Table 14.1: Fire Detection and Life Safety Requirements for Substations

ITEMS	REQUIREMENTS
1. CONSTRUCTION	4. **INDOOR OIL INSULATED TRANSFORMERS** i. Capacitor units located indoors, which contain flammable dielectric fluid, should be separated from adjacent areas by a 3 hour fire resistance rated barrier. ii. If transformer is to be indoors, dry type (Air cooled) transformers are recommended to be installed indoors. iii. When an oil filled equipment or transformer is installed indoors, it should be installed in transformer /Capacitor vault or room. iv. Oil insulated transformers having more than 100 gal oil capacity shall be separated from adjacent areas by 3 hour fire resistance rated fire barriers without fire suppression system and 1 hour fire resistance rated fire barriers if protected with automatic fire suppression as per **Table 14.1.b.** v. Oil insulated transformers having a rating more than 35 kV shall be separated from adjacent areas by 3 hour fire resistance rated fire barriers without automatic fire suppression system and 1 hour fire resistance rated fire barriers if protected with automatic fire suppression as per **Table 14.1.b.** vi. Where multiple oil insulated transformers having more than 100 gal oil capacity are installed adjacent to each other in group, the group shall be separated from adjacent areas by 3 hour fire resistance rated fire barrier and automatic fire suppression shall be provided as per **Table 14.1.b.** 5. **OIL CIRCUIT BREAKERS** i. Oil circuit breakers are recommended to be installed outdoors. ii. If circuit breakers are to be indoors, it is recommended to be dry type or gas-cooled circuit breakers. **6. SPILL AND DRAINAGE** i. Transformer vaults or rooms, Cable spreading rooms, basements and cable tunnels should be provided with adequate fixed drainage arrangement, preferably with fixed sump and piping. ii. Special precautions should be taken to collect and contain the oil for Oil filled equipment and oil filled transformers by providing Yard stone, Bern, holding tanks or curb around equipment, or pits. iii. The substation grading must be contoured to permit the oil to flow to an area that will not affect or endanger other equipment or areas. iv. The discharge from any oil pressure relief device should be directed away from any nearby equipment to prevent from the splashing of flaming oil. v. Equipment protected with water suppression systems shall also be provided with drainage systems to prevent flooding.
2. FIRE STOPPING	i. Every penetration in the substation building shall be sealed and fire stopped with approved and listed material as per **Chapter 1 Section 3.** ii. Cable penetrations, equipment penetrations, piping and duct penetrations and all openings in fire barriers shall be provided with approved and listed fire stopping systems as per **Chapter 1, Section 3.** iii. Fire barriers shall also be provided with Fire dampers where ducts are penetrating to maintain the fire rating and integrity of the fire barrier.