

WAC 296-45-215 Underground electrical installations. This section provides additional requirements for work on underground electrical installations.

(1) Protective barriers, or approved guards and warning signs must be erected before removing manhole covers or making excavations in places accessible to vehicular or pedestrian traffic.

(2) Whenever an opening is made in the street, it must be properly guarded or covered until same is closed and whenever an obstruction is left in the roadway after dark, it must be marked with approved lights, flares or similar devices.

(3) Access. A ladder or other climbing device must be used to enter and exit a manhole or subsurface vault exceeding 4 feet (122 cm) in depth. No employee may climb into or out of a manhole or vault by stepping on cables or hangers.

(4) When work is to be performed in a manhole or unvented vault:

(a) No entry will be permitted unless the atmosphere is found to be safe by testing for the presence of explosive or potentially hazardous gases or fumes.

(b) No entry will be permitted unless the atmosphere has been found safe by testing for oxygen deficiency or forced ventilation is provided.

(c) When unsafe conditions are detected, by testing or other means, the work area must be ventilated and otherwise made safe before entry.

(d) Provisions must be made for a continuous supply of air as provided for in Part L, chapter 296-62 WAC.

(e) When forced ventilation is not used a method of monitoring said manhole or vault so as to prevent the occurrence of oxygen deficiency due to work being performed in said manhole or vault, and to detect the presence of any explosive gases or fumes which may occur while the employees are working in said manhole or vault.

(5) When open flames are used or smoking is permitted in manholes, adequate mechanical forced air ventilation must be used.

(6) Before using open flames in a manhole or excavation in an area where combustible gases or liquids may be present, such as near a gasoline service station, the atmosphere of the manhole or excavation must be tested and found safe or cleared of the combustible gases or liquids prior to the entry.

(7) When work is to be performed in manholes containing any wires or appliances carrying electrical current, they must be in a sanitary condition.

(8) Care must be taken to prevent the possibility of vehicles or pedestrians coming in contact with the wires and equipment.

(9) Lowering equipment into manholes. Equipment used to lower materials and tools into manholes or vaults must be capable of supporting the weight to be lowered and must be checked for defects before use. Before tools or materials are lowered into the opening for a manhole or vault, each employee working in the manhole or vault must be clear of the area directly under the opening.

(10) Materials must not be thrown into or out of manholes but must be placed in the proper receptacle and hoisted in and out by means of a rope.

(11) Tools and materials must not be left on the ground around or near the manhole opening where they might be pushed or otherwise fall into the hole.

(12) Attendants for manholes.

(a) An attendant must be kept at the surface when there is any hazard to the employees in the manhole and the attendant should not leave the manhole unwatched until such time as all employees are out and the cover has been replaced.

(b) While work is being performed in a manhole containing energized electric equipment, an employee with first aid and CPR training meeting WAC 296-45-125(1) must be available on the surface in the immediate vicinity to render emergency assistance.

Notes:

- An attendant may also be required under WAC 296-45-205(7). One person may serve to fulfill both requirements. However, attendants required under WAC 296-45-205(7) are not permitted to enter the manhole.
- Employees entering manholes containing unguarded, uninsulated energized lines or parts of electric equipment operating at 50 volts or more are required to be qualified electrical employees under WAC 296-45-065.

(c) No work must be permitted to be done in any manhole or subway on any energized wire, cable or appliance carrying more than 300 volts of electricity by less than two qualified electrical employees who must at all times, while performing such work, be in the same manhole or subway in which work is being done. This rule does not apply to work on telephone, telegraph or signal wires or cables.

(d) For the purpose of inspection, housekeeping, taking readings, or similar work, an employee working alone may enter, for brief periods of time, a manhole where energized cables or equipment are in service, if the employer can demonstrate that the employee will be protected from all electrical hazards.

(e) Reliable communications, through two-way radios or other equivalent means, must be maintained among all employees involved in the job.

(13) Cable in manholes or underground vaults must be accessible to employees and a clear working space must be maintained at all times; and/or approved protective guards, barriers, etc., when installed will be considered as providing adequate working clearance for cables over 5 k.v. If a manhole and/or underground vault is determined to have an electrical or structural hazard, no work will be done in the manhole and/or vault until the unsafe condition is corrected or deenergized.

(14) No work must be performed on cables or equipment unless they have been properly identified by an approved method.

(15) Duct rods. If duct rods are used, they must be installed in the direction presenting the least hazard to employees. An employee will be stationed at the far end of the duct line being rodged to ensure that the required minimum approach distances are maintained.

(16) Multiple cables. When multiple cables are present in a work area, the cable to be worked must be identified by electrical means, unless its identity is obvious by reason of distinctive appearance or location or by other readily apparent means of identification. Cables other than the one being worked must be protected from damage.

(17) Before cutting into a high voltage cable or opening a high voltage splice, the cable must be deenergized then clearance obtained, tested and then grounded in an approved manner. The cable to be worked on must be identified by tags or equivalent means.

(18) Moving cables. Energized cables that are to be moved must be inspected for defects.

(19) Insulated platforms or other protective devices will be provided when work is to be done on energized wires or equipment in manholes.

(20) Furnaces must always be placed in a secure, level position on the downhill side of the manhole to avoid spillage of hot metals or compounds into the manhole.

(21) Pulling underground cable. When pulling cable(s) all employees must be made aware of the hazard of being caught in the sheaves, lashings or winch gears. All employees must stand clear of the pulling line when the pull is begun or when the line is under tension. This rule applies to all work performed by means of a winch.

(22) Fishing conduit or ducts. When fishing conduit or ducts, it must first be determined that the fish tape or wires will not contact any energized line or equipment.

(23) WAC 296-45-335 on clearances must be complied with. Also WAC 296-45-345 and/or WAC 296-45-355 on grounding must be complied with.

(24) Defective cables. Where a cable in a manhole has one or more abnormalities that could lead to or be an indication of an impending fault, the defective cable must be deenergized before any employee may work in the manhole, except when service load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole provided they are protected from the possible effects of a failure by shields or other devices that are capable of containing the adverse effects of a fault in the joint.

Note: Abnormalities such as oil or compound leaking from cables or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints that are swollen beyond normal tolerance are presumed to lead to or be an indication of an impending fault.

(25) Sheath continuity. When work is performed on buried cable or on cable in manholes, metallic sheath continuity must be maintained by bonding across the opening (or by equivalent means), or the cable sheath must be treated as energized.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and chapter 49.17 RCW. WSR 19-13-083, § 296-45-215, filed 6/18/19, effective 8/1/19; WSR 16-10-082, § 296-45-215, filed 5/3/16, effective 7/1/16. Statutory Authority: RCW 49.17.040. WSR 99-09-080, § 296-45-215, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. WSR 98-07-009, § 296-45-215, filed 3/6/98, effective 5/6/98.]