauthorized entry.
4. **Sections 1 and 2** on the PEC must be completed prior to entering the space when using alternate entry procedures. This will document the hazards, precautions, entry procedures and the supporting data for using alternate entry procedures and to verify the space is safe for entry. The PEC must be made available to each employee entering the space or to their authorized representative, as applicable, and kept at the job site.
5. Any conditions making it unsafe to remove an entrance cover (i.e. manhole cover) must be eliminated before the cover is removed. If an entrance cover is removed, the opening must be immediately guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and will protect employees from falling objects when working in the space.
6. Continuous mechanical forced air ventilation must be set up and used to ventilate the space. Exhaust ventilation and natural ventilation are not acceptable substitutes for forced air ventilation. The forced air ventilation must be directed to ventilate the immediate areas where each employee will be working within the space and must continue until all employees have left the space. The air supply for the forced air ventilation must be from a clean source and must not increase the hazards in the space.
7. After the space has been ventilated, the atmosphere must be re-tested prior to entry to ensure that the forced air ventilation is preventing the accumulation of a hazardous atmosphere. After re-testing, the atmosphere must be continuously monitored unless periodic monitoring is sufficient to ensure that the atmosphere remains nonhazardous. Anytime a periodic, subsequent or re-test of the atmosphere is conducted, the results must be documented and kept at the work site. [\(See Appendix C\)](#): **Confined Space Atmospheric Testing Data Sheet**. Atmospheric test results are not required to be documented if *continuously monitoring* the atmosphere within the space.
8. Monitoring instruments must be equipped with an early warning audible alarm that is capable of alerting employees of any atmospheric hazard that may have entered into the space and provides sufficient time to exit the space.
9. If the ventilation system is equipped with an audible alarm, employee(s) must immediately leave the space on their own if the ventilation stops for any reason when the alarm sounds.

If the ventilation system is not equipped with an audible alarm, an employee stationed at the top of the space opening (top man) must be readily available to monitor the ventilation system and be able to effectively communicate with the employees within to immediately exit the space on their own should the ventilation stop for any reason.

10. A safe method of entering and exiting the space must be provided. Any hoisting system that is used must either be designed or manufactured for personnel hoisting or be approved for personnel hoisting by a registered professional engineer prior to use.
11. Confirm local emergency units are readily available in the case of an emergency.
Attendants, rescue equipment and rescue teams are not required during alternate entry procedures unless the space is reclassified as a full permit space.
12. If a hazard is detected while employees are working within the space, the foreman must ensure each worker leaves the space immediately. The space is then reclassified as a full permit space until additional testing and evaluation demonstrate that the space is safe for re-entry. The foreman must document the event, hazards, and steps taken to eliminate or isolate that hazard to prevent another occurrence in **Section 3** on the PEC. The foreman must include his/her signature authorizing re-entry into the space.
13. The GC must be notified when work has been completed and informed of any hazards that occurred or were created in the space during entry. Document this in **Section 4** on the PEC.

FULL PERMIT SPACE ENTRY

1. Complete Section 1 of the PEC to verify the conditions of the permit space during the initial work site evaluation and prior to entry. When hazards or potential hazards within a space cannot be eliminated, isolated, controlled with ventilation, or entrants are unable to exit the space in the event the ventilation system stops working, full permit space entry procedures must be established and implemented.
2. DANGER – PERMIT-REQUIRED CONFINED SPACE – DO NOT ENTER signs must be posted at each full permit space location to prevent unauthorized entry.
3. Prior to entry, the foreman must inform the controlling contractor of the existence, and location, of hazards (including any hazards likely to be confronted or created), and that full permit entry procedures will be used to enter the space. The entry procedures must be coordinated with the controlling contractor when another employer's employee(s) is working in the permit space at the same time and when a work activity that could result in a hazard is performed in the space at the same time.
4. Full permit entry procedures must be developed and implemented to ensure safe entry into the space. The entry procedures must include, at a minimum, all of the following:
 - a. Specify the acceptable entry conditions;
 - b. Provide entrants or their authorized representative an opportunity to observe any monitoring or testing of space;
 - c. Isolate the space and physical hazards within the space;

- d. Purging, inerting, flushing, or ventilating the space as necessary to eliminate or control atmospheric hazards;
 - e. Determine that, in the event the ventilation system stops working, the monitoring procedures and equipment will detect an increase in atmospheric hazard levels in sufficient time for entrants to safely exit the space;
 - f. Provide pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards;
 - g. Verify that conditions within the space are acceptable throughout entry.
5. Provide the following equipment, maintain the equipment, and ensure employees use the equipment properly:
- a. Testing and monitoring equipment;
 - b. Ventilating equipment;
 - c. Communication equipment;
 - d. Personal protective equipment when engineering and work-practice controls do not adequately protect employees;
 - e. Approved lighting equipment;
 - f. Barriers and shields;
 - g. Equipment, such as ladders, for safe access and egress;
 - h. Rescue and emergency equipment, unless equipment is provided by rescue services; and
 - i. Any other equipment necessary for safe entry into, safe exit from, and rescue.
6. Full permit space conditions must be evaluated as follows during entry:
- a. Test the atmosphere in the space before entry to determine if acceptable entry conditions exist before changes to the space's natural ventilation are made. If isolation of the space is infeasible, due to being large or is part of a continuous system (such as a sewer), all of the following must be conducted:
 - i. Perform pre-entry atmospheric testing to the extent feasible before entry;
 - ii. Continuous monitoring of conditions in the areas where entrants are working;
 - iii. Provide an early-warning system that continuously monitors for non-isolated engulfment hazards and alerts entrants and attendants in sufficient time to safely exit the space.
 - b. Continuously monitor atmospheric hazards unless periodic monitoring is sufficient to ensure that the atmosphere remains nonhazardous.
 - c. When testing the atmosphere, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.
 - d. Allow entrants or their authorized representative to observe any testing.
 - e. Reevaluate the space as requested by the entrant or their authorized representative and provide them with the results of any testing.
7. The authorized entrant(s), attendant(s), and foremen each have specific duties whenever work is performed in a permit space. Their specific duties are listed below:

Authorized entrants must:

- a. Know space hazards, including information on the means of exposure such as inhalation or skin contact, and symptoms of the exposure;
- b. Use appropriate personal protective equipment properly;

- c. Stay in communication with attendant as necessary to enable the attendant to monitor the entrant's status and alert to evacuate when necessary;
- d. Exit from the permit space as soon as possible when:
 - i. Ordered by the attendant or foreman;
 - ii. When he/she recognizes the warning signs or symptoms of exposure;
 - iii. A prohibited condition exists; or
 - iv. An automatic alarm is activated.
- e. Alert the attendant when a prohibited condition exists or when warning signs or symptoms of exposure exist.

Attendants must:

- a. Remain outside the permit space during entry operations unless relieved by another authorized attendant;
- b. Perform non-entry rescues when specified by the rescue procedure;
- c. Know existing and potential hazards, including information on the types of exposure, signs or symptoms, consequences, and other effects;
- d. Maintain communication with and keep an accurate account of the workers within the space;
- e. Assess conditions inside and outside the space and order evacuation of the permit space when:
 - i. A prohibited condition exists;
 - ii. A worker shows behavioral effects of hazard exposure;
 - iii. A situation exists outside the confined space that could endanger the employees within the space; and
 - iv. The attendant cannot effectively and safely perform required duties.
- f. Summon rescue and other services during an emergency and when a worker becomes injured or ill;
- g. Ensure that unauthorized people stay away from permit spaces or exit immediately if they have entered into the space;
- h. Inform entry employees and foreman if any unauthorized person enters the permit space; and
- i. Perform no other duties that interfere with the attendant's primary duties.

Foremen must:

- a. Know space hazards including information on the mode of exposure, signs or symptoms and consequences;
 - b. Verify that specified entry conditions are satisfied, including permits, tests, procedures and equipment before allowing entry;
 - c. Terminate entry and cancel or suspend permits when entry operations are completed or if a condition that is not allowed under the permit arises;
 - d. Verify that rescue services are available and that the means for summoning them are operable;
 - e. Take appropriate measures to remove unauthorized entrants; and
 - f. Ensure that entry operations remain consistent with the entry permit and that acceptable entry conditions are maintained.
8. At least one attendant must be stationed outside the permit space when workers are working within, and maintain communication with all entrants and keep track of their conditions. If one or more entrants suffers an injury or illness and is unable to exit the space without help, the attendant must initiate a rescue. When an attendant is required to

monitor multiple permit spaces, additional procedures must be implemented in the event of an emergency within one or more of those spaces.

9. **Rescue and emergency** procedures must be established for summoning rescue and emergency services and preventing unauthorized personnel from attempting rescue.
 - a. **Non-entry rescue:** It is preferable if the entrant(s) can be rescued without others entering the space to avoid having additional personnel exposure to the hazard that caused the illness or injury. Therefore, non-entry rescue procedures using retrieval equipment must be implemented, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant, such as when obstructions can snag the retrieval line or the line can become entangled with air lines or electric cords. The attendant must be prepared to perform non-entry rescues if needed.

When non-entry procedure is selected, each entrant must wear a chest or full body harness, with a retrieval line attached at the D-ring in the center of the back or another point which positions the entrant so that he or she is small enough to be pulled out of the space. The other end of the retrieval line must be attached to a mechanical device or a fixed point outside the permit space. A mechanical device must be available to retrieve someone from vertical type permit spaces more than 5 feet deep. Wristlets or anklets may be used instead of a chest or full body harness only if the employer can demonstrate that use of a chest or full body harness is infeasible or creates a greater hazard.

When a non-entry rescue procedure is selected, the foreman must also confirm, before entry begins, that emergency assistance (typically the local fire department) is available if the non-entry rescue fails.

- b. **Entry rescue:** When non-entry rescue is not feasible, the only way to rescue an entrant is for others to enter the permit space. For entry rescue, an on-site rescue team consists of our employees or another contractor's employees. An off-site rescue service is a local fire department or other rescue service. The off-site rescue service must be able to respond in time to get the entrant out of the space to receive medical treatment, which requires the foreman to contact the rescue service prior to entering the space and informing them of the nature and hazards involved in the space. In some cases, this may require a standby rescue team, such as when the entrant is working in an atmosphere that is immediately dangerous to life or health (IDLH) and is wearing an airline respirator or a self-contained breathing apparatus.

When entry rescue takes place, an attendant must be stationed outside the permit space so that additional help can be summoned if needed. If the original attendant is to enter the space as part of the rescue team, a new attendant must be in position before the first attendant enters the space.

- c. **Training requirements for rescue teams and off-site rescue services:** All members of a rescue team must receive the training that is required for authorized entrants and have been trained to perform their assigned rescue duties. Rescue team members must be provided with personal protective and rescue equipment,

including respirators, and must be instructed on how to use it. All rescuers must be trained in first aid and CPR. At a minimum, one rescue team member must be certified in first aid and CPR. Rescuers must be informed of the hazards within the permit space before entering. Rescue team practices or exercises must take place at least yearly. Off-site rescue services must be provided access to all permit spaces, if requested, in order to practice rescue operations.

Off-site rescue services must notify the foreman in the event that their service is unavailable. The permit space work can be postponed or another off-site rescue service can be used.

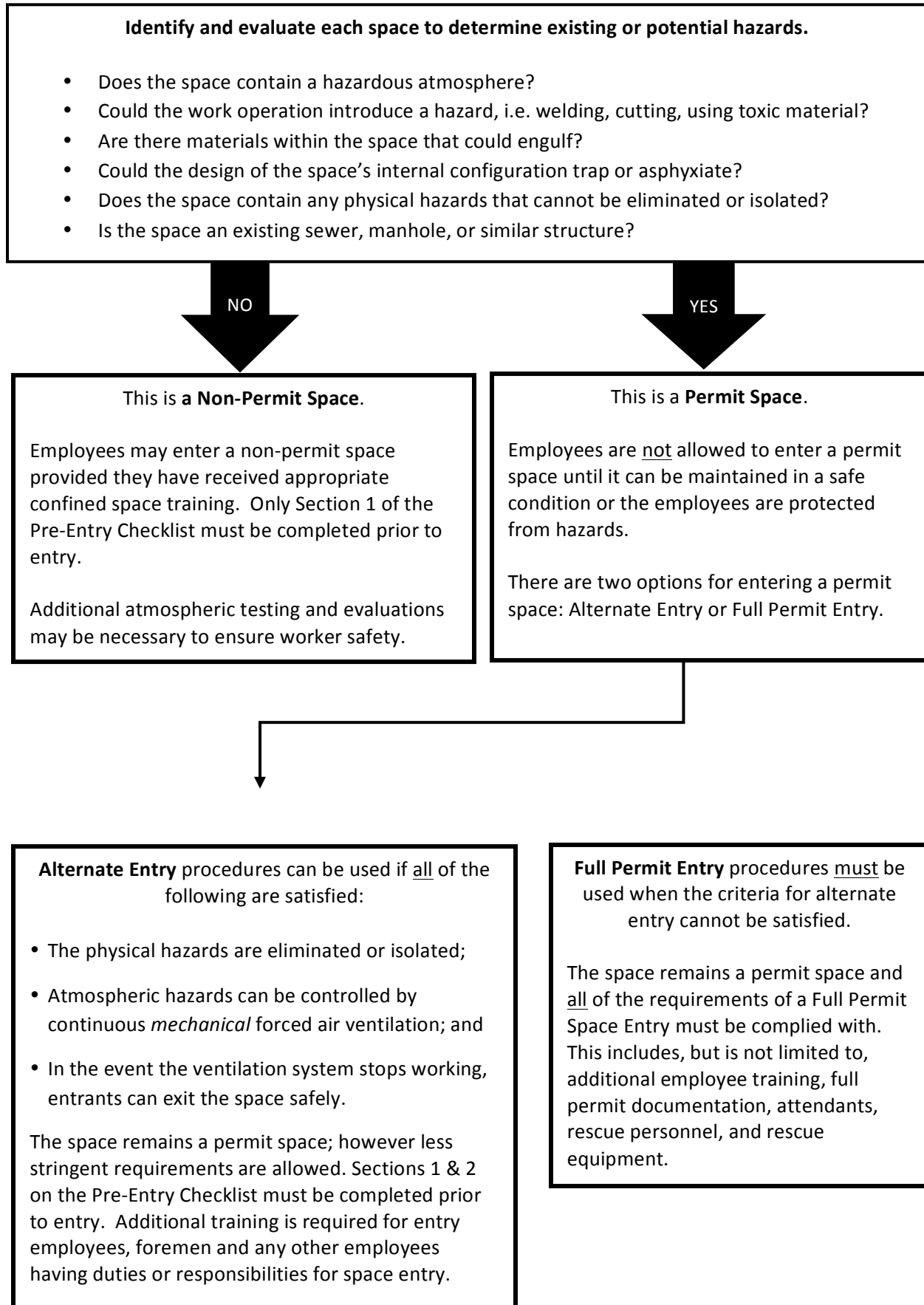
If using an off-site rescue service, the foreman must determine that the service has the ability and equipment to carry out a rescue in the particular permit space or type of permit space that entrants are working in. The foreman must contact the rescue service to make sure that it will be able to respond in a timely manner whenever an entrant is in the permit space.

10. Full permit space entry procedures must be reviewed and deficiencies must be corrected whenever it is discovered that the procedures established may not be protecting employees adequately. Circumstances requiring a review include an injury or near misses, unauthorized entry, detection of a new hazard or condition prohibited by the Entry Permit, or an employee complaint about the program's effectiveness. In addition, the Full Permit Space Procedures will be reviewed annually for effectiveness using the cancelled entry permits.
11. Prior to entry, a **Full Permit Space Entry Permit** ([See Appendix D](#)) must be completed for each full permit space that employees may enter into. The entry permit includes all of the following information:
 - a. Name of the permit space to be entered, authorized entrants(s), current attendants, and current entry foremen;
 - b. Purpose of entry;
 - c. Date and authorized duration of entry;
 - d. Means of detecting an increase in atmospheric hazard levels;
 - e. Name and signature of foreman who authorizes entry;
 - f. Known hazards in the space;
 - g. Measures to be taken to isolate permit spaces and to eliminate or control space hazards;
 - h. Acceptable entry conditions;
 - i. Test results, date and time of tests(s), and the tester's initials or signature;
 - j. Name and telephone numbers of rescue and emergency services and means to be used to contact them;
 - k. Communication procedures and equipment to maintain during entry;
 - l. Special equipment and procedures, including personal protective equipment and alarm systems;
 - m. Any other information needed to ensure employee safety; and
 - n. Additional permits, such as for hot work, that have been issued authorizing work in the permit space.

12. The foreman must cancel entry permits when work has been completed within the space or when new hazards or conditions occur. Once a permit is cancelled, entry under it is no longer permitted. New hazards or conditions must be noted on the cancelled permit and used in revising the permit space program. Once the work has been completed and the entry permit cancelled, it must be kept for a least one year.
13. The foreman may suspend an entry permit instead of cancelling it if a temporary condition has occurred in or near the space that, once corrected, is not expected to reoccur. The permit may be reinstated and entry may occur under the permit if the entry supervisor has determined that the conditions in the space match the allowable conditions listed on the permit.
14. The GC shall be informed when work has been completed within the space and of any hazards that occurred or were created in the space during entry.

APPENDIX A

CLASSIFYING CONFINED SPACES



**APPENDIX B
PRE-ENTRY CHECKLIST**

SECTION 1: INITIAL WORK SITE EVALUATION

Date of Initial Evaluation:	Identify space being entered:	Person completing the evaluation:
Can the initial evaluation be completed without entering? Yes <input type="checkbox"/> <i>Continue to next box.</i> No <input type="checkbox"/> <i>STOP! –Use full permit space procedures.</i>		If a cover or guard has to be removed to perform the initial evaluation or testing, have all hazardous conditions been eliminated, isolated, or controlled? Yes <input type="checkbox"/> N/A <input type="checkbox"/>

Atmospheric Hazard Assessment

Record initial atmospheric testing: Oxygen % Flammable/Explosive Gas % LEL Hydrogen Sulfide (H2S) PPM Carbon Monoxide (CO) PPM Other (Specify) Record subsequent atmospheric testing on the Confined Space Atmospheric Testing Data Sheet (Appendix C).	Does the space contain a hazardous atmosphere? No <input type="checkbox"/> Yes <input type="checkbox"/> (Only Alternate Entry or Full Permit Entry procedures are allowed.) Could a hazardous atmosphere possibly enter the space after the initial testing, (i.e. sewers and manholes) or could a hazard be introduced from a work operation (i.e. welding, cutting, applying toxic material)? No <input type="checkbox"/> Yes <input type="checkbox"/> (Only Alternate Entry or Full Permit Entry procedures are allowed.)
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Physical Hazard Assessment

Are there existing or potential physical hazards in the space (i.e. electrical, mechanical, engulfment)? No <input type="checkbox"/> Yes <input type="checkbox"/> (Check applicable boxes below) <input type="checkbox"/> Electrical <input type="checkbox"/> Entrapment <input type="checkbox"/> Mechanical <input type="checkbox"/> Converging Walls <input type="checkbox"/> Engulfment/Water <input type="checkbox"/> Fall Hazard <input type="checkbox"/> Hydraulic/Pneumatic <input type="checkbox"/> Temp. Extreme <input type="checkbox"/> Other (Specify): _____	If physical hazards were detected in the space, were they eliminated or isolated? No <input type="checkbox"/> Yes <input type="checkbox"/> (Check applicable boxes below) <input type="checkbox"/> Lock out/Tag out <input type="checkbox"/> Personal Fall Arrest/Rest. <input type="checkbox"/> Isolate/Guard <input type="checkbox"/> Install Work Platform <input type="checkbox"/> Purge/Drain/Clean <input type="checkbox"/> Guard Rails/Hole Covers <input type="checkbox"/> Blank/Block/Bleed <input type="checkbox"/> Ventilation/Ice Vest <input type="checkbox"/> Other (Specify): _____
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SPECIFY THE APPROPRIATE CLASSIFICATION AND ENTRY PROCEDURES

Non-Permit Space. There are no existing or potential physical hazards or atmospheric hazards. Periodic atmospheric testing may be necessary. Employees may enter the space.

Alternate Entry Space. There are no physical hazards. There are existing or potential atmospheric hazards that can be controlled by ventilation; and if the ventilation system stops working, entrants can exit the space safely on their own. Continue to Section 2: Alternate Entry Space.

Full Permit Space. There are physical hazards that cannot be eliminated or isolated and/or there are existing or potential atmospheric hazards that cannot be controlled by ventilation. Full permit space entry procedures are required.

SECTION 2: ALTERNATE ENTRY SPACE

Confined space danger sign posted at the space? Yes <input type="checkbox"/>	Are local emergency services readily available? Yes <input type="checkbox"/>
GC notified of the work and entry procedure? Yes <input type="checkbox"/> N/A <input type="checkbox"/>	Alternate entry training provided to employees? Yes <input type="checkbox"/>

Check applicable boxes describing the existing or potential atmospheric hazards detected in the space:

<input type="checkbox"/> Oxygen Deficiency	<input type="checkbox"/> Carbon Monoxide (CO)	<input type="checkbox"/> Flammable/Explosive Gases/Vapors (Specify):
<input type="checkbox"/> Welding/Cutting	<input type="checkbox"/> Hydrogen Sulfide (H ₂ S)	<input type="checkbox"/> Other (Specify):

Check applicable boxes that describe how the atmospheric hazards will be isolated or controlled in order to protect entrants:

<input type="checkbox"/> Mechanical ventilation system set at 100% outside air	<input type="checkbox"/> Open additional manholes to increase air circulation
<input type="checkbox"/> Use portable blowers to augment natural ventilation	<input type="checkbox"/> Repeat atmospheric testing after ventilating the space
<input type="checkbox"/> Continuous air monitoring during and after entry	<input type="checkbox"/> No burning, cutting, or welding operations in the space
<input type="checkbox"/> Use intrinsically safe lighting in the space	<input type="checkbox"/> Other (Specify):

In the event the ventilation system stops working, check applicable boxes that describe how the atmospheric hazards will remain at safe levels long enough for entrants to recognize the problem and safely exit the space:

- Fully ventilated space while unoccupied to get non-detect readings for atmospheric hazards; then shut down ventilation and monitored air quality. If atmospheric hazards are detected that reach maximum limits, full permit space procedures will be implemented.
- The atmospheric testing equipment is equipped with an audible alarm to alert entrants to exit the space.
- Entrants are wearing personal air monitors that are equipped with an audible alarm to alert them to exit the space.
- The ventilation system is equipped with an audible alarm to alert entrants to exit the space.
- A top man is readily available to monitor the ventilation system and alert the entrants to exit the space.
- Other (Specify):

Check applicable boxes that describe how employees are able to safely exit the space on their own:

- A fixed ladder is located in the space and safe for entrants to use to exit the space.
- A portable ladder will remain in the manhole during the time entrants are working in the space.
- A work platform has been installed in the space for egress.
- Other (Specify):

Check appropriate boxes that describe any additional steps or monitoring to be taken to ensure conditions are safe from physical hazards: Periodic inspections Early warning system Other (Specify):

SECTION 3: COMPLETE ONLY WHEN A HAZARD IS DETECTED IN THE SPACE AFTER THE INITIAL EVALUATION

Were employees evacuated from the space when the hazard was detected? Yes

Describe the event, hazard, and steps taken to eliminate or isolate the hazard to prevent another occurrence:

Is the space safe for re-entry?

Yes *Employees may re-enter the space.* Foreman Signature: _____

No *Employees must not enter the space. This is now re-classified as a full permit space. Full permit space procedures are required until space has been made safe for re-entry.*

SECTION 4: AFTER WORK HAS BEEN COMPLETED IN THE SPACE

GC informed that work has been completed? Yes GC informed of any hazards detected during entry? Yes N/A

APPENDIX C

CONFINED SPACE ATMOSPHERIC TESTING DATA SHEET

The initial atmospheric test results for a space are recorded on the Pre-Entry Checklist. This data sheet is used to record subsequent or additional atmospheric testing of a space.

Job Site: _____ Space being tested: _____

Date	Time	Oxygen	Flammable/ Explosive Gas	Hydrogen Sulfide (H ₂ S)	Carbon Monoxide (CO)	Other (Specify)	Employee Initials
Permissible Levels		19.5 to 23.5%	10% LEL	5 PPM	25 PPM		

Notes:

APPENDIX D

FULL PERMIT SPACE ENTRY PERMIT

1. Permit space to be entered (i.e. sewer, tank, manhole, crawlspace, attic):			Host, GC and Subs notified of the work? Yes <input type="checkbox"/> NA <input type="checkbox"/>							
2. Purpose of entry:			Location:							
3. Date of entry:		Auth. duration of entry permit:		Entry supervisor print name/contact information:						
4. Rescue type selected: Non-entry <input type="checkbox"/> or Entry <input type="checkbox"/> Equipment: Tri-pod/Davit arm <input type="checkbox"/> or Emergency service <input type="checkbox"/> Emer. Service Available (Permit Space only): Onsite <input type="checkbox"/> or <input type="checkbox"/> Off-site (name & phone): _____ Rescuer(s) trained in 1 st Aid/CPR (Permit Space only): <input type="checkbox"/> (Note: Part 1 1 st Aid requirements)			Communication Equipment: Radio <input type="checkbox"/> Voice <input type="checkbox"/> Cell Phone <input type="checkbox"/> Air Horn <input type="checkbox"/> <input type="checkbox"/> Other (Specify): _____							
5. Authorized entrants (Print Names)			Entry time		Entry time		Entry time		Entry time	
Use back or attach page for more entrants			In	Out	In	Out	In	Out	In	Out
6. Attendant (Print Name)			Date and Time		7. Current training for confined space workers verified?					
			<input type="checkbox"/> AM <input type="checkbox"/> PM <input type="checkbox"/> AM <input type="checkbox"/> PM		Yes <input type="checkbox"/> No <input type="checkbox"/>					
8A. Identify, evaluate and record hazards of space to be entered.			Yes	No	8B. Specify equipment and measures required to eliminate/control hazards before and during entry					
A. Lack of Oxygen or Inert Gas Present (i.e. Argon, Nitrogen)	<input type="checkbox"/>	<input type="checkbox"/>	Continuous forced air ventilation <input type="checkbox"/>							
B. Flammable Gas/Vapor (%LEL)	<input type="checkbox"/>	<input type="checkbox"/>	Blank, Block and Bleed <input type="checkbox"/>							
C. Toxic Gas/Vapor (i.e. CO and H ₂ S)	<input type="checkbox"/>	<input type="checkbox"/>	Purge, Clean, Drain <input type="checkbox"/>							
D. Chemical (impairs self-rescue)	<input type="checkbox"/>	<input type="checkbox"/>	Intrinsically Safe Lighting <input type="checkbox"/>							
E. Electrical	<input type="checkbox"/>	<input type="checkbox"/>	Respiratory Protection: Supplied Air with Escape Bottle <input type="checkbox"/> SCBA <input type="checkbox"/>							
F. Mechanical	<input type="checkbox"/>	<input type="checkbox"/>	Other (list) <input type="checkbox"/>							
G. Hydraulic/Pneumatic	<input type="checkbox"/>	<input type="checkbox"/>	Lockout/Tagout <input type="checkbox"/>							
H. Temp. Extreme	<input type="checkbox"/>	<input type="checkbox"/>	Isolate/Guard <input type="checkbox"/>							
I. Engulfment	<input type="checkbox"/>	<input type="checkbox"/>	Blank, Block and Bleed <input type="checkbox"/>							
J. Entrapment/Converging Walls	<input type="checkbox"/>	<input type="checkbox"/>	Other (list) <input type="checkbox"/>							
K. Fall Hazard	<input type="checkbox"/>	<input type="checkbox"/>	Continuous forced air ventilation <input type="checkbox"/> Ice Vest <input type="checkbox"/> Other (list) <input type="checkbox"/>							
L. Introduced Hazards (i.e. Chemical, Hot Work)	<input type="checkbox"/>	<input type="checkbox"/>	Drain <input type="checkbox"/> Pump <input type="checkbox"/> Other (list) <input type="checkbox"/>							
M. Other	<input type="checkbox"/>	<input type="checkbox"/>	Install Work Platform <input type="checkbox"/> Hole Covers <input type="checkbox"/> Guard Rails <input type="checkbox"/>							
9. Gas tester(s)/monitor model(s)/type(s):			Serial/unit no(s): _____							
			Bump test to confirm function? Yes <input type="checkbox"/> Verified: On-site test <input type="checkbox"/> Documentation <input type="checkbox"/>							
Test Required	Permissible levels	Initial test levels		Subsequent test type: Sample <input type="checkbox"/> Continuous <input type="checkbox"/>						
		(before vent)		(take readings before EACH entry into space)						
		Test 2	Test 3	Test 4	Test 5	Test 6				
A. Oxygen (O ₂)	19.5 to 23.5%									
B. Combustible gas/vapor (LEL)	10% LEL									
C. Hydrogen sulfide (H ₂ S)	5 PPM									
D. Carbon monoxide (CO)	< 25 PPM									
E. Other										
	Tester initials									
	Test Times									

10. Are entry conditions acceptable? (Remove debris and other obstructions from entry point) Yes No

Entry Suspended (time): _____ AM PM Time of reentry: _____ AM PM

Reason for suspending permit: _____

Permit Canceled date/time _____ / _____ AM PM Unanticipated Hazards? No Yes If yes, describe below: _____

Debriefing occurred after entry? Yes No _____

Entry Supervisor Signature: _____