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	Company Doc. No. HSEDOCS- ITTCWP-00-000	Contractor Ref. No. QHSE-ITTCWP-0000	Date 00-00-0000	Revision 00

Method Statement for Installation & Testing Of Chilled Water Piping

Project No:	
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REVISION HISTORY	ISSUE DATE	DESCRIPTION	REVIEW / STATUS
00			

PREPARED BY:	REVIEWED & APPROVED BY:
QA QC ENGINEER	PROJECT ENGINEER

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1.0 Scope

This method statement applies to the installation, pressure testing, insulation, and cladding of chilled water piping including valves and accessories, as per specification [WRITE HERE].

2.0 Purpose

The purpose of this method statement is to outline the method of storage, handling, fabrication, installation, pressure testing, insulation, and cladding of chilled water piping including valves and accessories.

3.0 Material

3.1 Pipes

ERW, black steel, SCH 40, Grade 'B'

3.2 Fittings

Up to 50mm dia. MI fittings, Black, threaded ends 65mm dia and above – Steel Butt welding type/Grooved coupling joint type.

3.3 Valves

Up to 50mm: Threaded ends 65mm and above Flanged ends

3.4 Accessories

Pressure gauges, thermometers, test points, air vents, water meters, etc.

3.5 Elastomeric Closed cell insulation, adhesives.

3.6 Supporting Materials

Clevis hangers, MS angles/channels, threads rods, anchor fasteners, etc. As per the attached sketches.

4.0 Method

4.1 Storage

- All material while unloading shall not be dropped but slowly lowered to the ground.
- For pipes, wooden supports shall be placed beneath at equal distances.
- Pipes shall be stacked on a flat surface with adequate support.
- End caps of pipes shall be in place until removed for installation.
- While stacking, it shall be ensured that pipes of bigger sizes are placed below and smaller sizes on top.

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- All pipes shall be covered and shall not be exposed to direct sunlight.
- All other items such as valves, fittings, gauges, etc. shall be kept on racks within site stores and shall be segregated as per size, model, type, etc. for easy retrieval.
- Elastomeric insulation shall be stored in the manufacturer's packing and shall not be exposed to direct sunlight.
- Insulation material shall be segregated as per size, thickness for easy retrieval.
- The adhesive material shall be stored in a covered and ventilated storage area.
- All supporting materials shall be stored in a covered storage area, segregated according to size, type, model, etc. for easy retrieval.
- Manufacturer's instructions for storage shall be followed for applicable items.
- Any items found damaged or not suitable as per project requirements shall be removed from the site. If required to store temporarily, they shall be marked and stored separately to prevent any advertent use.

4.2 Preparation

- Check and ensure all drawings used for installation are the latest and approved for construction.
- Mark the pipe routing and support locations in the trench as per the approved drawings.
- Check the coordination of piping layout with other services and decide pipe route with minimum bends/offsets.
- Check and ensure sufficient clearance around the pipe for applying insulation / cladding as applicable.
- Check the access and clear space around valves, vent points, and drain point locations for maintenance and servicing.
- Fabricate the structural supports from MS angles/channels as per the support schedule as required.
- Clean and apply primer/red oxide on all ERW black pipes.

4.3 Installation

- Drill the holes in the trench wall for fixing supports.
- Fix the anchors and threaded rods with clevis hangers / structural supports as applicable. Threaded rod length shall be sufficient to allow for leveling of piping. Supports details as per attached sketches.
- Cut the pipes accurately to measurements determined at the site.
- Prepare the pipe ends according to the type of joints i.e. Threaded joints, welded joints / grooved coupling joints.
- The end preparation shall be done at the site workshop.
- For grooved joints pipe end should be square and cut with the machine.

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- The flow process of grooving the pipe will incorporate a 1M long sprit level of at least two nos. of pipe stands for 6M long pipe and a completion check for square.
- Threading and grooving as applicable shall be done as per the fittings/coupling manufacturer's recommendations.
- End preparations for welded joints shall be done as per the approved welding procedure.
- After the end preparation clean the pipe ends and ensure no material and dust is left inside.
- Depending on site conditions, assemble the piping into manageable lengths on the floor. Using threaded, welded/groove coupled jointing as applicable.
- Qualified and approved welders with current certificates shall be engaged for welding works.
- Install the pipe sections at heights as per the approved drawing in a neat manner.
- Insert the approved hard insulating material of suitable thickness between the pipe and support.
- Align and level the piping as per approved drawings.
- Sleeves of suitable sizes shall be provided at wall crossings.
- Expansion grooved couplings shall be installed at locations as designated by a specialist (VICTAULIC)
- A hole saw cutter shall be used to cut the holes in the pipework for fixing branch connections for Victaulic fittings.
- Install the valves in locations as per approved drawings.
- Install the piping connections with valves and accessories wherever equipment is installed as per approved drawings.
- Fix the blind plugs / temporary valves on all drains, air vents, pressure gauges, thermometers, and test points tapping's approved drawings.
- Check and ensure proper support is provided as per approved drawings.
- Make temporary tapping provisions at multiple points for easy and quick filling and draining of pressure-testing water.
- Ensure all joints are properly tightened in line with the manufacturer's recommendation.
- While installation is going on of the pipework, the insulation will be fitted to the pipework before pressure testing as explained in 4.5 pipe insulation. But all fittings and joints will be left exposed until the pressure testing and inspection are completed.
- Raise the "WIR" for piping installation by Company QA/QC and consultant. Obtain signoff for hydraulic pressure testing.

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4.4 Pressure Testing:

- The chilled water piping shall be tested according to the system working pressure and PN ratings of the pipes, pipe fitting, and valves used in the piping.
- The piping may be tested in sections or total, depending on site requirements.
- Estimate the piping volume and arrange the required quality of clean water.
- Arrange for temporary piping/hose pipe connections for filling and draining the water.
- Fix the temporary valves at air vent/drain points and pressure gauges.
- Fill the piping system with clean water.
- During initial filling, employ sufficient manpower to monitor the entire length of the piping system for possible leakages.
- If leakages are observed, arrest the leakage immediately. If leakages are major, isolate the leaking portion with the nearest isolating valve and/or stop the water filling.
- Rectify the leakages and again fill them with water.
- Ensure no leakages throughout the entire piping system.
- Observe for the leakages and pressurize the system using a hydraulic test pump.
- During pressurization observe the joints and the entire piping system for leakages.
- Pressurize the system till pressure on the pressure gauge at the lowest part of the system indicates pressure.
- Observe the pressure gauge readings for 8 hours and ensure there is no drop in gauge pressure.
- Raise the "WIR" for witnessing the hydraulic pressure testing by Company QA/QC and consultant.
- Obtain signoff with clearance for insulation only after satisfactory pressure testing.

4.5 Pipe Insulation

- The pipe surface shall be thoroughly cleaned to remove dust, traces of oil, grease, etc. All welded joints are painted with red oxide primer.
- For smaller pipe sizes, a pre-formed insulation pipe section of suitable thickness, as per approved drawings/submittals to be used. For larger pipe sizes insulation sheets shall be used in the thickness described in the materials submittal.
- The smaller pipe which is not exposed to direct sunlight and insulation is not susceptible to damage, insulation may be done by inserting the pipes into insulation sections during pipe installation.
- When insulation is done after pressure testing following procedure shall be followed.
- Slit the pipe insulation section, longitudinally and apply adhesive on the inner surface and longitudinal slit as recommended by the manufacturer.
- Apply the adhesive on the surface of the pipe to be insulated, as recommended by the manufacturer.

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- Fix firmly the insulation on the pipe surface and hand press the insulation to remove any air locks. The longitudinal seam shall be joined properly by hand pressing.
- Fix the elastomeric self-adhesive tape over the longitudinal seam.
- Continue the same procedure for successive lengths. The adhesive shall be applied on the circumferential joint properly. Seal the circumferential joint by fixing self-adhesive tape.
- For larger pipe sizes, cut the insulation sheet of suitable width to suit the pipe size. The length shall be as manageable as per site conditions.
- Complete the insulation as explained earlier in points No. 4.5.6. To 4.5.9.
- Under no circumstances insulated pipes shall be exposed to direct sunlight.
- Vapor seal must be achieved 100%.
- Raise the “WIR” for Company QA/QC and consultants and obtain the signoff for cladding wherever applicable.

5.0 Inspection

- “WIR” by Company QA/QC and Consultant shall be raised for piping installation, pressure testing, and joint insulation and signed by Consultant.
- The inspection shall be carried out as per the installation checklist during the installation, testing, and insulation stages.
- The entire installation work shall be supervised by the supervisors/engineers.

6.0 Safety

- All safety precautions shall be followed as per the established project safety plan and procedure.
- Warning signs shall be displayed while carrying out pressure testing.
- Only experienced and skilled technicians shall be engaged for carrying out installation and testing work.
- The people involved in the installation shall use PPE such as safety helmets, safety shoes, helmets, gloves, etc. as required.
- The safety office shall check and ensure that all safety precautions are followed.
- The safety office shall check and ensure that all scaffolding and ladders used at the site are having duly signed tags.
- A hot work permit is to be obtained before welding.

7.0 Records

“WIR” duly signed by QA/QC & and other parties and consultants for

- Piping Installation

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- Pressure Testing
- Insulation