

	TITLE	Ref. No. :
	<b>METHOD STATEMENT FOR INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	REV. No. 00
		Date :
		Page 1 of 13

**METHOD STATEMENT FOR**

**INSTALLATION, TESTING & COMMISSIONING OF EXTERNAL FIRE HYDRANT**

	TITLE <b>METHOD STATEMENT FOR          INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	
		Ref. No. :
		REV. No. 00
		Date :
		Page 2 of 13

<b>REVISION RECORD</b>
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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 All previous cover pages are hereby superseded and are to be destroyed.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

	TITLE	Ref. No. :
	<b>METHOD STATEMENT FOR INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	REV. No. 00
		Date :
		Page 3 of 13

## **CONTENTS**

### **1.0 PURPOSE**

### **2.0 SCOPE**

### **3.0 REFERENCES**

### **4.0 DEFINITIONS**

### **5.0 RESPONSIBILITIES**

### **6.0 EQUIPMENTS**

### **7.0 PROCEDURE**

### **8.0 ATTACHMENTS**

	TITLE	
	<b>METHOD STATEMENT FOR INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	Ref. No. :
		REV. No. 00
		Date :
		Page 4 of 13

## 1.0 PURPOSE

- This method statement is applicable for the Installation, Testing & Commissioning of External Fire Hydrant for the project as mentioned in the Specifications & Approved Shop Drawings.

## 2.0 SCOPE

- This method Statement shall cover the Supply, Installation, Testing & Commissioning of External Fire Hydrant in line with project requirements as indicated in the Approved Shop Drawings, specifications & manufacturer's instructions.

## 3.0 REFERENCE

- 3.1 Latest Approved shop drawings intended for Fire Fighting System
- 3.2 Specifications
- 3.3 Project Quality Plan
- 3.4 Project HSE Plan
- 3.5 Material Approval
- 3.6 Approved Method Statement for Installation & Testing for Fire Fighting System & Accessories

## 4.0 DEFINITIONS

PQP	: Project Quality Plan
PSP	: Project Safety Plan
QCP	: Quality Control Procedure
HSE	: Health, Safety and Environment
MS	: Method Statement
ITP	: Inspection Test Plan
QA/QC	: Quality Assurance / Quality Control Engineer.
WIR	: Inspection and Test Request
MIR	: Material Inspection Request
UPVC Class E	: Ultra polyvinyl chloride
UPVC	: Ultra polyvinyl chloride
HDPE	: High density polyethylene
PEX PIPE	: Cross-linked Polyethylene
G.I. Pipe	: Galvanized Iron Pipe

TITLE	<b>METHOD STATEMENT FOR INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	Ref. No. :
		REV. No. 00
		Date :
		Page 5 of 13

➤ Responsibilities for ensuring that the steps in this procedure shall be carried out are specified at relevant steps in the procedure:

- Project Manager
- Construction manager
- QA/QC Engineer
- Site Engineer
- HSE officer
- SK

### **5.1 Project Manager**

- The work progress shall be carried out as per planned program and all the equipment's required to execute the works shall be available and in good condition as per project planned.
- Specific attention is paid to all safety measures and quality control in coordination with Safety Engineer and QA/QC Engineer and in line with PSP and PQP.

### **5.2 Construction Manager**

- Construction Manager is responsible to supervise and control the work on site.
- Coordinating with QA/QC Engineers, Site Team & Foremen for all activities on site.
- Control and sign all WIRs before issuing to Consultant approval.

### **5.3 Site Engineer**

- The method of statement to the system shall be implemented according to the Consultant project specifications and approved shop drawings.
- Provision of all necessary information and distribution of responsibilities to his Construction team.
- The work progress shall be monitored in accordance with the planned work program and he will provide reports to his superiors.
- The constant coordination with the Safety Engineer to ensure that the works are carried out in safe working atmosphere.
- The constant coordination with the QA/QC Engineer for any works to be carried out and initiate for the Inspection for the finished works.
- He will ensure the implementation of any request that might be raised by the Consultant.
- Efficient daily progress shall be obtained for all the equipment and manpower.
- He will engage in the work and check the same against the daily report received from the Foremen.
- The passage of all the revised information to the Foremen and ensure that it's being carried out properly.

### **5.4 QA/QC Engineer (MEP):**

- The monitoring of executions of works at site and should be as per the approved shop drawings and project specifications.
- Ensure WIRs and MIRs are being raised for activities in timely manner and inspected by the Consultant.
- He will follow and carries out all the relevant tests as per project specifications.

TITLE	<b>METHOD STATEMENT FOR INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	Ref. No. :
		REV. No. 00
		Date :
		Page 6 of 13

- Obtain the required clearance prior to Consultant's inspections.
- Should acquire any necessary civil works clearances and coordination.
- QA/QC Engineer will assist the Consultant Engineer/ Inspector during Inspection.
- Check & ensure work is completed prior to offer Consultant for inspection.
- Coordination with site construction team.
- He will assist the Consultant Engineer/ Inspector during the inspection.

#### **5.5 Site Foreman**

- The carrying-out of work and the proper distribution of all the available resources in coordination with the Site Engineer on a daily basis.
- Daily reports of the works are achieved and coordinated for the future planning with the Site Engineer.
- Incorporate all the QA/QC and Safety requirements as requested by the concerned Engineer.
- Meeting with any type of unforeseen incident or requirement and reporting the same to the Site Engineer immediately.

#### **5.6 Safety Officer**

- The implementation of all safety measures in accordance with the HSE plan and that the whole work force is aware of its proper implementation.
- The implementation of safety measures is adequate to maintain a safe working environment on the work activity.
- Inspection of all the site activities and training personnel in accident prevention and its proper reporting to the Construction Manager and the Project Manager.
- The site is maintained in a clean and tidy manner.
- Ensure only trained persons shall operate the power tools.
- Ensure all concerned personals shall use PPE and all other items as required.
- Ensure adequate lighting is provided in the working area at night time.
- Ensure high risk elevated areas are provided are barricade, tape, safety nets and provided with ladders.
- Ensure service area/inspection area openings are provided with barricade, tape, and safety nets.
- Ensure safe access to site work at all times.

#### **5.7 Store Keeper (SK)**

- Responsible for overall Store operations in making sure to store the material delivery to the site and keep it in suitable area that will keep the material in safe from rusty and damage.
- One who will acknowledge the receiving of materials at site in coordination with QA/QC & concerned Engineer.

### **6.0 EQUIPMENTS**

Following tools shall be arranged before starting the job.

- a. Tool Box.
- b. Measuring Tape.
- c. Hack Saw Blade

	TITLE	
	<b>METHOD STATEMENT FOR INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	Ref. No. :
		REV. No. 00
		Date :
		Page 7 of 13

- d. Spirit Level
- e. Electric Drill Machine
- f. Step Ladders
- g. Threading Machine
- h. Solvent Cement
- i. Electric welding machine. (if required)
- j. Torque Wrench
- k. Pipe Cutting Machine
- l. Grinding Machine
- m. Pressure Gauge
- n. Hammer
- o. Water Level Marker
- p. Mobile Scaffolds
- q. Staging Platforms

## **7.0 PROCEDURE**

- Work Sequence/Procedure

### **7.1 General Requirements**

- All the materials received at site shall be as per the approved technical material submittal for External Fire Hydrant to be inspected upon receipt & approved by the engineer prior in proceeding with the installation through MIR. Any discrepancies, damages etc., should be reported to the supplier for rectification or replacement & to be removed from site immediately.
- All construction/inspection/testing works shall be carried out in accordance with the specifications & to be done by qualified Mechanical Engineers and shall be checked and approved by MEP Subcontractor Construction Manager along with QA/QC Engineer.
- Contractor has to clarify the procedure for material delivery to the site through Consultant Engineer at site.

### **7.2 Delivery & Storage**

#### **7.2.1 Material Transport/ Delivery**

- During transportation ensure that the equipment & its components (if any) are delivered in a shipping package and or shall be at least in a box covered with plastic. Extra care in unloading the equipment is required to avoid scratching or denting.
- Where ever possible the loading and offloading of the External Fire Hydrant shall be

TITLE	<b>METHOD STATEMENT FOR INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	Ref. No. :
		REV. No. 00
		Date :
		Page 8 of 13

carried out by hand. If weight cannot bear by hand, fork lift shall be used.

- Equipment shall not be dropped onto hard surfaces & should not be dragged along the ground.
- All the received units shall be checked & inspected to ensure that it is complying with the approved material submittals prior to site storage.

### **7.3 Storage**

#### **7.3.1 Storage on Site Store**

- To ensure that deterioration of the External Fire Hydrant does not occur during storage, it is recommended to store the equipment in sheltered conditions that are protected from weather elements and accidental damage.
- External Fire Hydrant shall be protected with plastic/ tarpaulin or shall not be removed from the shipping package unless otherwise instructed to do so.
- All packages for the equipment reaching the site shall be identified as per package list.

### **7.4 Sequence of Installation for the External Fire Hydrant**

#### **7.4.1 Safety**

- All site safety rules & regulations shall be complied with.
- Supervisors will deliver tool box talks, relevant to these activities to all operatives involved in the installation, testing & commissioning and shall be recorded.
- All operatives will be equipped with minimum personnel protective equipment; hard hat, coveralls, safety boots, safety glasses.
- The persons using cleaning fluid and solvent cement have to wear hand gloves.
- Ensure only qualified personnel shall install, test & commissioned the equipment.
- During Testing & Commissioning, display warning sign boards necessarily provided and barricade the area whenever necessary.
- Ensure that all operatives fully understand the method of these activities.

#### **7.4.2 Pre- Installation Procedure**

- Before commencement of installation activity, the supervisor must ensure that:
  - Delivered Fire Hydrants shall have been inspected & approved via MIR by the Consultant prior to installation at site.
  - All Installations & Pressure Testing of Fire Fighting Pipe works have been completed & approved by the Consultant.
  - Relevant documents or certificates shall be presented at the time of inspection if required by the Consultant.
  - Permission to start or Civil Clearances prior to installation has been given by the main



TITLE	<b>METHOD STATEMENT FOR INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	Ref. No. :
		REV. No. 00
		Date :
		Page 9 of 13

contractor.

- All relevant Shop drawings for the installation of the equipment shall be available & approved by the Consultant. No installation shall be done without Approved Shop Drawings.
- Installation activities shall only commence when all associated works by the Civil have been verified & completed.
- Safe access shall be provided by the Main Contractor thru Work Permit in coordination with the Safety in charge at site.
- Inspect the relevant area for any possible clashes with other services.
- Check for other services, making sure that there is no interference between each service & adequate access to work and for future maintenance can be maintained.

#### **7.4.3 Installation Procedure for the External Fire Hydrant**

- Prior to installation, ensure that all External Fire Hydrants are equipped with associated appurtenances as per manufacturer standard & supply according to the approved material submittal.
- All External Fire Hydrants shall be covered & protected for moisture, corrosion, dust & any deterioration before & after the installation.
- Ensure all pipework to be connected to the External Fire Hydrant has the proper size & have been hydraulically tested.
- Pipes shall be free of debris or dirt prior to connection.
- Mark the location & size of the Valve pit in preparation. Inform civil staffs for construction.
- Valve pits shall be of concrete construction to adequately house the valves.
- Ensure that the location of the valves are readily accessible for inspection, operation, testing & for future maintenance.
- Provide plinths for the External Fire Hydrants. Size of plinths shall be as per the size requirement & size shall be as per the approved details.
- Place the External Fire Hydrant on the plinths as per the approved installation details.
- Each fire hydrant will be provided with isolation valve with the correct size.
- Ensure that the isolation valve shall open & close from the surface of the ground level.
- Whenever required, provide valve pit covers on the pit for protection.
- After installation, raise an inspection to the Consultant for approval & acceptance.

##### **7.4.3.2.2 Installation Procedure of Butterfly Valves:**

- Install butterfly valves as per the approved drawings. Ensure that it is readily accessible for operation & maintenance.
- Ensure valve disc does not interface with the operation of other system components adjacent to the butterfly valve.
- If the valve is hard to close, it may be due to debris lodge in the sealing area. This can be corrected by backing-off the hand wheel and closing it again several times if necessary. Don't force the valve to seat by applying a wrench to hand wheel. This may distort the valve components or scratch the sealing surfaces.

TITLE	<b>METHOD STATEMENT FOR INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	Ref. No. :
		REV. No. 00
		Date :
		Page 10 of 13

- The inlet & outlet piping of the valve shall be properly supported to prevent excessive stress to the valve body. Do not use the valve body to support pipeline position as it may result in distortion of the valve body.

#### **7.4.4. Testing & Commissioning Procedures**

##### **7.4.4.1 Visual Inspection & Testing Procedure**

- After documentations & visual checks, Testing shall proceed further.
- Ensure all pipe works has been hydrostatically tested & completed. Refer to Approved Method Statement Ref. No.: MS-6012-0021 Rev.02.
- All supporting system has been completed, properly installed & fixed.
- Ensure all instruments (if required) to be used during the testing shall be calibrated & records shall be available.
- Ensure that the all Equipment is in their proper location as mentioned on the Approved Shop Drawings.

##### **7.4.4.2 Commissioning Procedure for the External Fire Hydrant**

- Prior to commissioning, ensure that all instruments (if any) to be used during the commissioning shall be calibrated. Calibration certificates shall be available.
- Ensure that all installed External Fire Hydrants & Valves have been installed as per the approved shop drawings, manufacturers' recommendation.
- Piping system has been tested for leaks. Approval for all preliminary inspections shall be available during the commissioning stage.
- Ensure all External Fire Hydrants have been installed & fix properly with the correct alignment & spacing.
- Ensure firmness & tightness of supports prior to Commissioning of the Fire Hydrant.
- Verify that the external Fire Hydrant shall be easily accessible.
- Verify that the hydrant has been fitted with maintenance record tag.
- Verify that signage has been provided that clearly indicates the location of the fire hydrant.
- Simulate fire conditions by opening a valve.
- Verify that all water flow alarm & valve monitoring system switches operate correctly.
- Verify water pressure & flow at the hydrant.
- Connect a fire hose & open the fire hydrant valve. The water throw shall be at least 20 meters.

#### **8.0. ATTACHMENTS**

- 8.1. Inspection & Test Plan
- 8.2. Installation Check Sheet

	TITLE	Ref. No. :
	<b>METHOD STATEMENT FOR INSTALLATION, TESTING &amp; COMMISSIONING OF EXTERNAL FIRE HYDRANT</b>	REV. No. 00
		Date :
		Page 11 of 13

8.3. Testing & Commissioning Check Sheet

8.4. Risk Assessment