

METHOD STATEMENT FOR INSTALLATION
OF DISTRIBUTION BOARDS &
ACCESSORIES

RED LINE NORTH ELEVATED AND AT
GRADE

Revision and Issue Records

Review History

Document No.	Revision	Title
M002-RLR-ELE-MES-00015	1	MS for Installation of Distribution Boards & Accessories

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Rev. No	Date	Description	Prepared	Reviewed	Approved

Document Review and Approval

Signed : _____ P.Serra	Signed : _____ M.Agrimakis	Signed : _____ M. Ali	Signed : _____ R.Neri
<input checked="" type="checkbox"/> Originator	<input checked="" type="checkbox"/> Construction	<input type="checkbox"/> Stakeholder	<input checked="" type="checkbox"/> Quality
Signed : _____ J. Brink	Signed : _____ E. Ndarake	Signed : _____ M. Thompson	Signed : _____ D. Bernasconi
<input checked="" type="checkbox"/> Health and Safety	<input checked="" type="checkbox"/> Environment	<input type="checkbox"/> Commercial	<input checked="" type="checkbox"/> Cont. Rep.

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1 Definitions and Abbreviations:

Table 1: Definitions and Abbreviations

Abbreviation	Definition
BS	British Standard
HS	Health, and Safety
ITP	Inspection and Test Plan
MSDS	Material Safety Data Sheet
PMC	Project Management Consultant
QA/QC	Quality Assurance / Quality Control
QCS	Qatar Construction Specification
SONO	Statement of No Objection

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Abbreviation	Definition
PPE	Personal Protective Equipment
RLN-EAG	Red Line North Elevated and At Grade
RLR JV	Rizzani de Eccher, Lotte and Redco - Joint Venture
DB	Distribution Board
MCB	Motorized Circuit Breaker
SMDB	Sub Main Distribution board
MDB	Main Distribution Board
ITP	Inspection Test Plan
FAT	Factory Acceptance Test
MS	Method Statement
QR	Qatar Rail
QCS-2014	Qatar Construction Specification

2 Purpose:

The purpose of the method statement is to describe the procedure for material delivery inspection, installation and inspection of the Distribution Boards & Accessories at Stations. The Intent of this report is to explain, the methods to be adopted to ensure works conducted on site are in compliance with approved design & material approvals as per Project specifications.

3 Scope of Method Statement:

The scope of application of this method statement is the Installation and inspection of Distribution Board for RedLine North Elevated & At Grade. (Chainage: 25+285 to Chainage: 31+950, Section of the RLN-EAG Project.

4 Work Execution:

4.1 General Supplied Items:

4.1.1 Personnel:

Ref.	Trade & Despines	Responsibility

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1	MEP Construction Manager	<ul style="list-style-type: none"> Delivering the overall works in a safe and timely manner, ensuring conformance with the approved design. Leading the team of engineers and surveyors, guiding them in the delivery of the works. Verifying that work done is in accordance with requirements of contract. Ensuring the quality standards set for the work are achieved and the work team adhere to the QA/QC and HS requirements of the contract.
2	Systems Assurance Engineer	<ul style="list-style-type: none"> Establish the system assurance process. Manage the RAMS team and EMC team in delivering the system assurance submissions. <p>Liaise with the System Assurance Manager for all safety and RAM related activities respectively.</p>
3	Project/Site Engineer	<ul style="list-style-type: none"> Ensuring that the works are being carried out in accordance with contract requirements and this Method Statement. Management onsite to ensure that the team carries out the works in time with the delivery schedule. Implementation of and adherence of the team to the QA/QC and H&S policies and procedure.
3	QA/QC Manager	<ul style="list-style-type: none"> The preparation of the company's QA manual control and supervision of all amendments and revisions Monitor all quality related activities on the project Perform all internal and external audits on behalf of the company's management Preparation, monitoring, training of project staff on method statements, and control of material on site.
4	QA/QC Engineer	<ul style="list-style-type: none"> The QA/QC Engineer is the overall responsible for the implementations of this procedure and will carry out the material inspection to ensure that materials received on site are approved materials. He will be conducting surveillance and inspection duties at various stages of the project delivery to ensure compliance to contract requirements and to QA / QC requirements. He will monitor the installation works according to the approved drawing & method statement. He will coordinate with the Supervisory Consultant to carry out inspection/testing of the completed works. The QA/QC Engineer is responsible for the detail application of this procedure for the inspection and testing, to coordinate with the Construction Manager and Site Engineer for the inspection of on-going work.
5	Surveyor	<ul style="list-style-type: none"> Setting out all planned works.

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		<ul style="list-style-type: none"> Monitoring the works being carried out to ensure they are at the correct levels and measurements. Maintaining documents relevant to alignment and height control.
6	Document Controller	<ul style="list-style-type: none"> Documenting, distributing and maintaining data in the prescribed format. Making the necessary data available as requested by the team or the client.
7	HS Inspector	<ul style="list-style-type: none"> Identify HS requirements, non-compliance or otherwise by conducting both formal and informal audits and communicate said to relevant site management Advise site management on HS substandard acts and HS substandard conditions on a continuous basis and record said. Coordinate and record action by site management as identified and advised. Verify actions taken by site management , record and report accordingly Conduct relevant HS administrative functions and additional tasks as directed by HS Management.
8	Supervision Engineer	<ul style="list-style-type: none"> Checking the compliance of works to the design. Carrying out comprehensive supervision of all construction works. Confirming that the work executed complies with the approved design and be responsible for checking the construction works.

All of the above will individually be responsible for a safe and healthy operational environment consideration of all the workers in their team related to the execution of their duties and any other personnel. Furthermore one group of workers is planned for execution of installation of Distribution Board & Accessories. This group will perform all activities. The group will have following labour profile.

Labours/Workers

No.	Description	No.	Description
1	Electrical Supervisor	3	Electrician
2	Electrical Forman	4	Labours

4.1.2 Equipment and tools :

The typical construction equipment requirements is as listed below, and will be used for Installation activities at site.

General Tools used for this activity

- PPE for all staff and labour
- Measuring tapes and setting out markers
- Electrician Tool Box with all tools
- Spirit Level
- Screwdriver set
- Maker/Whitener
- Mechanical Winches
- Lugs Punch

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- Cable Lugs and Heat Shrink Sleeve
- Identification Tags
- Insulation Tape
- Hammer
- Flat File
- Spanners Set
- Heat Gun
- Multimeter
- Mobile Scaffolding (if Required)
- Man Lift (if Required)
- Ladders (if Required)
- Drilling Machine

Note: All the powered tools shall be suitable for use of 220V - 240V power Supply.

The above tools and equipment shall be checked for operational suitability before each shift of commencement of works including, but not limited, to safety and operational compliance. The same shall be executed for all small tools and miscellaneous items.

Equipment may be substituted subject to availability and actual requirements on the day.

The type and quantities of equipment are subject to change to suit the site requirements and to meet the construction program.

4.1.3 Material

The material shall be used according to project specifications and shall be approved by the Engineer. Must have following minimum requirements

1. Miniature Circuit Breakers (MCB's) shall be type C for general purpose uses, suitable for the load they feed, rated in accordance with BS EN 60898, IEC60898 and shall have short circuit rating of 9 kA.
2. RCBO shall comply with BS EN 61008-1 & BS EN 61009-1
3. Earth leakage circuit breakers (ELCB's) shall be provided as per approved shop drawings and approved DB Schedule.
4. Supply and install the DB and its components in accordance with specification and the following,
 - a. Small power distribution boards shall include 20% spare space (15 % Spare Breaker) for the addition of future outgoing protective devices.
5. All Distribution Boards and fittings shall be fire rated for 2hr as per NFPA 130.

4.1.4 Handling and Storing of Materials

On receipt of the Distribution boards at site necessary precautions shall be taken for unloading, shifting and storage as follows:-

1. Material shall be stored in a covered I dry space at all the time to avoid corrosion.
2. All materials received at site shall be inspected and ensured that the materials are as per approved material submittal. Check all the FAT and other test reports are available upon delivery. Make sure the DB tag are correct upon delivery.
3. Any discrepancies, damage etc., found will be notified and reported QA/QC Engineer and Project Engineer for further action.
4. Material found not suitable for site use will be removed from site immediately.
5. Ensure the materials are stored properly and there is no mark of damage or deformity of any kind before issuing the material from site store. All materials and accessories should also be free of dust, scale, or oil.
6. Ensure that the issued materials are of approved specifications/submittals and as per the requirement of the area shop drawings. (I.e. Make, size, Model Type etc.).

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7. While unloading, shifting and storage, it should be ensured that there are no damages.
8. The stacks will be protected from direct sunlight.
9. Where manual handling is to be utilized it is imperative that a proper load assessment is undertaken and correct manual handling techniques are used to avoid injury. Safety and careful handling should be top priorities when handling materials.
10. Materials shall be stacked on shelves or a flat surface free from any sharp edges and shall be adequately supported. Electrical materials shall be stored in covered area having protection from the elements.
11. All material shall be stored indoor in a dry (Water Free) area.
12. For mechanical lifting, support each unit with nylon I canvas slings during all phases of handling. When off-loading, materials shall be lowered and not dropped to the ground.

4.1.5 Off Loading:



Sample Figure -1 (Off Load DB Pallet)

4.1.6 Handling:



Sample Figure -2 (Handling and Storing DB Pallet)

4.1.7 Storage:

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Sample Figure -3 (Storing of DB)

4.2 Site Execution

4.2.1 Program

Installation of Distribution Board is expected to be performed starting MAY-2017. Detail schedule of Installation activity will be provided in the weekly update of the 3-weeks look ahead construction schedule.

4.2.2 Pre-Requisites

1. To make sure that the entire installation is in conformance and in accordance with the design intent of the project for the Distribution Board in addition to the specification and as per approved shop drawings and comply with Local and International Standards.
2. Adhere to the drawings as closely as possible. The right is reserved to vary the DB position according to the Site Conditions and later the repositioning shall be mentioned in as built with Red Marker.
3. Before beginning installation in any area, examine all parts of the adjoining work onto which applicable work is to be placed. Should any condition be found which will prevent the proper execution of the work, installation shall not proceed in that area until such conditions are corrected by the contractor.

4.2.3 Pre-Installation Procedures

Before the commencement of installation, the following are required to be carries out.

1. No one shall be allowed to interfere installation work on going, or work in the immediate vicinity of installation without a valid permit to work signed by the QA/QC Engineer. This applies to both temporary and permanent electrical installations and equipment. It is to be done to avoid any damage to Electrical Panels.
2. Before the Installation of Distribution Boards, Work Permit need to be obtained and it shall be ensured that other MEP services all already installed in the particular section.
3. It shall be ensured that the cable containment system for both Normal and Emergency power supply is installed and inspected.
4. It shall be ensured that the DB Panels are free from dirt, damage and corrosion.
5. Location for the DB is marked as per approved shop drawing.
6. All related civil work is completed in the area of the installation.
7. It shall be ensured that all wiring and cable is completed and tested and site is cleared from any civil (activity) section to install Distribution Board.
8. Prior to start installation, it shall be ensured that latest approved shop drawings/ MEP services coordination drawings related to the installation area are referred and that required materials are available at site as per approved material.

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9. It shall be ensured that approved mock up details are followed.

4.2.4 Site Access

1. Clearly designated walkways must be established to allow persons to access the tunnel/site safely
2. Walkways must be maintained free from obstruction and any debris.
3. Adequate illumination must be provided for access routes and walkways.
4. Signs must be displayed to indicate the routes to be taken by persons, changes in routes must be clearly communicated.
5. All safety measures shall be taken care as per the instruction of HS Department.

4.2.5 General

1. Distribution Boards (DB) located remote from the main switch boards shall be mounted at a height of not less than 1200mm from finished floor level to bottom of the DB and maximum height of this DB shall be 2200mm from finished floor level to top of DB.
2. Where there is Distribution Board stand alone, then:
 - (i) Distribution Boards shall be flush mounted type, or surface mounted type and shall be mounted separately from motor control centres or switchboards. The boards shall be totally enclosed, dust protected, vermin proof type. Distribution boards installed in all plant rooms and other process areas shall be corrosion resistant.
 - (ii) Enclosure shall be fabricated from robust galvanised sheet steel fully rust-proofed, stove enamelled, of minimum thickness of 1.5mm and shall be protected to IP 32 for internal use with neoprene gaskets for the doors.
 - (iii) The distribution boards shall be provided with fixed cover and a hinged door with padlock which can be opened without any obstruction about 120 degrees and conduit knockouts from the top and bottom.
3. Distribution boards shall be provided to serve lighting, fans, socket outlets, and other appliances. Board shall be arranged in banks of ways as indicated on the schedule of points.

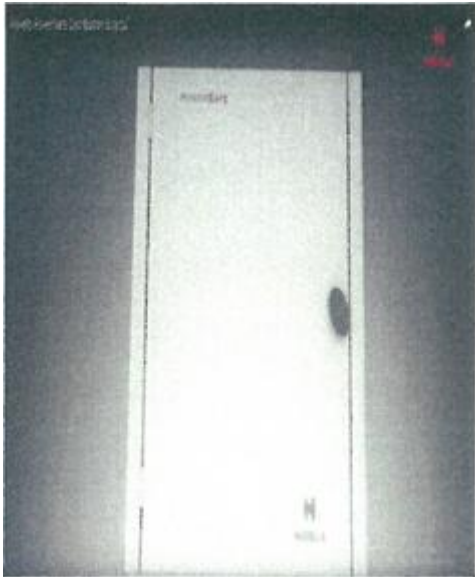
4.2.6 Installation Procedures

1. It shall be ensured that tradesmen regarding the execution of the works have received all necessary approved shop drawings of the latest version.
2. Marking shall be done on the walls and shall be inspected by QA/QC Engineer and if any conflict arises with any other services. Further action shall be taken upon the advice of Supervisor Engineer.
3. Surface Mounted Distribution Boards to be mounted will be selected at warehouse and conveyed to installation area.
4. Exact location of the Distribution Board shall be determined, Distribution Board Shall be held on the wall such that top side of Distribution Board is according to the specified height as mentioned in the section 11.5, from finished floor and mounting holes will be marked on the wall.
5. Marked points will be drilled and anchor-bolted.
6. Distribution Board shall again be held on its exact place and mounted using screws and hanging supports.
7. DB shall be assembled according to manufacturer's recommendation after mounting it to the wall.

a) DB Assembly Procedure (Pictorially)

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Step - 1



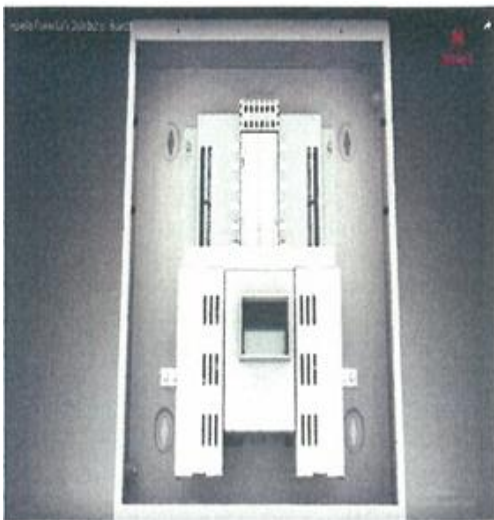
Select the DB as per Schedule

Step - 2



Remove the Door and main Cover

Step - 3



Assemble the Busbar firmly

Step - 4

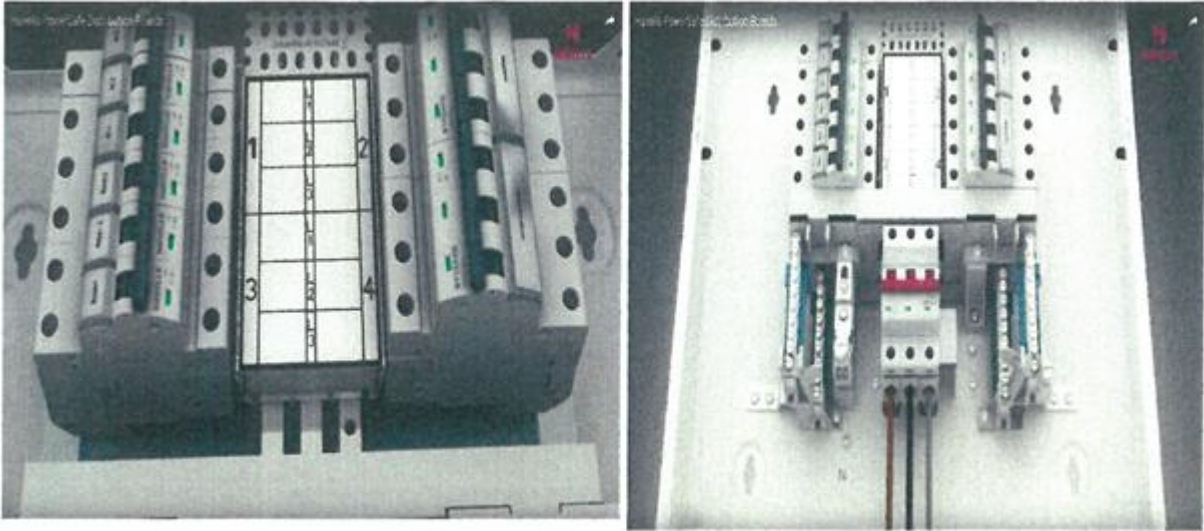


Step - 5

Step - 6

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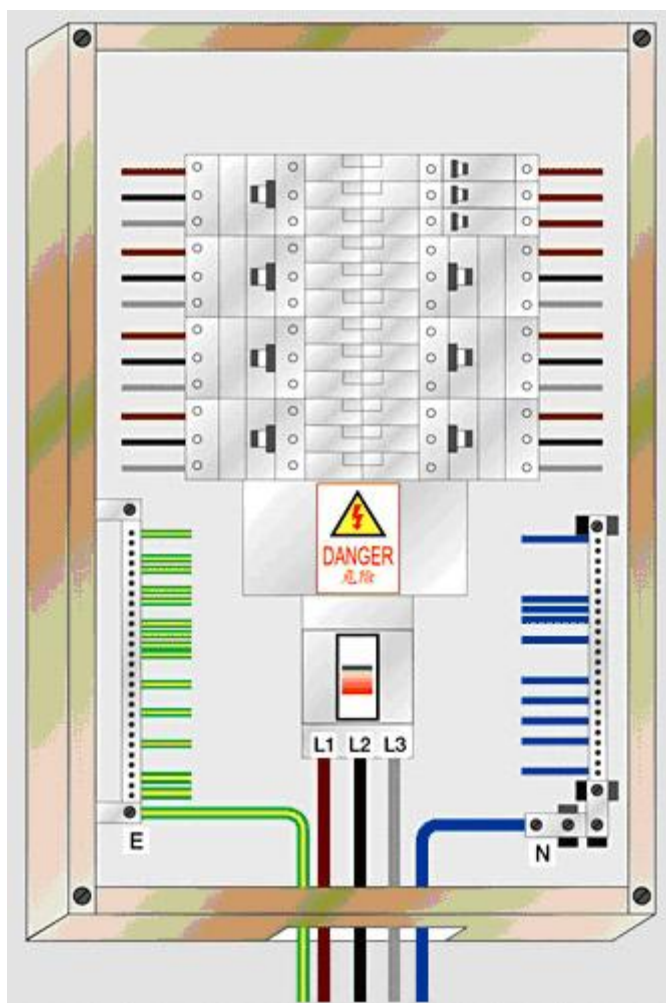
Connect the Branch Breakers as per Terminate the main incomer cable in Isolator Schedule

b) Main Feeder Cable Termination

1. Main feeder cable penetrations shall be made using glands.
2. Cable cores will be connected directly into terminals of 3P MCB or 3P Isolator, and fitted with cable lugs as per Approved DB Schedule.
3. In case of armoured cable, Steel wounded armour around the cores will be bunched Together and connected to the earth bus bar.
4. All terminal and bus bar connections will be ensured to be tight.
5. Connection shall be made accordingly

DB Terminal label Details	
R (L1)	Red core
Y (L2)	Yellow core
B (L3)	Blue core
Neutral (N)	Black core
Earthing (E)	Yellow-Green

6. Cable continuity and insulation resistance of cables will be conducted before final cable terminations.
7. Relevant tagging to each & every cable shall be provided after termination.
8. Cable tray serving the DB shall be connected to earth bus bar via Y/G single core cable.

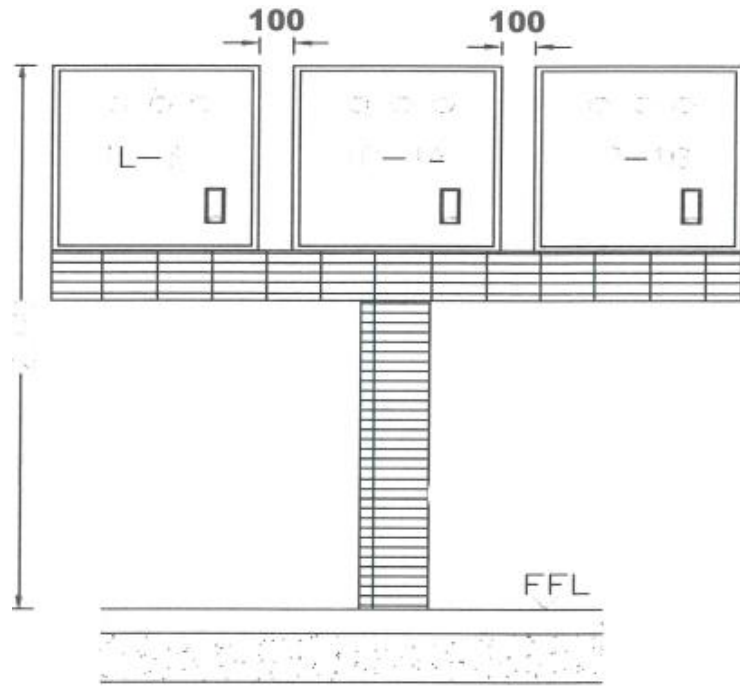


Sample Figure- 4 (Cable Termination for DB Main incomer)

c) Wire Termination

1. Wires of the final circuit drawn on the cable tray/trunking shall be regulated according to the single-line diagram of the Distribution Board.
 2. Wiring continuity and insulation resistance of all wires will be conducted before final cable terminations.
 3. Wires shall be bent neatly towards the specified breaker terminal and spare length shall be cut off.
 4. Identification lettered and numbered ferrules shall be placed on the wires inside the Distribution Board.
 5. All terminal connection shall be tightly wound as per requirement.
 6. All terminal and bus bar connections will be ensured to be tight.
 7. Extra trunking shall be added below the DB for collecting the final circuits wiring and to dress them properly for termination. Also some extra length of the wires is also kept in it.
- Figure - 15.

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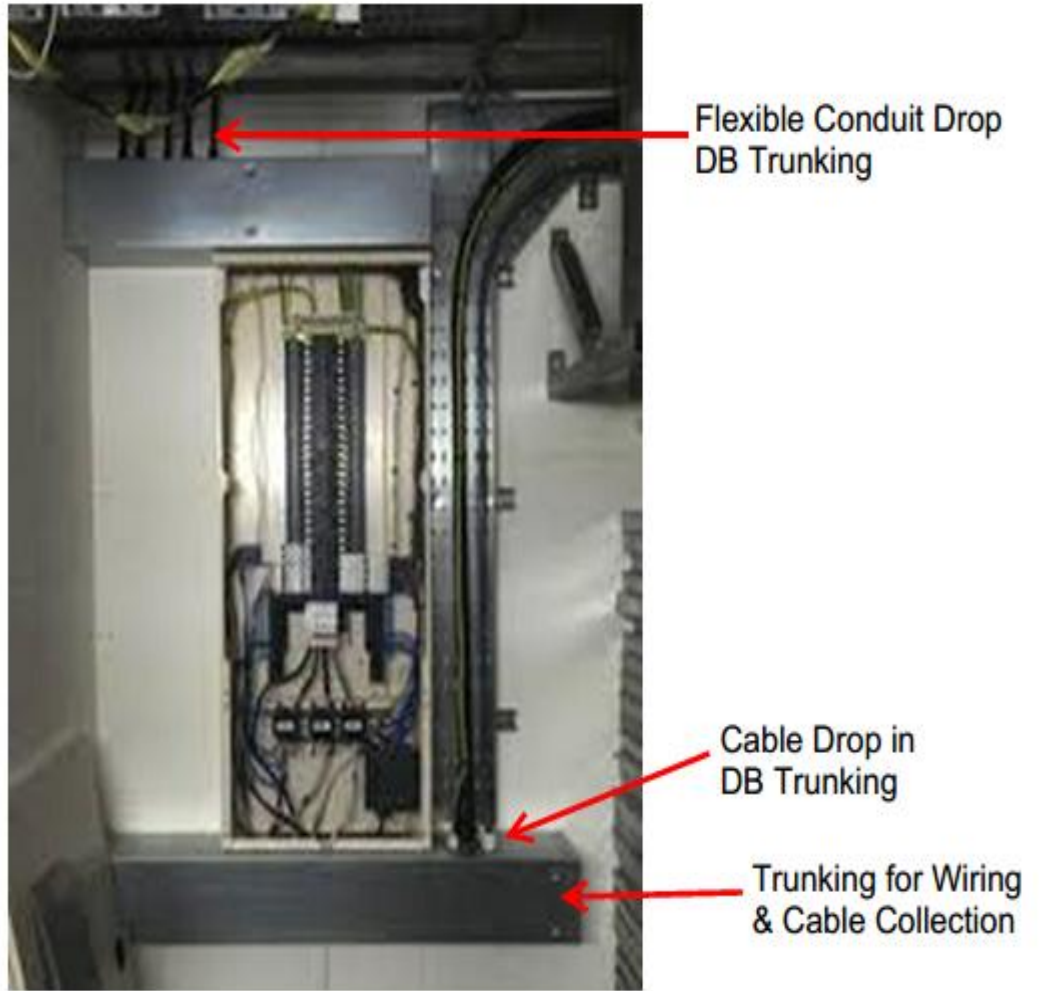


PANEL INSTALLATION HEIGHT ELEVATION

Sample Figure – 5 (Trunking of Distribution board)



Sample Figure – 6 (Trunking Around Distribution board)



Sample Figure – 7 (Trunking & Accessories Distribution board)



Sample Figure – 8 (Trunking Around Distribution board)

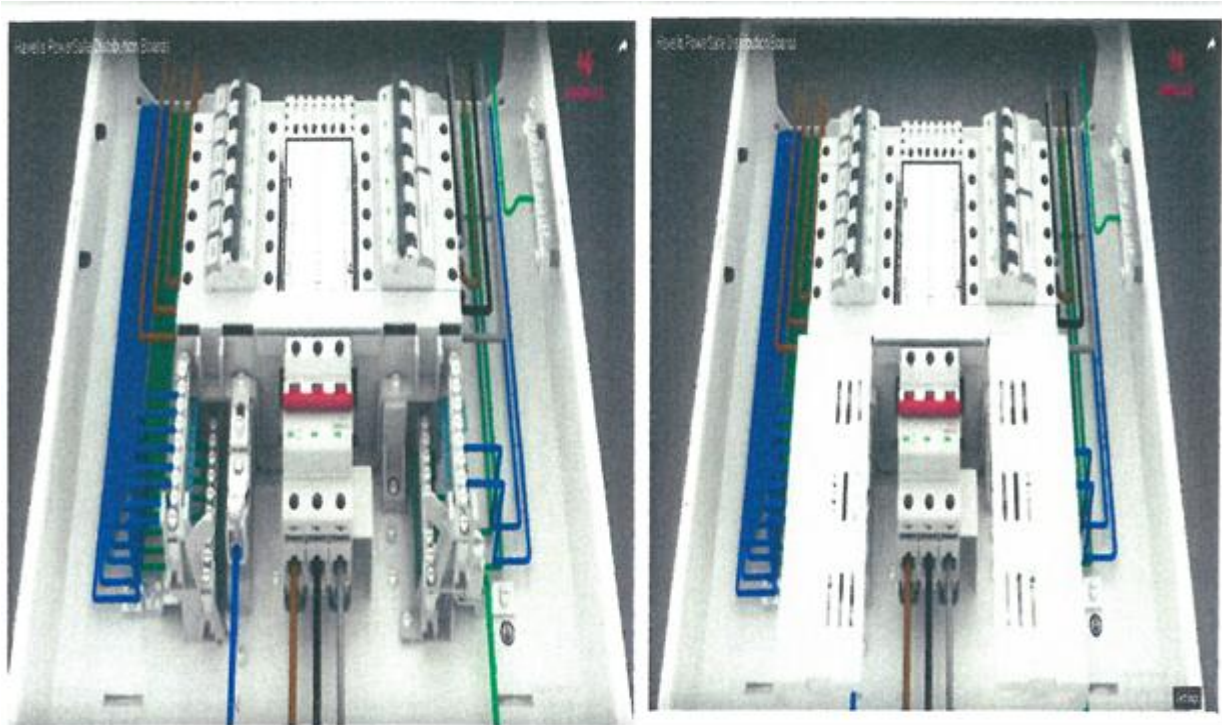
d) Distribution Board Wiring Termination and Testing (Pictorially)

Step – 1

Step - 2

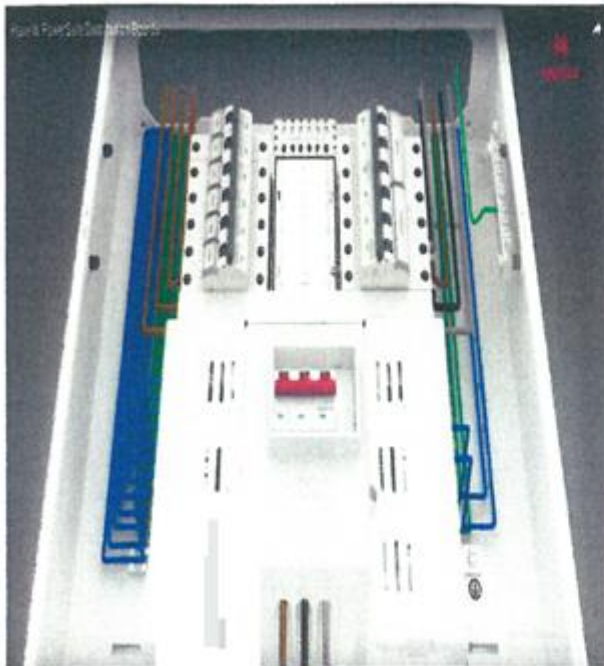
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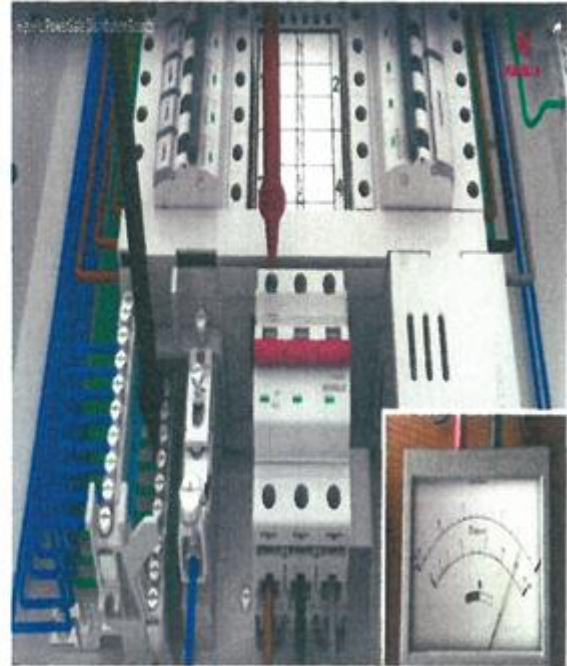
- Distribution Board is terminated as per Schedule
- Insert the Safety Cover

Step – 3



Main Isolator Safety Cover

Step – 4



Testing as per Method Statement section 11.3

4.2.7 Testing

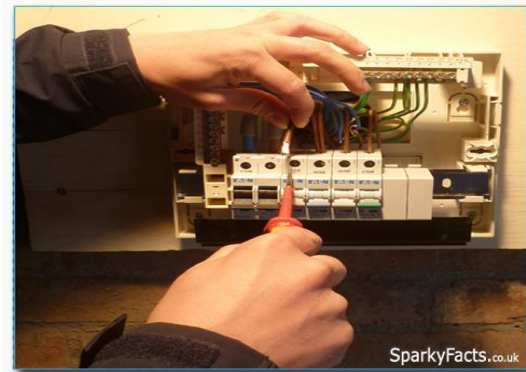
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a) Continuity Test for Distribution Board

Step 1

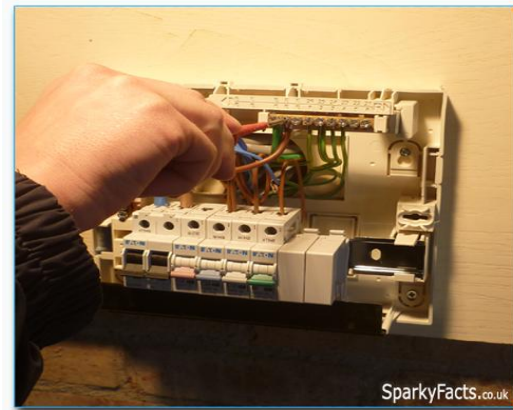
Select the circuit to be tested in the distribution board and remove the Line conductor from the MCB.



Sample Figure - 9 (Removing line Conductor)

Step 2

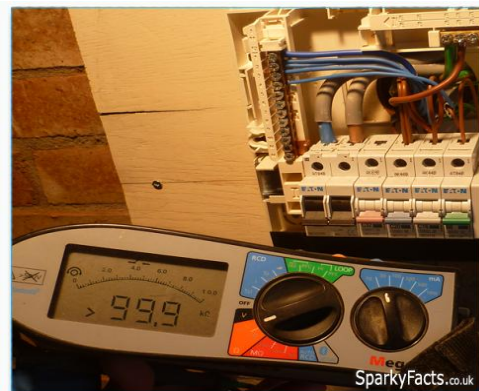
Connect the Line conductor to the Earth conductor (for simplicity, connect it to one of the spare terminals on the Earth bar). This way you will form a circuit which is half made up of the Line conductor and half made up of the Earth conductor (provided that the terminations within the electrical accessories such as wall sockets are correct)



Sample Figure - 10 (Connecting line Conductor)

Step 3

Select the correct test function on the test equipment, which is the low reading ohm meter function (Megger).



Sample Figure - 11 (Configuring Test Equipment)

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Step 4

Do not forget to null the test instrument if required (you can do this by connecting the two test leads together and pressing the TEST button until the measured value on the display becomes zero ohm's)



Sample Figure - 12 (Configuring Test Equipment For Null)

Step 5

Measure between Line and Earth terminals at each outlet in the circuit. The highest reading should be recorded on the Schedule Of Test Results as the value of (R1+R2).



Sample Figure - 13 (Measuring the Reading)

Step 6

Return the Line conductor back in to the MCB

Repeat these steps for every circuit except for the ring main circuit.

- a) Test method for the continuity of bonding conductors and the earthing conductor

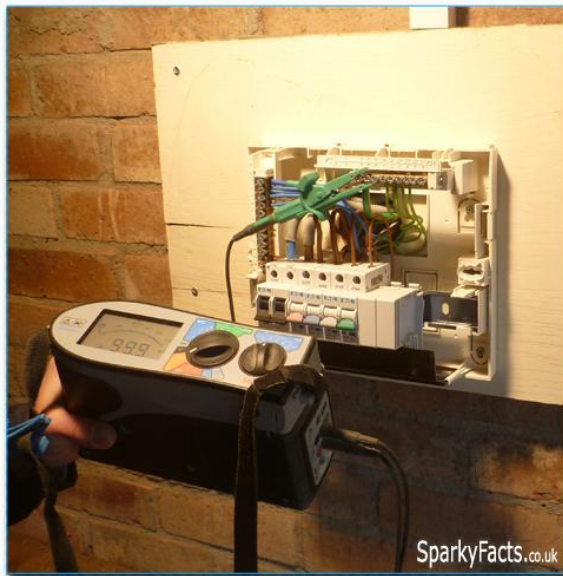
Step 1

Select a long lead (or long wire) and connect it between the two test leads of the resistance tester (low reading ohm meter). You must null the instrument at this point in order to ignore the resistance of the long lead (press the TEST button until it displays zero ohm's)

Step 2.

Connect one lead of the low reading ohm meter to the bonding conductor inside the distribution board.

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Sample Figure - 14 (Connecting Lead to DB)

Step 3.

Connect the long lead to the other end of the bonding conductor.

Step 4.

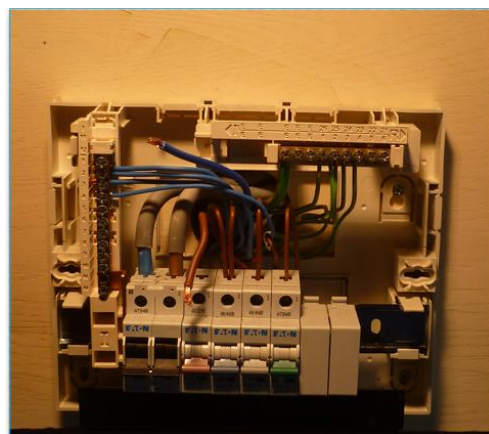
Measure to confirm the continuity of the bonding conductor.

Repeat these steps for every bonding conductor and for the earthing conductor.

b) Insulation Resistance Test Sequence:

Step 1:

Select the required circuit and disconnect its live conductors from the distribution board (the earth conductor can stay)

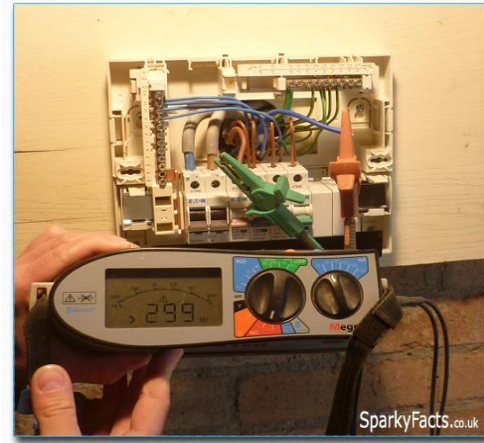


Sample Figure - 15 (Disconnecting live Conductors)

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Step 2:

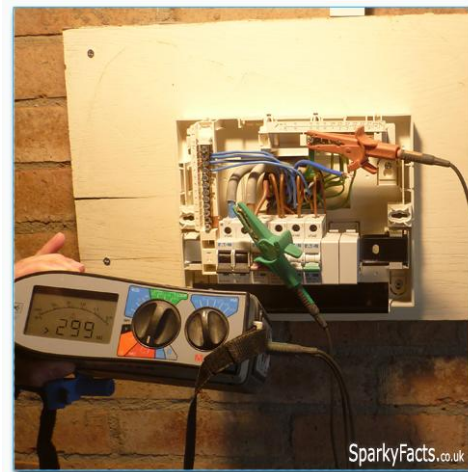
Connect one of the test leads of the Insulation Tester to the Line conductor and the other one to the Neutral conductor. Set the tester to the required voltage and press and hold the TEST button. The tester will display a value in Ohm's.



Sample Figure - 16 (Connecting Test leads to insulation Tester)

Step 3:

The test process one of the test leads on the Line conductor and the other one on the Earth conductor



Sample Figure - 17 (Testing)

Step 4:

Repeat the test process with one of the test leads on the Neutral conductor and the other one on the Earth conductor



Sample Figure - 18 (Test)

Step 5:

That is it - compare all test results to the minimum allowed value in BS7671 (1Mn for a 230V ac circuit

Nominal Circuit Voltage	Test Voltage	Minimum Resistance
Between 0 V and 50 V a.c.	250 V d.c.	0.5 M ohm

Between 50 v and 500 V a.c.	500 V d.c.	1 M ohm
Between 500 V and 1000 V a.c.	1000 V d.c.	1 Mohm

4.2.8 Identifications for DB

Install the tags/labels are as per project specification and as per approved material submittals.

a) Externally

DB shall be clearly identify with following Details,

- i. Circuit Ways (e.g.; 8 ways)
- ii. Feeding Area (e.g.; office 1 to 4)
- iii. Fed From (e.g.; SMDB-4, Electrical Room-3)
- iv. Manufacturer's Details (Name, Telephone, Address)
- v. This all information to be placed firmly on the DB door.

b) Internally

1. Every outgoing circuit shall be Identify with a renewable circuit chart, in a transparent plastic envelope
2. Permanently fitted inside the cover of every distribution board.
3. Clearly indicate for each circuit, in typed script, the following information:
 - i. circuit identification number
 - ii. cable size
 - iii. circuit breaker rating
 - iv. description of item supplied and area supplied by circuit
4. Label all wires connections internally with their circuit reference by using lettered and numbered ferrules.

Note:

1. Temporary identification labels and notices shall be provided immediately after installation inspection is APPROVED.
2. Warning, caution and instruction notices where indicated in the engineering system sections of this Specification or on the drawings shall be provided temporarily.
3. It shall be ensured that all identification labels and notices installed in a visible position.
4. When cable/jumper fixing and termination is completed then Permanent label and notices shall be provided according to the Approved Method statement of "TAG and Marking (M002-RLR-ELE-MES-00018)".

c) REDLINE MARK-UP & AS-BUIT

If any changes occur in the location or position (Non Adherence to the approved Shop drawings) then such information shall be detailed in the AS -Built Drawings with Red Lines.

5 Quality

The Inspection and Test Plan (ITP) for this Method Statement summarizes various characteristics to be checked. The concerned Site Engineer or Site Supervisor will be

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responsible to ensure compliance for these operations and the site QA/QC Engineer will carry out quality control checks and report the inspection results.

5.1 Quality Records:

ITP reference No: M002-RLR-ELE-ITP-00015.

Quality records shall be provided as identified in the ITP and maintained as per ISO 9001/QCS 2014 section 2 part 5 QR Quality Guidelines.

Required form of records and reports are defined in the Inspection and Test Plans. Refer to Doc. No: M002-RLR-ELE-ITP-00015.

6 **Health and Safety Plan:**

- a) The Health and Safety Plan: M002-RLR-HMS-PLN-00001 will be strictly adhered to at all times.
- b) Compulsory RLR HSE induction is required before access to workplace is permitted. PPE relevant to the scope of work risks as identified must be utilized.
- c) Compliance with the HS Summer working plan is compulsory Ref: M002-RLR-HMS-00003.
- d) Expose to direct sunlight; including Installation of Distribution Board & Accessories shall be avoided 11.30 AM to 3.00PM hours during Hot seasons. Precaution shall be taken on heat strokes, dusty winds and other unsuitable weather conditions.
- e) Workplace HS communication ie Toolbox talks, task briefings and HS non compliant notices / closeouts are compulsory.
- f) The health and safety Department shall create and approve tool box talks which the safety office shall conduct such meetings shall cover, at various times and before use of equipment, the respective matters consisting of, but not limited, to:
 - i. Use of tools including specialised equipment;
 - ii. Personal protective equipment;
 - iii. Smoking;
 - iv. Handling of waste material;
 - v. Use of ablution facilities;
 - vi. Barricades, signs and warning tape;

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RLR EMERGENCY CONTACT NUMBERS In case of emergency, accident, sickness	

Management Office: _____	
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Contacts for Traffic issues:

Security Manager		
Traffic Manager		

6.1 Specific Measures:

Specific measures related to span erection are as follow:

1. Working at height: all measures described in M002-RLR-HMS-PRO-00005 shall be in place during erection activities.
2. Load shifting Machinery
 - i. Do not operate any load shifting machinery without training and approval.
 - ii. Operators of forklift trucks, bulldozers, loaders, excavators, trucks should possess appropriate certificates/ Passes.
3. Manual Handling

Avoid manual handling operations as far as possible to minimize the risk of injury. Estimate the weight of the load. Lift an object with a correct posture. Wear suitable protective equipment. Put on gloves as far as possible to protect your hands from any cut, scratch or puncture, and wear safety boots or shoes to prevent injury to toes by heavy falling objects .Seek assistance from someone in lifting a load if necessary.
4. Portable Power Tool
 - i. Do not use a portable power tool (such as saw, grinder and drill) unless its dangerous parts have been effectively guarded.
 - ii. Place the electric cable and hose of a tool at an appropriate position to avoid tripping hazards.
 - iii. Do not operate a cartridge operated fixing tool unless you have possessed a valid
 - iv. certificate.
 - v. Wear suitable eye and ear protectors while operating a cartridge-operated fixing tool.
 - vi. Use a cartridge-operated fixing tool with great care.
5. Scaffold (Mobile)
 - i. Do not use scaffolds unless they have been erected by trained workmen and under the supervision of a Supervisor.
 - ii. Do not use a scaffold unless it has been inspected and certified safe (A Green Tag to visibly hoist on the scaffolds) by a Certified Supervisor before use.
 - iii. Strictly follow the instructions of a Supervisor. Do not alter the scaffold unless authorized to do so.
 - iv. Do not work on an unfinished scaffold.
 - v. When it is necessary to work on a mobile scaffold, lock the wheels of the scaffold before you start working.
 - vi. Do not work on a scaffold unless it has been provided with a suitable working platform.
 - vii. Ladders shall be used where no other means of access is possible.

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6. Safety Requirements.

- i. First Aid Kit to be provided at Station working areas in consultation with HSE officer.
- ii. Clean up work area immediately after each task; never leave an area that is cluttered
- iii. with tools or supplies that could present tripping hazard.
- iv. Barriers as required shall be in place wherever necessary.
- v. Visible "Safety sign" shall be provided where necessary as per HSE requirements.
- vi. Good quality gloves are to be worn to protect your hands when using the equipment or handling materials.
- vii. The basic Personal Protective Equipment for this particular job are:
 - a. Hard Hats (Hat Colours as specified by HSE Department)
 - b. Gloves (Must Be Task Specific)
 - c. Goggles (Clear Glasses for underground areas and Black Glasses for work in Sun Light)
 - d. Reflective Vest
 - e. Safety Boots (High Ankle as Qatar Rail)

Note: Always wear safety spectacles when using the equipment.

Other specific risks & measures are addressed in the Risk assessment attached in Appendix B.

7 Environmental:

The site team including subcontractors shall implement the following environmental controls measures:

- a) The waste material from the installation of Distribution Board are to be placed in waste skips provided at site.
- b) Unused materials shall be returned to the stores for appropriate storage according to manufactures' instructions for potential reuse;
- c) Colour coded skips with signage shall be provided for waste segregation (general waste, metals, and plastics). Separate colour coded storage skips to be used for hazardous material.
- d) Good housekeeping shall be maintained regularly at job site.

8 Interfaces and Permits

8.1 Interfaces

- Interface with other utilities etc will be resolved using BIM.

8.2 Permits

- Not Applicable

9 Appendices / References:

9.1 Appendices:

- Appendix A – Inspection and Test plan;
- Appendix B– Risk Assessment;
- Appendix C – Test Report

9.2 References:

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This Method Statement shall be read in conjunction with the following documents:

Material Submittal:

- Material submittal for Cable Glands.
- Material Submittal for Fir Resistant Multicore Armoured Cables.
- Material Submittal for Low Voltage LSOH Cables & Wires.
- Material Submittal for Distribution Boards.
- Material Submittal for Cable Accessories.
- Material Submittal for Wiring Devices and Accessories.

Method Statement For:

Document No.	Document Title
M002-RLR-ELE-MES-00001	Installation of Cable Containment System
M002-RLR-ELE-MES-00002	Installation of GI Conduits, Flexible Metallic Conduits & Accessories
M002-RLR-FRS-MES-00009	Installation of Fire Alarm Control Panel & Repeater Panels
M002-RLR-ELE-MES-00010	Installation of Wiring Accessories & General Power
M002-RLR-ELE-MES-00011	Installation of LV Cables & Wires

Specifications:

Document No.	Document Title
M002-RLR-MEP-TEN-00008	Material and Workshop Specifications Volume 7
M002-RLR-MEP-SPE-27005	DD2 –Qatar University Station-WP11.2 MEP Specifications
M002-RLR-MEP-SPE-36303	DD2 –Lusail Station-WP18.2 MEP Specifications
QCS 2014	QCS 2014 Section 21 Part 2
M002-RLR-ELE-SPE-36013	Lusail Station - WP18.2 - DD2 - Earthing and Bonding Specifications
KAHRAMAA	Section 04
Volume 6 –Contract’s Requirements Design Speciation’s	13.3 Electrical Works Description,(13.3.2 General Design Criteria) 13.3.3 Station
BS EN 60439	Low- Voltage Switchgear and control gear assemblies
BS EN 7671	Standards for Electrical Installation
NFPA 70	National Electrical Code ®
NFPA 130	Standard for Fixed Guide way Transit and Passenger Rail System

Reports & Calculation:

Document No.	Document Title
M002-RLR-MEP-RPT-27003	DD2- Qatar University Station Earthing & Bonding Report
M002-RLR-ELE-RPT-26000	DD2- Qatar University Station WP11.2 – MEP Design Report
M002-RLR-ELE-CLN-26004	DD2- Qatar University Station Electrical Calculation Notes
M002-RLR-MEP-RPT-27701	DD2- Qatar University Station BACS Sequence of Operations
M002-RLR-MEP-RPT-27702	DD2- Qatar University Station BACS Input/output Schedule