1. PURPOSE

The Permit-Required Confined Space program has been developed to provide safe direction for Wake Forest University authorized employees and contractors to safely enter and work within permit-required confined space on campus. This procedure is intended to define the OSHA (Occupational Safety Health Act) requirements and how the University complies with those requirements.

2. REFERENCES

OSHA Standard 1910.146

3. DEFINITIONS

"Confined space" is a space that:
- Is large enough and so configured that an employee can bodily enter and perform assigned work
- 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 employee occupancy.

"Permit-required confined space" may have one or more of the following characteristics:
- Material that could potentially engulf an entrant (such as steam)
- Contains or has potential to contain a hazardous atmosphere: oxygen deficiency, combustible gas and vapor, and toxic gas and vapor.
- Mechanical hazards such as fall hazards and tripping hazards
Examples of permit-required confined spaces on the Wake Forest University Campus include: Boilers, Storm Water Pipelines, Fireboxes, Tunnel System, Elevator Pits, Tanks, Ductwork. If there is a space that meets these criteria and has not been defined as a Permit Confined Space, it must be reported to Maintenance and Utilities or EHS for evaluation and determination.

There are other definitions within 29CFR. 1910.146 if further clarification is needed.

4. RESPONSIBILITIES

Maintenance and Utilities Operation Center (UOC)

- Identify pre-entry procedures and practices for safe permit-required confined space entry.
- Review and approve reason for entry and location
- Issue permit for entry with assigned work order
- Ensure required equipment for Atmospheric Test is available
- Identify communication procedures between entrant, attendant, and a radio dispatcher
- Provide notification to the EHS and Rescue Team that entry is being made
- Submit completed permits to EHS Office if permits are returned to UOC

Environmental Health and Safety

- EHS has the authority to temporarily or permanently cease any confined space entry that is not being conducted within the guidelines of this policy.
- Review completed permits for thoroughness and note deficiencies.
- Review confined-space entry program annually and make revisions as needed.
- Conduct routine assessments of entries for compliance and recommend improvements to entry process if necessary.
- Retain records for a minimum of one year.
- Conduct annual review of program with Maintenance and Utilities Management

Entrant

- Responsible to understand the reason for entry and how to protect self from hazards that are present or potentially present.
- Do not enter until the air monitoring initial test and re-entry tests have been conducted and the Supervisor of the entry gives the ok to enter.

- No entrant should ever remain in a confined space if the individual feels a sense of insecurity or identifies an immediate hazard. Any doubt at all should prompt the entrant to immediately exit the confined space and report the hazard to the entry supervisor.

- Manholes and confined spaces with limited ventilation must have an outside air supply provided, such as a venturi fan. Spaces must be ventilated for at least 10 minutes prior to entry and air must continue to be blown into the space during the time the entrant is in the working space.

**Attendant**

- At least one or more attendant is required for every permit-required confined space entry.

- Attendant is required to remain on site for the duration of the entry and is to maintain reasonable, periodic contact with the entrant(s) throughout the entry. In the event the attendant is unable to communicate with the entrant(s), the attendant is to notify the entry supervisor immediately.

**Rescue Team**

The Rescue Team is trained in confined space rescue and will provide access to all permit-required confined spaces immediately upon their arrival. Team members will work with the attendant, entry supervisor, The Department of EHS, and University Police to ensure the area is isolated. If medical attention is needed beyond first aid, external medical emergency services must be requested by calling 911. The Entry Supervisor will be responsible in calling 911. There must be at least one first aid and CPR trained rescue member available during permit required entries.

**Entry Supervisor**

- The entry supervisor is responsible for determining if acceptable entry conditions have been met, for overseeing both the entrant and the attendant and for terminating entry if hazards arise. The entry supervisor is also held accountable for ensuring that all information on the Confined Space Entry Permit is documented correctly and to ensure the work site is barricaded from all individuals aside from those involved in the entry process.

- When WFU authorized contactors are conducting confined space entry on campus, it is the responsibility of the contractor to provide all entry and rescue equipment such as: air testing monitor, Personal Protective Equipment (PPE), communication equipment, and fall prevention equipment. Exceptions to the aforementioned must be discussed and agreed upon by the Utilities Operations Manager and The Department of EHS prior to work being performed.
- The entry supervisor is responsible to inform employees the hazards that exist or have the potential to exist within the space. The entry supervisor is responsible to ensure that equipment for safe entry is available and used.

- The entry supervisor is responsible to notify The Department of EHS that an entry is being made, location of entry, and time of entry. Call the main office line at ext 3427 or call EHS personnel on safety channel of hand held radio.

- The entry supervisor must remain outside of entry. If there is need for the supervisor to enter the confined space, then the responsibility of new supervisor must be made before the permitted supervisor can enter.

- The entry supervisor is responsible to contact Director of Maintenance & Utilities and Director of EHS immediately if emergency response operations are required during entry. If emergency medical services are needed, the entry supervisor is responsible for the 911 call.

5. PROCEDURES

All entries must be pre-approved by one of the following:

- Manager- Utilities Operations Center
- Director of Maintenance and Utilities
- Director of Environmental Health and Safety (EHS)
- Associate Director of Environmental Health and Safety (EHS)

Permits are issued and approved by Utilities Operations Center (UOC) Office or Department of Environmental Health and Safety. All closed permits (after the work is done and / or permit has expired) and any other pertinent records related to Permit Required Entries will be submitted to and maintained in the EHS Office for one calendar year.

The Log Book for Permits is maintained electronically in Google Docs which are shared between the four authorizers and EHS staff. Confined Space Entry and Rescue equipment is located and maintained in the EHS utility trailer on campus within the Facilities compound. Employees who conduct work in confined spaces have access to the fall prevention equipment and rescue equipment.

Necessary Equipment

Entry into a permit-required confined space requires the following:

- Air testing and monitoring equipment (four gas detector) must be used at all times prior to and during the entry.
- Ventilation equipment (Venturi fans) if the air quality testing identifies presence of gases, hazardous atmosphere, Oxygen level is less than 19.5% results in atmosphere is Oxygen Deficient or if greater than 23.5%, air is Oxygen Enriched.

- Communication equipment allowing quick access to 911 dispatcher as well as between entrant, attendant, and UOC. This equipment will include hand held radios and cell phones.

- Personal Protective Equipment includes body harness and fall protection if necessary. Hard hats are recommended due to the overhead hazards that exist in different PCS. Foot Protection is necessary as based on the present or potential hazard such as: steel toes or water proof.. Flashlights may be required if working in area with no to little lighting.

- Barriers-Construction cones and tape must be in place to define work area and to keep others out of the work space.

- Fall arrest equipment and / or ladders are required if the entry has a fall potential.

**Entry Preparation**

Before entering any permit-required confined space, the entry supervisor must complete the Confined Space Entry Permit. While completing the permit, the supervisor must contact the Rescue Team Captain from EHS and inform of the planned entry to ensure that Rescue Team is aware of entry and be available if necessary. If not available, the supervisor will need to reschedule entry or contract to a third party to do entry and / or rescue.

**Permit Requirements:**

- Name and signature of authority for entry must be completed by the authorizer.

- Purpose of entry. Define the reason for going in the space.

- The exact location of entry point. If the exit is different than the entry point, it must be defined on permit.

- Date of entry and expected duration (all permits are 8:00 a.m. – 4:30 p.m. unless specific authorization has been received from the Director of EHS). If there is a job that requires multiple days, then a new permit will be issued for each day of the entry. If work is going to be longer than 4:30 in the afternoon, rescue operations must be available. Either the contractor or F&CS staff will have to schedule and retain Rescue Team before the work exceeds the expiration timeframe of 4:30 p.m.

- Work order number. Permits will not be issued unless there is a work order established.
- List of entrants and attendants. If there is not enough space to write on front of permit, the names of all involved must be written on back of permit.

- Entry supervisor name, signature and date.

- Notifications to the EHS personnel can be made by phone or on the Safety Channel of radio.

- Hazards noted in the space. This is the responsibility of Supervisor of the entry. Each space can have its own unique set of hazards. It is important to identify those hazards and document on the permit. These identified hazards must be communicated with all entrants and attendants.

- Recorded readings taken during the atmospheric testing. Prior to entry and during the entry, air monitoring readings must be recorded on the permit. Time of each reading and initials of who conducted the monitoring must be recorded with the data.

- Means of contact for rescue efforts. The authorizer of entry, supervisor of entry, and Rescue Team Captain contact information must be on the permit.

- Rescue equipment must be readily available. In the event that rescue equipment is used, the entry supervisor and Rescue Team Captain is to ensure that the equipment is in operable condition for the type of rescue necessary.

- PPE being used by entrants. Full body harness is required for entry of all Permit Required Spaces. Lifeline does not have to be attached to person’s harness unless there is a fall potential greater than 6 feet. All entrants must wear full body harness that is compliant with OSHA regulations. The reason of this requirement is for rescue purposes, in order to attach a quick retrieval line to the entrant in case of an emergency.

- Communication equipment to be used between entrant and attendant(s) and Rescue Team must be defined.

- Entrants are encouraged to take breaks as necessary or at, a minimum of once per hour if working in the tunnel system or UOC firebox.

- Permit must be maintained at the entry site, outside the entry point. It must be reviewed by all entrants and attendants. If must be available for inspection purposes. If necessary, place permit in a clear laminate cover to protect against moist weather conditions.

- After entry is complete, the Supervisor of entry is responsible to add comments on the permit for the closing. Conditions of space must be defined on permit and discussed with the issuer of permit, the Supervisor and issuer of permit must discuss and develop a plan of action as necessary. This permit closure must have both signatures of the Supervisor of Entry and the issuer of permit.
If trenching is necessary which creates a confined space, the contractor responsible for the work is responsible to implement their own confined space permit system. Notification of the confined space must be made to the Manager of UOC (Utilities Operations Center).

- Elevator shafts are considered confined spaces and employees and contractors must adhere to the permit system. Contractors conducting work in elevator shafts must inform the WFU Project Manager of any entry and the contractor permit system must be implemented.

**Entry:**
Entrants and Attendants must be competent to perform work as assigned.

Continuous Air Monitoring must be conducted. Readings from the air monitor shall be communicated to the attendant. The attendant will record the air readings and time on permit.

There must be continual communication between the attendant and entrant(s). If communication is broken down and there is suspicious or concerns for lack of communication, the attendant is to notify the supervisor immediately. If communications cannot be made, then the rescue team must be activated. The entry now becomes a Rescue Mission. Refer to Rescue Team Operations for Confined Space and High Angle.

Completed Permits are to be submitted to the EHS office for review and record retention annually.

**6. TRAINING**

Any individual assigned to the role of entrant, attendant, or entry supervisor must receive training on confined space entry procedures, the permit process, and recognizing hazardous conditions. Employees must also be aware of the requirements for Fall Protection, How to Utilize the Correct PPE, How to Use an Air Monitor, and Basics of Self Rescue. The Rescue Team members must also receive training in rescue attempts before becoming involved in a confined space rescue.

**7. REVISIONS**

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<thead>
<tr>
<th>REVISION</th>
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<tr>
<td>Revised the confined-space-entry approvers and made minor changes to the language.</td>
<td>11/28/2016</td>
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<tr>
<td>Revisions include contractor responsibilities and closing of the permit includes comments be provided on the status of entry and two signatures obtained by Supervisor of Entry and issuer of permit.</td>
<td>9/10/2015</td>
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<td>Revision to the approved responsibility is AVP, Strategy and Operations.</td>
<td>10/24/2014</td>
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<tr>
<td>Revision to the program defined as authorizing responsibility is a shared responsibility between EHS and Maintenance and Utilities Operations Center (UOC). The permit log will be a shared google excel workbook.</td>
<td>9/25/2014</td>
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