



CONFINED SPACE PROGRAM

Effective Date: October 19, 2022

Revised: November 17, 2022

Responsible Office: Office of Safety and Risk Management / Facilities

Division: Finance and Administration

I. PURPOSE/OBJECTIVE

To define policies concerning the Permit Required Confined Space (PRCS) program and to ensure safe entry methods are utilized during all activities regarding the permit space to prevent personal injuries and illnesses that could occur.

To restrict all Grambling State University employees from entering or working in a confined space.

II. SCOPE

The program prohibits all Grambling State University Employees from entering any confined spaces. Employees may be responsible for reporting, identifying or monitoring contractor entry and work within confined spaces. The program also covers any contractor or subcontractor of Grambling State University whose duties require entry and work within confined spaces.

III. Definitions

Acceptable Entry Conditions means the conditions that must exist in a permit space to allow entry and to ensure that workers involved with a PRCS entry can safely enter 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 contractor's permit space program.

Authorized Entrant means a worker who is authorized by his employer (GSU contractor or sub-contractor) to enter a permit space. No GSU employee may become an authorized entrant.

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 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:

- Is large enough and so configured that a worker can enter and perform assigned work

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- 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)
 - Is not designed for continuous worker 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.

Energy Isolating Device means any device that prevents the transmission or release-of-energy.

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 PRCS. Entry includes ensuring 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.

Hazardous Atmosphere means an atmosphere that may expose workers to the risk of death, incapacitation, and impairment of ability to self-rescue.

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.

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.

LOTO is the placement of a lock and/or tag on the energy-isolating device. The energy isolating device will not be operated until the installer of said locks or tags has removed all lockout/tagout devices.

Qualified Person is a person who has the appropriate education, training and experience to work in and around confined spaces and is experienced and knowledgeable in the various operations of confined space work.

Non-Permit Required Confined Space (NPRCS) 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.

PRCS (Permit Space) means a confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere (i.e. gas, heat, toxic vapor, oxygen deficiency or enrichment, etc.)
- Contains a material that has the potential for engulfing an entrant (i.e. particulate, matter, liquid, etc.)
- 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
- Contains any other recognized serious safety or health hazards

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

Toxic Atmosphere is an atmosphere (in or around) a confined space that contains a concentration of a substance (solid, liquid, or gas) above the published or otherwise known safe levels.

IV. Responsibilities

Director of Facilities Management and Director of Safety and Risk Management

- Jointly holds the overall responsibility for the review of the Permit-Required Confined Space Program provided by all contractors and sub-contractors.

Facilities Management & Campus Operations Committee

- Review the confined space entry program at least annually or whenever the following occur as reported:
 - Any unauthorized entry of a confined space is performed.
 - A hazard is identified which was not covered by the permit.
 - A near miss or injury incidents occurs.
 - An employee shows lack of training or ignorance of safety sensitive information regarding entry.
 - Review and approve all contractors and sub-contractors Permit-Required Confined Space Program including proof of worker training.
- Ensure confined space assessments have been properly conducted and all PRCS's are posted as such. Ensure contractors and sub-contractors provide equipment to ensure safe entry for entrants.
- Review, with Directors, this program and permits to ensure effectiveness and compliance.
- Evaluate contractors and sub-contractors entry and rescue teams/services to ensure they are adequately trained and prepared.
- Ensuring rescue teams have access during entry into spaces with Immediate Danger to Life and Health (IDLH) atmospheres.

Authorized Entrant (Contractors and Sub-contractors only)

- Complete the required training before entering a confined space.
- Before entry, make sure that the “qualified person” has evaluated/inspected the confined space, and that it was determined safe to enter and that all potential hazards have been identified and that serious hazards have been isolated.
- Before entry, obtain authorization from the Directors of Facilities Management and Safety and Risk Management, or his/her designee, to enter confined spaces.
- Before entry, make sure that all appropriate rescue equipment has been made available at the site. Whenever workers are required to enter a PRCS, they are required to don a full body harness and an attached retrieval line, secured outside the confined space unless the retrieval equipment would increase the overall risk or would not contribute to the rescue of the victim. Retrieval lines will be attached to an approved mechanical hoisting device.
- The entrant will make sure that the appropriate ventilation equipment and tubing has been positioned properly to provide continuous, clean air to the work area when deemed necessary by the permit.
- Use the proper equipment when entering a confined space and know how to use the equipment properly.
- Observe the entry procedures and permit.
- Make sure the necessary communication equipment for the type of work being performed is available and be familiar with the use and warnings of all monitoring equipment.
- Communicate with the attendant as necessary so the attendant can monitor the status of the entrants and be able to alert the entrants of the need to evacuate the space if necessary.
- Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- Alert the attendant whenever the entrant recognizes any warning signs or symptoms of exposure to a dangerous situation, or when any prohibited condition is detected.
- Exit the confined space as quickly as possible whenever the following occur:
 - The attendant or entry supervisor gives an order to evacuate the space.
 - The entrant recognizes any warning signs or symptoms of exposure to a dangerous situation.
 - The entrant detects a prohibited condition. An evacuation alarm is activated.
- Entrants are allowed the option to voluntarily participate in and review calibrated air monitoring data before entry.

Entry Attendant

- At least one attendant must be outside the confined space for the duration of the entry operation.
- An attendant may not monitor more than one confined space at a time.
- Perform no secondary duties that would interfere with the attendants’ primary duty to monitor and protect the entrants.

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- Know the hazards that may be faced during entry, including information on the mode of entry and consequences of any exposure to harmful materials.
 - Be aware of possible behavioral effects of hazardous exposure on entrants.
 - Continuously maintain an accurate count of entrants in the permit space and ensure a means to accurately identify authorized entrants.
 - Remain outside the permit space during entry operations until relieved by another authorized attendant.
 - Communicate with entrants as necessary to monitor entrant status and alert entrants of the need to evacuate.
 - Monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space. Order the entrants to immediately evacuate if any of the following are detected:
 - A prohibited condition
 - Hazardous material exposure to entrants
 - A situation outside the space that could endanger the entrants
 - A situation in which the attendant cannot effectively and safely perform all the attendant duties
 - Verify that the means to summon rescue services is operable. Summon rescue and EMS as soon as the entrants need assistance to escape the confined space.
 - Perform non-entry rescues as specified by the rescue procedure and the entry supervisor.
 - Take the following action when unauthorized persons approach or enter a confined space while entry is under way:
 - Warn the unauthorized persons that they must stay away from the confined space.
 - Advise unauthorized persons that they must exit immediately if they have entered the space.
 - Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the confined space.

Entry Supervisor

- Responsible for the overall permit space entry and must coordinate all entry procedures, tests, permits, and equipment, as well as other relevant activities dealing with confined space.
- Ensure that the necessary equipment has been made available and placed on site before work has begun.
- Ensure that each confined space to be entered has been accurately assessed by a qualified person before entry is permitted. If the qualified person finds the confined space unacceptable, the Entry Supervisor shall make sure that no one enters the confined space until corrective measures have been made, and the qualified person has the permitted entry.
- Ensure that the appropriate two-way communication equipment is made available to the attendant/entrants. The attendant will be equipped with communication equipment in case of an emergency.

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- Know the hazards that may be faced during entry, including information on the mode of entry, signs or symptoms, and consequences of the exposure.
 - Verify 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.
 - Verify that rescue services are available and that the means for summoning them are operable.
 - Remove unauthorized persons who enter or attempt to enter the space during entry operations.
 - Determine when responsibility for a confined space entry operation is transferred, entry operations remain consistent with terms of the entry permit, and acceptable entry conditions are maintained.
 - Terminate the entry and cancel the permit when the entry is complete.

V. Policy/Procedure

Grambling State University Confined Space Entry Program is designed to prohibit all of the universities' employees from entering confined spaces. In addition, all contractors and sub-contractors shall provide the appropriate permits and Permit-Required Confined Space Entry Programs to meet compliance with OSHA standard 29 CFR 1910.146 to ensure that all that may be involved in PRCS understand the required standards for confined space operations. Under this program, we identify permit-required spaces on the Grambling State University Campus, and provide instructions for our employees for identification and monitoring of confined spaces. Contractors and sub-contractors PRCS and activities will be monitored regarding their responsibilities in the permit space to increase awareness, training and recognition of the following:

- The risks of a PRCS,
- The hazards in each space,
- Access restrictions only to authorized personnel,
- Engineering and work practices to control and monitor hazards, and
- Environmental tests to ensure the hazards remain under control.

Identifying Confined Space Areas

To determine if there are permit-required confined spaces, the Directors of Facilities Management, Safety and Risk Management, or their designee(s) have conducted a hazard evaluation of the campus. This evaluation has provided the information necessary to identify the existence and location permit-required confined spaces that must be covered by the PRCS Program. Grambling State University has identified permit required confined spaces located on campus.

Work in these areas requires that the procedures specified below are followed by all personnel. Permit required spaces are located in the following areas:

| Building/Area | Location | Description of Confined Space |
|---------------------------------------|--|--|
| Jacob T. Stewart / Charles Adams Hall | Manhole located between buildings, below electrical box on pole | Vertical Entry into manhole. |
| McCall Hall dining center | Located underneath building. Entrances to space located in rear of building, in pump/boiler room and inside of kitchen wash area | Crawlspace Both horizontal and vertical entry is possible into this space |
| Football Stadium | Below foundation of pump station building | Vertical Entry using ladder |

To prevent exposed employees from accidentally entering a permit space, a posted sign that states, "Confined Space-Entry Permit Required," will identify each PRCS along with a lock to prevent unauthorized entry.

Hazard Evaluation All areas meeting the definition of a confined space will be considered as permit required until such time as it can be demonstrated that it can be reclassified as non-permit required.

Hazard evaluations and reclassifications of PRCS to NPRCS will be performed by a technically qualified person.

Atmosphere Testing Confined Space Conditions

Before entry is authorized to begin, atmosphere tests should be conducted to determine if acceptable entry conditions exist. If entry is authorized, atmosphere conditions will be continuously monitored in the area where entrants are working. The attendant shall test the atmosphere conditions periodically to determine if acceptable entry conditions are being maintained during the operation and must inform the entrants of the potential hazards and results.

Test for gases in the following sequence when testing for atmospheric hazards:

- Oxygen
- Combustible gases and vapors
- Toxic gases and vapors
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Permit System

- Before entry is authorized, the employer must ensure that the following actions are taken: Implement the necessary measures to prevent unauthorized entry.
- Identify and evaluate the hazards of the spaces before workers enter the PRCS.

The following actions are required by the contractors or sub-contractors:

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- Develop and implement the means, procedures, and practices necessary for safe entry.
 - Specify acceptable entry conditions.
 - Provide each authorized entrant or their representative with the opportunity to observe any monitoring or testing of PRCS.
 - Isolate the area.
 - Purge, insert, flush, or ventilate the space as necessary to eliminate or control atmospheric hazards.
 - Provide pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards.
 - Verify that conditions are acceptable for entry throughout the duration of the entry.
 - The permit should contain the date, location of the confined space, and the signature of the person making the determination.

Entry Standard Operating Procedures

Grambling State University must ensure that a standard operating procedure (SOP) has been developed for each space to standardize the entry procedure and is communicated to employees.

Determination of whether an area is a confined space will result in Grambling State University prohibiting employees from entering it for any reasons.

The SOP outlines the following:

- Hazards
- Hazard control and abatement
- Acceptable entry conditions
- Means of entry
- Entry equipment required
- Emergency procedures

Contractors must perform the same SOP and provide it for examination by the Directors or Facilities Management, Safety and Risk Management, or their designees.

PRCS Entry General Rules

During all confined space entries, the following safety rules will be enforced:

- Only authorized and trained employees may enter a confined space or act as attendants.
- No smoking is permitted in a confined space or near the entrance and exit area.
- Note: Smoking is prohibited in all areas of Grambling State University.
- During confined space entries, an attendant must be present.
- Constant visual or voice communication must be maintained between the attendant and workers entering a confined space.
- No bottom or side entry may be made, or work conducted below the level of any hanging material or material which could cause the entrant to be engulfed.
- Prevent injuries to others, a barricade must protect all openings to confined spaces when covers are removed.
- Each worker who enters or is involved in the entry must meet the following requirements: Understand the procedures for confined space entry.

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- Know the hazards of the specific space.
 - Review the specific procedures for each entry. Understand how to use entry and rescue equipment.

Confined Space Entry Permits

Confined space entry permits must be completed before any worker who are allowed to enter a PRCS. The permit must be provided by the contractor or sub-contractor to the Directors of Facilities Management, Safety and Risk Management, or their designee, before beginning work. Permits will be cancelled upon completion of the work, before the completion of the shift, or if any pre-entry conditions change. Permits will be maintained on file for 1 year for annual review and identification of problems encountered.

Contractor Entry

All contracted companies that perform confined space entry for the university will adhere to this policy. This policy and the specific hazards of the confined spaces to be entered will be provided prior to beginning work for Grambling State University.

Emergency Response

As soon as the attendant determines that the entrants may need assistance to escape from the permit space hazards, the attendant shall do the following in the order given:

1. Immediately summon rescue services by using the established communication system.
2. If possible, attempt a non-entry rescue while rescue/EMS are in route.
3. Using lifeline/mechanical retrieval device(s), extricate the entrant using care to prevent injury or entanglement of the entrant or lifeline with the space.
4. If extrication is successful, begin first aid required until relieved by rescuers. 5. Upon their arrival inform rescuers of any known hazards with the space and make available any Safety Data Sheet (SDS) pertinent to the rescue.

Confined space attendants will not enter the confined space for rescue.

If the potential exists for an entry rescue, a qualified rescue team shall be selected and notified prior to entry. The selected rescue team must meet the following requirements:

- Able to respond to a rescue summons in a timely manner, considering the hazards involved.
- Function appropriately while rescuing entrants from the confined space.
- Be capable of reaching the victim within a time frame that is appropriate for the confined space hazards.
- Is equipped for and proficient in performing the needed rescue services.
- Have rescue services on-site when conditions immediately dangerous to life and health exist within an occupied confined space.
- Must be certified in First Aid and CPR.

Grambling State University will inform the rescue teams of the hazards that they will encounter when called on to perform a rescue at the site. They will also provide the rescue

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

Confined Space Hazards

- A flammable atmosphere generally arises from the following:
- Enriched oxygen atmospheres e Vaporization of flammable liquids
- Byproducts of work
- Chemical reactions
- Concentrations of combustible dusts
- Vaporization of chemicals from inner surfaces of the confined space

Combustible gases or vapors will accumulate when there is inadequate ventilation in a confined space. Flammable gases can be trapped in confined spaces, and since many gases are heavier than air, they will seek lower levels as in pits, sewers, and various types of storage tanks and vessels. In a closed-top tank, lighter-than-air gases may rise and develop a flammable concentration if trapped below the ceiling. The byproducts of working in a confined space can generate flammable or explosive conditions as follows:

- Specific kinds of work such as spray painting can result in the release of explosive gases or vapors.
- Welding in a confined space is a major cause of explosions in areas that contain combustible gas.
- Chemical reactions forming flammable atmospheres occur when surfaces are initially exposed to the atmosphere, or when chemicals combine to form flammable gases.
- Some chemical reactions that form flammable atmospheres arise from deposits of pyrophoric substances (carbon, ferrous oxide, ferrous sulfate, iron, etc.) that can be found in tanks used by the chemical and petroleum industries. These tank's flammable deposits can spontaneously ignite upon exposure to air.
- Combustible dust concentrations are usually found during the process of loading, unloading, and conveying grain products. These concentrations can cause certain substances to accumulate electrostatic charges of energy to produce sparks and ignite a flammable atmosphere. These sparks may also cause explosions when the right air mixture, oxygen to dust mixture, or gas mixture is present.

Toxic Atmospheres

The substances to be regarded as toxic in a confined space can cover the entire spectrum of gases, vapors, and finely divided airborne dust in industry. The sources of toxic atmospheres encountered may arise from the following:

- The manufacturing process
- Stored products
- The operation performed in the confined space

Carbon Monoxide

Carbon monoxide (CO) is a hazardous gas that may build up in a confined space. This odorless, colorless gas has approximately the same density as air and is formed from incomplete combustion of organic materials, such as wood, coal, gas, oil, and gasoline. It can

also be formed from microbial decomposition of organic matter in sewers, silos, and fermentation tanks.

CO is an insidious toxic gas because of its poor warning properties. Early stages of CO intoxication are nausea and headache. CO maybe fatal at 1000 parts per million (ppm) in air, and is considered dangerous at 200 ppm, because it forms carboxyhemoglobin in the blood preventing the distribution of oxygen in the body.

CO is relatively abundant; therefore, any untested atmosphere should be suspected of containing it. A safe reading on a combustible gas indicator does not ensure that CO is not present. CO must be tested for specifically. The formation of CO may result from chemical reactions or work activities. Fatalities due to CO poisoning are not confined to any industry.

Irritant (Corrosive) Atmospheres

Prolonged exposure to irritants at corrosive concentrations in a confined space may produce little or no evidence of irritation. This may result in a general weakening of the defense reflexes from changes in sensitivity. The danger in this situation is that the worker is usually not aware of any increase in his/her exposure to toxic substances. Irritant or corrosive atmospheres can be divided into primary and secondary groups.

Primary Irritants

These exert no systemic toxic effects. Examples of primary irritants include the following:

- Chlorine
- Ozone
- Hydrochloric acid

Hydrofluoric acid

Sulfuric acid

Nitrogen dioxide

Ammonia

Sulfur dioxide

Secondary Irritant

These may produce systemic toxic effects in addition to surface irritation. Examples of secondary irritants include the following:

Benzene

Carbon tetrachloride

Ethyl chloride

Trichloroethane

Trichloroethylene

Chloropropene

Asphyxiating Atmospheres

Any reduction of oxygen in a confined space may be the result of either consumption or displacement.

See the below table for the expected symptoms from too little oxygen in the surroundings.

Symptoms of Oxygen Deprivation

| Percent of Oxygen in Surroundings | Symptoms |
|--|---|
| 17% | <ul style="list-style-type: none">• Deterioration of night vision that is not noticeable until a normal oxygen concentration is restored• Increased breathing volume• Accelerated heartbeat |
| 14-16% | <ul style="list-style-type: none">• Poor muscular coordination• Intermittent respiration |
| 6-10% | <ul style="list-style-type: none">• Nausea• Vomiting• Inability to perform work• Unconsciousness. |
| Less than 6% | <ul style="list-style-type: none">• Spasmodic breathing• Convulsive movements• Death |

VI. Training

Grambling State University will provide training for all employees whose work is regulated by this section. Any employee who is required supervise those identifying a confined space or monitoring contractors or sub-contractors entering into a confined space will receive appropriate training. This training will assure that understanding, knowledge, and skills necessary for safe performance of duties are acquired.

- Personnel are trained at the following times:
- Prior to initial assignment
- Prior to a change in assigned duties
- When a new hazard has been created
- When deviations have occurred

All Grambling State University employees responsible for identifying or monitoring confined spaces will receive refresher training for confined space identification and monitoring. This training includes the following:

- Duties and responsibilities of the entry supervisor, entrant, and attendants
- Confined space entry permits
- General hazards of confined spaces
- Use of air-monitoring equipment
- First aid and CPR training
- Emergency action and rescue procedures
- Rescue training for any employee assigned rescue responsibilities
- Skills/Knowledge Assessment

All contractors and sub-contractors shall provide Grambling State University with proof of their workers responsible for monitoring, rescuing or entering confined spaces with the following initial and refresher training for confined spaces including the following:

- Duties and responsibilities of the entry supervisor, entrant, and attendants
- Confined space entry permits
- General hazards of confined spaces
- Use of air-monitoring equipment
- First aid and CPR training
- Emergency action and rescue procedures
- Rescue training for any employee assigned rescue responsibilities
- Skills/Knowledge Assessment

This policy specifically prohibits all employees of Grambling State University from entering and confined space, and the Confined Space Policy and Program should not be interpreted to mean otherwise.