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PROJECT NAME

PROJECT LOGO

METHOD STATEMENT FOR INSTALLATION & TESTING FOR FIRE FIGHTING PIPING SYSTEM AND ACCESSORIES

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REVISION RECORD

This cover page is a record of all revisions of the document identified above by number and title. All previous cover pages are hereby superseded and are to be destroyed.

Rev. No.	Date	By	Chkd.	Approvals	Description and Page Numbers of Revisions

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1.0 PURPOSE

This method statement is applicable for Installation & testing of Fire Fighting Piping system and its accessories in all areas for the project.

2.0 SCOPE

Supply , installation & testing of Fire Fighting Piping system and its accessories for all applications in line with project requirements .

3.0 REFERENCE

3.1 Drawing References.

All Fire Fighting layouts:

3.2 Specifications

4.0 DEFINITIONS:

Main Contractor :

.

Sub contractor :

Quality Engineer:

Nominated Quality Engineer at Site.

Project Engineer:

Designated Project leader as decided by the Management and assigned with the responsibility of managing the Project.

AWS:

American Welding Society.

ASME:

American society of Mechanical Engineers.

ASTM:

American Society for Testing & Materials.

AWWA:

American Water works Association.

F.D.C:

Fire-Department Connection.

FM:

Factory Mutual.

NFPA :

NFPA.

NPSH:

Net Positive Suction Head.

UL:

Under Writers Laboratory.

5.0 RESPONSIBILITIES:

5.1 Project Manager

- Responsible for the implementation and maintenance of the requirements of this procedure.

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5.1 Construction Manager

- responsible to supervise and control the work on site.

5.1 Project Engineer

- Shall be overall responsible for arranging the materials as per specification.

5.2 Site supervisor/foreman

- Ensure workmanship and also ensure that all the work is done by the experienced manpower.

5.3 QA/QC Engineer

- Shall ensure that all work is done as per approved drawings and material used is approved and coordinate with MEP Coordinator for internal checking prior to final inspection to consultant.

• EQUIPMENT

Following tools shall be arranged before starting the job.

- | | | |
|-----------------------|----------------------------------------------------------------------|-----------------------------------------|
| • Tool box | • Anchor punch | • Testing pump (manual hand press type) |
| • Measuring tape | • Marking line-dori | • Pipe wrench |
| • Marker | • Screw driver (flat & star set) | • Electrical welding machine |
| • Wood-saw | • Fix spanner (4mm to 32mm) | • Chipping hammer |
| • Half round file | • Adjustable spanner | • Fire extinguisher |
| • Hack-saw frame | • Monkey plier | • L key set |
| • Hilti drill machine | • Stand & bench wise | • Hilti concrete bit (6mm to 16 mm) |
| • Threading m/c | • Grooving machine (compatible to be used with above threading m/c). | • Scaffolding |
| • Pump for flushing. | • Tank | • Pipe cutter |

6.0 PROCEDURE

Work Sequence/Procedure (Installation & Pressure Test of Fire Fighting Piping system and accessories).

6.1 General Requirements

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- Before starting the work site engineer has to ensure that all fire fighting piping and accessories are approved through submittals and approved copy is available.
- All the materials after delivery at site has been inspected and approved by the consultant/client/consultant through MIR.
- For installation purpose only approved shop drawings from consultant and civil defence shall be used.

6.2 Material Storage & Handling

All pipes shall be stored properly with end caps. The pipes shall be stored on a flat dry level surface free from sharp projections, stones or other objects likely to cause point loading or pipe deformation. Timber supports spaced 1.5m apart along the pipe can be used to support the pipes.

6.3 Pipes & Fittings Installation Procedure

6.3.1 Below Grade Installation

- Below grade HDPE pipes shall be installed after the trenches are ready by main contractor.
- Trench clearance for pipe installation is obtained from main contractor.
- All locations, sizes, depths and levels are as per approved shop drawings.
- After compaction one layer of soft sand will be spread before laying the pipes by main contractor.
- Thrust blocks shall be used for all the fittings especially where change of direction is required.
- Back filling shall be done with the approved material by main contractor and process shall be monitored in order to avoid any damage especially for underground joints.
- All the pipes passing below the roads or building shall be installed in concrete encasement (sleeve is required) provided by main contractor.

6.3.1.1. Pipe Jointing For Below Grade Pipe

- Below grade HDPE pipes shall be joined using the electro fusion welding Pn-16. (Coupling)
- Approved warning tape to be used as approved shop drawing (layout). Detectable type.

6.3.2. Above Grade Installation

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- The piping work should not be above the electric installations.
- Above grade installation work will start from marking the pipe locations and levels in accordance with finished floor levels.
- GI rods and hanging clamps shall be installed at the intervals mentioned in the shop drawings using proper sized anchor bolts, and in accordance with NFPA 13 standard.
- Before hanging the pipes that are passing through walls, floors or slabs approved sleeves of GI material shall be provided. After the system is approved the sleeves and openings shall be sealed using the approved fire resistant sealing materials.
- The pipes shall be raised and hanged using the manual lifting for smaller sizes up to 65mm or chain pulley for larger sizes.
- Pipes and fittings jointing shall be done as mentioned in section 6.4.
- Automatic air vents shall be installed as mentioned on the approved drawings and as per specifications, at the highest point of the system/zone/area.
- The pipes shall be painted with two coats of approved post office red enamel paint after one coat of primer, suitable for galvanized pipes. The paints shall be done in clean and protect area.

7.3.2.1 Pipe Jointing For Above Grade Piping

- Above grade steel pipes shall be jointed using flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 (DN 65) and larger end connections. For smaller sizes from 50mm threaded fittings and joints shall be used.
- Install unions adjacent to each valve in pipes (DN 50) and smaller.
- Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- **Flanged Joints:** Approved gasket material in size, type, and thickness suitable for water service. Join flanges with gasket and bolts according to ASME B31.9. All the nuts, bolts and washers etc. shall be of stainless steel in order to avoid corrosion in open areas.
- **Expansion joints,** expansion loop or expansion compensators shall be provided as per the approved shop drawings wherever required.

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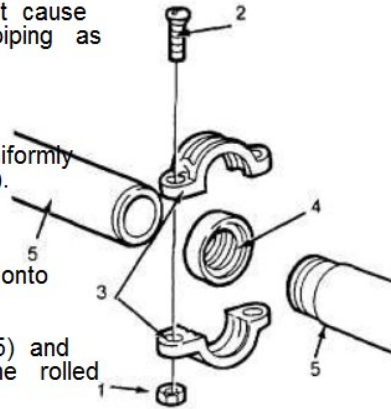
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- **Threaded Joints:** Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Apply appropriate tape or thread compound to external pipe threads. Tighten the pipes with fittings.
- **Twist-Locked Joints:** Insert plain end of steel pipe into plain-end-pipe fitting. Rotate retainer lugs one-quarter turn or tighten retainer pin.
- **Steel-Piping, Pressure-Sealed Joints:** Join lightwall steel pipe and steel pressure-seal fittings with tools recommended by fitting manufacturer.
- **Steel-Piping, Cut-Grooved Joints:** Cut square-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe joints.
- **Steel-Piping, Roll-Grooved Joints:** Roll rounded-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.
- **Steel-Piping, Pressure-Sealed Joints:** Join Schedule 5 steel pipe and steel pressure-seal fittings with tools recommended by fitting manufacturer.
- **Dissimilar-Material Piping Joints:** Make joints using adapters compatible with materials of both piping systems.
- **Victaulic couplings** shall be used for all flanged joints as per the below mentioned example:

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- (1) Remove the nuts (1) and capscrews (2) retaining the clamp halves (3) together.
- (2) Separate the clamp halves (3) and remove. It may be necessary to break the seal between the gasket (4) and the clamp halves (3) using a small hammer.
- (3) Remove gasket (4) from pipe and discard.
- (4) Clean the pipe ends (5) and inspect for damage such as indentations, roll marks or projections that might cause the gasket (4) to leak. Replace defective piping as required.
- (5) Inspect clamp halves (3) for cracks or dents.
- (6) Using petroleum jelly (item 21, Appendix E), uniformly lubricate the entire gasket (4) and the pipe ends (5).
- (7) Install new gasket (4) onto one pipe.
- (8) Maneuver the second pipe and slide the gasket (4) onto it. Center the gasket over both pipes (5).
- (9) Position the clamp halves (3) over the pipes (5) and gasket (4). Ensure the clamp lips lay in the rolled grooves.
- (10) Install the capscrews (2) and nuts (11) and tighten as indicated.



6.4 Accessories Installation

- Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, and sized and located according to NFPA 13.
- Install drain points at the lower side for complete system drainage and as mentioned in the approved shop drawings.
- Install sprinkler control valves, test assemblies, and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.
- Install automatic (ball drip) drain valve at each check valve for fire-department connection, to inlet piping between fire-department connection (F.D.C.) and check valve.
- Provide trim for bypass, drain, electric sprinkler alarm switch, pressure gages, precision retarding chamber, drip cup assembly piped to floor or hub drain and fill line attachment with strainer.
- Install suction pressure gauges on pump suction and discharge at integral pressure gauges, and

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equipment supports as indicated for complete installation.

6.5 Valves Installation

- Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.
- Install listed fire-protection shutoff valves supervised open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.
- Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.
- Temper switches shall be installed with OS&Y valves and to be integrated with Fire Alarm System.
- Zone control valves shall be integrated with the fire alarm system and building management system.

6.6 Specialty Valves:

Install in vertical position for proper direction of flow, in main supply to system. Alarm Valves: Include bypass check valve and retarding chamber drain-line connection.

6.7 Identification

Install labelling and pipe markers on equipment and piping according to requirements in NFPA 13. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division Section 220553 Mechanical Identification.

6.8 Hydrostatic Test:

- All the piping system including yard piping and fire department connections shall be tested hydrostatically at 1.5 times the working pressure of the system.
- The hydrostatic test pressure shall be measured at the low elevation point of the individual system or zone being tested.
- Only calibrated pressure gauges shall be used for testing.
- The test pressure shall be held for 2 hours without a drop and results shall be recorded as per attached pressure test report format.

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- After the piping network is finally approved the flushing shall be done with the potable water in order to remove the suspended particles and debris. The flushing process will be continued until the water is colourless and odourless.

7.0 ATTACHMENTS

- Quality Control Procedure
- Inspection & Test Plan
- Check Sheets
- Test Certificate
- Risk Assessment

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