



SECTION-3.27: FIRE STOP SYSTEM

1.0.0 INTENT OF SPECIFICATION

This section covers the requirements of Fire stop system for cable penetrations.

2.0.0 SCOPE OF WORK

The scope of work shall include supply, installation, testing and commissioning of Fire proof cable penetration seals for the following:

- a) All floor openings and wall openings (cable penetrations) in the electrical rooms/ cable spreader rooms
- b) All floor openings and wall openings (cable penetrations) in the main plant buildings
- c) All floor openings and wall openings (cable penetrations) in the auxiliary plant buildings
- d) Consumables
- e) Tools & tackles
- f) Any other equipment required for the system

3.0.0 CODES AND STANDARDS

All the equipment and accessories covered under this specification shall be designed, manufactured and tested in accordance with the latest revision of the specified / applicable Standards. The fire proof cable penetration system shall confirm to the requirement of latest editions including amendments of the following standards:

- a) BS: 476 Part- 20 to 23 Fire tests on building materials and structures
- b) IS: 3809 Fire resistance test for structures
- c) IS: 12458 Method of test for fire resistance test of fire stops.
- d) ASTM E – 119 Standard test methods for fire tests of building construction and materials
- e) ASTM E – 814 Standard test methods for fire tests of Through Penetration fire stops
- f) UL:1479-1983 Fire tests of Through Penetration fire stops

4.0.0 TECHNICAL REQUIREMENTS

- 4.1.0 Fire barriers shall be provided for all fire rated wall and floor penetrations and for all direct cable entries into electrical equipment. Sleeves and openings for the passage of electrical cable or raceway shall be sealed with fire stops. Fire barriers and fire stops shall have a fire rating not less than 2 hours.
- 4.2.0 All fire stops shall be installed in accordance with the manufacturer's recommendations including installation by trained personnel when so recommended by the manufacturer. All fire stop materials, fire stop testing, and installation methods shall be approved by the Owner prior to installation.
- 4.3.0 The fire proof cable penetration sealing system shall prevent spreading of fire in cable beyond the seal system in case of fire and shall have minimum two hour fire resistance rating
- 4.4.0 The fire proof cable penetration sealing system shall comprise either of the following methods:
 - a) Panel sealing method complete with
 - Encasing Panels
 - Cavity fill material
 - Sealant



- b) Mortar sealing method shall basically include Mortar based fire seal compound. The process shall include
- Surface preparation like dusting / removal of any oil substance
 - Mixing Mortar with water
 - Damming / Shuttering
 - Filling
 - Curing with water
- 4.5.0 The fire proof cable penetration sealing system offered should have been tested and evaluated at CBRI, Roorkie for compliance for the following tests. The following tests should have been carried out one after the other on the same sample in the specified sequence without any touching up/repair/modifications. A copy of test report shall be furnished along with the Bid. (But not more than 5 Years old).
- Accelerated ageing test
 - Water absorption test
 - Vibration test
 - Fire rating test
 - Hose Stream test
 - Anti-Rodent test
 - Temperature rise test for cables in fire stops
- 4.6.0 The fire proof cable penetration sealing system shall be suitable for site condition at 50°C ambient temperature and relative humidity of 60%. Contractor shall co-ordinate, plan and use the material within stipulated self-life of material.
- 4.7.0 The fire proof cable penetration sealing system of each wall / floor crossing shall be adequately designed / sized such that 20% addition of cables is possible at any later date without disturbance / wastage of material in the penetration system.
- 4.8.0 The fire proof cable penetration sealing system shall be physically, chemically, thermally stable and shall be mechanically secured to the masonry / concrete / structural members. The system shall be mechanically robust and capable of giving satisfactory performance under vibrations encountered in power stations.
- 4.9.0 The encasing panel (support frame) shall be of single panel of uniform density. Paper laminated gypsum boards shall not be used.
- 4.10.0 Sealing putty shall not be based on chlorinated rubber.
- 4.11.0 Under normal load, short circuit & fire conditions cables may be subjected to movement and vibration. The fire proof cable penetration sealing system shall be designed to withstand & perform satisfactorily under these conditions. The fire proof cable penetration sealing system shall have life expectancy of 40 years.
- 4.12.0 The fire proof cable penetration sealing system should not affect the current carrying capacity of cables passing through it.
- 4.13.0 Asbestos shall not be used in the construction of fire penetration seal system.

5.0.0 DRAWINGS & DOCUMENTS

The following drawings and documents shall be submitted for approval during detail engineering stage.

- Design basis for fire stop system
- Installation details for fire stop system



- Layout for fire stop system
- Fire stop arrangement details for floor crossing, wall crossing, below panels.
- Test reports
- Data sheet
- Sub-vendor list
- Manufacturing quality plan
- Field quality plan