

METHOD STATEMENT FOR INSTALLATION AND INSPECTION OF FIRE FIGHTING SYSTEM

1. SCOPE

This procedure covers installation and inspection of Fire Fighting System – 1” Fire Hose Reel System and 1 ½” Fire Hose System

2. PURPOSE

The purpose of this procedure is to define the method of installation and inspection of Fire Fighting System – Hose Reel Systems.

3. ABBREVIATIONS

3.1. Abbreviations

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| 1. ICL | - Inspection Check List |
| 2. IR | - Inspection Request |
| 3. ITL | -Independent Testing Laboratory |
| 4. ITP | - Inspection and Test Plan |
| 5. ITR | -Inspection & Test Requests |
| 6. MAT | - Material Submittal |
| 7. MEP | - Mechanical Electrical Plumbing |
| 8. MET | - Method Statement |
| 9. MIR | - Material Inspection Request |
| 10. MSDS | - Material Safety Data Sheet |
| 11. PPE | -Personal Protective Equipment |
| 12. PQP | -Project Quality Plan |
| 13. PTW | -Permit To Work (Working at Height or enclosed spaces) |
| 14. RA | -Hazard Identification and Risk Assessment |
| 15. RFIA | - Request for Inspection and Approval |
| 16. SPD | - Shop Drawing |
| 17. TBM | - Temporary Bench Mark |

4. QUALITY CONTROL

Quality of installation and materials at site will be ensured by our project team consisting of a Project Manager, Project Engineers, QA / QC Engineer and the site Foremen. All will be according to the Specification, NFPA standards and /or local civil Defence authority requirements.

5. EQUIPMENTS/ TOOLS / MANPOWER/MATERIALS

5.1. Materials used

1. All materials to be used are as per the approved material submittals.

5.2. Tools & equipment

The following Tools and Equipment will be used for Fire Fighting System Installation:

1. Grooving Machine
2. Threading Machine
3. Welding Machine
4. Drill Machines (Hilti Models TE-1 and TE-2 Type)
5. 12" Grinding / Cutting Machine
6. 4" Grinding Machine
7. Vice Table
8. Pipe Wrenches & Spanners, etc.

6. FIRE FIGHTING SYSTEM DESCRIPTION

1. Fire Hose Reel

- Automatic Wet System
- It is a system that is attached to a water supply capable of supplying the system demand at all fires and that requires no action other than opening a hose valve to provide water at hose connection.

2. System Components

- Network of pipes
- Fire hose & fire hose reel cabinets
- Landing Valves
- Pressure reducing valves
- Air release valve

3. 1" Fire Hose Reel & 1 1/2" Fire Hose System

- Surveying
- Area per floor occupancy
- Distance of the hose connection from the source(s) of the water supply
- Number of floor level
- Means of escape/exit passage way
- Location of Landing Valve / Hose
- At each intermediate landing between level
- On each side of the wall adjacent to the exit opening
- Exit passage way at the entrance
- As per approved shop drawings.

4. Minimum pressure of stand pipe

- Hydraulically designed to provide 10 GPM (37.85 lpm) at a minimum residual pressure of 2.2 bars at the outlet of the hydraulically most remote 1" dia. Hose reel connection.
- Hydraulically designed to provide 100 GPM (378.5 lpm) at a minimum residual pressure of 4.5 bars at the outlet of the hydraulic most remote 1 1/2" dia. Fire hose connection.

7. WORK SEQUENCE AND METHODOLOGY

7.1. Storage and handling

The pipes will be stacked in the site store on a flat surface at a height not exceeding 1.7m from the bottom layer. Fittings will be separately packed and stored as per the sizes required for the project. All open ends of pipes will be covered to protect from foreign matter, dirt/debris.

7.2. General Piping Installation Guidelines

1. Pipe work shall be installed in accordance with the piping general arrangements and their supporting drawings, specifications and schedules.
2. Installation of pipe work shall be carried out under conditions satisfactory to the contractor.
3. All work performed and completed must meet the approval of the contractor.
4. Scheduling of work to carry out the installation of pipe work shall be agreed and to the satisfaction of the contractor and shall be co-coordinated with the work schedules of other trades and disciplines involved in the overall construction.

7.3. Installation of pipes

1. Run all piping as direct as possible, avoiding unnecessary offsets and conceal piping in finished rooms.
2. 2" and below sizes of pipes are made threaded, 2 ½" and above sizes are normally grooved type. Groove can be made Cut groove or Roll groove. We will make Roll Grooves utilizing manufacturers Roll Grooving Tools
3. Make tee connections with standard tee fittings for full size branches.
4. All piping must be rigidly supported by a combination network comprised of pipe hangers and rigid support brackets. Pipe hangers are used to support the "dead load" of the pipe system. Pipe hangers will be spaced according to the relevant NFPA standard / Specification clause and Hanger rod sizes and numbers will comply with the requirement of the respective NFPA standard / Specification clause or Manufacture's recommendations.

7.4. Installation of Fire Hose Reel / Fire Hose Cabinets

1. Check cabinets are approved size and dimension. Inspect for signs of damage.
2. Locate exact location of these Cabinets as per approved shop drawings and with careful measure of elevation and plumb.
3. Fix cabinet using recommended Rawl (anchor bolts) bolts. Proceed with installation of accessories, lock shield valve, landing valves, etc. taking in consideration of approval for these devices.
 - a. Installation of Breaching Inlet
4. Locate Breaching inlet cabinet and its accessories as shown on the shop drawing near the main entrance of the building for Civil defence inject water in to the system in case of emergency.

7.5. Threaded Joints

1. Threaded piping will be made with Teflon tape or with a suitable pipe sealing compound (jute and mastic combination) applied on male threads only. Ends of pipe will be reamed out before being made up into fittings.
2. Joints in threaded steel pipe will conform to the American National taper pipe thread, ANSI B1. 20.1 Or British Standard BS 21. All burrs will be removed, pipe ends will be reamed or filed out size of bore, and all chips will be removed.
 - a. Pipe Fabrications and Installation

3. Make piping layout and installation in the most advantageous manner possible with respect to headroom, valve access, opening and equipment clearance, and clearance for other work, particular attention will be given to piping in the vicinity of equipment. Preserve the equipment parts for maintenance.
4. Cut all pipes accurately to measurement determined at the site. After cutting the pipe, ream it and remove all burrs.
5. Install piping neatly, free from unnecessary traps and pockets. Work into place without springing or forcing. Use fittings to make all changes in direction. Make all connections to equipment using flanged joints or unions. Make reducing connections with reducing fittings only.
6. Remove dirt, scale and other foreign matter from inside piping before tying in sections, fitting, valves or equipment.

7.6. Offsets and Fittings

1. Carefully investigate the structural and finish conditions affecting the work and take such steps as may be required to meet such conditions.
2. Install all piping close to walls, ceilings and columns so piping will occupy the minimum space. Proper space will be provided for covering and removal of pipe, special clearance, and for offsets and fittings.
3. Pipe work will be installed not closer than 200 mm to electrical conduits, lighting, and power cables. Pipes will be spaced in ducts, ceilings, voids and plant areas, such as adequate access is permitted to any pipe for maintenance or removal without disturbance to the remaining pipe work and other services.
4. Pipes will not be solidly built into walls or plaster. Pipe joints will not be positioned within the thickness of walls, floors or in any other inaccessible position. Pipes passing through walls and floors will be sleeved; where they are exposed to view chrome plated covers will be fitted.
5. Couplers, unions and fittings will be screwed up to the reduced depth of the thread, such that no more three-turns are showing when pulled up tight.
6. All pipes, valves and fittings and connected equipment will be thoroughly cleaned of rust, sand and dust, scale and other foreign matter before erection and before any initial fill water for hydraulic testing.
7. Prior to hydraulic testing, all pipe work systems including valves, strainers and fittings will be washed thoroughly. Any washing of the piping systems will be carefully carried out where there are isolation valves or equipment are employing.
8. Any stoppage due to foreign matter or air lock which is found to impede the flow of fluid will be removed, either before or after the systems are in operation.
9. Fittings will be of the eccentric pattern to ensure proper drainage and the elimination of air pockets wherever necessary. Increases or decreases in pipe diameters required to suit fittings, tee-offs and equipment connections will be formed using taper pieces, flanged as
10. Required with taper reduction located about axis of the pipe to facilitate proper flow and to allow proper venting and draining of the pipes. The angle of the taper of such fabricated taper pieces will not be greater than twenty (20 °) degree.

7.7. Painting

1. All pipes will be cleaned inside and outside for removal of dust and debris before painting.
2. One coat of Approved Red-oxide Primer will be applied of 35 Microns film thickness
3. After drying, one coat of Approved Enamel Paint will be applied of 35 Microns film thickness before installation of pipe.
4. Finally one coat of Approved Enamel Paint of 35 Microns will be applied after hydraulic test and in the final stages.

7.8. Flushing: Cleaning of Piping and Equipment

1. After piping is erected, all piping systems including main header line and branch line will be cleaned to remove all mill, welding scale, oil, corrosion, and other construction debris.
2. System will be flush cleaned and filled ready for service immediately after cleaning.
3. Do not operate pumps or equipment until debris has been removed from the respective system has been flushed out.
4. Flushing of the system can be done from a pumping source with minimum flow rate to provide a velocity of 3 m/ sec.
5. Flush the piping system until all debris is removed and clean water comes out.
6. Automatic devices which can become clogged during the cleaning process will be disconnected and will not be connected permanently until the cleaning process is complete.

8. HEALTH AND SAFETY

Work shall strictly follow as per the Manufacturer's/ Client's / Consultant's Health & Safety recommendations for handling and use of the materials. Ensure all involved personnel shall be aware of the same.