

# METHOD STATEMENT FOR INSTALLATION OF PVC CONDUIT & ACCESSORIES

## RED LINE NORTH ELEVATED AND AT GRADE

### Revision and Issue Records

Review History


Document No.	Revision	Title
M002-RLR-ELE-MES-00021	1	Method Statement for Installation of PVC Conduits & Accessories

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## 1 Definitions and Abbreviations

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Table 1: Definitions and Abbreviations

Abbreviation	Definition
BS	British Standard
PPE	Personal Protective Equipment
HS	Health, and Safety
ITP	Inspection and Test Plan
PMC	Project Management Consultant
QA/QC	Quality Assurance / Quality Control
QCS	Qatar Construction Specification
SONO	Statement of No Objection
PPE	Personal Protective Equipment
RLN-EAG	Red Line North Elevated and At Grade
RLR JV	Rizzani de Eccher, Lotte and Redco - Joint Venture
MS	Method Statement
SWA	Steel Wire Armoured
FOH	Front of House
LV	Low Voltage
LSOH	Low smoke zero Halogen

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Abbreviation	Definition
BOH	Back of House
OSHA	Occupational Safety and Health Administration
SLD	Single Line Diagram
QCS-2014	Qatar Construction Specification
PVC	Polyethylene Vinyl Conduit

## 2 Purpose:

The purpose of the method statement is to describe the procedure for material delivery inspection, installation and inspection of PVC Conduit & 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 and as per project requirement.

## 3 Scope of Method Statement:

The scope of application of this method statement is the Installation and inspection of PVC Conduit & Accessories for Red Line 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
1	MEP Construction Manager	<ul style="list-style-type: none"> <li>Delivering the overall works in a safe and timely manner, ensuring conformance with the approved design.</li> <li>Leading the team of engineers and surveyors, guiding them in the delivery of the works.</li> <li>Verifying that work done is in accordance with requirements of contract.</li> <li>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.</li> </ul>

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2	Systems Assurance Engineer	<ul style="list-style-type: none"> <li>Establish the system assurance process.</li> <li>Manage the RAMS team and EMC team in delivering the system assurance submissions.</li> </ul> <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"> <li>Ensuring that the works are being carried out in accordance with contract requirements and this Method Statement.</li> <li>Management onsite to ensure that the team carries out the works in time with the delivery schedule.</li> <li>Implementation of and adherence of the team to the QA/QC and H&amp;S policies and procedure.</li> </ul>
3	QA/QC Manager	<ul style="list-style-type: none"> <li>The preparation of the company's QA manual control and supervision of all amendments and revisions</li> <li>Monitor all quality related activities on the project</li> <li>Perform all internal and external audits on behalf of the company's management</li> <li>Preparation, monitoring, training of project staff on method statements, and control of material on site.</li> </ul>
4	QA/QC Engineer	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>He will monitor the installation works according to the approved drawing &amp; method statement.</li> <li>He will coordinate with the Supervisory Consultant to carry out inspection/testing of the completed works.</li> <li>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.</li> </ul>
5	Surveyor	<ul style="list-style-type: none"> <li>Setting out all planned works.</li> <li>Monitoring the works being carried out to ensure they are at the correct levels and measurements.</li> <li>Maintaining documents relevant to alignment and height control.</li> </ul>
6	Document Controller	<ul style="list-style-type: none"> <li>Documenting, distributing and maintaining data in the prescribed format.</li> <li>Making the necessary data available as requested by the team or the client.</li> </ul>
7	HS Inspector	<ul style="list-style-type: none"> <li><b>Identify</b> HS requirements, non-compliance or otherwise by conducting both formal and informal</li> </ul>

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		<p>audits and communicate said to relevant site management</p> <ul style="list-style-type: none"> <li>• <b>Advise</b> site management on HS substandard acts and HS substandard conditions on a continuous basis and record said.</li> <li>• <b>Coordinate</b> and record action by site management as identified and advised.</li> <li>• <b>Verify</b> actions taken by site management , record and report accordingly</li> <li>• <b>Conduct</b> relevant HS administrative functions and additional tasks as directed by HS Management.</li> </ul>
8	Supervision Engineer	<ul style="list-style-type: none"> <li>• Checking the compliance of works to the design.</li> <li>• Carrying out comprehensive supervision of all construction works.</li> <li>• Confirming that the work executed complies with the approved design and be responsible for checking the construction works.</li> </ul>

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.

#### Workers

One group of workers is planned for execution of Installation of PVC Conduit & Accessories. This group will provide all activities. The group will have following labour profile:

Sr. No.	Description
1	Electrical Supervisor
2	Electrical Foreman
3	Electrician
4	Labour (skilled and unskilled)

#### 4.1.2 Equipment and tools :

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

##### Plants

No.	Type	Use
1	Man Lift	For Installation of Tags and Markers
1	Scaffolding	For the Installation
2	Lights	For use during night operations
3	Generator	For Power Generation for Lights

##### Small Tools and Equipment

- PPE for all staff and labour
- Measuring tapes and setting out markers
- Electrician Tool Box with all tools
- Measuring tape

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- Leveler
- Fitter tool Box
- Knife Blade
- Drilling Machine
- Marker/Whitener
- Solvent Cement
- Spring Bender
- Portable / Cordless circular Saw
- Grinder
- Ladders
- Mobile Scaffold's

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.

#### 4.1.3 Material

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Works shall not commence until a Statement of No Objection (SONO) has been issued by the Engineer for Material and Workmanship Specifications.

##### **PVC Conduits**

Conduit cable containment system shall be approved by the Engineer and shall be according to

- BS 4607 for Non-metallic conduits and fittings for electrical installations rigid PVC conduits and conduit fittings, metric units
- BS 731 Flexible Conduit

All related accessories shall be according to material approved by the Engineer. All conduits and fittings shall be fire rated for 2hr as per NFPA 130 standard.

#### 4.1.4 HANDLING AND STORAGE MATERIAL

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On receipt of PVC conduits & fittings, the materials shall be handled & stored in line with the following procedure:

1. Conduits will be stacked on a flat surface free from sharp projections, stones or other objects likely to caused point loading or conduit deformation.
2. The storage area shall be kept in proper level, so that the stacked conduits may be uniformly supported throughout their length.
3. Materials received at site shall be inspected randomly and ensure that the materials are as per approved material submittals.
4. Conduits will not be dropped on hard surfaces and will not be dragged along the ground. Wherever possible the loading and unloading of conduits will be carried out manually by hand.
5. If mechanical lifting equipment is used, ensure no metallic slings, hooks or chains will be used in direct contact with the conduit. Rope or nylon belt sling will be preferred which will not damage or cut the conduit surface.
6. Conduit of different sizes or wall thickness will be stored separately
7. The stacks will be protected from direct sunlight by covering with tarpaulin sheets.
8. All the conduit fittings will be stored in the boxes as supplied by the fittings manufacturer.
9. Any discrepancies, damage, and etc. found to the materials will be notified and reported to QA/QC Engineer and Project Engineer for further action.

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10. Materials found not suitable for site use should be removed from site immediately.
11. It shall be ensured that the fabricated conduit pieces are numbered or tagged as per latest approved shop drawing to avoid wrong connections during assembly or installation and to expedite the progress in assembly works.
12. While unloading, shifting and storage, it should be ensured that there are no damages.
13. Conduit shall be stored in a place free of water, dust and adequately covered to avoid any kind of damages.
14. While unloading, shifting and storage, it should be ensured that there are no transit damages.
15. All materials to be used shall be as per approved.
16. Do not put the pallets down on to hard ground with a bang.
17. Put the pallets down only on ground that is sufficiently hard to prevent the base timber sinking into it.
18. Leave sufficient space between individual pallets.
19. To avoid damage to the sealing elements, store individual conduits only on a wooden base.
20. Store fittings standing upright on their sockets.

#### 4.1.5 Unloading from the Truck

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1. Conduits are to be checked on unloading. Possible damages must be reported on the delivery note.
2. Lifting belts shall be used; chains and ropes shall not be used.
3. The lifting belts must be placed outside around the pallets and outside the base timber.
4. Steer the pallets manually to prevent them colliding with anything.
5. Do not move the pallets on the truck with the aid of levers or crowbars.
6. Do not allow the conduits to be impacted by any hard object (e.g. crane hook, chain etc.)

#### 4.1.6 Unloading with a Forklift Truck

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1. When placing the pallets transversely on the forks, make sure the forks are positioned sufficiently widely apart.
2. When placing the pallets longitudinally on the forks, place protective timber between the parcel and the fork's base. Better is to transport the parcel in transversal direction on the fork teeth.
3. When transporting individual conduits by sliding a tooth into a conduit, always have protective material between the forks and the conduit.

#### 4.1.7 Material Sampling and Testing

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The minimum frequency of QA sampling and testing shall be consistent with requirements in the Codes and Contract Specifications.

## 4.2 Site Execution

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### 4.2.1 Program

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Installation of PVC Conduit & Accessories is expected to be performed starting January-2017. Detail schedule of Installation activity will be provided in the weekly update of the 3-weeks look ahead construction schedule.

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#### 4.2.2 Pre-Requisites

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1. It shall be ensured that all work is completed and site is cleared from civil section to install PVC conduits.
2. 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.
3. 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 the equipment and injury to any worker.

#### 4.2.3 Site Access

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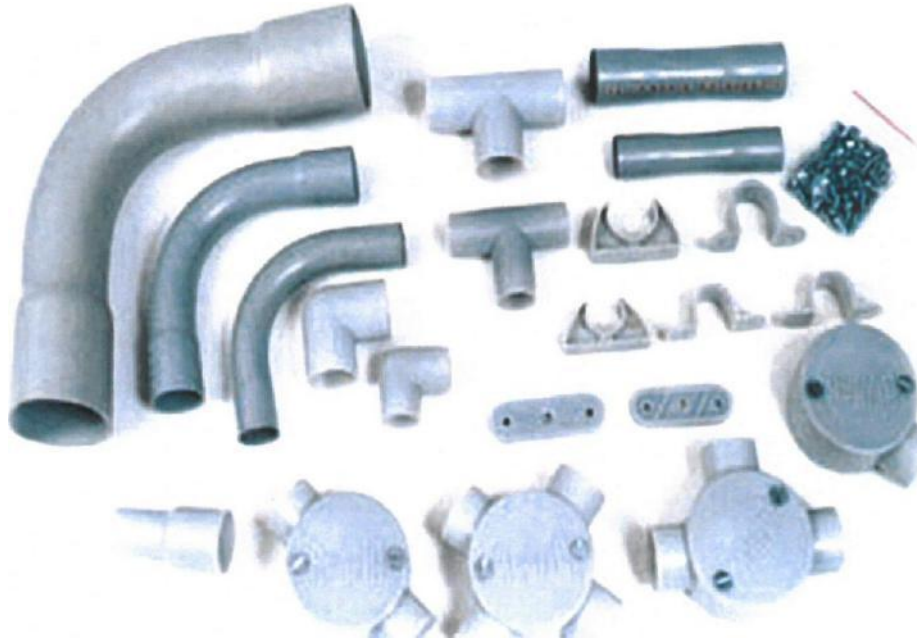
1. Clearly designated walkways must be established to allow persons to access the site safely
2. Walkways must be maintained free from obstruction and any debris.
3. Adequate illumination must be provided for access routes and walkways.
4. Signs must be displayed to indicate the routes to be taken by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

#### 4.2.4 Pre-Installation Procedures

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1. At site necessary precautions shall be taken for unloading, shifting & storage of the PVC conduits
2. All PVC conduit and accessories delivered at site shall be carefully off-loaded by developing necessary / adequate manpower and equipment in such a manner that no damage shall be caused to conduits and accessories.
3. Ensure that the work area is ready and safe to start the installation of electrical conduits
4. Prior to start the installation, refer the approved shop drawings related to the area of installation and ensure required material is available at site as per approved material submittals.
5. All conduits and accessories will be inspected, handled and stored properly upon receipt at site.
6. Conduit materials shall be stored in a place free of water and properly covered to avoid any damages due to weather affect.
7. Ensure that PVC conduits are not dropped onto hard surface and will not be dragged along the ground. To the maximum extent the loading and unloading of electrical conduits will be carried out manually by hand.
8. Any discrepancies, damage etc., found will be notified and reported for further action.
9. Material found not suitable for site use will be removed from site immediately.
10. No conduit smaller than 20mm in diameter or larger than 50mm diameter shall be used.
11. Figure- 1 illustrates a range of PVC conduit boxes, reducers and adaptors.
12. Figure- 2 illustrates the PVC Conduits.

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**Figure - 1 (Sample Picture) PVC Fittings**



**Figure - 2 (Sample Picture) PVC Conduits**

The table below shows a suggested spacing of supports for PVC conduits ranging from 25mm to 50mm in diameter. Supports should be positioned within 300mm of bends and fittings. The table assumes that the conduit is not subject to other external mechanical stresses. Table - 1 illustrates the saddle spacing.

Conduit Size	Spacing
20-25mm	600 mm
32-38mm	900 mm
50 mm	1000 mm

Ref: 'A PRACTICAL GUIDE TO THE WIRING REGULATIONS 17th EDITION IEEE WIRING REGULATIONS (BS 7671:2008) & QCS 2014 Section 21 Part 7 Clause 7.3.2 ( 5 – b)

#### 4.2.5 Installation Procedures

1. Mark the location of the back boxes or pull boxes & place thermo coal (if required) secured with masking tape on these locations.

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2. Install the PVC conduits utilizing the steel reinforcements as supports by using necessary binding wires.
3. The concealed conduiting of slab or any other concrete structure should be securely fastened with binding wires to reinforcement rods or shuttering to withstand concrete & screed pour.
4. Sufficient gap shall be provided between conduits at cross-over locations.
5. Ensure all open end of the conduit are capped / plugged properly before concrete pouring. Also ensure caps are provided for unused knock out holes where blanks have been removed
6. In vertical wall the conduits shall run vertically from the back boxes. Horizontal runs shall be avoided on walls.
7. Conduits shall be mandrel tested and draw wires shall be installed.
8. Ensure the recessed position of outlet boxes is accurate to allow for surface finish thickness.
9. Conduits chased into wall should be recessed sufficiently to permit a minimum thickness of 15mm for plaster cover. For conduits run to be embedded in concrete a minimum 25mm cover will be provided.
10. Provide pull box fix at maximum 10m spacing and to limit the number of bends in conduit to not more than two 90° bends. After completion of conduiting installation for any portion, the area will be cleaned properly by removing all surplus material, construction debris or scrap material etc., to leave the area in clean and tidy condition prior to concrete pour.
11. After removal of concrete shuttering, all the conduits shall be checked for blockage (wherever possible), shall be cleaned & plugged/covered.
12. Conduit used on site shall be of approved calculations.
13. Cable spacing within conduit shall be proven allowing for fire rated cable longer size also clearly mention the no. of passing cables from the conduit in the approved drawings.
14. All working on site shall be done according to approved Shop drawing.

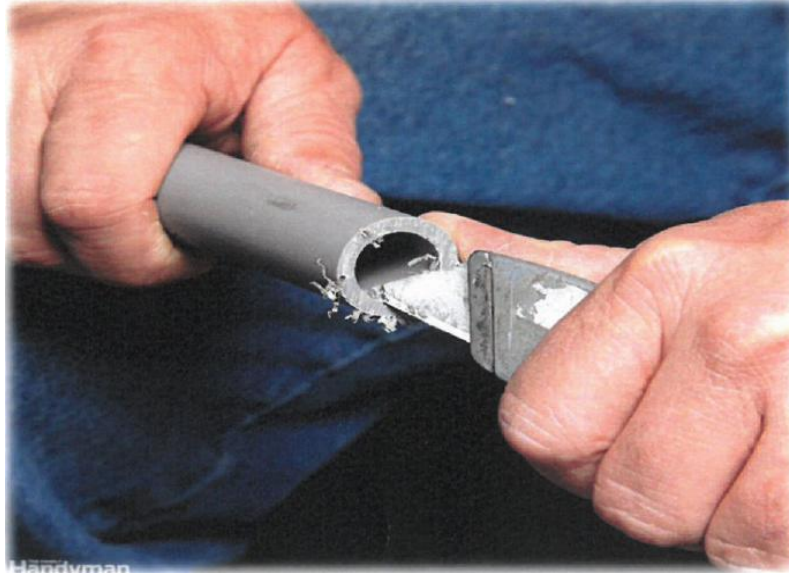
#### 4.2.6 Cutting PVC Conduit

There are lot of ways to cut PVC Conduit, but a circular saw fitted with a metal blade gives a smooth, fast, burr-free cut. But if no metal blade is available regular construction blade can be use, after cutting with regular construction blade the end of the conduit must be deburr after the cut. Figure Fig-3 (A & B), illustrates this process.



**Figure — 3A (Sample Picture) Conduit Cutting Method**

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**Figure — 3B (Sample Picture) Conduit Deburring Method**

#### 4.2.7 Jointing Process of PVC Conduit

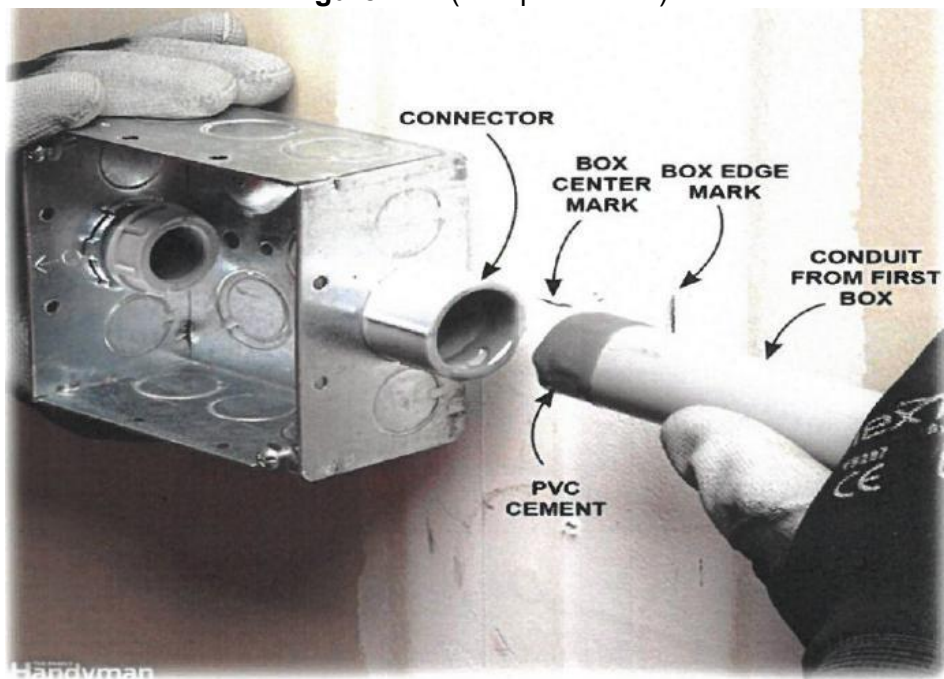
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1. The jointing of PVC conduits shall be done with suitable couplers and solvent cement.
2. The PVC conduits shall be bonded tightly to the back boxes / pull boxes with suitable adapters.
3. The jointing process of PVC conduit will be followed as mentioned below :
  - a. Both the joining ends of conduits will be cleaned from inside as well as from outside by using solvent cleaning fluid and wipe it with clean rag to make it dry.
  - b. A thin layer of solvent cement is applied to the inner surface of the coupler.
  - c. Push fit the conduit ends fully into the coupler by slight twisting action & remove the spilled or surplus solvent cement from around the joint. Make sure the conduit has entered fully into the box spouts and couplers except expansion couplers.
  - d. Make sure that the joint is tight enough and entry of water into the conduit through joints is not possible.
4. Connections between PVC conduits and accessories shall be threaded up tight With solvent Fig-4 (A & B)

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**Figure - 4A** (Sample Picture)



**Figure - 4B** (Sample Picture)

5. Approved connectors / adopters will be used for connections to back boxes / pull boxes. Shown in Fig- 4C
6. Expansion couplers of approved type shall be provided wherever the conduits pass through the expansion joints of the building.

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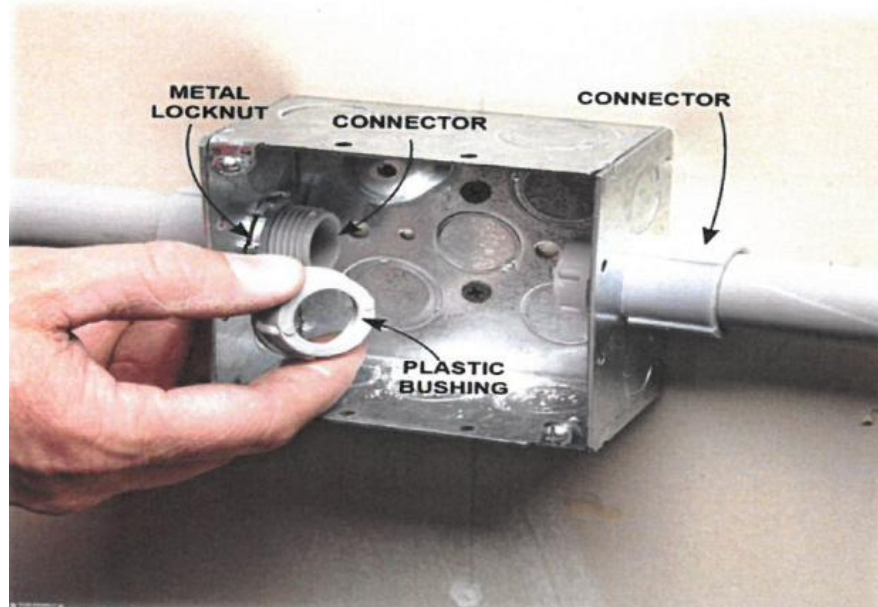


Figure – 4C (Sample Picture) Conduit Connection with Back Box

#### 4.2.8 Bending PVC Conduit

1. All bends of PVC conduiting will be made by using correct size of bending spring. Ensure the radius of any conduit bend shall not be less than four times the outside diameter of the conduit to satisfy the easy cabling / wire pulling requirements. Shown in Fig - 5
2. To facilitate easy cabling / wiring sufficient pull box or junction boxes will be provided in all conduiting. At least one pull box shall be provided on every two 90 degree bends.
3. In longitudinal straight runs the pull boxes / junction boxes will be provided in every 30 meters.

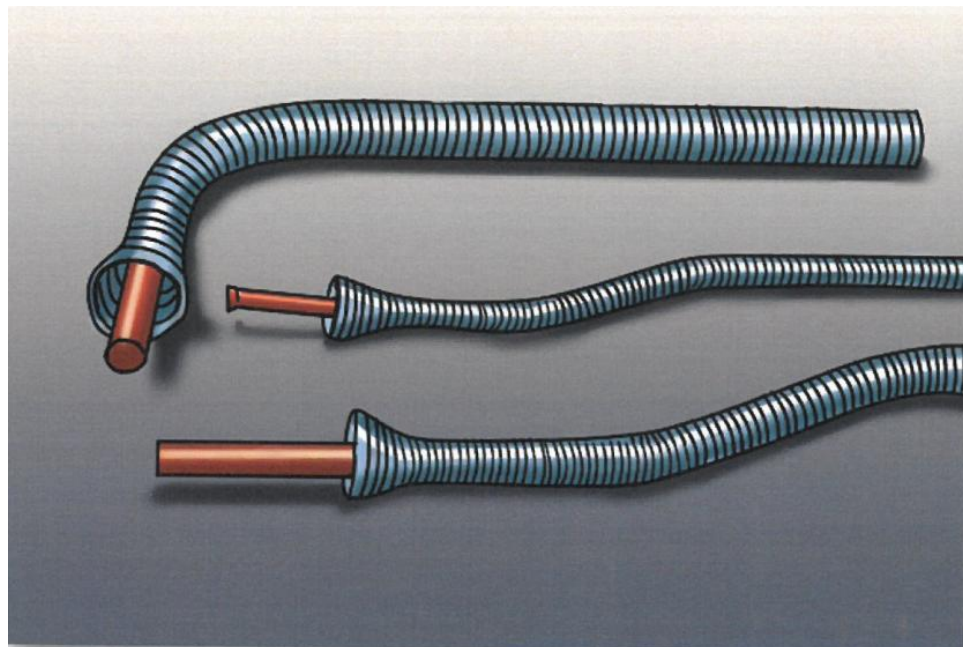


Figure - 5 (Sample Picture) Conduit Bending Method

#### 4.2.9 Flexible Conduits

1. Flexible conduits shall be employed for connecting electrical motors, lighting and other equipment subject to adjustment of position and vibration to the fixed wiring.

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2. In damp and wet locations all flexible conduits shall be of the type to be used that prevents the ingress of water and moisture.
3. Flexible conduits shall only be run exposed and shall be so positioned that they are not susceptible to mechanical damage. Where necessary flexible conduits shall be adequately supported.
4. The ends of flexible conduits shall be securely anchored to the fixed conduit or equipment to which it is attached by approved flexible conduit adapters that maintain effective mechanical continuity securely in position without distorting it. The flexible conduit shall not be used as part of the earth conductor. A separate earth conductor shall be installed to comply with the same requirements for rigid conduit installations.
5. The maximum length of a flexible conduit run shall be 2.50 meters. Where flexible conduit is installed less than 1.50 meters above a floor in a position where it may be easily disturbed or reached, it shall be supported at intervals not exceeding 300 mm, except where terminating at motors or at other equipment which requires a free length of flexible conduit to provide for normal movement.



**Figure - 6 (Sample Picture) Flexible Conduit**

#### 4.2.10 Installation of Flexible Conduit

All conduits must be secured to outlet boxes, junction boxes or cabinets by placing locknuts on outside of box and locknuts and bushings on the inside of box. Proper Coupler will be used for connection.

1. Conduits connecting recessed fixtures and their adjacent junction boxes must be flexible metallic conduit 20 mm minimum size and shall be of sufficient length to permit dropping of the fixture below the ceiling (or Equipment to be connected) and to gain access to the junction box.
2. Conduit to motors shall be terminated in the conduit fittings on the motors, the final connection being made with liquid tight flexible conduit and suitable liquid tight connectors.
3. Where changes to flexible conduits occur, a watertight outlet box with threaded entries shall be inserted and the earth connection made to an internal terminal. The cover screws shall not be used for earthing connections.

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**Figure - 7 (Sample Picture) Flexible Conduit with Coupler**

#### 4.2.11 Special Care

1. Conduits shall not be run closer to any steam or hot water pipes and shall be run underneath such pipes rather than over them.
2. Minimum 100mm distance shall be between conduits & Non-Electrical Services.
3. Particular care shall be taken to ensure that no grout or other foreign materials enters the conduit system through joints, or through surface openings. Screw holes in boxes must keep entirely free and clean. A compressed air is to be blown through the conduit system to ensure that it is clean and a steel draw wire of adequate size to be pulled through to a certain that no obstructions is adhering to the inside of the conduits.
4. No wiring or draw-in wires, cables or wire of any description are to be drawn into the conduits until the section of the conduit system involved is complete.

#### 4.2.12 IDENTIFICATION OF ELECTRICAL SERVICES

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 pulling and termination is completed then Identification of every type of service contained in cable ladder/tray/trunking; Permanent label and notices shall be provided according to the Approved Method statement of "TAG and Marking"

## 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 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-00021.

Quality records shall be provided as identified in the ITP and maintained as per ISO 9001/QCS 2014 part section 2 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-00021.

## 6 Health and Safety Plan:

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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.
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 HS Department)

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- b. Gloves (Must Be Task Specific)
- c. Goggles (Clear glass for underground areas and Black Glass for work in Sun Light)
- d. Reflective Vest
- e. Safety Boots (High Ankle as Qatar Rail)

## 7. Electricity

Before using an electric tool, check the tool and its plug and connecting cable.

1. Do not use a damaged tool.
2. Do not use an electric tool unless its connecting cable is well protected.
3. Do not use an electric tool unless its metal casing is earthed and its power supply is provided with an earth leakage circuit breaker.
4. Regular monthly inspection and regular inspection (prior to commence work) of equipment and tools shall be conducted as required. Tag must be put to tools and equipment that have damaged to prevent using.
5. Ensure that it has the correct inspection report for the month and report immediately any defects or damage to your supervisor. If faulty DO NOT USE!
6. Do not repair or alter any electrical installation unless competent to do so.
7. If you meet any fault or problem, report it to your supervisor immediately.
8. Make sure that the power cables have good insulation and properly connected not causing a tripping hazard and that they are not laid in water, working area of moving equipment, materials and areas where they are walked on.
9. Keep cables off the ground suspend from structures where possible. It must be ensured that live cables are not in contact with metallic surfaces.
10. Do not stand in water while using the equipment and do not allow the equipment to get wet.
11. Check the power supply connections and make sure that the equipment is properly earthed.
12. Only Trained technicians who have full knowledge on how to operate the equipment are allowed to use.
13. Only qualified electrician must install and maintain the live electrical equipment.
14. Make sure that all equipment (If any used), cutting machine, bending machine and all other appliances (As Specified in MS Tool & Equipment Section) brought to the Site have relevant Test Certificates I Training.

## 8. Fire Risk

There is always a fire risk. However, the chances of fire can be reduced, and you will know what to do when a fire breaks out if you:

1. Always keep the workplace clean and tidy.
2. Handle machinery and tools that may generate sparks or heat carefully .
3. Do not smoke or use naked flames in any area where flammable and explosive substances are stored.
4. Know where fire extinguishers are
5. Located and how they are used.
6. Know the place of assembly for fire evacuation.
7. Provide portable fire extinguishers nearby the working area and all persons involved must be familiar how to operate the fire extinguisher (If Necessary or Advised by the HS officer)

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:

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

- a) The waste material from the installation of PVC Conduits & Accessories 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

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### 8.1 Interfaces

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- Not Applicable

### 8.2 Permits

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- Not Applicable

## 9 Appendices / References:

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### 9.1 Appendices:

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

### 9.2 References:

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

#### Material Submittal:

Material submittal for PVC Conduits & Accessories.

Material submittal for Tags & Markers..

Material Submittal for Cable Tray, Trunking ladder & Accessories.

Material submittal for GI Conduit, Flexible Metallic Conduit & Fittings, GI Back boxes.

#### 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 Conduit, Flexible Metallic Conduits & Accessories
M002-RLR-ELE-MES-00006	Installation of Earthing & Bonding System
M002-RLR-ELE-MES-00005	Installation of Fire Alarm Cables
M002-RLR-ELE-MES-00007	Installation of Lightning Protection System
M002-RLR-ELE-MES-00010	Installation of Wiring Accessories & General Power
M002-RLR-ELE-MES-00011	Installation of LV Cables & Wires
M002-RLR-ELE-MES-00013	Installation of Isolating Switches
M002-RLR-ELE-MES-00014	Installation of MCC Panels & Accessories
M002-RLR-ELE-MES-00015	Installation of Distribution Boards & Accessories
M002-RLR-ELE-MES-00016	Installation of Sub main Distribution Boards (SDB)
M002-RLR-ELE-MES-00017	Installation of Control Cables

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**Specifications:**

<b>Document No.</b>	<b>Document Title</b>
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-ELE-SPE-36013	Lusail Station - WP18.2 - DD2 - Earthing and Bonding. Specifications
QCS 2014	QCS 2014 Section 21 Part 7
M002-RLR-MEP-SPE-36303	Lusail Station - WP18.2 - DD2 – MEP Specifications
KAHRAMAA	Section 620 (Rigid Non Metallic Conduit) and Section 621 (Flexible Conduits)
BS EN 7671	Standards for Electrical Installation
BS 4607	Non-metallic conduits and fittings for electrical installations rigid PVC Conduits and conduit fittings, metric units
NFPA 70	National Electrical Code ®

**Reports:**

<b>Document No.</b>	<b>Document Title</b>
M002-RLR-MEP-RPT-27003	
M002-RLR-ELE-RPT-26000	

<b>Document No.</b>	<b>Revision</b>	<b>Title</b>
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