

Table 12.7.: Safe Work Practices

ITEMS	REQUIREMENTS
7. UNDER GROUND OPERATIONS	<p><u>7. ELECTRICAL CONDUCTORS</u></p> <ul style="list-style-type: none"> i. Electrical cords and plugs shall be heavy duty and suitable for use in damp locations. ii. Conductors shall be located or guarded so as to be protected from physical damage. Multiconductor portable cable shall be permitted to supply mobile equipment. iii. An equipment grounding conductor shall be run with circuit conductors inside the metal raceway or inside the multiconductor cable jacket. iv. The equipment grounding conductor shall be permitted to be insulated or bare. v. Oil-filled transformers shall only be used underground where located in a fire-resistant enclosure suitably vented to the outside and surrounded by a dike to retain the contents of the transformers in the event of rupture.
	<p><u>8. ELECTRICAL ENCLOSURES</u></p> <ul style="list-style-type: none"> i. Bare terminals of transformers, switches, motor controllers, and other equipment shall be enclosed to prevent accidental contact with energized parts. ii. Enclosures for use in tunnels shall be raintight, rainproof, or watertight as defined in NFPA 70, National Electrical Code, where necessitated by the environmental conditions. iii. Special attention shall be given to maintaining clear access and adequate work space around electrical equipment in accordance with NFPA 70E, Standard for Electrical Safety in the Workplace. Proper housekeeping shall be maintained to avoid fire hazards. iv. All nonenergized metal parts of electrical equipment and metal raceways and cable sheaths shall be effectively grounded and bonded to all metal pipes and rails at the portal and at intervals not exceeding 300 m (1000 ft.) throughout the tunnel.
	<p><u>9. HAZARDOUS OPERATIONS AND PROCEDURES</u></p> <ul style="list-style-type: none"> i. Hot work operations shall be in accordance with NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work. ii. A suitable fire extinguisher or other fire control device shall be ready for instant use in any location where hot work is performed. iii. Acetylene, liquefied petroleum gas (LPG), liquefied oxygen (LOX), and methyl acetylene propadiene stabilized gas (MPS) shall be permitted to be used underground only for welding, cutting, and hot work and only if the quality of air is within permitted limits in accordance with the ACGIH Threshold Limit Values and Biological Exposure Indices for 1992–1993. iv. The quantity of combustible materials to be used underground shall be kept to a minimum. Advance planning shall provide for the use of materials having the most favorable combination of high ignition points, low rates of combustion, and low emissions of smoke and harmful gases.