

	METHOD STATEMENT			Page 1 of 7
	Installation of Power / Electrical Bus bar			
	Company Doc. No. QHSEDOCS-EBB--00-000	Contractor Ref. No. QHSE-QHSE-EBB-0000	Date 00-00-0000	Revision 00

Method of Statement for Installation of Power / Electrical Bus Bar

Project No:

REVISION HISTORY	ISSUE DATE	DESCRIPTION	REVIEW / STATUS
00			

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

	METHOD STATEMENT			Page 2 of 7
	Installation of Power / Electrical Bus bar			
	Company Doc. No. QHSEDOCS-EBB--00-000	Contractor Ref. No. QHSE-QHSE-EBB-0000	Date 00-00-0000	Revision 00

Table of Contents

1.	Scope of Work.....	3
2.	Purpose.....	3
3.	Health and Safety.....	4
4.	Procedure and Methodology.....	4
5.	Supporting Installation/Structure.....	4
5.1.	Horizontal Mounting Support:.....	4
5.2.	Vertical Mounting Support:.....	5
6.	Continuity Testing Of Power Busbar.....	6
7.	Inspection and Testing of Bus Duct.....	6

	METHOD STATEMENT			Page 3 of 7
	Installation of Power / Electrical Bus bar			
	Company Doc. No. QHSEDOCS-EBB--00-000	Contractor Ref. No. QHSE-QHSE-EBB-0000	Date 00-00-0000	Revision 00

1. Scope of Work

Busbars installation shall be done following approved shop drawings and properly coordinated with Site Engineers for the exact locations and levels. Before starting the installation of the power electrical busbar following tools shall be arranged:

- Tower Crane / Fork Lift for transporting Busbar
- Chain Block Pulley (Suitable Capacity)
- Portable hand tools
- Portable Drilling Machine
- Spirit Level (1,50 meters – 2,00 meters long)
- Level Threads
- Torque wrench (capacity recommended by the manufacturer)
- 1000 volts Megger

2. Purpose

Preparation for Busbar Installation:

- 2.1. Its main purpose is to describe instrumentation and procedures for the testing and performance evaluation of water cooling towers.
- 2.2. The marking of the route on site is to be carried out before the commencement of installation works.
- 2.3. The electrical Engineer or Electrical Supervisor should check the approved isometric drawing of the Busbar layout and ensure that all sections of the Busbars are received at the site.
- 2.4. During shifting to the installation location, lift the busbar and its associated fittings using proper lifting equipment or manually with an adequate number of people.
- 2.5. Never drag the busbars across the ground, handle with care to avoid damage to internal components and the enclosures.
- 2.6. All involved personnel will wear appropriate personnel protection PPE at all times during the entire period of unloading/shifting.
- 2.7. While storing the busbar for longer periods, store the bus duct and its associated fitting in a clean and dry area to prevent condensation.
- 2.8. Do not allow the bus bar to contact with corrosive fumes, liquids, and other foreign matters.
- 2.9. It must be stored off the ground and securely covered to protect it from dirt & moisture.
- 2.10. Busbars should not be stored outdoors without proper weather protection.
- 2.11. Before installation, ensure that approved shop drawings for construction details of bus duct arrangement & bus duct routing are available as approved by the supervision consultant.

	METHOD STATEMENT			Page 4 of 7
	Installation of Power / Electrical Bus bar			
	Company Doc. No. QHSEDOCS-EBB--00-000	Contractor Ref. No. QHSE-QHSE-EBB-0000	Date 00-00-0000	Revision 00

2.12. This drawing should be followed carefully to ensure a proper busbar system.

3. Health and Safety

Shaft Preparation for Busbar Installation:

- 3.1. In shafts, bus bar riser works are carried out over temporary working platforms which are installed at every floor level.
- 3.2. Safety/emergency rescue plan with detailed procedures to be prepared and available on the project site.
- 3.3. Site Supervisor/ Safety Supervisor to check proper lighting and ventilation availability before starting any works related to bus duct installation.
- 3.4. Ladders/scaffoldings are to be secured firmly over the working platform and checked by a competent scaffolding inspector, before the start of work.
- 3.5. Site Supervisors to keep check of working technicians in risers at regular intervals.

4. Procedure and Methodology

Busbar Installation Work Sequence:

- Before installation ensure all relevant drawings are approved and available to the installation team.
- Installation of the bus bar starts from the Main distribution board.
- During the installation chain block (1-2 tons) will be used to lift the bus bar and its components to its proper position as per the approved drawing.
- During the installation process workers involved shall wear appropriate safety protection clothing.
- Distribute pieces of the bus bar and its associated fitting to each floor as per the approved drawing details of the bus duct arrangement.
- In shifting the materials to each floor tower crane/forklift will be used manually with an adequate number of people.
- All involved personnel must wear appropriate personnel protection during the entire period.
- Install horizontal busbars & vertical busbar riser including its supports following the approved specification, manufacturer's recommendation & approved shop drawing.

5. Supporting Installation/Structure

5.1. Horizontal Mounting Support:

- 5.1.1. Use approved channel/hanger flat and down rod as per manufacturer's recommendation.
- 5.1.2. During the installation maintain good alignment of the drop rods along the busbar run; do not support the busbar at the joints.

	METHOD STATEMENT			Page 5 of 7
	Installation of Power / Electrical Bus bar			
	Company Doc. No. QHSEDOCS-EBB--00-000	Contractor Ref. No. QHSE-QHSE-EBB-0000	Date 00-00-0000	Revision 00

- 5.1.3. After the busbar is secured in the hangers, adjust the hangers on the rod for the correct elevation.
- 5.1.4. The joint shall be done as per the manufacturer's recommendations; this is to avoid any ingress of moisture into the bus duct system.
- 5.1.5. Before making the joint, both sections of the bus duct to be joined shall undergo a continuity & insulation resistance test.
- 5.1.6. Joints shall be made by simply sliding together the bus duct unit, and tightening the clamping bolts progressively to the specific torque.
- 5.1.7. Ensure that all joint contact surfaces are free of contamination.
- 5.1.8. Install plug-in box (MCCB) as per the approved shop drawing and manufacturer's recommendation.
- 5.1.9. Ensure that during the installation of the plug-in box (MCCB), the operating handle shall not be more than 2 meters above the finish floor level (FFL).

5.2. Vertical Mounting Support:

- 5.2.1. Use vertical support (vertical hanger) and spring support (vertical spring hanger) as per the manufacturer's recommendation.
- 5.2.2. Before installation, check the opening in each floor where the busbar will go through, after the busbar is placed through the floor; the floor flange must first be installed before installing the vertical hanger.
- 5.2.3. This must be done in conjunction with mounting supports or channels.
- 5.2.4. Ensure that it is capable of absorbing a horizontal movement of 60 mm in any direction.
- 5.2.5. Provide vibration insulation pads.
- 5.2.6. Install the first outlet of the vertical at a minimum distance of one foot above the floor.
- 5.2.7. Install floor flanges at each floor penetration.
- 5.2.8. Provide approved fire-stop material at floor & wall penetration following the appropriate standards and requirements of the local authorities
- 5.2.9. Provide a minimum of 75 mm high concrete curb around bus duct floor penetrations.
- 5.2.10. During the installation, inspect the bus bar run for straightness in all planes and make any adjustments necessary for good alignment.
- 5.2.11. Clearance between bus ducts running in a vertical riser shall be considered during the installation to allow for adequate heat dissipation & the installation of the bus duct selection joint.
- 5.2.12. Install expansion joint wherever required following contract documents, approved shop drawing & manufacturer's recommendations as well as on every building expansion joint.
- 5.2.13. After the erection, use vinyl or corrugated cardboard or polythene sheets to cover the Power Busbar System as protection from concrete, plaster, water damage, etc.
- 5.2.14. All the necessary tools or equipment shall be provided for perfect installation.

	METHOD STATEMENT			Page 6 of 7
	Installation of Power / Electrical Bus bar			
	Company Doc. No. QHSEDOCS-EBB--00-000	Contractor Ref. No. QHSE-QHSE-EBB-0000	Date 00-00-0000	Revision 00

- 5.2.15. Ensure A danger notice is fitted to all accessible panels where voltage is exceeding 200V and the Power Busbar System is protected until the building is clean, and the system is ready to be energized.

6. Continuity Testing Of Power Busbar

- 6.1. Before installation of the Power Busbar System and before electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
- 6.2. Perform continuity test to both sections of the bus duct to be joined to ensure proper connections.
- 6.3. If satisfactory readings cannot be achieved, remove and replace malfunctioning busbars with new units and retest.
- 6.4. Measure resistance between phases, phase, and earth using Megger. (The mega ohm readings should not be less than the value recommended by the manufacturer.)
- 6.5. Upon installation, measure the resistance of each major branch.
- 6.6. In case of low readings, re-tighten all joint bolts in the busbar section being tested using a torque wrench.
- 6.7. If satisfactory readings cannot be achieved, remove and replace malfunctioning busbars with new sets and retest.

7. Inspection and Testing of Bus Duct

- 7.1. An electrical engineer should verify that the supervisor/foreman with construction responsibilities for installation is familiar with this method statement and is issued with copies of the inspection checklists and test plans.
- 7.2. The engineer should satisfy the procedures provided by QA/QC team to ensure that the electrical bus bar installation meets the specified engineering requirements and approved drawings.
- 7.3. QC inspection personnel in coordination with Site Supervisor, should verify that the quality of the related Busbars installation activities is within the prescribed criteria.
- 7.4. The Supervisor should verify any as-built record of Busbars installation and confirm that the information meets the project requirements.
- 7.5. Quality Control Engineer along with Project Engineer and Site Supervisor will monitor that all components are installed as per contract specifications and approved technical submittals.
- 7.6. Work Inspection Request (WIR) shall be submitted by Site Engineer for client/consultant verification and approvals/inspections.
- 7.7. Readable stamped approved drawing to be available during installation and inspection.
- 7.8. Architectural approval for wall/ceiling to be attached with WIR.
- 7.9. All the equipment engaged for testing shall have a valid calibration and a relevant certificate should be furnished.

	METHOD STATEMENT			Page 7 of 7
	Installation of Power / Electrical Bus bar			
	Company Doc. No. QHSEDOCS-EBB--00-000	Contractor Ref. No. QHSE-QHSE-EBB-0000	Date 00-00-0000	Revision 00