

# Confined Space Entry

---

SAFETY POLICY MANUAL - SECTION 1 - POLICY NO. SM 1.10



SAFETY DEPARTMENT | 6001 UNIVERSITY BOULEVARD MOON TOWNSHIP, PA 15108

412-397-4343

**I. PURPOSE:**

To protect employees and contractor personnel from hazards associated with entering into confined spaces. These hazards include toxic, explosive, flammable or asphyxiating atmospheres; engulfment, entrapment, and other potential health and safety risks.

**II. SCOPE AND APPLICABILITY:**

This policy applies to the servicing and maintenance of vessels and equipment that satisfy the OSHA definition of a confined space. Special emphasis is placed upon “permit-required” confined spaces. The program applies to all employees and contractors involved in confined space entry.

**III. REFERENCES:**

Occupational Safety and Health Administration (OSHA) 29 CFR 1910.146, Permit Required Confined Spaces.

**IV. DEFINITIONS:**

- A. ATTENDANT** – a trained individual stationed outside a confined space who monitors the authorized entrants inside.
- B. AUTHORIZED ENTRANT** – an authorized person who enters a confined space.
- C. BLANKING OR BLINDING** – the absolute closure of a pipe, line or duct by inserting a solid plate or cap which completely covers the bore and is capable of withstanding the maximum upstream pressure.
- D. CONFINED SPACE** – a space that is large enough and so configured that a employee can bodily enter and perform assigned work, has limited or restricted means for entry or exit and is not designed for continuous human occupancy.
- E. CONFINED SPACE ENTRY** – any action that results if any part of an entrant breaks the plane of any opening of a confined space.
- F. COMPETENT PERSON** – a person who is capable of identifying hazardous or dangerous conditions with regard to confined space entry and has the authority to take prompt action. The person must receive formalized training in the recognition, evaluation, and control of confined spaces.
- G. DOUBLE BLOCK AND BLEED** – a method used to isolate a confined space from line, duct or pipe by closing two in-line valves in a piping system and opening a valve between them which is vented or drained to safe location.
- H. ENGULFMENT** – the surrounding and effective capture of a person by a liquid or finely divided solid that can be aspirated to cause death by filling or plugging the respiratory system, or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

- I. **ENTRY PERMIT** – a written or printed document provided by an employer to allow or control entry into a permit-required confined space under defined conditions for a stated purpose during a specified time.
  
- J. **ENTRY SUPERVISOR** – a person such as the immediate supervisor or empowered person who is 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 if necessary. At Robert Morris University, the Safety Officer/Specialist is the Entry Supervisor.
  
- K. **GENERAL VENTILATION** – a system of ventilation that introduces fresh air into a confined space and relies on its movement to purge, mix with and dilute air contaminants. This action displaces air contaminants that may be present, provides an adequate supply of oxygen to the space, and exhausts any contaminants formed by processes such as welding, oxy-fuel gas cutting, abrasive blasting, painting or solvent usage. General ventilation is useful in providing comfort-cooling and for removing unpleasant odors.
  
- L. **HAZARDOUS ATMOSPHERE** – an atmosphere presenting a potential for death, injury or illness due to the presence of:
  - 1. Flammable gases, vapors or mists in excess of 10% of its lower explosive limit (LEL);
  - 2. An airborne combustible dust at a concentration that meets or exceeds its LEL;
  - 3. An atmospheric oxygen concentration below 19.5% or above 23%;
  - 4. An atmospheric concentration of any substance for which a dose (IDLH – see below) or a  
permissible exposure limit (PEL) is in excess of its dose or PEL;
  - 5. Any other atmospheric condition that is immediately dangerous to life and health.
  
- M. **IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH)** – any condition which poses an immediate threat of loss of life or which may result in irreversible or immediate-severe health effects or may result in eye damage, irritation or other conditions which could impair escape from a confined space.
  
- N. **INERTING** – rendering the atmosphere in a confined space non-flammable, non-explosive or otherwise chemically non-reactive by displacing or diluting the original atmosphere with an inert gas such as argon or nitrogen. NOTE: An inert atmosphere represents an extremely dangerous asphyxiation hazard (oxygen deficiency).
  
- O. **ISOLATION** – the process by which a confined space is removed from service and completely protected against the release of energy and material into the space by such means as:
  - 1. Blanking or blinding;
  - 2. Misaligning or removing sections of lines, pipes or ducts;
  - 3. A double block and bleed system;
  - 4. Lockout and tagout of all sources of energy;
  - 5. Blocking or disconnecting all mechanical linkages.

- P. LINE BREAKING** – the intentional opening of a pipe, line or duct that is or has been carrying flammable, corrosive or toxic materials, an inert gas or any fluid at pressures or temperatures capable of causing injury.
- Q. LOCAL EXHAUST** – a method of ventilation that captures air contaminants at their point of generation and exhausts them to a remote location.
- R. LOWER FLAMMABLE LIMIT (LFL) AND LOWER EXPLOSIVE LIMIT (LEL)** – have the same meaning and are used interchangeably. Both mean the lowest concentration of a flammable gas or vapor which will ignite and burn in the presence of an ignition source.
- S. NON-PERMIT CONFINED SPACE (NPCS)** – a confined space that does not contain any atmospheric hazards, and that has no potential for introducing any hazard capable of causing death or serious physical harm.
- T. PERMIT-REQUIRED CONFINED SPACE (PRCS)** – a confined space that has one or more of the following characteristics:
1. Contains or has the potential to contain hazardous atmospheres;
  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-sectional area;
  4. Contains any other recognized serious safety or health hazards.
- U. PURGING** – a process by which gases, vapors or other air contaminants in a space are initially cleared by displacing the hazardous atmosphere with air, steam or an inert gas. Flammable or combustible atmospheres must be purged with an inert gas. NOTE: An inert atmosphere represents an extremely dangerous asphyxiation hazard (oxygen deficiency).
- V. QUALIFIED PERSON** – a person who possesses a recognized degree of knowledge and experience in regard to confined space entry and who has successfully demonstrated his/her ability to recognize and resolve problems related to confined space issues.
- W. STANDBY PERSON** – a person trained in emergency rescue procedures and positioned outside a confined space who remains in communication with those inside for the purpose of rendering assistance or effecting rescue.
- V. PROCEDURE:**
- A. IDENTIFICATION AND POSTING OF PERMIT-REQUIRED CONFINED SPACES (PRCS):**
1. Confined spaces in each workplace must be evaluated to determine if any areas are PRCSs.

2. Each PRCS at RMU is identified in the attached (Attachment B) “Permit Required Confined Space Inventory”. 2 PRCSs shall be identified with posted signs, “DANGER – CONFINED SPACE – PERMIT REQUIRED FOR ENTRY,” or equivalent to avoid unauthorized or inadvertent entry.

#### **B. CONFINED SPACE PERMIT SYSTEM:**

1. Entry of persons into PRCSs shall be authorized via a written Confined Space Entry Permit, which is found in Attachment A – Confined Space Entry Permit.
2. Confined Space Entry Permits shall be issued by a Facilities Department Manager or Safety Services.
3. Entry requirements shall be indicated on the Confined Space Permit and must be followed at all times.
4. Only work authorized by the Confined Space Permit and the written entry plan may be performed inside the space.
5. The duration of the Confined Space Entry Permit shall not exceed the duration of the work to be performed in the space. The Confined Space Entry Permit should be terminated immediately upon completion of authorized work.
6. Several jobs may occur simultaneously within a PRCS. In this situation, a single permit may be issued.
7. A copy of the authorized Confined Space Permit shall be maintained and displayed at each space entry location at all times while entry is underway.
8. A Facilities Department Manager or Safety Services shall terminate the Confined Space Permit after the entry work is completed. Completed permits will be filed for documentation and reference.
9. Copies of terminated Confined Space Entry Permits shall be retained for a minimum period of one year.
10. Entry permits must include the following information:
  - a) Test results; determination of potential respiratory/health/safety hazards;
  - b) Tester’s initials or signature;
  - c) Name and signature of supervisor who authorized entry (may be same as test conductor and attendant);
  - d) Name of permit space to be entered. Authorized Entrant(s), eligible Attendants, and individual(s) authorized to be Entry Supervisor(s);
  - e) Purpose of entry and known space hazards;
  - f) Measures to be taken to isolate permit spaces and to eliminate or control space hazards; i.e., lockout/tagout, ventilation, decontamination;
  - g) Availability of rescue and emergency services;
  - h) Date and authorized duration of entry;
  - i) Acceptable entry conditions;
  - j) Communication procedures and equipment to maintain contact during entry;
  - k) Additional permit(s), such as for hot work, that have been issued to authorize work in the permits space;
  - l) Special equipment and procedures. Including personal protective equipment and alarm systems;
  - m) Any other information needed to ensure employee safety.
11. The completed Permit shall be displayed at PRCS entrances or otherwise made available to entrants.

### **C. HAZARD IDENTIFICATION, EVALUATION, AND CONTROL:**

1. Safety Services shall be responsible for identification, evaluation, and control of known or potential safety and health hazards.
2. Entry shall not be permitted into any PRCS where hazards cannot be effectively eliminated, isolated or controlled.
3. Entry shall not be permitted into any PRCS where the safety or health hazards are not known and understood by all Entrants, Attendants, and Entry Supervisors.
4. All PRCSs designed to contain hazardous gases, liquids, or solids, shall be purged prior to entry so that the materials do not present a hazard. Engulfing hazards shall be removed from the space prior to entry.
5. Hazardous atmospheres shall be evacuated as noted in AIR MONITORING REQUIREMENTS.
6. Personal protective equipment (PPE) is an acceptable hazard control measure when hazards cannot be effectively eliminated, isolated or controlled by other feasible means.

### **D. LOCKOUT/TAGOUT PROVISIONS:**

1. The PRCS shall be isolated from steam, heat, fire, water, pressure, chemicals, gases, etc. All electrical and mechanical equipment that may present a hazard shall be de-energized and isolated prior to persons entering the space.
2. Mechanical isolations and de-energizing of electrical systems shall be performed according to Lockout/Tagout Procedures.
3. Flange blanks or other appropriate devices may be required on lines that supply gases, liquids, chemicals, solids, etc. to the confined space.

### **E. VENTILATION PROVISIONS:**

1. All PRCSs shall be ventilated prior to entry. Ventilation (forced or natural draft) shall be applied, as necessary, to maintain normal air quality inside confined spaces.
2. Natural draft ventilation shall be created and maintained where possible.
3. Forced mechanical ventilation shall be provided, where natural ventilation is inadequate.
4. PRCSs that contain toxic or flammable gases or liquids, or inert (oxygen deficient) atmosphere shall be emptied and purged prior to entry. The effect on areas surrounding openings during purging shall be considered.
5. Explosion-proof ventilation equipment shall be utilized where hazardous levels of flammable gases, vapors, or dusts may be present or are to be ventilated.
6. If acceptable air quality cannot be achieved and maintained, respiratory protection must be utilized as noted in RESPIRATORY PROTECTION REQUIREMENTS.

### **F. AIR MONITORING REQUIREMENTS:**

- a) Before initial entry, air inside the PRCS shall be monitored for:

- b) Oxygen;
  - c) Combustible gases;
  - d) Other toxic materials if potentially present.
- e) NOTE: It is important that oxygen be monitored first in the monitoring sequence. Typical combustible gas instruments (explosion meters) do not function effectively in an oxygen deficient atmosphere.
2. Monitoring shall be performed utilizing calibrated, direct-reading instruments or detector tubes. Results shall be recorded on the Confined Space Entry Permit.
  3. Direct-reading air monitoring instruments shall comply with the design, use, calibration, and maintenance requirements for confined space applications.
  4. If initial monitoring results indicate that normal air quality does not exist:
    - a) Forced mechanical ventilation (purging shall be provided);
    - b) The space shall be re-sampled;
    - c) Entry shall not be permitted until normal air quality is achieved and maintained, and the reasons for initial unacceptable conditions are known and understood;
    - d) The air inside the PRCS shall be continuously or periodically re-monitored as indicated on the Confined Space Entry Permit;
    - e) Normal air quality must be maintained for entry to continue.
  5. If initial monitoring results indicate that normal air quality exists and all sources of atmospheric hazards are eliminated:
    - a) Natural draft or forced mechanical ventilation shall be provided as necessary to sustain air quality;
    - b) Continuous or periodic monitoring shall be performed to ensure that acceptable air quality is maintained;
    - c) Normal air quality must be maintained for entry to continue.
  6. Continuous air monitoring is required for, but not limited to:
    - a) Sewers or other PRCS where there is a potential for constant replenishment of air contaminants;
    - b) Any PRCS that contains oxygen-consuming materials;
    - c) A PRCS that contains residual flammable or toxic materials;
    - d) Any work using inert gases;
    - e) Any work where outside activities could adversely affect air quality inside the space;
    - f) Any work within the confined space (welding, cutting, burning, etc.) that may alter air quality.

7. Periodic re-monitoring is required for, but not limited to:

- a) Subsequent re-entry into a PRCS that was inert, contained flammable or toxic materials, or was oxygen deficient;
- b) Spaces presenting a low likelihood of potential air problems, but where available air quality data is limited.

#### **G. SPECIAL ELECTRICAL EQUIPMENT REQUIREMENTS:**

1. Explosion-proof electrical equipment shall be used whenever flammable gases, vapors, dusts, or mists are encountered or whenever volatile flammable liquids or gases are used inside a PRCS.
2. Portable or hand-held tools, lights, or other electrical equipment shall be either:
  - a) Double-insulated;
  - b) Operated at 50 volts or less;
  - c) Constructed so that all metal, no-current carrying parts are grounded.
3. Ground fault circuit interrupters (GFCIs), overcurrent protection and grounding should be utilized for all electrical equipment over 50 volts used in:
  - a) Small, cramped, conductive PRCSs;
  - b) Wet PRCSs with freestanding water.

#### **H. RESPIRATORY PROTECTION REQUIREMENTS:**

1. Ventilation, purging, isolation and decontamination shall be applied as the primary means for eliminating hazardous atmospheres. Respirators shall be used whenever these controls are not feasible or effective.
2. If respirators are required, they shall be selected, inspected, used, cleaned, and maintained in accordance with OSHA Respiratory Protection Standard, 29 CFR 1910.134. Employees who wear respirators shall be trained, fit tested, and medically approved (for negative pressure respirators) per OSHA requirements.

#### **I. COMMUNICATIONS:**

1. Communications shall be continuously maintained between persons inside and outside the PRCS. Communications may include voice or visual contact, radios, etc. or any other means for maintaining contact.
2. Provisions shall be available for summoning rescue and emergency services.

#### **J. ATTENDANTS:**

1. At least one attendant shall be assigned to remain outside each PRCS during entry. They shall not perform any other work that might interfere with their primary duty as an attendant. A single attendant may attend more than one PRCS if feasible.
2. Attendants may be dedicated persons, the Entry Supervisor, or rescue persons. They may enter the space providing they are authorized and trained and have someone to relieve them of their attendant duties.



3. Duties of the attendant are defined in the Responsibilities Section.

#### **K. ENTRY SUPERVISORS:**

1. Facilities Management and Safety Services perform Entry Supervisor duties.
2. An Entry Supervisor shall be designated for each PRCS entry.
3. The Entry Supervisor may also serve as a PRCS attendant.
4. Duties of the Entry Supervisor are defined in Responsibilities Section.

#### **L. AUTHORIZED ENTRANTS:**

1. Only Authorized Entrants, as specified on the Confined Space Permit, are permitted to enter the PRCS.
2. Minimum qualifications for authorized entrants are:
3. Initial and refresher PRCS Entry Training;
4. Permission from the Entry Supervisor;
5. If respirators are required to be used, respirator training, medical examinations, and fit testing (negative pressure devices) are also required.
6. Duties of Authorized Entrants are defined in the Responsibilities Section.

#### **M. RESCUE AND EMERGENCY PROVISIONS:**

1. Rescue and emergency services shall be readily available when persons enter a PRCS. Rescue personnel must be familiar with the nature of hazards encountered in PRCSs.
2. Confined space rescue at RMU is assigned to the local Fire Department / Emergency Medical Services Bureau – RESCUE ONE for the Moon Campus and the ISC location.
3. Emergency response teams are trained and equipped for confined space rescue.
4. Emergency notification access is dial 911.
5. On-site familiarization and required practice rescue exercises, if required, will be scheduled by Facilities Management and/or Safety Services.
6. Qualifications for Rescue Teams:
  - a) PRCS entry and rescue training;
  - b) Respiratory protection training including SCBAs;
  - c) Medically qualified to wear respirators, and physically capable of rescue operations;
  - d) First aid and CPR training and certification;
  - e) Annual rescue/retrieval drills. Mock rescue drills should be conducted for confined space work that involves high hazard potential.

7. Specific rescue equipment requirements will depend upon the types of hazards associated with the PRCS. Equipment provided with rescue teams may include:

- a) Full body harnesses, shock-absorbing lanyards, or retractable lifelines;
- b) Hooks, shackles, slings, tripods, and hoists;
- c) Body baskets, litters, stretchers, and restraints;
- d) SCBAs with additional air bottles.
- e) A mechanical device must be available to retrieve personnel from vertical permit spaces greater than five feet deep.
- f) Non-entry rescue/retrieval systems may be required under certain conditions. Exceptions are when the rescue/retrieval equipment would increase the overall risk of retrieval or would not contribute to the rescue of the person.
- g) Duties of Rescue Teams are defined in the Responsibilities Section.

#### **N. NON-PERMIT CONFINED SPACES:**

1. Confined spaces that are free of health and safety hazards, and that pose no potential for airborne contaminants, oxygen deficiency, engulfment, entrapment or physical/mechanical hazards are classified as Non-Permit Confined Spaces. Work may be performed within these spaces without a permit and associated surveillance and rescue provisions so long as the work procedures inside the space do not generate health/safety hazards.

#### **O. DECLASSIFICATION AS NON-PERMIT-REQUIRED CONFINED SPACES:**

1. PRCSs may be declassified to non-permit status, with no permit required for entry, providing all the following conditions are met:

- a) The space poses no actual or potential atmospheric hazard;
- b) All other serious safety and health hazards remain eliminated;
- c) The reason is indicated on the Confined Space Permit;
- d) The reclassified Permit is made available to all entrants.
- e) This reclassification/declassification may be considered a termination of the Confined Space Permit.
- f) Any condition change that would create a serious safety or health hazard requires that the space be reclassified as a PRCS.
- g) NOTE: Control of airborne contaminants via continuous forced ventilation is not an accepted procedure for declassification of a PRCS to non-permit status.

#### **P. CONTRACTORS:**

1. Contractors who perform PRCS work on RMU sites shall be informed that permit-required spaces exist and that a Confined Space Permit Entry Program is required for entry.
2. Communication, cooperation and coordination among RMU personnel and contractors are essential to implementation of an effective PRCS program.
3. Contractors who perform work in PRCSs should implement their own permit entry program. RMU Department Heads shall inform the on-site contractor of specific work practices, procedures and policies that may be required in order to be consistent between them.
4. Department Heads or Entry Supervisors shall:
  - a) Inform the contractor of the reasons the space they will work in is a PRCS. This information shall include the hazards identified and any past experience with the space to be entered;
  - b) Inform the Contractor of any precautions or procedures that have been implemented for protecting persons working inside the PRCS;
  - c) Coordinate entry operations through the RMU Entry Supervisors and the Contractor's Entry Supervisor as necessary;
  - d) Debrief the Contractor at the end of entry work regarding their confined Space Permit Entry Program and hazards encountered and created during entry work.
5. Where PRCSs will be entered by more than one contractor, or by both contractor and on-site employees:
  - a) All entry work should be coordinated by all parties through a designated person/supervisor.
  - b) Appropriate entry procedures should be defined and agreed upon by RMU and on-site contractors.
  - c) Only one Confined Space Permit should be issued for all work conducted simultaneously within a specific confined space.
  - d) A single Entry Supervisor and Attendant may be assigned for PRCS entry work involving a combination of Contractor/RMU Employees so long as all work is performed under a common Entry Permit operating procedure, rescue provision, etc.

#### **Q. EQUIPMENT INVENTORY:**

1. Compliance with the OSHA Confined Space Entry Standards and written policy will require availability of necessary equipment. Types and quantity of equipment will depend upon the specific hazards associated with the confined spaces identified. Equipment examples include:
  - a) Mechanical ventilating equipment
  - b) Oxygen meter with copy of instruction manual
  - c) Combustible/toxic gas meter with copy of instruction manual

- d) Monitoring equipment specific to hazards encountered
- e) Entry permits, entry logs
- f) Confined space assessment information
- g) Flashlight and other specific lighting equipment
- h) Communication equipment as required
- i) Personal protective equipment (respirators, gloves, safety goggles, hearing protection, protective outerwear)
- j) Body harness, wristlets, retrieval line and mechanical retrieval systems as required for vertical rescue
- k) Appropriate phone numbers
- l) Safety barrier and cones

## **VI. RESPONSIBILITIES:**

### **A. DEPARTMENT HEAD:**

1. Ensuring that all PRCSS under their authority are properly identified and properly posted;
2. Ensuring that PRCSS permits are issued by Facilities or Safety Services prior to any entry;
3. Assignment of personnel to duties of Entry Supervisors, Attendants, and PRCSS Entrants and ensuring that training and education requirements are met;
4. Ensuring that rescue and emergency services are immediately available for work in PRCSS;
5. Declassifying PRCSS as to non-permit confined spaces, as appropriate, with assistance from Safety Services;
6. Communicating appropriate PRCSS details to contractors; coordinating contractor operations and ensuring that contractors observe PRCSS procedures in accordance with OSHA requirements;
7. Participation in OSHA mandated annual review and possible revision of the PRCSS program.

### **B. SAFETY SERVICES:**

1. Development, interpretation and revision of the PRCSS program;
2. Assist applicable departments (Facilities/Construction) with required training.
3. Technical direction in confined space matters;
4. Issuing PRCSS permits for all confined space work that requires a permit;
5. Performing Entry Supervisor duties, which include identifying, evaluating, and controlling confined space hazards, and establishing entry requirements;

6. Assistance in securing appropriate air monitoring equipment;
7. Assistance in declassifying/reclassifying of PRCSSs;
8. Coordinating Emergency Response Teams, and assisting, as needed, in developing effective rescue plans;
9. Ensuring that required respirator training and fit testing are provided when situations require respirator usage;
10. Participation in OSHA-mandated annual review and possible revision of the PRCSS program;
11. Maintaining records and documentation, and provision for inspection in accordance with OSHA requirements.

### C. ENTRY SUPERVISOR:

NOTE: Facilities Management or Safety Services shall perform all Entry Supervisor duties.

1. Knowing potential hazards associated with confined spaces within assigned work area;
2. Being familiar with specific work to be performed, and evaluating specific hazards;
3. Performing air monitoring of enclosed or confined spaces;
4. Ensuring that all electrical and mechanical equipment is isolated and de-energized, as necessary, prior to work in PRCSSs (lockout/tagout);
5. Knowing the signs, symptoms, and behavioral changes associated with exposure to PRCSS hazards;
6. Verifying that all entry requirements specified on the Confined Space Permit are met before and during entry;
7. Ensuring that only authorized entrants enter the space;
8. Conducting pre-entry briefings for all entrants and attendants prior to entry;
9. Knowing the procedure for immediately contacting emergency rescue services, ensuring that rescue teams and equipment are available and the means for summoning them is operable for work in PRCSSs;
10. Ensuring that acceptable entry conditions and requirements are maintained whenever responsibility for entry operations is transferred to another Entry Supervisor;
11. Terminating the entry and permit when the work has been completed or a condition that is not allowed under the permit arises in or near the space;
12. Coordinating PRCSS work among different workgroups;
13. Re-evaluating changing work and confined space hazards, if necessary;

14. Maintaining Confined Space Permits, Entry/Exit Logs, and Permit Number Logs; and ensuring proper documentation and recordkeeping;

15. Performing Attendant or Authorized Entrant duties when necessary;

16. Developing a record of unforeseen hazards, accidents, near misses, or potential deficiencies in the PRCS program for future review and possible revision of the program;

#### D. AUTHORIZED ATTENDANT:

1. Knowing the hazards associated with the PRCS;

2. Knowing the signs, symptoms, and behavioral changes associated with exposure to PRCS hazards;

3. Maintaining an accurate count and names of all persons inside a PRCS. An Entry/Exit Log should be implemented.

4. Remaining outside the space during entry until relieved by another Attendant;

5. Maintaining communications with entrants;

6. Allowing only authorized persons to enter the space;

7. Monitoring activities inside and outside the space for safety and health;

8. Ordering evacuation of entrants if dangerous situations arise;

9. Knowing how to immediately summon emergency rescue or medical services, and altering emergency response teams when required;

10. Performing entry supervisor and authorized entrant duties when required;

11. Developing a record of PRCS activities, noting any unforeseen hazards, accidents, near misses, or potential deficiencies in the PRCS program for future review and possible revision of the program.

#### E. AUTHORIZED ENTRANTS:

1. Knowing the potential hazards associated with any PRCS that they may be assigned to enter;

2. Knowing the signs, symptoms, and behavioral changes associated with exposure to PRCS hazards;

3. Becoming familiar with PRCS work to be accomplished, and securing proper equipment to minimize work hazards and conduct PRCS work in a proficient manner to effectively limit the time in a PRCS;

4. Properly utilizing and maintaining assigned monitoring devices, entry equipment and personal protective equipment;

5. Maintaining communications to enable the Attendant to monitor entry status;

6. Alerting the Attendant of any known dangerous or prohibited condition;

7. Exiting the space; whenever any dangerous or prohibited condition is detected or an evacuation order is given by the Attendant or Entry Supervisor;

**F. EMERGENCY RESPONSE TEAM:**

1. Effective rescue/retrieval from those PRCSS identified within their assigned area;
2. Being aware of PRCSS activities and hazards and able to respond in a timely manner;
3. Rescue of persons from PRCSS that are not capable of exiting unaided or with the use of nonentry rescue/retrieval systems;
4. Rescue of persons in a manner that does not increase their risk of injury or illness or place additional life-threatening risks on other persons;
5. Providing first aid or CPR when required;
6. Participation in training programs and required practice rescue exercises.

**G. CONTRACTORS PERFORMING WORK ON RMU PREMISES:**

1. Becoming knowledgeable in regard to hazards associated with those PRCSS they may be entering;
2. Providing properly trained and equipped personnel for PRCSS entry;
3. Implementing practices, programs, and procedures that comply with the RMU PRCSS program and with OSHA requirements.

**VII. TRAINING:**

A. Initial and annual training shall be provided for all Entry Supervisors, Authorized Entrants, Attendants, and Rescue and Emergency Service persons assigned prior to performing work associated with PRCSS. This training shall include the following:

1. Review of the OSHA Permit-Required Confined Space Standard, 29 CFR 1910.146;
2. Review of the confined space entry policy;
3. Explanation of the Confined Space Procedure and the Confined Space Permit System;
4. Understanding of the specific safety and health hazards associated with PRCSS;
5. Understanding of the duties and responsibilities of Entry Supervisors, Authorized Entrants, Attendants, and Rescue and Emergency Services Persons as noted in the RESPONSIBILITIES section.

B. The off-site Emergency Rescue Team shall be trained as follows:

1. Basic first aid and CPR;



2. Design, inspection, operation, use, and limitations of personal protective equipment and rescue equipment necessary for making rescues from confined spaces;
3. Simulated rescue operations for confined spaces that represent potentially serious hazards.

**VIII. DOCUMENTATION AND RECORDKEEPING:**

- A. Safety Services for reference, review and inspection for a one-year time interval shall retain Confined Space Permits and Entry/Exit Logs.
- B. Training records shall be documented and retained by the Facilities & Construction Department.

**IX. REVIEW FREQUENCY:**

This Confined Spaces Entry Program shall be reviewed on an annual basis by Safety Services and Facilities Management. This review shall include administrative, operational, and training provisions of the PRCS program. The purpose of the review is to evaluate the effectiveness, level of compliance, and potential deficiencies of the program. Comments for revisions shall be submitted to Safety Services. Revisions shall be made as necessary to correct deficiencies and reflect changes in program or policy.

---

**Implementation Date:** January 2007

**Last Reviewed/Revised:** April 2021

**ATTACHMENTS:**

Attachment A - Confined Space Entry Permit

Attachment B – Permit Required Confined Space Inventory









**Attachment A**  
**Confined Space Entry Permit**



<b>CONFINED SPACE ENTRY PERMIT</b>							
<i>A Copy Of This Completed Permit Must Be Displayed At The Entry Site During The Entry Procedure.</i>							
LOCATION:				PERMIT NO.			
PLACE TO BE ENTERED:				Emergency Phone No.			
PURPOSE FOR ENTRY							
ENTRANT NAME:				ATTENDANT NAME:			
AUTHORIZED DURATION OF PERMIT: _____ DATE _____ TIME (From/To): _____							
<b>PERMIT – SPACE HAZARDS</b> (Note if there is potential for exposure to any of the following hazards)							
Oxygen Deficiency		Mechanical Hazards		Entrapment			
Oxygen Enrichment		Electrical Hazards		Engulfment			
Combustible Gases or Vapors		Chemical Contact		Dust, Welding Fume			
Toxic Gases or Vapors		Falls to Lower Level		Other (Note)			
Extreme Temperatures		Falling Objects					
<b>PREPARATION FOR ENTRY</b> (Note steps that have been taken)							
Permit Posted and Recorded		Pre-entry Briefing		Decontamination-Hazard Isolation/Removal			
Ventilation		Lockout/Tagout		Attendant			
<b>EQUIPMENT REQUIRED FOR ENTRY AND WORK:</b>							
Personal Protective Equipment:							
Respiratory Protection:							
Atmospheric Testing/Monitoring:							
Communication:							
Rescue Equipment:							
<b>ATMOSPHERIC TESTING RESULTS</b>							
Hazard/Contaminant	Limit	Result AM / PM	Result AM / PM	Result AM / PM	Result AM / PM	Result AM / PM	Result AM / PM
Oxygen– Percent (%)	19.5 – 21.5						
Combustible Gas (%LEL)	<10%						
Carbon Monoxide	50 ppm						
Toxic Materials	(PEL)						
Tester: _____				DATE: _____			
(Signature)				(PEL) = OSHA Permissible Exposure Limit			

**Attachment B**

**Permit Required Confined Space Inventory Moon Campus**

PERMIT REQUIRED CONFINED SPACES	HAZARD INVENTORY	BUILDING/ FACILITY LOCATION
	<p>Vault depth is over six feet. Requires fall protection and retrieval system. Possible atmospheric hazard. Initial entry air monitoring required.</p>	<p>Moon Campus The water meter vault is located at the Amherst Admissions Center on the hillside just south of the building.</p>
<p><b>Water Meter Vault</b></p> 	<p><b>Required Entry Equipment</b></p> <ul style="list-style-type: none"> <li>• Air Monitoring for the presence of O<sub>2</sub>, LEL, CO, H<sub>2</sub>S</li> <li>• Fall Protection / Retrieval Device Tripod system with combination Fall Protection &amp; Retrieval Device</li> <li>• Full Body harness</li> </ul>	<p><b>Hazard Elimination / Space Reclassification</b></p> <ul style="list-style-type: none"> <li>• Installation of remote meter reading equipment. This will eliminate the need for entry into the pit by utility personnel</li> <li>• Entry will be required for repair and maintenance only.</li> <li>• Pre-entry air monitoring</li> </ul>
	<p>Access restriction due to size and opening location. Current entry is from the top of the tank. Tank depth is approximately nine feet. Fall and retrieval hazards exist due to configuration of the space. Water Additive Chemicals, Atmospheric Hazard</p>	<p><b>Moon Campus</b>  Patrick Henry Mechanical Room 200</p>

<p><b>Cooling Tower Water Tank</b></p> 	<p><b>Required Entry Equipment:</b></p> <ul style="list-style-type: none"> <li>• Air monitoring for the presence of CO, H<sub>2</sub>S, LEL, low oxygen content and combustible gases</li> <li>• Personal protective clothing, water resistant outer clothing, gloves, boots, full body harness, eye/fall protection</li> <li>• Entry Equipment-Combination fall protection and retrieval</li> </ul>	<p><b>Hazard Elimination / Entry Equipment / Space Reclassification</b></p> <ul style="list-style-type: none"> <li>• Install anchorage point above the tank to allow for the attachment of a cable system for the hoist.</li> <li>• Mount the hoist outside of the tank. (See diagram)</li> <li>• Attach chain ladder or portable ladder to inside of tank</li> </ul>
--	--	---

<p><b>PERMIT REQUIRED CONFINED SPACES</b></p>	<p><b>HAZARD INVENTORY</b></p>	<p><b>BUILDING/ FACILITY LOCATION</b></p>
	<p>Limited access in size and number. Two hatches are located at the bottom of the units. Access can be made from the top which would require fall protection and retrieval devices. Other required safety procedures: Lockout/TagOut</p>	<p><b>Moon Campus</b>  Patrick Henry Building Roof</p>
<p><b>Cooling Tower</b></p>	<p><b>Required Entry Equipment</b></p> <ul style="list-style-type: none"> <li>• Air monitoring for the presence of H<sub>2</sub>S, O<sub>2</sub>, LEL, and CO</li> <li>• Full Body</li> </ul>	<p><b>Hazard Elimination / Space Reclassification</b></p> <ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
	<p>A fall hazard exists with these grease pits. The depth is well over six feet. Fall protection and retrieval equipment is required. Exposure to animal fat, and other physical hazards. Atmospheric hazards may exist requiring air monitoring.</p>	<p><b>Moon Campus</b>  Nicholson Center loading dock at the Cafeteria.</p>



<p><b>Grease Trap / Sanitary Sewer</b></p> <p>The normal maintenance for these grease traps is done from the outside of the pit. A vacuum truck removes the liquid or sludge. Restricted Access: Robert Morris Facilities Management employees do not enter these locations.</p>	<p><b>Required Entry Equipment Outside Contractor</b></p> <ul style="list-style-type: none"> <li>• Air monitoring for the presence of H2S, O2, LEL, and CO</li> <li>• Retrieval Device</li> <li>• Full Body Harness</li> <li>• Personal protective clothing including gloves, boots, coveralls &amp; respiratory protection</li> </ul>	<p><b>Hazard Elimination/Space Reclassification</b></p> <p>The size, configuration, and the materials inside these spaces, prevent full hazard elimination.</p> <p>These sewers will remain permit required</p> <p><b>Recommendation: Outside service contractor</b></p>
--	--	--



PERMIT REQUIRED CONFINED SPACES	HAZARD INVENTORY	BUILDING/ FACILITY LOCATION	
<p><b>Elevator Pits Campus Wide 25 Elevators</b></p>	<p>Unexpected start up of equipment, failure of hydraulic system. Chemical exposure.</p> <p>Other applicable safety requirements: Lockout Tag Out, bracing and blocking the elevator car.</p>	Lexington	1
		Concord	2
		Massey	1
		Hale	1
		John Jay	1
		Nicholson	4
		Patrick Henry	1
		Braddock	1
		Joe Walton	1
		Yorktown	4
		UPMC EC	2
		Student Rec	1
		Scaife	1
		Wheatley	1
Salem	2		
School of Business	1		
<p><b>Elevator Pits</b></p> <p>Restricted Access</p>		<p><b>Hazard Elimination/Space Reclassification</b></p> <p>Move the elevator car to rest on the support.</p> <p>Release hydraulic pressure.</p> <p>Check for atmospheric hazards. If no atmospheric hazards are present and the potential for atmospheric hazards has been eliminated the space can be reclassified.</p>	









<p><b>Storm and Sanitary Sewers          Campus Wide</b></p> <p><b>Do Not Enter</b></p> <p><b>Outside contractor or          municipal services only</b></p>	<p>The majority of the “Man Holes” are over six feet in depth. A fall hazard exists. Personal fall protection and retrieval equipment is required. Exposure to unknown chemical and biological materials and the possibility of an oxygen deficient atmosphere, and or hydrogen sulfide. Air monitoring is required.</p>	<p>These “Man Holes” are located throughout the campus. Review the map for specific locations.</p>
--	--	--

<p><b>PERMIT REQUIRED          CONFINED SPACES</b></p>	<p><b>HAZARD INVENTORY</b></p>	<p><b>BUILDING/ FACILITY          LOCATION</b></p>
	<p><b>Required Entry Equipment</b></p> <p><b>Outside Contractor</b></p> <ul style="list-style-type: none"> <li>• Air monitoring for the presence of H<sub>2</sub>S, CO, LEL, oxygen content and combustible gases</li> <li>• Fall Protection/Retrieval Device</li> <li>• Full Body Harness</li> <li>• Personal protective clothing including gloves, boots, coveralls, respiratory protection</li> </ul>	




**Permit Required Confined Space Inventory Neville Island Sports Center**

<p><b>PERMIT REQUIRED CONFINED SPACES</b></p>	<p><b>HAZARD INVENTORY</b></p>	<p><b>BUILDING/ FACILITY LOCATION</b></p>
<p><b>Elevator Pit</b></p> 	<p>Unexpected start up of equipment, failure of hydraulic system. Chemical exposure.</p> <p>Other applicable safety requirements: Lockout Tag Out, bracing and blocking the elevator car.</p>	<p><b>Neville Island Sports Center</b></p> <p><b>Hazard Elimination/ Space Reclassification</b></p> <ul style="list-style-type: none"> <li>• Provide a support or brace to prevent the elevator car from moving down into the elevator pit.</li> <li>• Move the elevator carto rest on the support.</li> <li>• Release hydraulic pressure.</li> <li>• Check for atmospheric hazards. If no atmospheric hazards are present and the potential for atmospheric hazards has been eliminated the space can be reclassified.</li> </ul>
<p><b>Snow Melt Pit (Glycol)</b></p> 	<p><b>Required Entry Equipment</b></p> <ul style="list-style-type: none"> <li>• Air monitoring for the presence of H2S, CO, LEL, oxygen content and combustible gases</li> <li>• Retrieval Device</li> <li>• Full Body harness</li> </ul>	<p><b>Neville Island Sports Center</b></p> <p><b>Hazard Elimination/ Space Reclassification</b></p>

<p><b>PERMIT REQUIRED CONFINED SPACES</b></p>	<p><b>HAZARD INVENTORY</b></p>	<p><b>BUILDING/ FACILITY LOCATION</b></p>
<p><b>Sewage Wet Well Lift Station</b></p> 	<p>Atmospheric hazard, biological exposure, fall potential. A fall hazard exists during entry. Biological exposures from fecal matter and an atmospheric hazard from possible presence of hydrogen sulfide and low oxygen content.</p>	<p><b>Neville Island Sports Center</b></p> <p>Hazard Elimination /Space Reclassification</p>
<p><b>Sewage Wet Well Lift Station</b></p> 	<p><b>Required Entry Equipment</b></p> <ul style="list-style-type: none"> <li>• Air monitoring for the presence of H<sub>2</sub>S, CO, LEL, oxygen content and combustible gases</li> <li>• Fall Protection /Retrieval Device</li> <li>• Full Body Harness</li> <li>• Respiratory Protection</li> <li>• Water resistant outer clothing, coveralls or two piece garments</li> <li>• Boots, gloves,</li> </ul>	<p><b>Neville Island Sports Center</b></p> <p>Hazard Elimination / Space Reclassification</p> <p>Space cannot be reclassified without extensive decontamination/disinfection activities</p>
<p><b>Sewage Discharge Check Valve</b></p> 	<p>Fall hazard, potential atmospheric hazard, from exposure to Hydrogen Sulfide, biological material, contact with raw sewage. Required Entry Equipment Outside Contractor</p> <ul style="list-style-type: none"> <li>• Air monitoring for the presence of H<sub>2</sub>S, CO, LEL combustible gases and all oxygen content</li> <li>• Retrieval Device</li> <li>• Full Body Harness</li> <li>• Personal protective clothing</li> <li>• Gloves, boots, coveralls &amp; mask</li> </ul>	<p><b>Neville Island Sports Center</b></p>

<p><b>PERMIT REQUIRED CONFINED SPACES</b></p>	<p><b>HAZARD INVENTORY</b></p>	<p><b>BUILDING/ FACILITY LOCATION</b></p>
<p><b>Electrical Vaults</b></p> 	<p><b>No entry task required.</b></p>	<p><b>Neville Island Sports Center</b></p>
<p><b>Crawl Space</b></p> 	<p>This space is limited by the size, type and number of access and egress locations. The potential for an oxygen deficient atmosphere, the potential presence of ammonia gas.</p> <p><b>Required Entry Equipment</b></p> <ul style="list-style-type: none"> <li>• Full body Harness</li> <li>• Life Line</li> <li>• Horizontal retrieval system</li> <li>• Air monitoring for the presence of H<sub>2</sub>S, ammonia, CO, LEL, combustible gases and all oxygen content</li> </ul>	<p><b>Neville Island Sports Center</b></p> <p><b>Crawl space below collegiate rink</b></p>
<p><b>Ammonia Condenser</b></p> 	<p>This space is limited by the size, type and number of access and egress locations. The potential for an oxygen deficient atmosphere, the potential presence of ammonia gas.</p> <p><b>Required Entry Equipment</b></p> <ul style="list-style-type: none"> <li>• Full body Harness</li> <li>• Life Line</li> <li>• Air monitoring for the presence of H<sub>2</sub>S, ammonia, CO, LEL, combustible gases and all oxygen content</li> </ul>	<p><b>Neville Island Sports Center</b></p> <p><b>Ammonia Condenser Hatch</b></p>



<p><b>PERMIT REQUIRED CONFINED SPACES</b></p>	<p><b>HAZARD INVENTORY</b></p>	<p><b>BUILDING/ FACILITY LOCATION</b></p>
<p><b>HVAC Cooling Towers</b></p> 	<p>Limited access in size and number. Two hatches are located at the middle of the units. Access can be made from the top which would require fall protection and retrieval devices.</p> <p><b>Required Entry Equipment</b></p> <ul style="list-style-type: none"> <li>• Air monitoring for the presence of O<sub>2</sub>, LEL, CO, H<sub>2</sub>S</li> <li>• Full Body Harness</li> <li>• Life line</li> </ul>	<p><b>Neville Island Sports Center</b></p>
<p><b>Dome Air Handling Unit</b></p> 	<p><b>Required Entry Equipment</b></p> <ul style="list-style-type: none"> <li>• Full Body Harness</li> <li>• Attendant</li> <li>• Communication equipment</li> </ul>	<p><b>Neville Island Sports Center</b></p>
<p><b>Water Meter Vault</b></p> 	<p><b>Required Entry Equipment</b></p> <ul style="list-style-type: none"> <li>• Air Monitoring for the presence of O<sub>2</sub>, LEL, CO, H<sub>2</sub>S</li> <li>• Fall Protection / Retrieval Device Tripod system with combination Fall Protection &amp; Retrieval Device</li> <li>• Full Body harness</li> </ul>	<p><b>Hazard Elimination /Space Reclassification</b></p> <ul style="list-style-type: none"> <li>• Installation of remote meter reading equipment. This will eliminate the need for entry into the pit by utility personnel</li> <li>• Entry will be required for repair and maintenance only.</li> <li>• Pre-entry air monitoring</li> </ul>