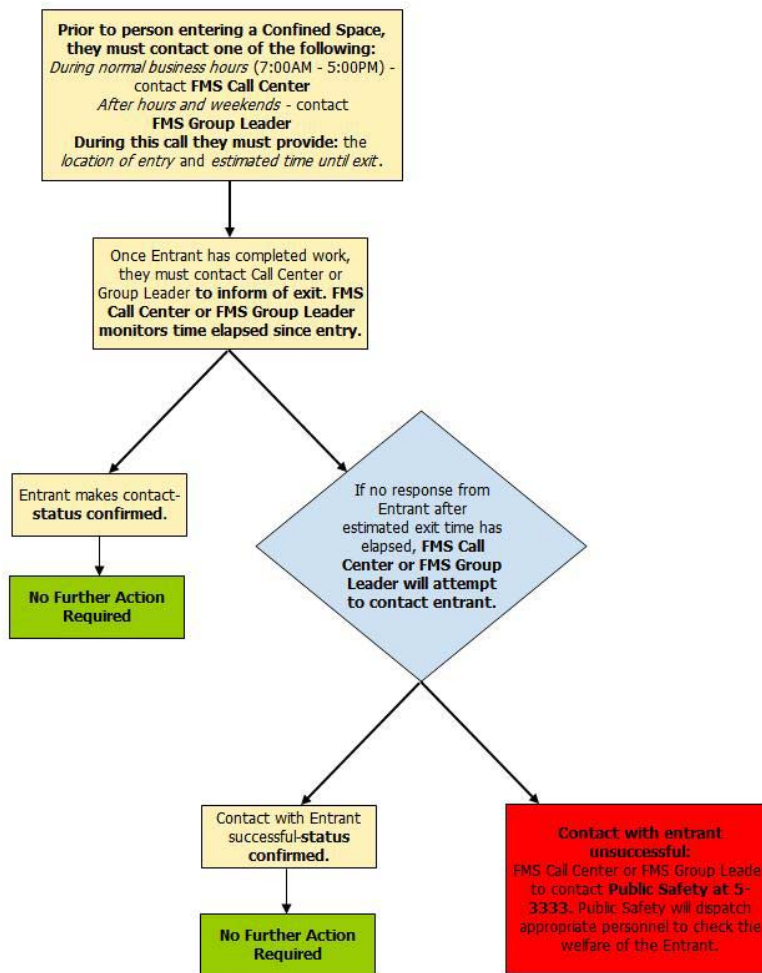


Confined Space Procedures for FMS (04-23-08)

Confined space flowchart on procedure to follow for communicating before entering and upon exiting confined spaces:

Confined Space Entry



Confined Space Procedures-

I. **Non-Permit Required** Confined Spaces (Procedure #1)

- 1) An RIT employee may enter a Non-Permit Required Confined Space using the following procedure:
 - 1) Before entry into Non-Permit Required Space, employee calls FMS Operations Center (7AM-5PM M-F) or FMS Group Leader (after hours) and advises of the entry location and expected time of exit from space.
 - 2) Employee enters space with communication device (cell phone or two-way radio).
 - 3) Upon exit of space, employee calls FMS Operations Center or FMS Group Leader and confirms employee has exited space.

II. **Permit Required** Confined Spaces (Procedures #2-39) that can be Reclassified as Non-Permit Spaces via Procedure – These spaces require a **Mechanical/Physical Hazard Elimination Certificate** (the certificate **without** the atmospheric testing section) to be completed.

- 2) Air Handlers - Space between filters and Hot Water Coil or Coil Access
 1. Valve off one side of Hot Water coil to stop water flow in coil.
 2. Lock out and Tag out closed valve in step #1.
 3. Allow time for coil to cool.
 4. Power down Supply Fan and Return Fan (if there is a Return Fan) at VSD.
 5. Lock out and Tag out Power Disconnect Switches for Supply and Return Fans.
 6. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 7. Notify FMS Operations Center or FMS Group Leader of exit.
- 3) Air Handlers - Fan Section (Supply or Return)
 1. Power down Supply Fan and Return Fan (if there is a Return Fan) at VSD.
 2. Lock out and Tag out Power Disconnect Switches for Supply and Return Fans.
 3. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 4. Notify FMS Operations Center or FMS Group Leader of exit.
- 4) Air Handlers - Sections where air flow or a damper is a mechanical hazard
 1. Power down Supply Fan and Return Fan (if there is a Return Fan) at VSD.
 2. Lock out and Tag out Power Disconnect Switches for Supply and Return Fans.
 3. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 4. Notify FMS Operations Center or FMS Group Leader of exit.
- 5) Air Handler – Steam Fired Humidity Wand Section
 1. Valve off Steam supply to Humidity Wand.
 2. Valve off Condensate line from Humidity Wand.
 3. Lock out and Tag out closed Steam supply and Condensate return valves.
 4. Allow time for Wand to cool.
 5. Power down Supply Fan and Return Fan (if there is a Return Fan) at VSD.
 6. Lock out and Tag out Power Disconnect Switches for Supply and Return Fans.
 7. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 8. Notify FMS Operations Center or FMS Group Leader of exit.
- 6) Air Handlers - Sections with Fall Hazards
 1. Power down Supply Fan and Return Fan (if there is a Return Fan) at VSD.
 2. Lock out and Tag out Power Disconnect Switches for Supply and Return Fans.
 3. Discuss fall mitigation.
 4. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit

- time.
5. Notify FMS Operations Center or FMS Group Leader of exit.
- 7) Return (or Exhaust) Air Fans
 1. Power down Return Fan at VSD.
 2. Lock out and Tag out Power Disconnect Switch for Return Fan.
 3. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 4. Notify FMS Operations Center or FMS Group Leader of exit.
 - 8) Duct Work - Fall hazards
 1. Power down Supply Fan and Return Fan (if there is a Return Fan) at VSD.
 2. Lock out and Tag out Power Disconnect Switches for Supply and Return Fans.
 3. Discuss fall mitigation.
 4. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 5. Notify FMS Operations Center or FMS Group Leader of exit.
 - 9) Coil Access (Upstream) - Air Flow (mechanical hazard, but no temperature hazard)
 1. Power down Fan upstream of coil at VSD.
 2. Lock out and Tag out Power Disconnect Switch for Fan.
 3. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 4. Notify FMS Operations Center or FMS Group Leader of exit.
 - 10) Coil Access (Downstream) - Air Flow (mechanical hazard, but no temperature hazard)
 1. Power down Fan upstream of coil at VSD.
 2. Lock out and Tag out Power Disconnect Switch for Fan.
 3. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 4. Notify FMS Operations Center or FMS Group Leader of exit.
 - 11) Elevator Pits and Hoistways - Hydraulic Elevators - Mechanical Hazard
 1. Shut off power to elevator machine at Main Disconnect Switch in elevator machine room. It is IMPERATIVE that the power be shut down at the Main Disconnect in the machine room! Failure to shut off the Main Disconnect in the machine room will allow the automatic lowering unit to remain powered and the elevator car may still move!
 2. Lock out and Tag out the Main Disconnect Switch for the elevator.
 3. Open hoistway doors and turn OFF Pit Safety Switch before entering pit.
 4. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 5. Notify FMS Operations Center or FMS Group Leader of exit.
 - 12) Elevator Pits and Hoistways - Traction Elevators - Mechanical Hazard
 1. Shut off power to elevator machine at Main Disconnect Switch in elevator machine room.
 2. Lock out and Tag out the Main Disconnect Switch for the elevator.
 3. Open hoistway doors and turn OFF Pit Safety Switch before entering pit.
 4. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 5. Notify FMS Operations Center or FMS Group Leader of exit.
 - 13) Building 50B Common Exhaust Fan Duct
 1. Power down all three (3) Exhaust Fans at disconnects.
 2. Lock out and Tag out all three Power Disconnect Switches for Exhaust Fans.
 3. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
 4. Notify FMS Operations Center or FMS Group Leader of exit.

14) Reserved

15) Cooling Tower - Fan(s) and Sump (shallow pan)

1. Shut off power to Condenser Pump.
2. Lock out and Tag out Power Disconnect Switch for Condenser Pump.
3. Shut off power to all fan(s) at VSD(s).
4. Lock out and Tag out Power Disconnect Switch(es) for all fan(s).
5. Drain sump.
6. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
7. Notify FMS Operations Center or FMS Group Leader of exit.

16) Supply Fans

1. Power down Supply Fan at VSD or Disconnect Switch.
2. Lock out and Tag out Power Disconnect Switch for Supply Fan.
3. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
4. Notify FMS Operations Center or FMS Group Leader of exit.

17) Roof Top Package A/C Units

1. Power off unit at Power Disconnect Switch.
2. Lock out and Tag out Power Disconnect Switch.
3. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
4. Notify FMS Operations Center or FMS Group Leader of exit.

18) Reserved

19) Reserved

20) Air Handler – Direct Gas Fired Heat

1. Turn off gas burner at controls.
2. Allow unit to run to cool gas burner.
3. Valve off gas line to unit.
4. Lock out and Tag out closed gas valve.
5. Power down Air Handler (Supply Fan and Return Fan (if there is a Return Fan)) at Disconnect.
6. Lock out and Tag out Power Disconnect Switches for Supply and Return Fans.
7. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
8. Notify FMS Operations Center or FMS Group Leader of exit.

21) Roto-Clone

1. Power down Fan at VSD.
2. Lock out and Tag out Power Disconnect Switch for Fan.
3. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
4. Notify FMS Operations Center or FMS Group Leader of exit.

22) Roto-Clone Collector Box in 7B Penthouse #2

1. Power down all three Roto-Clone Fans at VSDs (Roto2,3,&4).
2. Lock out and Tag out Power Disconnect Switches for all three Fans.
3. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
4. Notify FMS Operations Center or FMS Group Leader of exit.

III. Permit Required Confined Spaces (Procedures #40-69) that can be Reclassified as Non-Permit Spaces via Procedure – These spaces require a **Atmospheric & Mechanical/Physical Hazard Elimination Certificate** (the certificate **with** the atmospheric testing section) to be completed.

40) Building 24 Gas Fired Air Handlers

1. Turn off gas burner at controls.
2. Allow unit to run to cool gas burner.
3. Valve off gas line to unit.
4. Lock out and Tag out closed gas valve.
5. Power down Air Handler (Supply Fan and Return Fan (if there is a Return Fan)) at Disconnect.
6. Lock out and Tag out Power Disconnect Switches for Supply and Return Fans.
7. Test atmosphere with 4 gas meter.
8. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
9. Notify FMS Operations Center or FMS Group Leader of exit.

41) Air Intake/Exhaust Pits

1. Test atmosphere with 4 gas meter.
2. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
3. Notify FMS Operations Center or FMS Group Leader of exit.

42) Blg 76 Crawl Space

1. Test atmosphere with 4 gas meter.
2. Notify FMS OC (7AM-5PM M-F) or FMS Group Leader (after hours) of entry and approximate exit time.
3. Notify FMS Operations Center or FMS Group Leader of exit.

IV. Permit Required Confined Spaces (Procedures #70-99 - The permit required form requires an entry team with extrication means, first aid (CPR), and manager. RIT EH&S must be notified of this type of entry at least 48 hours in advance for a review. Rescues are to be performed without entering the confined space. Vertical rescues require contractor team with appropriate rescue equipment **(In case an emergency rescue is required Henrietta Fire Dept can be contacted through RIT Campus Safety Department at Extension 5-3333. Henrietta Fire Dept. will be performing the rescue).**

70) HTHW & LTHW (Dorms) Boilers – Horizontal Rescue (HTHW will be replaced with similar MTHW boilers, same rules will apply)

1. Shut down burner at controls.
2. Lock out and Tag out burner power.
3. Shut off Gas Valve to boiler.
4. Lock out and Tag Gas Valve.
5. Allow time for fire box to cool with water flow.
6. Shut down pumps as needed.
7. Valve off boiler Supply and Return valves.
8. Lock out and Tag out Supply and Return valves.
9. Drain and vent waterside to remove water pressure from tubes.
10. Open fire side access.
11. Allow time for cooling and multiple air changeovers.
12. Test atmosphere with 4 gas meter.
13. Entrant must be outfitted with body harness, helmet, and lanyard.
14. Entrant is not to climb over any vertical tube walls that would prevent horizontal rescue.

71) HTHW/MTHW Expansion Tanks – Horizontal Tank & Vertical Tanks – Horizontal Rescue

1. Secure burner controls, Lock Out and Tag Out power to boilers.
2. Close Expansion Tank valve from HTHW or MTHW system to Expansion Tank.
3. Lock out and Tag out Expansion Tank Valve.

4. Vent nitrogen from tank.
5. Drain tank.
6. Remove tank manhole cover.
7. Allow time for cooling.
8. Test atmosphere with 4 gas meter.
9. Entrant must be outfitted with body harness, helmet, and lanyard. Entrant may break the plane of entry (for inspection) with head and arms, but must not climb into tank causing a vertical rescue.

72) HTHW City Water Make Up Tank (Blg 01 & 50A) – Vertical Tank – Horizontal Rescue

1. Close City Water valve to Make Up Tank.
2. Lock out and Tag out City Water valve.
3. Close valve between Make Up Tank and Make Up Pumps(s).
3. Lock out and Tag out City Water valve.
4. Vent and drain tank.
5. Remove tank manhole cover.
6. Test atmosphere with 4 gas meter.
7. Entrant must be outfitted with body harness, helmet, and lanyard. Entrant may break the plane of entry (for inspection) with head and arms, but must not climb into tank causing a vertical rescue.

73) Steam Boiler – Gas Fired – Fire Side - Horizontal Rescue

1. Shut down burner at controls.
2. Lock out and Tag out burner power.
3. Shut off Gas Valve to boiler.
4. Lock out and Tag Gas Valve.
5. Vent boiler. Allow time for fire and water side to cool.
6. Open fire side access.
7. Allow time for cooling and multiple air changeovers.
8. Test atmosphere with 4 gas meter.
9. Entrant must be outfitted with body harness, helmet, and lanyard.

74) Building 55 Steam Boiler - HTHW fired – Horizontal Rescue

1. Close HTHW Supply and Return valves to Boiler HTHW bundle.
2. Lock out and Tag out HTHW Supply and Return valves.
3. Vent boiler. Allow time (72 hours) for boiler to cool.
4. Shut down make up pumps as needed.
5. Valve off boiler make up pumps and City Water make up.
6. Lock out and Tag out pumps and valves.
7. Drain and vent waterside.
8. Open manhole.
9. Allow time for cooling and multiple air changeovers.
10. Test atmosphere with 4 gas meter.
11. Entrant must be outfitted with body harness, helmet, and lanyard.

75) Building 25 Condensate Return Tank – No Entry - Not a Confined Space

1. Close Condensate Return Valve.
2. Lock out and Tag out Condensate Return Valve.
3. Shut down make up pumps.
5. Valve off city water supply to condensate tank.
6. Lock out and Tag out pumps and valves.
7. Drain tank.
8. Open manhole.
9. Allow time for cooling and multiple air changeovers.
10. Test atmosphere with 4 gas meter before looking inside tank.

76) Garage Oil/Water Separator – Vertical Rescue

1. Call Contractor, advise of Confined Space and request a copy of their Confined Space Policy and Procedures for RIT EH&S review.

77) LTHW Boilers (Cleaver Brooks Boilers in Blg 23 & 78) – Horizontal Rescue

1. Shut down burner at controls.
2. Lock out and Tag out burner power.
3. Shut off Gas Valve to boiler.
4. Lock out and Tag Gas Valve.
5. Allow time for fire box to cool with water flow.
6. Shut down pumps as needed.
7. Valve off boiler Supply and Return valves.
8. Lock out and Tag out Supply and Return valves.
9. Drain and vent waterside to remove water pressure from tubes.
10. Open fire side access.
11. Allow time for cooling and multiple air changeovers.
12. Test atmosphere with 4 gas meter.
13. Entrant must be outfitted with body harness, helmet, and lanyard.

78) LTHW Flex Tube Boilers (Blg 10, 25, 35, 43, 47, 70) – Horizontal Rescue

1. Shut down burner at controls.
2. Lock out and Tag out burner power.
3. Shut off Gas Valve to boiler.
4. Lock out and Tag Gas Valve.
5. Allow time for fire box to cool with water flow.
6. Shut down pumps as needed.
7. Valve off boiler Supply and Return valves.
8. Lock out and Tag out Supply and Return valves.
9. Drain and vent waterside to remove water pressure from tubes.
10. Open fire side access.
11. Allow time for cooling and multiple air changeovers.
12. Test atmosphere with 4 gas meter.
13. Entrant must be outfitted with body harness, helmet, and lanyard.

79) Chimney Cleanouts (Blg 01, 09, 50A) – Horizontal Rescue

1. Shut down all boilers connected to chimney.
2. Lock/out Tag/out power to all boilers connected to chimney.
3. Open chimney clean door slightly to allow updraft for cooling chimney.
4. Allow 24 hours cooling time.
5. Open chimney door
6. Test atmosphere with 4 gas meter.
7. Entrant must be outfitted with body harness, helmet, and lanyard.

80) Sump Pump Pits – Vertical Rescue

1. Sump pump pits are not to be entered by RIT personnel. Contractors with Confined Space entry policy, procedures, and equipment shall be employed for entry into sump pump pits.
2. RIT must notify contractor that sump pump pits are confined spaces, and of any hazards associated with a particular sump pump pit.

81) Domestic Hot Water (Steam fired) Tanks – Vertical Tanks – Horizontal Rescue

1. Close Steam Supply and Condensate Return valves to DHW tank bundle.
2. Lock out and Tag out Steam Supply and Condensate Return valves.
3. Close Cold Water inlet valve to DHW Tank.
4. Lock out and Tag out Cold Water inlet valve.
5. Close Hot Water outlet valve from DHW Tank.
6. Lock out and Tag out Hot Water outlet valve.
7. Turn off DHW Return Pump.
8. Close DHW Return line inlet valve to DHW Tank.

9. Lock out and Tag out DHW Return line inlet valve.
10. Vent and drain tank.
11. Remove tank manhole cover.
12. Allow tank at least 48 hours to cool. Tank interior must be less than 80 deg F.
13. Test atmosphere with 4 gas meter.
14. Entrant must be outfitted with body harness, helmet, and lanyard. Entrant may break the plane of entry (for inspection) with head and arms, but must not climb into tank causing a vertical rescue.

82) Domestic Hot Water (HTHW fired) Tanks – Horizontal Tanks – Horizontal Rescue

1. Close HTHW Supply and Return valves to DHW tank bundle.
2. Lock out and Tag out HTHW Supply and Return valves.
3. Close Cold Water inlet valve to DHW Tank.
4. Lock out and Tag out Cold Water inlet valve.
5. Close Hot Water outlet valve from DHW Tank.
6. Lock out and Tag out Hot Water outlet valve.
7. Turn off DHW Return Pump.
8. Close DHW Return line inlet valve to DHW Tank.
9. Lock out and Tag out DHW Return line inlet valve.
10. Vent and drain tank.
11. Remove tank manhole cover.
12. Allow tank at least 48 hours to cool. Tank interior must be less than 80 deg F.
13. Test atmosphere with 4 gas meter.
14. Entrant must be outfitted with body harness, helmet, and lanyard.

83) Building 24 Pool Filters - Horizontal Tanks (high manhole)– Horizontal Rescue

1. Shut off power to pumps for filters.
2. Lock Out and Tag Out power to pumps at pump disconnects.
3. Valve off inlet and outlet valves to filter tank.
4. Lock Out and Tag Out valves.
5. Drain filter tank.
6. Remove tank manhole cover.
7. Allow time for cooling (Spa filter).
8. Test atmosphere with 4 gas meter. (Chlorine test?)
9. Entrant must be outfitted with body harness, helmet, and lanyard. Entrant may break the plane of entry (for inspection) with head and arms, but must not climb into tank causing a vertical rescue.

84) Building 04 Steam Boiler - HTHW fired – Vertical Tank - Horizontal Rescue

1. Close HTHW Supply and Return valves to Boiler HTHW bundle.
2. Lock out and Tag out HTHW Supply and Return valves.
3. Vent boiler. Allow time (72 hours) for boiler to cool.
4. Shut down make up pumps as needed.
5. Valve off boiler make up pumps and City Water make up.
6. Lock out and Tag out pumps and valves.
7. Drain and vent waterside.
8. Open manhole.
9. Allow time for cooling and multiple air changeovers.
10. Test atmosphere with 4 gas meter.
11. Entrant must be outfitted with body harness, helmet, and lanyard. Entrant may break the plane of entry (for inspection) with head and arms, but must not climb into tank causing a vertical rescue.

85) Building 24 Pool Drain Sump Tank – Vertical Tank – Vertical Rescue

1. Pool Drain Sump is not to be entered by RIT personnel. Contractors with Confined Space entry policy, procedures, and equipment shall be employed for entry into sump tank.

- 86) Building 24 Pool Surge Tank under Pool Deck – Vertical Tank – Vertical Rescue
1. Pool Surge Tank is not to be entered by RIT personnel. Contractors with Confined Space entry policy, procedures, and equipment shall be employed for entry into surge tank.
- 87) Building 76 Sanitary Drain Treatment Tank and Pit – Vertical Rescue
1. Sanitary Drain Treatment Tank and Pit are not to be entered by RIT personnel. Contractors with Confined Space entry policy, procedures, and equipment shall be employed for entry into tank or pit.
- 88) Scrubber – Blg 17– Horizontal Rescue
1. Power down circulation pump.
 2. Lock out and Tag out Power Disconnect Switch for pump.
 3. Power down Fan at MCC.
 4. Lock out and Tag out Power Disconnect Switch for Fan.
 5. Consult with EH&S and Scott Blondell to determine any chemical or gas hazards.
 6. Test atmosphere with 4 gas meter (programmable channel determined by #6 above).
 7. Entrant must be equipped with harness, lanyard, and helmet.
- 89) Reserved
- 90) 12Kv Electric Manholes – Vertical Rescue
1. 12Kv electric manholes are not to be entered by RIT personnel. Contractors with Confined Space entry policy, procedures, and equipment shall be employed for entry into manholes.
 2. RIT must notify contractor of any hazards associated with a particular manhole (12Kv electric, water, and atmospheric hazards).
- 91) Sanitary Sewer Manholes – Vertical Rescue
1. Sanitary Sewer manholes are not to be entered by RIT personnel. Contractors with Confined Space entry policy, procedures, and equipment shall be employed for entry into manholes.
 2. RIT must notify contractor of any hazards associated with a particular manhole (water, and atmospheric hazards).
- 92) Storm Sewer Manholes – Vertical Rescue
1. Storm Sewer manholes are not to be entered by RIT personnel. Contractors with Confined Space entry policy, procedures, and equipment shall be employed for entry into manholes.
 2. RIT must notify contractor of any hazards associated with a particular manhole (water, and atmospheric hazards).
- 93) Communication Manholes – Vertical Rescue
1. Communication manholes are not to be entered by RIT personnel. Contractors with Confined Space entry policy, procedures, and equipment shall be employed for entry into manholes.
 2. RIT must notify contractor of any hazards associated with a particular manhole (water, and atmospheric hazards).
- 94) Reserved
- 95) Reserved
- 96) Building 78 Water Feature Pump Pit – Vertical Rescue
1. Water feature pump pit is not to be entered by RIT personnel. Contractors with Confined Space entry policy, procedures, and equipment shall be employed for entry into pump pit.
- 97) Building 12 Water and Gas Line entry pit – Vertical Rescue
1. Water and Gas Line entry pit is not to be entered by RIT personnel. Contractors with Confined Space entry policy, procedures, and equipment shall be employed for entry into pit.

98) Building 25 Transformer Room Exhaust Fan Pit – Vertical Rescue
Problem

1. Shut down both exhaust fans at VSD.
2. Lock out and Tag out disconnects for both exhaust fans.
3. Entrant must be outfitted with body harness, helmet, and lanyard.