

 WAKE FOREST UNIVERSITY	SAFETY_015	Revision Date: 11/29/16
	STEAM SAFETY	Developed by: Environmental Health & Safety Approved by: Associate Vice President, Strategy and Operations <i>Emily Reese 11/29/16</i>
Effective Date: November 1, 2001		

1. PURPOSE

All steam tunnel entries are considered Permit Required Confined Spaces and must follow the Permit Required Confined Space Entry Policy

2. REFERENCE

Refer to Wake Forest University Permit Confined Space Policy.

3. DEFINITIONS

1. In addition, the following confined space hazards will be identified:
 - Process Hazard
 - Personal Confinement
 - (Entrapment/Entanglement)
 - Stored Energy – Electrical
 - Stored Energy – Hydraulic/ Pneumatic
 - Stored Energy – Gravity/ Mechanical
 - Safety Hazards - Engulfment/Immersion
 - Safety Hazards - Electrical Shock
 - Safety Hazards - Fire/Explosion
 - Safety Hazards – High/ Low Pressure Atmosphere.
 - Safety Hazards - Hot/Cold Surface
 - Safety Hazards – Slip, Trip, or Fall
 - Safety Hazards - Structural Hazard
 - Safety Hazards - Visibility/Light Level
 - Physical Agents - Heat/Cold
 - Physical Agents - Noise/Vibration
 - Physical Agents - Biological Hazard (such as rats)
 - Physical Agents - Chemical Hazard

4. RESPONSIBILITIES

- Environmental, Health and Safety (EHS)
- Review and Revise this procedure as necessary.

- Assist Maintenance and Utilities personnel with scheduling of training for this procedure and other procedures that are relative to the work that typically takes place in the steam tunnels.
- Training records will be maintained in the EHS Office.

Supervisor / Department

- Ensure that employees are trained and competent to conduct work that is in steam and condensate tunnels, building traps, and release valves.
- Ensure that employees utilize personal protective equipment
- Ensure that employees have the proper tools, LOTO devices, and necessary safety equipment with entering a permit required space to work on steam lines, valves, traps, etc...

Employee

- Atmospheric monitoring will be conducted prior to entry and monitored throughout steam tunnel work. Multi-Rae air quality monitor will be obtained from the EHS office. Atmosphere will be monitored for oxygen concentration, LEL, carbon monoxide, VOC and Hydrogen sulfide. Readings will be recording at least every twenty minutes.
- The locations of entry and egress from potentially dangerous work conditions will be identified to all personnel working in the tunnel. When deemed appropriate and prudent, multiple accesses shall be opened to provide alternative means of egress. Also, venture fans must be utilized to blow & pull fresh air through the tunnels, prior to entry & during entry.
- The “buddy system” will be used by employees entering the steam tunnel.
- Employees working in the steam tunnel system shall carry a portable flashlight and two-way radio at all times.
- Protective leather gloves shall be worn when working in steam tunnels.
- Other items of personal protective equipment required to control job-specific hazards shall be identified in job planning and worn by all personnel.
- Standard size welding gas cylinders shall not be taken into steam tunnels.
- F&CS Customer Service Dispatch will be contacted via hand held radio that all entrants are out of the tunnel.
- All information pertinent to confined space entry must be recorded on the permit and submit permit to UOC (Utilities Operations Center).

5. PROCEDURE

Prior to entry, authorization signature must be obtained from one of the following individuals:

Director of Maintenance and Utilities
 Associate Director of Utilities
 Utilities Operation Center Manager

- Prior to entry, the Rescue Team and EHS must be notified of the entry on radio network or by calling EHS staff members. The Rescue Team will be on stand-by for duration of the entry.

- Prior to entering the steam tunnel, the supervisor and workers shall discuss the scope and sequence of the work.
- Pre-planning shall include a discussion of all potential hazards, means and methods of hazard control; such as Lockout Tagout (LOTO) and emergency plans:
 - Identities and locations of energized steam lines
 - Identities and locations of energized compressed air lines
 - Signs and symptoms of heat exhaustion and heat stroke
 - Means of communication
 - Means of entry and egress
 - External hazards (work in roadways / walkways)
 - Means to control hazards (PPE, ventilation / exhaust, LOTO)
 - Steam line isolation and / or de-energizing (Lockout / TagOut) procedures
 - Potential emergency situations and plans

6. TRAINING

Employees must receive training prior to entering Steam Tunnels or working in and around steam and condensate. Supervisors are responsible to evaluate and determine if an employee is authorized to work with steam.

7. REVISIONS

REVISION	REVISION DATE
Revised Employee guidelines with minor changes to the language and removal of superfluous information.	11/28/2016
Revision based on change of signing authority to Associate Vice President, Strategy and Operations.	1/22/2015
Revised the List of personnel that can authorize entry into the tunnel system / permit required confined spaces.	7/26/2013