Method Statement for Structured Cabling System Installation

Project No:	

REVISION HISTORY	ISSUE DATE	DESCRIPTION	REVIEW / STATUS
00			

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

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1.0. Purpose

This Method Statement covers for Structured Cabling System Installation.

2.0. Scope of Work

2.1. This method of statement covers the nature and type of work for structured cabling installation as per approved material submittal and site requirements for the construction project.

2.2. Method statement also covers frequency of which the inspections are to be carried out. Any contractor to carry out works under main contractor must comply with this method statement as per manufacturer's recommendations and international standards.

2.3. All documentary requirements for this installation purpose will be submitted for approval and this will include Manufacturers data, certificate of compliance, brand designation, type and class including samples.

2.4. Many of the installation requirements included in the procedures will come from the specialist supplier.

2.5. Care should be taken to ensure that the requirements of the manufacturer and any of his technical manual (s) have been included.

3.0. References:

3.1. Project Specifications
3.2. Approved Drawings
3.3. Approved Material Submittal
3.4. Approved Safety Plan.
3.5. Approved Shop Drawings
3.6. QA/QC Installation
3.7. Regulations

4.0. Roles & Responsibilities

4.1. Project Manager

4.1.1. Project manager have full authority and overall responsibility to manage, supervise, control the works.

4.1.2. PM have direct responsibility for ensuring safe working practices and compliance with requirements of regulatory authorities, co-ordinate with consultant engineers for execution of the scope of works.

4.1.3. Implement the project quality systems to be the satisfaction of the project requirements.

4.1.4. Review changes and variations to evaluate impact of those on time and schedule.

5.0. Electrical Engineer

5.1. Electrical engineer is responsible for ensuring that all works are carried out as per the specifications, approved shop drawings and Method Statement as per the manufacturer instructions and coordinated with other works.

5.2. Co-ordinate all the site activities according to work schedule, installation according to the Project Specifications, Manufacturer Data Sheet and approved shop drawings.

5.3. Liaise with site representatives of Consulting Engineer and coordinate safety procedures with site supervisors and site foremen.

5.4. Will Co-ordinate and explain the work to be carried out to the Supervisors / Site Foreman.

5.5. Ensure the compliance of works with the related approved Quality Control Procedure and co-ordinate with consulting engineer to advise for the areas to be issued for inspections.

6.0. QA/QC Engineer

6.1. QA/QC engineer is responsible for monitoring that the works are in fulfillment with the specified requirements that all quality records related to the electrical works are complete.

6.2. To ensure that all installations are done as per approved material, approved layout shop drawing and coordination drawings, approved installation details, and approved mock-up.

6.3. Carry out all the inspections with the main contractor engineers and consulting engineers.

7.0. Site Supervisor & Foreman

7.1. The project team of experienced Supervisors and Foremen will ensure the quality of the installation work carried out, and will also ensure that it is as per the latest approved shop drawing issued for installation and according to instructions received from the Site Engineer.

7.2. Provide their subordinates (charge hand and skilled labors) adequate information to carry out their duties.

7.3. Ensure that he has adequate resources of machinery, labor and materials to carry out all the activities efficiently and to discuss with the site engineer.

7.4. Ensure safe and clean working environment to enforce a safe working habit.

7.5. The implementation of the procedures mentioned in method statement will be carried out by site Supervisor.

8.0. Tools & Equipment

Below is list of necessary tools and equipment for conducting the structured cabling system installation work.

8.1. Ladders/Scaffoldings

8.2. Continuity Tester

8.3. Multimeter / Category 6A Cable Tester

8.4. OPTIMAL TIME DOMAIN REFLECTOMETER (OTDR) METER

8.5. Mobile Communication Devices

8.6. Hand drilling machines
8.7. Hand Gloves/Fall Protection Equipment and other PPE as necessary
8.8. Standard Electrical tool box
8.9. Mechanical tool box / Tool Kit

9.0. Inspection & Storage of Materials

9.1. Submit Material Inspection Request upon receipt of materials delivery to site. Attach Delivery Receipt, Material Submittal Approval and other documents to show complete compliance with specifications and QA/QC Plan.
9.2. Any material found not as of approved material or with surface damage which is not rectifiable will be set aside. These materials will be labeled and returned to supplier warehouse and a Non-conformance Report will be issued to the supplier by QA/QC superior.
9.3. Deliver and store materials in manufacturer's original packaging labeled to show name, brand, type and grade.
9.4. Store materials in protected dry location off-ground in accordance with manufacturer's instructions.
9.5. Survey and check site for material delivery accessibility.
9.6. Lay down area at site to be coordinated with main contractor and arrangements to be made for unloading and / or mobilization of materials.
9.7. Ensure all the hoisting chain / belts are in good condition and checked by specialist third party and valid certificate are to be provided prior to any lifting activity unloading of materials at designated storage area and ensure no blockage to any access.
9.8. Ladders / Scaffoldings to be secured firmly over the working platform and inspected by competent personnel and tagging system (green/red) are implemented, prior to start of work.
9.9. Prior to commencement of work, the Engineers & Supervisor/Foreman will inspect all materials delivered to work place are checked for with their shipment check list and ensure they are the relevant piece for the site and materials are not damaged, without excessive scratches or visible corrosion.
9.10. Only required materials to be shifted to site and stored temporarily and ensure excess materials are not dumped to site and congest the working area.
9.11. Once work is completed excess materials and tools to be return back to stores, work area to be kept clean.

10.0. Pre Installation Requirements

10.1. All workers to attend safety induction conducted by main contractor and given specific training on the safe installation methods.
10.2. The Site Engineer and Site Supervisor will give necessary instructions to tradesmen (electrical technician) and provide necessary approved construction/shop Drawings of latest revision along with coordinated layouts.
10.3. The Site Supervisor/Foremen will also check that proper tools and equipment are available to carry out the work and are in compliance with contract specification.
10.4. Site Supervisor also explains to the tradesmen regarding safety precautions to be observed during the installation of data cabling system.

10.5. All operatives will attend safety induction further along with the relevant document copies i.e. copy of safety induction, valid visa / company ID copy, and copy of previous experience and training in the same job which proves his competency.

10.6. Supervisor should closely monitor the activity, if he finds any operative is lagging on safe work competency, he will be sent for re-induction and even retraining if deemed necessary.

10.7. Examine the areas to execute the work and the conditions under which the work will be performed. Identify conditions detrimental or unsafe for the proper and timely completion of the Work. Do not proceed until unsatisfactory or unsafe conditions have been corrected.

10.8. Check and verify if drawings are approved for site execution. Coordinate schedules and verify the site progress with Civil/Architectural Section for the timely execution of the work.

10.9. Sequence of Work for Structured Cabling Installation

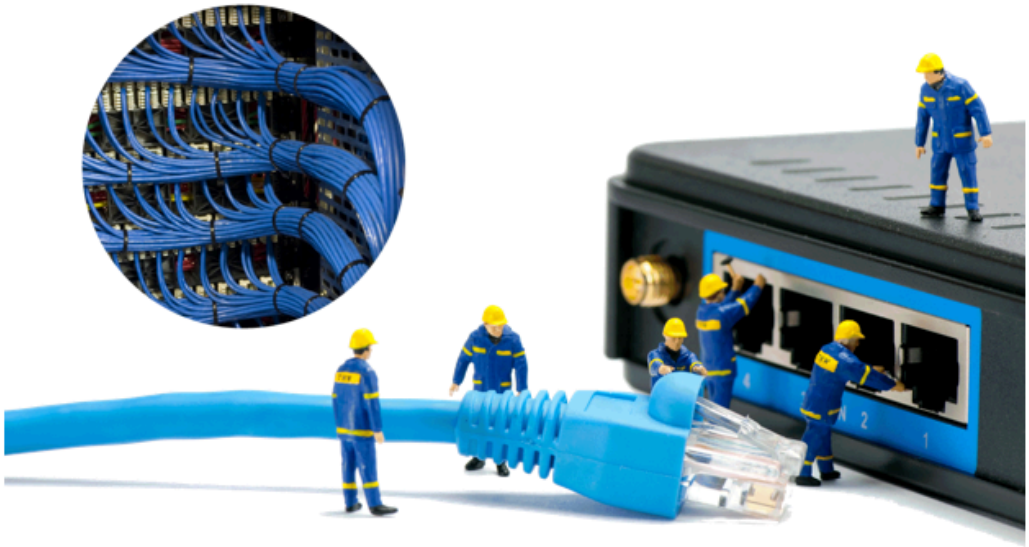
10.10. Ensure all materials have approved submittals and approved shop drawings as per manufacturer's recommendation and project specification before commencing the structured cable installation works.

10.11. Check and verify the cable (UTP cable) is not cut or damaged during or before installation.

10.12. Ensure that all the Containment (Cable Trays, GI Conduit and or the GI Trunking) for the Structured Cabling Cables and Fiber Optics are installed as per approved shop drawings.

10.13. Containment (Cable Trays and or GI Trunking) will be provided above the panel for bringing the device loop wiring inside.

10.14. Dedicated cable trays shall be provided for the telecom distribution from Telecom Rooms to the Landlord Main Telecom Rooms.



10.15. Install / Laying of Cables (UTP cable / fiber optic cable) unto the Dedicated Cable Trays as per approved shop drawings and projects specifications.

10.16. Make sure the length of the cables is enough for termination (Not exceeding 1.5 meter

extra length). Fixing and termination must be done by competent electrician.

10.17. The Structured cabling Installer (manufacturer's representative specialists) shall be responsible for the detail design, supply, installation, testing, verification, instruction and documentation of a complete structured cabling system and for the incoming cable the telecom provider specialist will be the one who will terminate.

10.18. Ensure that all wiring and equipment closets (patch panels) at each location for terminations of floor distribution and backbone cabling.

10.19. Installation of all wiring equipment risers associated with the backbone cabling within the main communication room and with further network equipment provisions.

10.20. Ensure a dedicated containment of structured cable for floor installation and termination of provided equipment and general outlets.

10.21. Make sure the installation of Backbone fiber optic cable links between floor risers and Main Communication Rooms and interlink between racks. Cables run on dedicated containment and diverse routes where possible.

10.22. Install the backbone UTP cable that links between floor risers and main communication rooms and interlinks between racks. Ensure that all cables run on dedicated containment.

11.0. Inspection for Twists & Damages

Check the UTP cable and Fiber Optics cable number which is being tested and note it down, below is the checklist for cable pair twists and fiber optics cable.

11.1. Verify that in punch down termination blocks, none of the cable pairs are untwisted.

11.2. Check whether the twists are maintained up to the index strip on the punch down termination block.

11.3. Inspect the voice and data cable jacket runs to the edge of the punch down termination block.

11.4. Physically check and verify that the cable pairs terminated in the RJ45 Jack do not twist into each other.

11.5. Check that the stipulated bend radius is not less than 4 times the cable diameter.

11.6. Randomly check the individual cable for cable stress / pulling tensions.

11.7. Check that all cables are terminated correctly at both ends.

Provide full testing, certification and verification of complete installation including full labeling linked to cable identification software which includes full test records.

Interconnection Requirements for Structured Cabling Network

Provide complete earthing and containment for its cable and provide pin down and earthing arrangement with switch. Ensure that all enclosure conformed to IEC 297-4 and will provide at the following locations:

- Main Communication Room
- Telecom Intake Position
- Telecom risers within Car park at each level for each riser

- Telecom riser within retail at each floor riser with in plant rooms

Ensure that the backbone connections provide fiber patch panels for multicore connections to remote panels and to local equipment panels. Provide Cat 6A RJ45 patch panels for backup connections to remote panels, and for local connections within the equipment room. Ensure that the backbone structured network shall serve the following equipment as listed:

- Wall mounted telephone handset in each plant room for direct communication between the Fire Control Center and the Plant room.
- Information points in the circulation public areas.
- Internet access terminal.
- Vending machines.
- Wireless repeater stations (transceivers).
- Telephone and Data outlets within the Fire Control Center.
- Cash pay stations (for car park ticketing, etc.)
- Wireless LAN, DECT & GPS distribution points.
- Access control system.
- CCTV Systems
- Interface to building systems, including but not limited to BMS; PMMS; Lighting Control; Emergency Lighting System and etc.

Upon Termination / Connection of wiring must be done by competent qualified electrical technicians and coordinated as per manufacturer's recommendations and project specification. All cables shall be terminated by the manufacturer's specialist only. Ensure the complete core tagging / labeling of all cables and equipment installed, as per approved shop drawings and specifications. After installation, cover the panels and other field devices with polythene sheets as protection against dirt, moisture, and other construction debris and as per approved IAQ Plan.

12.0. Inspection & Testing Requirements

12.1. The quality engineer shall verify that the supervisor/foreman with construction responsibilities for installation is familiar with this method statement and is issued with copies of the inspection checklists and test plans.

12.2. Site engineer should satisfy the procedures provided by QA/Qc inspectors to ensure the as-installed condition of the Structured Cabling installation meets the specified engineering requirements and approved drawings.

12.3. As part of the assessment, the QC Inspection Procedures must ensure a quantitative or qualitative acceptance criteria for determining the prescribed activities have been accomplished satisfactorily.

12.4. The QC inspection personnel, in coordination with Site Supervisor, should verify that the quality of the related Structured Cabling installation and testing activities are within the prescribed criteria.

12.5. The Supervisor should verify any as-built record of Structured Cabling installation & testing, and confirm that the information meets the project requirements.

12.6. Quality Control Engineer along with Project Engineer and Site Supervisor will monitor that all components are installed as per contract specifications and approved submittals.
12.7. Installations will be inspected by the manufacturer's representatives and the signed report will be forwarded to the consultant together with WIR.
12.8. Readiness for Work Inspection Request (WIR) will be confirmed by Site Engineer to QA/QC department for verification and inspections.
12.9. QA/QC engineer will submit WIR to consultant inspection and approval in accordance with ITP, architectural approval for wall/ceiling to be attached with WIR.
12.10. Readable stamped approved drawing to be available during installation and inspection.

13.0. Health & Safety Requirements

13.1. A task based risk assessment and mitigation strategy shall be submitted and approved before start of cable installation works.
13.2. Work will commence as per safety regulations laid down in the contract specification and project safety plan.
13.3. Mandatory safety gears will be used. All personal protective equipment will be used as appropriate according to the nature of the job. For electrical works. Provide non-conductive tools and PPE.
13.4. Working on live power cables/equipment is not allowed. ELCB will be used in temporary panel boards; industrial connectors/sockets to be used for temporary power cable connections.
13.5. Always maintain cleanliness in work areas. Housekeeping will be of good standard and all cut pieces and debris will be removed by the end of workday.
13.6. Ensure that all lifting operations are carried out as per approved procedures and safety regulations.
13.7. Ensure that adequate barricade and signage "DANGER KEEP-OUT. HEAVY LIFTING IN PROGRESS" is provided around the affected area. Work will be executed through Permit to Work system.
13.8. All scaffoldings will be checked by competent person and should carry green tags "safe to use", prior to use for working purpose.
13.9. All plant tools tackles will have valid certificate. Lifting machines, appliances and gear to be examined by qualified rigger and come with valid certification.
13.10. Operatives working at height to wear their full body harness and should be anchored to a rigid point.
13.11. Nobody is allowed to stand on the top of the step ladder; worker should stand two rungs below from top of the step ladder. A co-worker must hold the step ladder while in use.
13.12. Work inside shafts are not allowed without work permit and supervision. Work areas to be provided with proper lighting and ventilation at all times.
13.13. Store tools and equipment and unused materials stacked in a safe area at the end of the workday.
13.14. Method statement and risk assessments to be briefed to all concerned personnel and signed as read / understood.

14.0. Attachments:

14.1. Safety Risk Assessment.
14.2. ITP for Installation of Structured Cabling.
14.3. Checklist for Installation of Structured Cabling
14.4. Material Inspection Request Form
14.5. Work Inspection Request Form