# METHOD STATEMENT FOR INSTALLATION OF CABLE CONTAINMENT SYSTEM

# RED LINE NORTH ELEVATED AND AT GRADE

## Revision and Issue Records

Review History

| Document No. | Revision | Title |
|---|---|---|
| **M002-RLR-ELE-MES-00001** | 1 | Method Statement for Installation of Cable Containment System |

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Document Review and Approval

| | | | |
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## Contents

# 1 Definitions and Abbreviations:

Table 1: Definitions and Abbreviations

| Abbreviation | Definition |
|---|---|
| BS | British Standard |
| DVE | Design Verification Engineer |
| ITP | Inspection and Test Plan |
| MSDS | Material Safety Data Sheet |
| NCR | Nonconformity Report |
| PD | Project Director |
| PMC | Project Management Consultant |
| QA/QC | Quality Assurance / Quality Control |
| QCS | Qatar Construction Specification |
| QMS | Quality Management System |
| SONO | Statement of No Objection |
| H & S | Health and Safety |
| PPE | Personal Protective Equipment |
| RLN-EAG | Red Line North Elevated and At Grade |
| RLRJV | Rizzani de Eccher, Lotte and Redco - Joint Venture |
| MS | Method Statement |
| 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 Cable Containment System at Qatar University Station. The Intent of this report is also to explain, the methods to be adopted to ensure works conducted on site are in compliance with approved design & material approvals. The Scope of Works includes the site inward inspection, material delivery inspection, installation to be adopted to ensure that all elements of the Cable Containment inspected for the works is in accordance with the project requirements.

# 3 Scope of Method Statement:

The scope of application of this method statement is the Installation and inspection of Cable Containment system for Qatar University Station (Sec.11 Chainage: 26+441 to Chainage: 26+711, Zone A to Zone F) 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 | • Delivering the overall works in a safe and timely manner, ensuring conformance with the approved design.<br>• Leading the team of engineers and surveyors, guiding them in the delivery of the works.<br>• Verifying that work done is in accordance with requirements of contract.<br>• 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 | • Establish the system assurance process.<br>• Manage the RAMS team and EMC team in delivering the system assurance submissions.<br>• Liaise with the System Assurance Manager for all safety and RAM related activities respectively. |
| 3 | Project/Site Engineer | • Ensuring that the works are being carried out in accordance with contract requirements and this Method Statement.<br>• Management onsite to ensure that the team carries out the works in time with the delivery schedule.<br>• Implementation of and adherence of the team to the QA/QC and H&S policies and procedure. |
| 4 | QA/QC Manager | • The preparation of the company's QA manual control and supervision of all amendments and revisions<br>• Monitor all quality related activities on the project<br>• Perform all internal and external audits on behalf of the company's management<br>• Preparation, monitoring, training of project staff on method statements, and control of material on site. |
| 5 | QA/QC Engineer | • 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.<br>• 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.<br>• He will monitor the installation works according to the approved drawing & method statement.<br>• He will coordinate with the Supervisory Consultant to carry out inspection/testing of the completed works.<br>• 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. |
| 6 | Surveyor | • Setting out all planned works.<br>• Monitoring the works being carried out to ensure they are at the correct levels and measurements.<br>• Maintaining documents relevant to alignment and height control. |
| 7 | Document Controller | • Documenting, distributing and maintaining data in the prescribed format.<br>• Making the necessary data available as requested by the team or the client. |
| 8 | HS Inspector | • **Identify** HS requirements, non-compliance or otherwise by conducting both formal and informal audits and communicate said to relevant site management<br>• **Advise** site management on HS substandard acts and HS substandard conditions on a continuous basis and record said.<br>• **Coordinate** and record action by site management as identified and advised.<br>• **Verify** actions taken by site management , record and report accordingly<br>• **Conduct** relevant HS administrative functions and additional tasks as directed by HS Management. |
| 9 | Supervision Engineer | • Checking the compliance of works to the design.<br>• Carrying out comprehensive supervision of all construction works.<br>• 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.

### 4.1.2 Equipment and tools:

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

- PPE for all staff and labour
- Measuring tapes and setting out markers
- Spanner Set

- Spirit Level
- Ratchet Wrench
- Round files
- Marker/Whitener
- Line Marker
- Mobile Scaffolds
- Man Lift (MEWP)

- Baby Grinder (Cutting & smoothing the sharp edges after cutting) (shown in figure A)
- Metal cutting saw (shown in figure B)
- Hacksaw
- Drilling Machine
- Zinc Spray Paint

Figure A

Figure B

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:

Cable trays/ladders shall be of hot dip galvanized after fabricate ion type.
Cable trays shall comply with BS 7671 and NFPA 70 - National Electrical Code. Cable trays shall be constructed from mild steel hot dip galvanized.
Trunking, associated parts and accessories shall be fabricated from hot dipped galvanised sheet all accessories and fixing materials shall also be of galvanised sheet steel.
All raceways shall be sized considering 15% additional space capacity.
Cable trays/ladders and Trunking shall be fire rated for 2hr as per NFPA 130

- All Materials will be tested in accordance with Inspection and Test Plan.
- Cables trays/ladders and Trunking (Sizes) as per Approved Drawings
- Cable Tray and Trunking cover
- Proper bolts and fixing accessories
- Join point
- Turnings parts with different angles as per approved shop drawings.

➢ Handling and Storing of Materials

Note: All materials classified as COSHH will be stored in line with the current RLR COSHH procedures. (M002-RLR-EMS-PLN-00009)
On receipt of Cable Ladder/tray/ trunking & fittings, the materials shall be handled & stored in line with the following procedure:

➢ Handling upon Material Arrival

1 Mechanical handling will be considered prior to manual handling.
2 When materials arrive at site shall be inspected randomly and ensure that the materials are as per approved material submittals.
3 Thickness need to be checked using Vernier Calliper

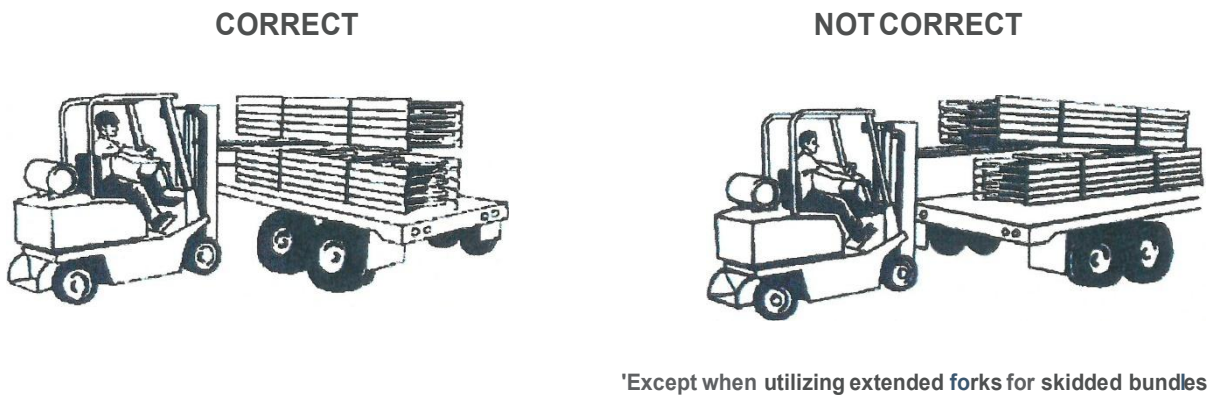
4 Any discrepancies, damage, and etc. found to the materials shall be notified and reported to QA/QC Engineer and Project Engineer for further action.
5 Materials found not suitable for site use shall be removed from site immediately.
6 While unloading, shifting and storage, it should be ensured that there are no damages.
7 Manufacturer's recommendations for Storage, transportation of the Materials Shall be followed.

- Receiving and Unloading

1 Material for Cable tray/trunkings shall be checked, if found according to approved material, the following procedure shall be practiced.
2 Cable tray/trunkings are generally bundled and shipped via motor or could be crated or loaded in containers. Accessories and small components are boxed and often skidded.

- When unloading with a forklift truck

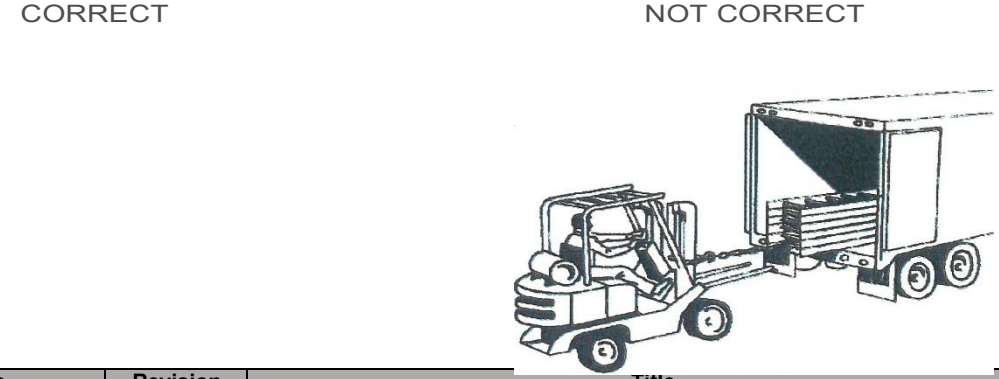
1 When placing the bundle transversely on the forks, make sure the forks are positioned sufficiently widely apart.
2 When placing the bundle longitudinally on the forks, place protective timber between the parcel and the fork's base. Better is to transport the parcel in transversal direction on the fork teeth. (Fig-1)

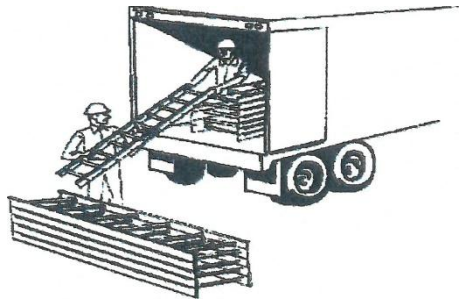



**(Figure-1) Sample Picture (Cable Tray Bundles offloading)**

- Unloading from the Closed Container

1 Chains and ropes shall not be used.
2 Do not move the bundle on the truck with the aid of levers or crowbars.
3 Remove the cable manually as show in the (Fig-2).





**(Figure-2) Sample Picture (Off Loading Details)**

1 Cable tray/trunkings are to be checked on unloading. Possible damages must be reported on the delivery note.
2 While unloading, shifting and storage, it should be ensured that there are no transit damages.
3 Manual handling of material shall be done only for the small lengths/sections cut according to appropriate weight category.
4 Manual handling of the material shall be according to QCS 2014 Section 11 Part 1.2.7.

- Storage

1 Cable Ladder/tray/ trunking fittings will be stacked on a flat surface free from sharp projections, stones or other objects likely to caused point loading or Cable Ladder/tray/ trunking deformation. Figure-3
2 The storage area shall be kept in proper level, so that the stacked cable tray/trunking May be uniformly supported throughout their length.
3 When products of five metre lengths or above are received in bundles, they shall be supported with a minimum of three timber bearers which provide sufficient clearance to accommodate the forks of a forklift truck. Bearers shall be spaced evenly along the length of the bundle.
4 When shorter length products are packed in bundles, they shall be supported with a Minimum of two timber bearers which provide sufficient clearance to accommodate the forks of a forklift truck. Bearers shall be spaced evenly along the length of the bundle.
5 Bundles should be placed on a flat level surface with timber bearers. If bundles are Stacked on top of one another they should be aligned vertically.
6 The stacks will be protected from direct sunlight by covering with tarpaulin sheets.
7 Cable tray/ ladder/trunking of different sizes will be stored separately.
8 Cable tray ladder/trunking/basket shall be stored in a place free of water, dust and adequately covered to avoid any kind of damages.
9 All materials to be used shall be as per approved.
10 To avoid damage, store individual cable tray/trunkings only on a wooden base.
11 It shall be ensured that the fabricated cable tray/trunking 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.

(Figure-3) Sample Picture (Cable Tray Storage)

## 4.2 Site Execution:

### 4.2.1 Program:

Installation of Cable Tray is expected to be performed starting Oct-2016. Detail schedule of Installation activity will be provided in the weekly update of the 3-weeks look ahead construction schedule.

### 4.2.2 Installation procedure:

- Pre-Requisites

It shall be ensured that all work is completed and site is cleared from civil section to install Cable Containment System.
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.

1. Cable Tray, which are more than slightly damaged, shall be rejected.

| Sr.No | Cable Tray | Horizontal Spacing | Vertical Spacing |
|---|---|---|---|
| 1 | Width size up to 300 mm | 1200mm | 100mm |
| 2 | Width size Larger than 300 mm | 1000mm | 100mm |
| 3 | Cable tray joint spacing | 1.2mm | 1.2mm |

- Treading Rod Details

1. The choice of using threading rod size shall be according to the size of cable tray/ trunking/ ladder/basket and as per approved shop drawing.
2. The sizes of the threading rods are as given below.
    a. 8 mm
    b. 10 mm
    c. 12 mm
    d. C-Channel Size (41mm x 41mm x 2.5mm)

- Field Modifications

1. Eventually it will be necessary to field cut the cable tray/ladder/trunking/basket because the length of the cable tray/ladder/trunking/basket required will be less than standard length.
2. If cuts need to be made as requirement, waste can be prevented by making a cut list, which shall be used to calculate the most efficient use of the standard sections.
3. Cable tray/ladder/trunking/basket field modifications shall be made by qualified personnel only.
4. Using a square that reaches across the width of the cable tray, gauge off the edge of one side rail and mark both flanges (Sample Figure 4.1). Next, position the square as shown in (Sample Figure 4.2 & 4.3) and mark the web of the rail. Marking can be done with a scribe, marking pen, or a pencil.

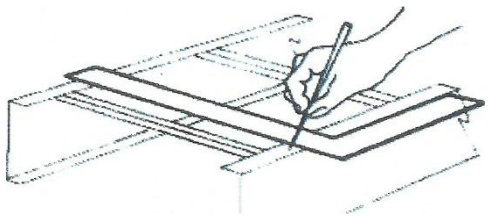


Figure 4.1(Sample Picture)
Marking of the Flanges

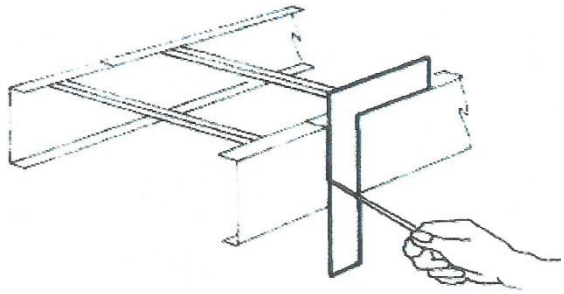


Figure 4.2 (Sample Picture)
Marking the Web of the Rail

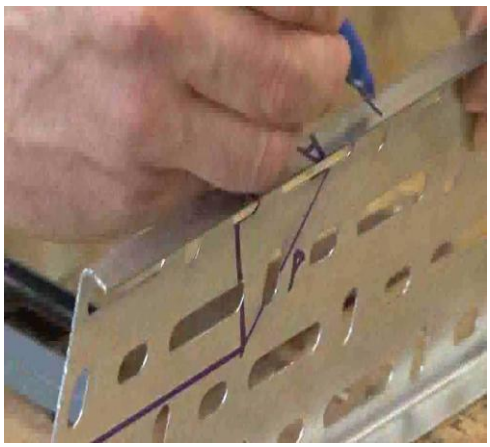


Figure 4.3 (sample Picture) Marking on the Cable Tray

- Cutting

1. The cut can be made using a hand held hack saw, hand-held band saw, offset bolt cutters or high speed grinder. It is important to get a square cut to ensure a good splice connection. (Sample Figure 4.3-A &B).
2. After cutting, smooth the cut edges to remove any burrs to prevent cable damage.

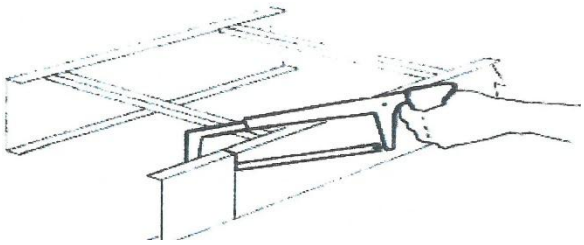


Figure 4.3 A (Sample Picture)
CUTTING WITH HAND-HELD BAND SAW

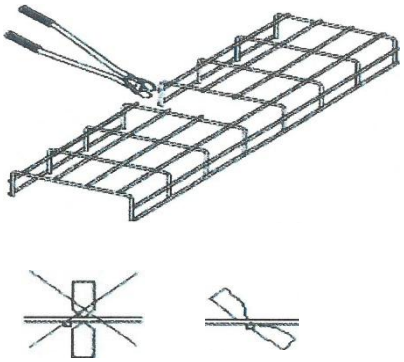


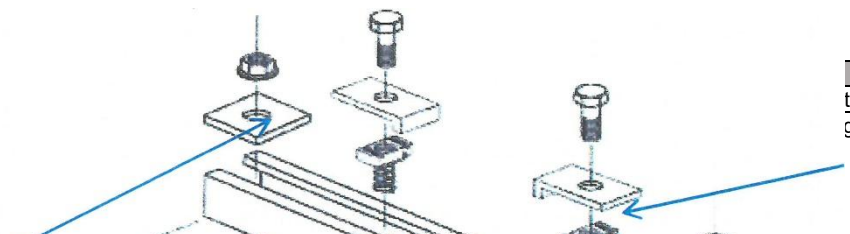
Figure 4.3 B (Simple Picture)
CUTTING WITH BOLT CUTTERS

- Finish Touch Up

1. Cable trays that have a hot dip galvanized coating applied after fabrication need to be retouched after cutting, drilling, or deburring or if the coating gets damaged.
2. These cutting operations leave bare metal edges that will begin to corrode immediately.
3. Cable trays made from mill galvanized steel do not need to be touched up because they are not designed to be used in heavily corrosive atmospheres and have bare metal edges inherent in their design.
4. Touch up of the galvanized finish must be done according to ASTMA 780, Repair of Damaged Hot-Dip Galvanized Coatings. Use an approved zinc-rich galvanizing material that meets the requirements of ASTMA 780. If it is not noted on the product label as to whether the material meets ASTMA 780, the material specification sheet should be obtained from the galvanizing material supplier. The paint can be applied by brushing or spraying.
5. Other protective coatings that are cut or damaged must be touched up with compatible coatings.

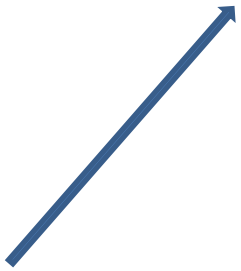
- Installation Procedure

1. All Health and Safety Requirements shall be obeyed for transportation and also for uploading to storage area and all personal protection equipment shall be used.
2. Coordinate with other trades prior start installation.
3. The route for the cable trays/trunking/ladder shall be established on Station walls /slab/ above ceiling & on walls, and marking shall be done with chalk liner. Ensure that the route conform with the latest approved coordinated services drawings.
4. Mark the locations of supports as per the approved shop drawing for the installation of cable containment.
5. It shall be insured that Cable containment supports do not touch other services.
6. Install the threaded rod and C channel bar supports for installation. Make sure that the supports are properly anchored, rigid and aligned. Fig- 4 (a & b)



Cable Tray /Trunking Fastening Details

For threaded rod tightening



C Channel

Figure - 4 (a) Sample Picture (C-channel hanging Details)

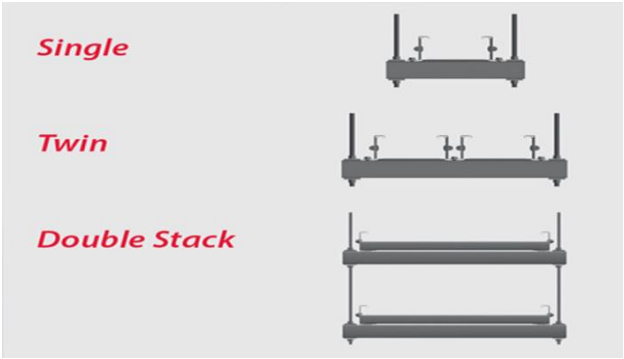



Figure - 4 (b) Sample Picture
(Cable tray Supported by C-Channel and Threaded rod)

1. Install Cable trays/trunking and ladders ensuring that it is properly fixed to its supports.
2. For the cable tray to be installed in the Station use the supports as approved by the Engineer and specified in the shop drawings.
3. Where sizes of Cable Trays/Trunking are not detailed on drawing then tray shall be adequately sized to support the cables without bunching and a 15 % reserve margin shall be allowed in size and weight be loaded.
4. Additional support shall be provided where the Cable Tray /Trunking changes direction or cables drop out of the cable tray.
5. Where necessary to cut the cable trays, the cutting line of the cable trays shall be continuous and straight. Burrs and sharp ends shall be removed prior to the installation of tray section or accessories.
6. Cable ladders or cable trays/trunking shall be repaired after cutting, drilling and de-burring.
7. Cable Trays/Trunking and Ladders shall be connected to adjacent lengths, tees, bends and fittings with approved couplers and securely fastened by mushroom head steel roofing bolts and nuts. Connection shall be mechanically strong so that there is no relative movement between joints. Fig - 5 A and 58.

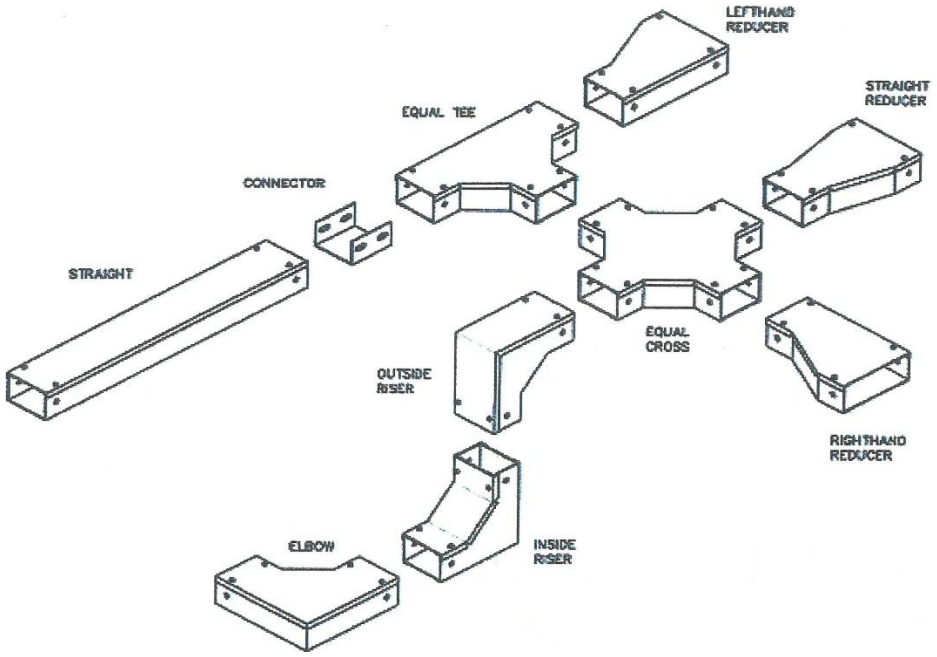



Figure - 5 A (Sample Picture) Cable Trunking Accessories

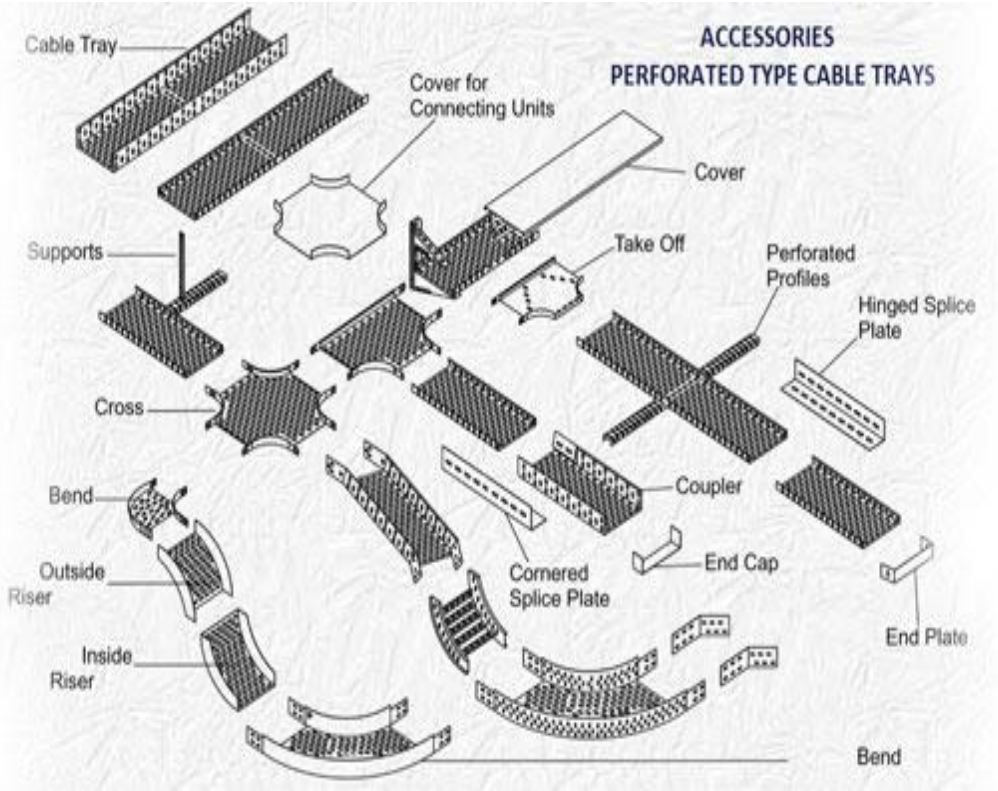



Figure - 5 B (Sample Picture) Cable Tray Accessories

Earth links shall be fixed on the adjacent connection of Cable trays/trunking, ladders and fittings to maintain the electro-mechanical continuity (Fig-6 A Earth links).

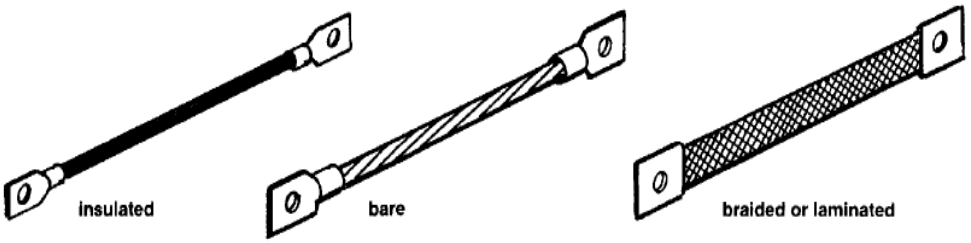



Figure - 6 A (Sample Picture) Earth Links for Cable Tray

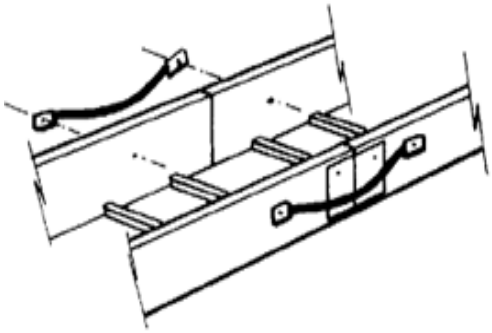


Figure 7.1
EXPANSION SPLICE PLATES

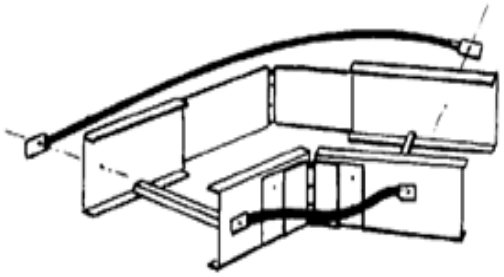


Figure 7.2
HORIZONTAL ADJUSTABLE SPLICE PLATES

Fig - 7.1 and 7.2 shows the earth link installation for liner cable tray and installation of earth links on bends.

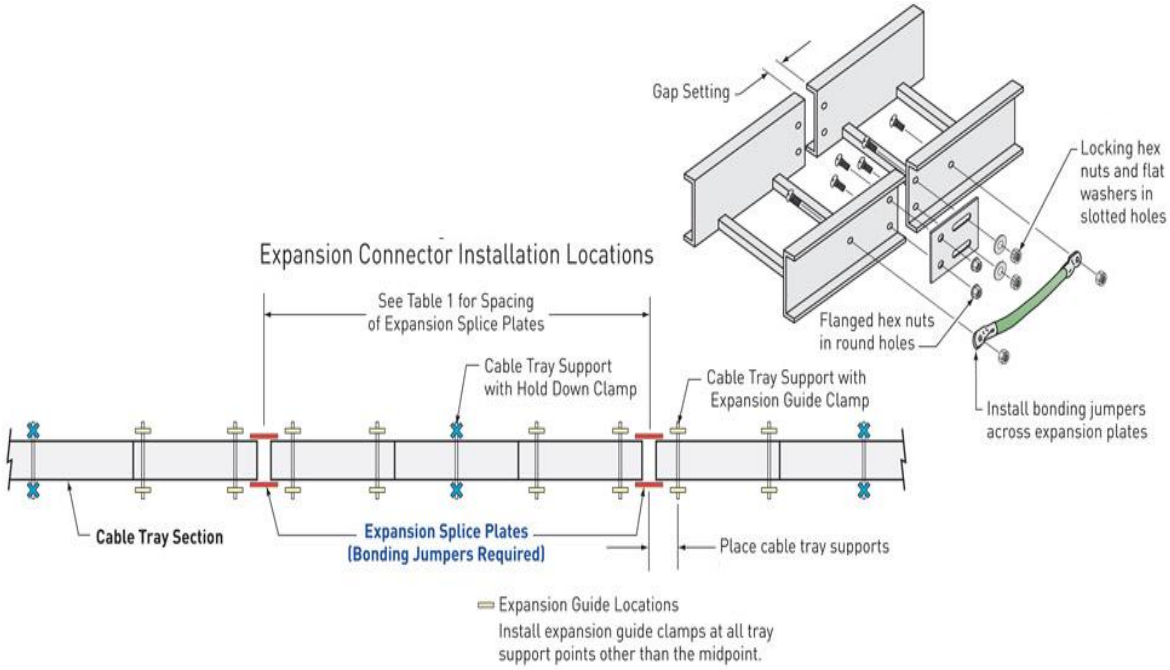



Figure - 8 (Sample Pic) Cable Tray at expansion joints

1. Approved sleeves shall be provided where cable tray passes through a floor or fire barrier, the same shall be sealed with fire resistant sealant I fire stop materials. And the sleeves shall be of same size as cable tray/trunking/ladder.
2. The radius for cable ladder and cable tray fittings shall be according to the bending radius and stiffness of the cables installed on the cable ladder or cable tray.
3. Typically, the cable manufacturer will recommend a minimum bend allowance for each type of cable. The radius of the cable ladder or cable tray fitting should be equal to or larger than the minimum bending radius of the largest cable installed.
4. Where fittings shall be used, additional supports shall be provided under the adjacent straight lengths close to the fitting joints (150mm) as shown in the Fig-9
5. Any cut ends support, rods, etc, must be corrosion protected by use of galvanized or equal.

No extended rods to be left

Where in a cable trays carrying power cables run in parallel with low current cable trays, a clear distance of (Minimum of 100mm) shall be kept throughout the installation.

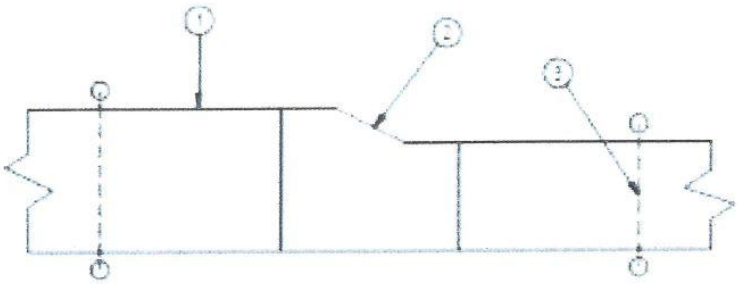



Figure- 9 (Sample Picture) Additional Supports for Cable Tray/Trunking Fitting

6. Cable trays for Station lighting run in parallel with BACS cable trunk, a clear distance of (Minimum of 50mm) shall be kept throughout the installation in the Station.
7. Maintain a clear space of (Minimum of 50mm) between parallel running LV cable trays.
8. Fix identification stickers for the power cable trays and ELV cable trays and other ELV services accordingly.
9. Raise Request for Inspection for the Cable Trays/Trunking and Ladders Installation.

- Cable Tray/ Trunking Covers

1. Covers shall be provided for cable tray or trunking on Roof for mechanical and environmental protection for cables being carried by cable tray or trunking after the cable installation approved inspection.
2. Cover for vertical running cable trays shall also be provided.
3. All cable trunking shall be provided with cover after the cable installation approved inspection.

- ELECTRICAL CONTINUITY

Cable ladder/trunking and cable tray systems that are electrically conductive should have adequate electrical continuity to ensure equipotential bonding and connections to earth. Installations shall comply with the requirements of BS 7671 (The Wiring Regulations).

- 12.1 The Continuity Test sequence:

1. Switch on your Multimeter, and set the dial to continuity mode (indicated by an icon that looks like a sound wave )))**)**

2. The Multimeter tests continuity by sending a little current through one probe, and checking whether the other probe receives it.

***Note: - The above methods may require adjustments due to manufacturer's tolerances and wear in different bending machines.***

3. To complete your continuity test, place one probe at each end of the earth link strip that need to be checked for continuity.
4. If your connection is continuous, the screen displays a value of zero (or near zero), and the Multimeter beeps.
5. Repeat this test for other joints and record the result as Pass or Fail on the sheet as given.

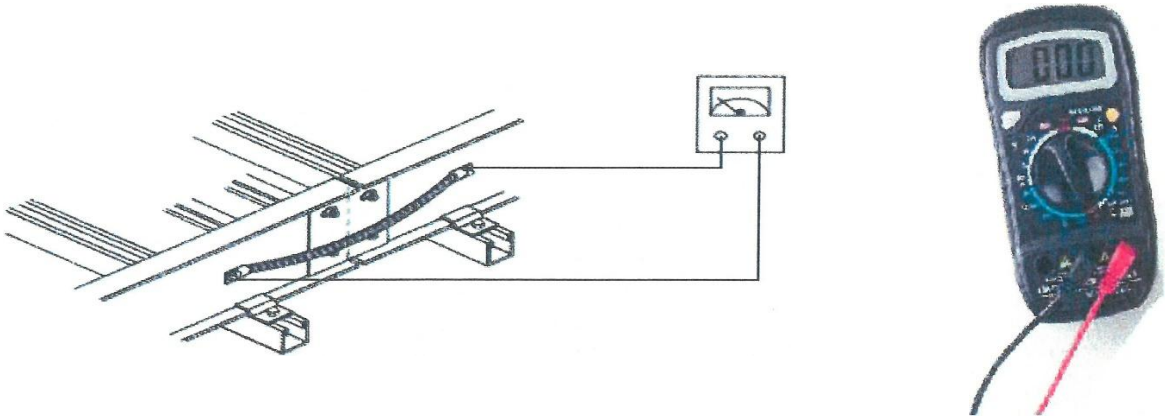


Figure- 10 (Sample Picture) Continuity check for Cable Ladder/Tray/Trunking joints

- 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/basket; 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:

1. ITP reference No: M002-RLR-ELE-ITP-00001.
2. Quality records shall be provided as identified in the ITP and maintained as per ISO 9001/QCS 2014-part section 2 QR Quality Guidelines.
3. Required form of records and reports are defined in the Inspection and Test Plans. Refer to Doc. No: M002-RLR-ELE-ITP-00001.

## 6 Health and Safety Plan:

### 6.1 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) Workplace HS communication ie Toolbox talks, task briefings and HS non compliant notices / closeouts are compulsory.

e) 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<br>EMERGENCY CONTACT NUMBERS<br>In case of emergency, accident, sickness** | |
|---|---|
| **QATARI EMERGENCY<br>CALL – FIRST AID, FIREFIGHTING BRIGADE, POLICE** | **999** |
| **RLR Emergency Number** | **74783299** |
| **QATAR RAIL DUTY MANAGER** | **44331777** |
| **KAHRAMAA CALL CENTER<br>ELECTRICITY & WATER** | **991** |
| **FIRST AIDER** | **74798190** |
| **DEPUTY RESCUE MANAGER: Mr. Joseph Linehan** | **30481706** |
| **HS Manager: Mr.Johann Brink** | **30461333** |
| **HS Deputy Manager : Mr.Varghese Chattukulam** | **30986153** |
| **Water Team** | **74798184** |

| | |
|---|---|
| **Environmental Assistant: Mr.Chaitanya Veruva** | **74795948** |
| Management Office: _____ | 44719853 |

Contacts for Traffic issues:

| | | |
|---|---|---|
| Security Manager | Mr. Arif Khan | 74795950 |
| Traffic Manager | Mr. Eur Ing Miguel | 50050399 |

### 6.2 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. Electricity
    i. Before using an electric tool, check the tool and its plug and connecting cable.
    ii. Do not use a damaged tool.
    iii. Do not use an electric tool unless its connecting cable is well protected.
    iv. If you meet any fault or problem, report it to your supervisor immediately.
    v. Make sure that the power cables have good insulation and properly connected not causing a tripping hazard.
    vi. Keep cables off the ground suspend from structures where possible. It must be ensured that live cables are not in contact with metallic surfaces.
    vii. Do not stand in water while using the equipment and do not allow the equipment to get wet.

Note: Always wear safety spectacles when using the equipment.
Other specific risks and 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 cable containment system 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.

e) Nose mask (PPE) to be used at the time of grinding works or at the time of applying zinc spray paint,

## 8 Interfaces and Permits:

### 8.1 Interfaces

- Not Applicable

### 8.2 Permits

- Not Applicable

## 9 Appendices / References:

### 9.1 Appendices:

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

### 9.2 References:

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

**Material Submittal:**

Material submittal for Cable Tray, Trunking, Ladder and Accessories

**Method Statement for:**

| Document No. | Document Title |
|---|---|
| M002-RLR-ELE-MES-00002 | Installation of GI Conduits, Flexible Conduit & Accessories |
| M002-RLR-ELE-MES-00005 | Installation of Fire Alarm Cables |
| M002-RLR-ELE-MES-00011 | Installation of LV Cables & Wires |
| M002-RLR-ELE-MES-00008 | Installation of Light Fixtures & Accessories-Back of House |
| M002-RLR-ELE-MES-00009 | Installation of Light Fixtures & Accessories-Front of House |
| M002-RLR-ELE-MES-00010 | Installation of Wiring Accessories & General Power |
| M002-RLR-ELE-MES-00015 | Installation of Distribution Boards & Accessories |
| M002-RLR-ELE-MES-00017 | Installation of Control Cables |
| M002-RLR-FRS-MES-00009 | Installation of Fire Alarm Control Panel & Repeater Panels |

**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 |
| QCS 2014 | QCS 2014 Section 21 Part 9 |

**Reports**

| Document No. | Document Title |
|---|---|
| M002-RLR-MEP-RPT-27003 | |
| M002-RLR-ELE-RPT-26000 | |