



SOP No	1.013
Effective Date	10.01.2013
Revision Date	
Approval Date	08.2013

STEAM TUNNEL ENTRY

1 PURPOSE

1.01 This document is intended to provide procedures to better ensure staff safety when entering and working within the Steam Tunnels at SJSU.

2 EXPECTATIONS

2.01 These procedures will be reviewed and followed by everyone entering the steam tunnels.

2.02 Asbestos lagging may be found on most steam lines.

2.03 Signs are posted on tunnel access doors stating that the steam tunnel system is a restricted access area.

2.04 *The following should be known by all employees entering the steam tunnels:*

2.04.1 San Jose State University has two main steam tunnels. Neither of the two steam tunnels meet the definition of confined space.

2.04.2 The steam tunnel system is a controlled access work area. Authorization is required to enter the steam tunnel system. Signs are posted on steam tunnel access doors stating that the steam tunnel system is a restricted access area. Specific steam tunnel entry procedures have been developed and implemented.

2.04.3 A considerable portion of the main tunnel system is designed for employees to enter through building equipment room doors, walk through the tunnel passages and perform equipment maintenance. Blind ends, smaller tunnels of approximately 4' by 4' and tunnel sections accessible only through manholes do exist in certain areas.

2.04.4 Three main means of egress (through doors) exist in the main tunnel system and one entry and one man-hole exist in the SPX tunnel.

2.04.5 Mechanical forced ventilation is provided throughout the Main Steam & SPX Tunnel System. There is little possibility for a hazardous atmosphere, as defined in 29 CFR 1910.146(b), to develop under normal operating conditions.

2.04.6 An air quality survey of the tunnel system demonstrates that under normal operating conditions the existence of a hazardous atmosphere is a remote possibility.

2.04.7 Although means of egress are restricted or limited, entrapment hazards as defined in 29 CFR 1910.146(b) do not exist in the main steam tunnel system.

2.04.8 Under normal operating conditions, engulfment hazards as defined in 29 CFR 1910.146(b) do not exist in the steam tunnel system.

2.04.9 Other serious hazards (i.e., exposed energized electrical conductors, moving machinery or lines that discharge hazardous materials into the space) as defined in 29 CFR 1910.146(b) do not exist in the main tunnel system under normal operating conditions.



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- 2.04.10 The most serious hazard is the potential for a steam line rupture. This potential hazard can be significantly reduced through preventive maintenance and engineering controls, such as installing additional means of egress and elimination of mechanical devices that might impede escape.
- 2.04.11 Normal confined space entry procedures, i.e., the use of an attendant, retrieval equipment and air monitoring devices, are not practical and do not protect employees (and might actually hinder self-rescue) from the most significant potential hazard, a steam line rupture.
- 2.04.12 Data collected on the steam tunnels is routinely reviewed with all affected employees who have participated in the development of the steam tunnel entry procedure.

3 RESPONSIBILITIES

- 3.01 *Technician:* Will contact the Appropriate Administrator and review these procedures prior to entering the steam tunnels.
- 3.02 *Project Manager:* will contact the Appropriate Administrator and review these procedures with contractors prior to entering the steam tunnels.

4 PROCEDURES

- 4.01 *Pre-Planning* will be performed prior to performing any work in the steam tunnels.
- 4.02 The Appropriate Administrator shall be notified prior to the entry of any individual into the steam tunnel system. This includes state and non-state employees.
- 4.03 The Technician will include their Supervisor / Lead in work pre-planning.
- 4.04 Pre-planning shall include a discussion of all potential hazards, means and methods of hazard control and emergency plans including:
- Identifying and locating of energized steam lines.
 - Identification and locating of energized compressed air lines.
 - Identification and locating of energized high voltage electrical conductors.
 - Locations of hot surfaces.
 - Signs and symptoms of heat exhaustion and heat stroke.
 - Lighting.
 - Means of communication.
 - Means of entry and egress.
 - Hazards created by work activity (ex. chemical products, welding/cutting, etc.)
 - External hazards (ex. work in roadways and walkways)
 - Identities of any job-site specific hazards, such as slippery surfaces, stairs, heat.
 - Means of hazard protection (ex. Personal Protective Equipment, Ventilation/Local exhaust or lockout/tagout).
 - Steam line de-energization and lockout procedures.
 - Potential emergency situations and plans.



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- Note that the Main Steam Tunnel has Two Blue Light Phones, these are to be pointed out before entering along with their locations.

- 4.05 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 alternate means of egress.
- 4.06 The “buddy system” will be used by employees entering the steam tunnel system.
- 4.07 Employees working in the tunnel system shall carry a portable flashlight and two-way communication equipment at all times.
- 4.08 Protective leather gloves shall be worn when working in steam tunnels.
- 4.09 Other items of Personal Protective Equipment required controlling job specific hazards, shall be identified in job planning and will be worn by all personnel.
- 4.10 Supervisor and workers shall discuss job specific emergency procedures.
- 4.11 Hot work (ex. welding, cutting, and brazing) requires authorization of the appropriate administrator. When hot work is performed, forced ventilation shall be provided and the atmosphere shall be monitored for flammable gases, oxygen content, and carbon monoxide. Standard size welding cylinders shall not be taken into steam tunnels.
- 4.12 Tunnels without forced ventilation and/or accessibility only through manholes shall be entered following the non-permit required confined space entry procedures.
- 4.13 *Entry Procedures:*
- 4.13.1 Prior to entering the steam tunnel all employees shall check in with Supervisor, and Central Plant to fill out log and obtain access key. Prior to entering the tunnel make sure you have appropriate two-way radio and/or cell phone, and working flashlight.
- 4.13.2 Identify with the Central Plant Operator and log in the following information:
- Identify tunnel (Main Steam or SPX) and work being performed.
 - Identify check-in and check-out estimated time/date.
 - Identify location you will be entering tunnel at.
 - Pick up access key.
 - After completion of work return key and sign out on the access log.
- 4.14 *Emergency Procedures:*
- 4.14.1 If an acute threat to safety and health is observed or perceived, all personnel shall immediately exit the tunnel by the nearest means of egress and:
- Assist injured to escape
 - Secure the jobsite



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- Contact the Supervisor/Lead and/or Appropriate Administrator immediately after all have exited
- Do not re-enter the tunnel until the hazard is identified, evaluated and eliminated.

4.14.2 If emergency assistance is required, use either the nearest telephone to call 911 or contact Central Plant or University Police Department on communication equipment. Clearly state to the dispatcher “this is an emergency” and provide all information necessary to getting the assistance required. Stay on the line until all information requested by the dispatcher is provided and let the dispatcher hang-up first.

4.14.3 Station someone at a highly visible location along the street to flag down and direct any emergency response personnel and vehicles to the scene of the emergency.

4.14.4 If required, render appropriate and prudent first aid until emergency personnel arrive on the scene.