Confined Space Classifications

The following were determined to be confined spaces; they may not be permit required that employees of the Division of Facilities may encounter:

Utility Tunnels, Crawl Spaces, Ventilation Duct Work, Vaults and Pits. These may be reclassified as permit required if there is a known or history of atmospheric hazards or that there is a serious safety or health hazards that exists such as a large steam leak, engulfment, welding, toxic chemical use, exposed live electrical wires, flooding, or atmospheric changes.

The following have been determined to permit required confined spaces that employees of the Division of Facilities may encounter:

Manholes (except for tunnels unless reclassified as permit required due to a known hazard), Electrical Vaults, Sewers, Tanks, Boiler/Boiler Stacks and Ventilation Duct Work in these areas: Chill Plant Tower Pit, Air Handling Units with chemical exposure having limited access entrance and exit.

The Standard Operating Procedure is an extension of the KSU Confined Space policy. All staff must understand their role and responsibility as assigned.

Air monitoring must be conducted in all confined spaces permit and non-permit spaces.

Standard Operating Procedure for Tunnels or <u>Confined Space (Non-Permit)</u>

Prior to Entrance Tunnel or Confined Space (Non-Permit)

1. Two Persons at all times.

2. PPE-Hard Hat, Long Sleeve Shirts and Pants, Leather Gloves and Shoes. Additional PPE needed based on task Eye Protection, Tyvek Suits, FR Clothing (NFPA 70 E Personnel) and Respirator.

3. Supplies Required: Flashlight and Air Monitor. Additional Supplies: Voltage Rated Tools and Equipment (NFPA 70 E Personnel), Portable Ventilation Unit and Escape Respirator.

4. Visual Inspection of outside area of the entrance into the tunnel or confined space area. Make sure that there in no operating equipment or vehicles are in the vicinity that could contaminate the air quality in the tunnel or confined space.

5. Entryway to tunnels or confined space shall be secured. Doors, manhole covers, screens, etc., required to be left open must be manned or properly barricaded.

6. Ventilation of the tunnels or confined space by forced air using the portable unit.

7. Monitor tunnel or confined space entryway air quality prior to entrance using the four gas monitor.

8. Radio Desk One giving them entrance time and duration during normal operating hours Monday thru Friday 8:00 a.m. to 5:00 p.m. after hours Radio KSUPD with Location of Entry, Expected Time Frame of Project and Number of People Entering.

<u>Special Lighting Required in Tunnels:</u>

Regular/Emergency Maintenance: must provide adequate lighting at entry and exit points along the section of tunnel where work is being performed.

Monthly Inspections: Tunnel inspector is required to have two types of portable bright lights while in the tunnel. In addition, workers above ground will open access points to introduce ambient lighting from above.

Entrance into Tunnel or Confined Space (Non-Permit)

9. Evaluate the tunnel or confined space for any unknown hazards. Make sure to control all known hazards.

10. Test communication that there is not a dead zone. If dead zone is encountered use an alternate source such as a cell phone.

11. Make sure the air monitor is used continuously while in the tunnels or confined space area.

12. Perform task. Control hazards by working de-energized.

Exiting from Tunnel or Confined Space (Non-Permit)

13. Ensure all tools are removed from area.

14. Radio Desk One giving the exit time during normal operating hours Monday thru Friday 8:00 a.m. to 5:00 p.m. after hours Radio KSUPD with Location of Exit and Number of People Exiting.

15. Turn off Air Monitor and return it to the appropriate Docking Station.

16. Prior to Docking the Air Monitor take a photo copy of the PEAK readings. Write the date and tunnel location and send the Safety Training Office. If you do not have access to a photo copier there is a form at the docking station to record results.

If at anytime the monitor goes off for any reason or if you encounter a serious hazard you must evacuate the tunnels or confined space immediately.

Standard Operating Procedure for <u>Permit Required Confined Spaces</u>

Prior to Entrance into Permit Required Confined Space

1. Confined Space Supervisor will define personnel roles such as entrant and attendant. Two Persons at all times. **If the permit required space involves the tunnels it will require three persons.**

2. Confined Space Supervisor will complete the entrant permit and review with assigned personnel.

3. PPE-Hard Hat, Long Sleeve Shirts and Pants, Leather Gloves and Shoes. Additional PPE needed based on task Eye Protection, Tyvek Suits, FR Clothing (NFPA 70 E Personnel) and Respirator.

4. Supplies Required: Flashlight and Air Monitor. Additional Supplies: Voltage Rated Tools and Equipment (NFPA 70 E Personnel), Portable Ventilation Unit, Escape Respirator, Non-Entry Rescue Equipment.

5. Entryway to tunnels or confined space shall be secured. Doors, manhole covers, screens, etc., required to be left open must be manned or properly barricaded.

6. Visual Inspection of outside area of the entrance into the permit confined space. Make sure that there in no operating equipment or vehicles are in the vicinity that could contaminate the air quality in the tunnel.

7. Ventilation of the permit confined space by forced air using the portable unit.

8. Monitor permit confined space entryway air quality prior to entrance using the four gas monitor.

9. Radio Desk One giving them entrance time and duration during normal operating hours Monday thru Friday 8:00 a.m. to 5:00 p.m. after hours Radio KSUPD with Location of Entry, Expected Time Frame of Project and Number of People Entering.

<u>Special Lighting Required in Tunnels:</u>

Regular/Emergency Maintenance: must provide adequate lighting at entry and exit points along the section of tunnel where work is being performed.

Monthly Inspections: Tunnel inspector is required to have two types of portable bright lights while in the tunnel. In addition, workers above ground will open access points to introduce ambient lighting from above.

Entrance into a Permit Required Confined Space

10. Evaluate the permit confined space for any unknown hazards. Make sure to control any existing hazards.

11. Test communication that there is not a dead zone. If dead zone is encountered use an alternate source such as a cell phone.

12. Make sure the air monitor is used continuously while in permit confined space.

13. Perform task. Control hazards by working de-energized.

Exiting the Permit Required Confined Space

14. Ensure all tools are removed from area.

15. Radio Desk One giving the exit time during normal operating hours Monday thru Friday 8:00 a.m. to 5:00 p.m. after hours Radio KSUPD with Location of Exit and Number of People Exiting.

16. Prior to Docking the Air Monitor record PEAK readings on permit form. Permits should be sent to the Safety Training Office.

17. Turn off Air Monitor and return it to the appropriate Docking Station.

18. The Confined Space Permit form will be kept on file in the Departmental Supervisor Safety Notebook. All permits must be kept on file for a period of one year.

If at anytime the monitor goes off for any reason or if you encounter a serious hazard you must evacuate the permit confined space immediately.

Confined Space Entry Permit

Location of space: _____

Date: _____ Time: _____ Expiration: _____

Purpose of entry: _____

Authorized Entrant(s): _____

Attendant(s): _____

Entry Supervisor: _____

Rescue contact: KSUPD   Phone #: 532-6412

Rescue Procedure: _____

_____

_____

Hazards:

Atmospheric Hazards

☐ Oxygen Deficiency (19.5%) Enriched (23.5%)

☐ Flammable Materials

☐ Toxic Substances

Engulfment Hazards

☐ Flowable Materials

Configuration Hazards

☐ Downward Sloped Floors

☐ Inwardly Converging Walls

Other Hazards

☐ Mechanical Hazards

☐ Electrical Hazards

☐ Wet/Slippery Conditions

☐ Heat/Cold

☐ Electrical Hazards

☐ Reduced Visibility

☐ Noise

☐ Other_____

Equipment:

Lockout/Tagout	yes	no	Rescue Equipment	yes	no
Ventilation	yes	no	Lifelines	yes	no
Isolation	yes	no	Radios	yes	no
Respirators	yes	no	Other PPE	yes	no
Escape Respirator	yes	no	Hard Hat	yes	no
Fire Extinguisher	yes	no	Goggles	yes	no
Lighting	yes	no	Ear Plugs	yes	no
Harness	yes	no	Other Permits	yes	no

Requirements Completed **Please Mark with an X**

Lockout/Tagout/De-energize _____

Lines(s) Broken-Capped-Blanked _____

Purge-Flush and Vent _____

Ventilation _____

Secure Area (Post and Flag) _____

Breathing Apparatus _____

Resuscitator – Inhalator _____

Standby Safety Personnel _____

Body Harness w/"D" ring _____

Emergency Escape Retrieval Equip _____

Lifelines _____

Fire Extinguishers _____

Lighting (Explosive Proof) _____

Protective Clothing _____

Respirator(s) (Air Purifying) _____

Burning and Welding Permit _____

Note: Items that do not apply enter N/A in the blank.

Supervisor/Attendant Air Monitoring:

Instrument Serial #: _____   Manufacturer #:_____

Factory Calibration Date: _____   Bump Test Date: _____

Entry	**Reading**	**Time:_____**
Oxygen (19.5 – 23.5 %)	_____	
Combustibles (<10% LEL)	_____	
CO (<35 ppm)	_____	
H_2S(<10 ppm)	_____	

Appendix A

Peak	Reading
Oxygen (19.5 – 23.5 %)	_____
Combustibles(<10% LEL)	_____
CO (<35 ppm)	_____
H_2S (<10 ppm)	_____

Entry Supervisor's signature, authorizing the above conditions have been met for safe

entry:_____   Date:_____   Time:_____

Time of cancellation:_____   Supervisor Signature: _____

Comments:_____

_____

_____

_____

_____

Permit Reviewed by:

_____   _____
            Attendant Signature   Date

_____   _____
            Entrant Signature   Date

_____   _____
            Entrant Signature   Date