Method Statement for Firefighting Sprinkler and Standpipe System Testing and Commissioning

This method statement covers the Testing and Commissioning of sprinkler and firefighting standpipe systems installed at project, this will also ensure proper workmanship and that the work conforms to contract documents and applicable NFPA regulations.

Commissioning manager will have the all the responsibility for the execution of the Testing and Commissioning activities, quality and safety as per the specification and standards.

Commissioning Engineer, & Site Engineer; will be responsible for the day to day activities onsite, for the test report and design information approval and the onsite testing.

Method of System Flushing

- Flushing of firefighting sprinkler system will be after successful completion of the pressure testing.
- Draining points will be left for this purpose, these points will be the lowest points in the area/zone.
- The water will be pumped into the network using the existing fire pumps and the lowest points will be connected to the drain riser in order to drain the flushing water.
- The pipe networks will be flushed to ensure that pipes are clear from debris and other residual materials.
- Flushing will be continued until clean water is observed at the drainage side.

Sprinkler System Pre –Commissioning Procedure

- Check visually the pipes and valves installation as per drawings.
- Visual check for the valves integration with fire alarm.
- Check the electrical termination completed for the Zone Control Valves.
- Ensure all systems are pressure tested up to 200 psi or 50psi in excess to the working system pressure whichever is greater and the same should be approved by consultant

- Replace if any damaged and malfunctioning controls and equipment.
- Verify that equipment hose threads are same as local fire-department Equipment.
- Piping between the exterior fire department connection and the check valve in the fire department inlet pipe shall be tested hydro-statically in the same manner as the balance of the system.
- Pneumatic test description for each individual sprinkler system per NFPA 13 is as follows:
- "Establish 40 psi (2.7 bars) air pressure and measure drop, which shall not exceed 1.5 psi (0.1 bars) in 24 hours.
- Hydro static tests shall be made at not less than 200 psi(13.6 bar) for 2 hours or 50 psi (3.4 bar) above static pressure in excess of 150 psi (10.2 bar) for 2 hours. All above ground piping leakage shall be stopped.

Sprinkler System Commissioning Procedure

- Divide the system into three parts:

1. High pressure lines up to OS & Y Gate Valve in the main header
2. Low Pressure lines up to all Zone Control Valves
3. Lines inside the floors after the Zone Control Valves

- Pressurize the main headers in the pump room.
- Close the gate valves after the main header in firefighting pump room at podium level.
- Maintain the pipes pressurized & check visually if there any leak for 2 hours.
- Close all the zone control valves at all the zones in the building, and start pressurizing the sprinkle risers using the jockey pump.
- Check visually for any leak for a period of 2 hours.
- Start opening the zone control valves floor by floor and check each floor visually for any leak for 2 hours period.
- After pressurizing the whole system, keep it under pressure for 24 hours for immediate action in case of emergency.
- Open the drain valve of the zone control valves floor by floor, flow will be detected by the flow switch and a fire signal will be send to the main fire alarm panel in the building.

- Close the zone control valves floor by floor, fire alarm system should indicate fault signal at the building main Fire alarm panel.
- Open the test valve at the alarm check valve, Water Alarm gong should operate.
- Conduct bucket test for the farthest sidewall sprinklers in the building in order to check the flow and pressure at these sprinklers.
- The above shall be successfully completed to consider the system passed the testing and commissioning and sprinkler system is operational.
- Each sprinkler system shall be individually pneumatically (first) and hydro statically (second) tested per the requirements of NFPA 13.
- Provide "Contractors Material and Test Certificate for Above ground Piping" as found in NFPA 13 for each and every sprinkler system.
- Forms shall be signed by the contractor and those witnessing tests and shall be filled out completely.

Standpipe System Pre Commissioning Procedure

- Visual check for the pipes and valves installation.
- Visual check for the valves integration with fire alarm system.
- Ensure all systems are pressure tested up to 200 psi or 50psi in excess to the working system pressure whichever is greater and the same should be approved by consultant.
- Replace damaged and malfunctioning controls and equipment.
- Verify that equipment hose threads are same as local fire-department Equipment.
- Piping between the exterior fire department connection and the check valve in the fire department inlet pipe shall be tested hydro-statically in the same manner as the balance of the system.

Standpipe System Commissioning Procedure

- Divide the system into three zones:

1. High pressure lines up to OS & Y Gate valve in the main header
2. High pressure risers and low pressure low pressure risers
3. Fire hose cabinet's pipes inside the floors feeding the cabinets.

- Pressurize the main headers in the pump room.
- Close the gate valves after the main header in the firefighting pump room.
- Maintain the pipes pressurized & check visually if there is any leak for 2 hours.
- Close the gate valves at the risers and the landing valves inside the cabinets and the lock Shield valves of the hose reel.
- Open the gate valve at main header and the isolation valves for each riser respectively to start risers and cabinet pipes pressurizing using the jockey pump.
- Check visually for any leak and maintain the system pressurized for 2 hours period.
- After pressurizing the whole system, keep it under pressure for 24 hours.
- Open the lock shield valve in each cabinet using the lock shield key.
- All Hose reel Pressure reducing valves will be set at 4.5 bars per regulatory requirements.
- Pull the fire hose reel to demonstrate water discharge, the Hose Reel will be fully operated within three revelations of the reel, check and verify the water throw.
- Open the remotest landing valves in the building and by the mean of flow meter and pressure gauge check and verify the pressure and water flow rates for landing valves.
- Check and verify the quantity, capacity, type, model number and expiry date of fire extinguishers.
- Acceptance testing of sprinkler systems shall comply in full with NFPA 13, 2013 edition, Chapter 25 “Systems Acceptance”

The system will consider pass if the criteria mentioned above is achieved.