



**Al Andalus Tr. & Elect. Cont.
Co. L.L.C**

Doc. Ref.

ATECCO-JTM /
ELECTRICAL

REV.

1

Date


DECEMBER - 2011

PROJECT QUALITY ASSURANCE PLAN

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**AL ANDALUS TRADING
&
ELECTRICAL CONTRACTING
COMPANY (L.L.C)**

**PROJECT QUALITY
ASSURANCE PLAN**

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PROJECT SPECIFIC QUALITY ASSURANCE PLAN

CONTROLLED COPY NUMBER:

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This Project Quality Assurance Plan is a working document which can be modified / revised as required, during the course of execution of the project.

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3.0 INTRODUCTION

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<p style="text-align: center;">3.1 Introduction:</p>
<p><i>The project quality assurance plan hereinafter referred to as the PQAP, describes Al Andalus quality management system for all phases of this project. All the staff involved in the project should know the contents of PQAP.</i></p>
<p><i>The overall objective of the PQAP is to present a management and control framework to ensure that all aspects of the project from start up through the final inspection and handing over to the Employer, including all equipment and materials incorporated in the works, comply with the contract requirements.</i></p>
<p><i>The PQAP provides the project staff, both on site and in the office, with a reference base and a management tool for the management control of quality matters. The controls described in the PQAP represent a practical and logical framework by which the quality of the product can be achieved. The PQAP covers general issues connected with the scope of the project and addresses specific areas.</i></p>
<p><i>AL ANDALUS believes that quality cannot be achieved by issue of plans only, but has to be a way of life for everybody involved in the project. Personal judgment and practical interpretation of occurring situations however remain important. The logic and philosophy are explained in this PQAP will enable the respective members of the project management team to make the right decisions.</i></p>

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4.0 PROJECT DETAILS



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PROJECT DETAILS

4.1 PROJECT TITLE :

4.2 PRINCIPLE PARTIES :

I) EMPLOYER :

II) DESIGN CONSULTANT :


III) MAIN CONTRACTOR :

IV) ELECT. SUB CONT. : M/S. AL ANDALUS TR. & ELECT.
CONT. CO. LTD
P.O. BOX.NO: 430
TEL: 06-5633515
FAX: 06-5634812

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5.0 PURPOSE AND SCOPE

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5.0 PURPOSE AND SCOPE

5.1 PURPOSE

The purpose of this project specific quality assurance plan is to ensure that the company quality management system is fully complied / implemented in terms of specific reference to the project requirements of subject building.

5.2 SCOPE

The Scope of this established project Q.A. Plan is to have sufficient inspections and tests of all products and works which include that of suppliers / specialist sub contractors to ensure conformance to all project specifications and design drawings.

Detailed Method Statements shall be prepared prior to the commencement of works. Further, all testing & commissioning results shall be recorded and documented within the Operation & Maintenance Manuals as per the requirements of specification.

5.3 REFERENCE DOCUMENTS

- ◆ Project Specification
- ◆ Project Quality Assurance Plan : ATECCO-JTM / Electrical
- ◆ Method Statements.
- ◆ Approved Shop Drawings
- ◆ Authority Standards and Regulations

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6.0 QUALITY POLICY & OBJECTIVES



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<p style="text-align: center;">6.1 Quality Policy:</p>
<p><i>It is the policy of Al ANDALUS to provide goods and services which meet the specified requirements and quality standards of their Employers.</i></p>
<p><i>The company will maintain a staff organization who will be able to understand the Employer requirements and ensure, by careful selections and inspections, that the goods and services supplied, confirming to the required standards, are installed and commissioned correctly to the Employers satisfaction. Should there be a need; the company can provide an ongoing regular preventive maintenance program endorsing the company's commitment to total Employers satisfaction.</i></p>
<p><i>The management will ensure that the staff is fully aware of the company's policy and its aims for continuous improvement by the evaluation of ongoing training needs of all its employees and the reviewing at regular intervals of the documented quality system records endorsing the company's commitment to its quality objectives.</i></p>

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7.0 ORGANISATION CHART





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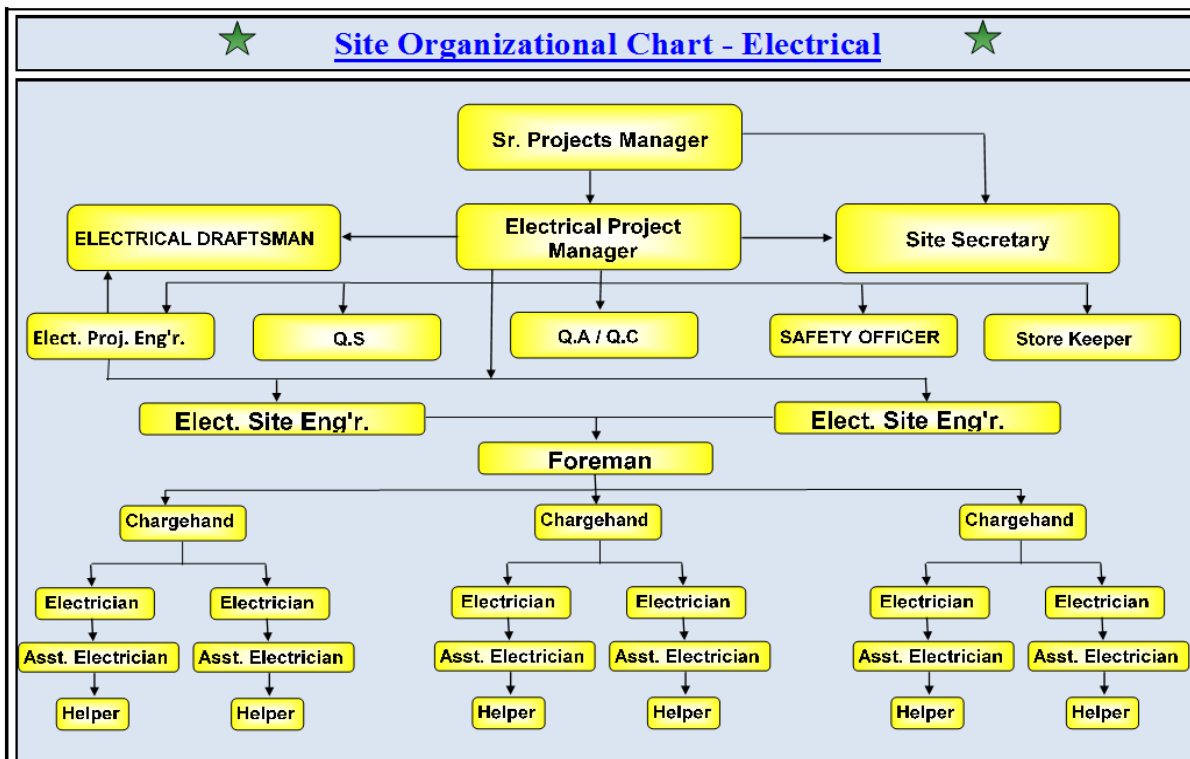
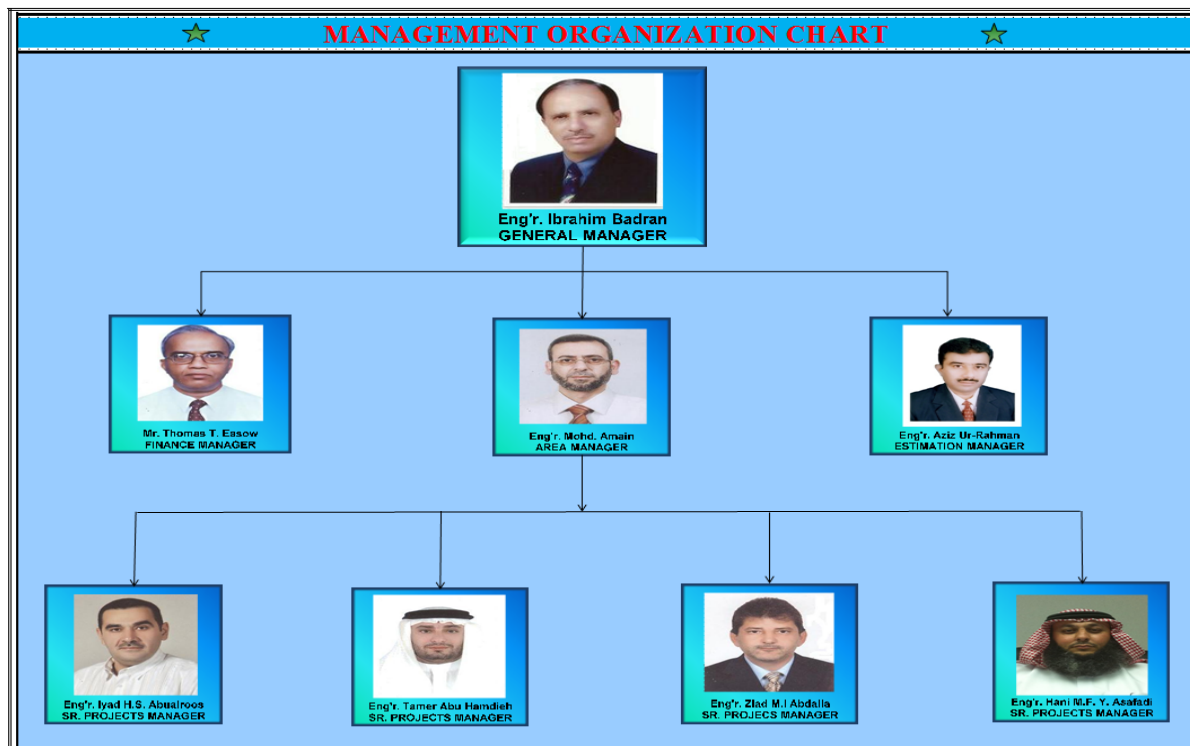
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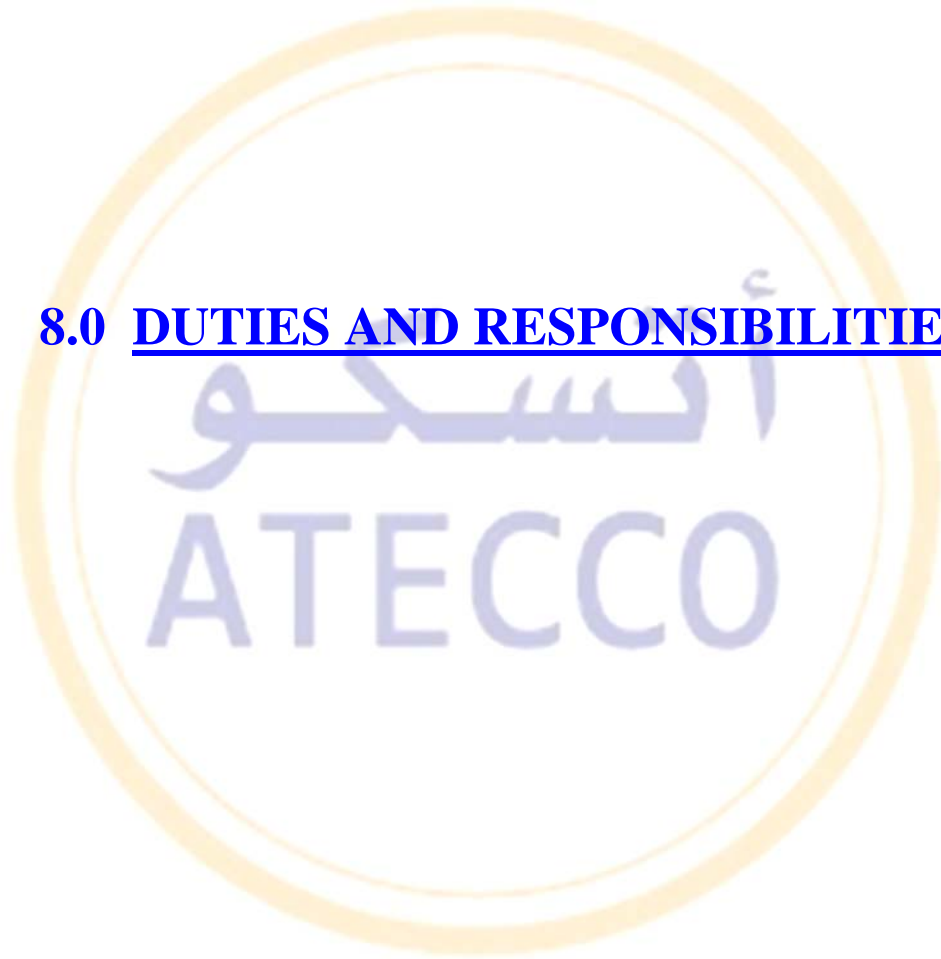
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8.0 DUTIES AND RESPONSIBILITIES



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PROJECT MANAGER

Reports to the Management and is responsible for the following:

- ◆ Executing the project on time, within the approved budget and in accordance with the contract specifications.
- ◆ Ensuring that the quality of materials and installation of work are in accordance with the criteria identified for the project.
- ◆ Receiving of all relevant information regarding design, drawings, and engineering.
- ◆ Reviewing the Planning engineer the detailed programs for the execution of the project and ensure that the programme is adhered to.
- ◆ Implement all aspects of the Project Quality Management System.
- ◆ Ensuring that suitably qualified personnel required for the project are mobilized in a timely manner, as required.
- ◆ Implement all HSE aspects related to the Project.
- ◆ Prepare material specifications lists and schedules and follow up with the procurement cell for the procurement of material.
- ◆ Reviewing the manpower requirements for the project.
- ◆ Ensure proper material planning, allowing for sufficient time for approval and processing of requisitions.
- ◆ Compilation of all necessary progress reports.
- ◆ Attending meetings with the Engineer / Owner and Sub-contractors.
- ◆ Identifying and taking the necessary corrective action to improve the progress and / or quality of work.

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- ◆ Handling of project petty cash, matters related to invoices, payments.
- ◆ Responsible for cost / time impacts and claims.
- ◆ Send / Receive and action project correspondence.
- ◆ Staff training and appraisal.

PROJECT ENGINEER

Reports to the Project Manager.

- ◆ The Project Engineer supervises the activities of the Engineers, Supervisors, Foremen and crew leaders:
- ◆ Ensure that all information on drawings is conveyed to the Site Engineer in a proper manner and details produced where required.
- ◆ Achieve the quality of work required by the specification by proper supervision of work.
- ◆ Co-ordinate with consultant and main contractors for smooth running of works.
- ◆ As each activity is completed, mark up the 'For Construction' drawing with comments relevant.
- ◆ To the preparation of As-built drawings.
- ◆ Ensure review to the red-line drawings by QA/QC (*Quality Assurance / Quality Control*) engineer / nominee.
- ◆ Full awareness and implementation of PQP (Project Quality Plan).
- ◆ Awareness and effective handling of Client Complaints (Internal and external).
- ◆ Review and action as required on internal audit reports.
- ◆ Verify and ensure measuring and monitoring equipment are calibrated and well maintained.
- ◆ Co-ordinate with QA-QC (*Quality Assurance / Quality Control*) staff to carry out inspections.
- ◆ Awareness and implementations of Method Statements. Co-ordinate daily site inspections.
- ◆ Awareness and related actions in case of incidents / accidents and near miss.

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- ◆ Effective and regular planning of work in line with the Baseline / Target programmes. Plan and execute the work to achieve the targets progress. Ensure that the materials personnel and plant are available on time for the execution of the work.
- ◆ Prepare day work details, data related to subcontractor payment and preparation of client payment valuation details.
- ◆ Timely preparation of requisition for the materials required at site. Approval of Requisition in accordance with the defined LOA (*Letter of Approval*)
- ◆ Ensure implementation of all aspects of Project Inventory Control.

SITE ENGINEER

Reports to the Project Manager and Project Engineer and is responsible for the following:

- ◆ Exercising full control over the workforce on site.
- ◆ Ensuring that work is executed in accordance with the HSE (*Health & Safety Engineer*) Plan, Project Quality Plan, contract drawings and specifications, agreed procedures and method statements.
- ◆ Preparation of designated procedures.
- ◆ Ensuring that safety rules and regulations are communicated to the workforce and are fully enforced.
- ◆ Site surveying and setting out dimensional control.
- ◆ Monitoring all sites works work closely to ensure that the quality of the work is as per specifications and is completed on time.
- ◆ Completing all necessary Q.A. (*Quality Assurance*) documentation related to the work under his direct control and co-ordinate daily site inspections.

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- ◆ General site Management.
- ◆ Ensuring that all information on drawings is conveyed to the workforce in a proper manner and details produced where required.
- ◆ Any other duties and responsibilities as designated by the Project Engineer.


QA-QC ENGINEER (Quality Assurance / Quality Control).

Reports to the Management Representative, coordinates with the Project Manager and is responsible for the following:

- ◆ Responsible for all aspects of the project related to quality assurance and quality control, and the overall implementation of the Quality management System at site.
- ◆ Preparation of the Project Specific Quality Plan, Method Statements, Quality Control procedures, Inspection and Test Plans, Quality control checklists.
- ◆ Controlling all inspection activities at site-receiving (for permanent works items), in process, final and off-site inspection activities.
- ◆ Completion of necessary documentation to verify the works performed.
- ◆ Ensuring that inspection requests are implemented and relevant logs maintained.
- ◆ Ensuring that all test reports are verified to meet the contract requirements.
- ◆ Issue of Non Conformance Reports and the necessary follow-up.
- ◆ Responsible for overseeing / audits of Subcontractor Quality Management Systems.

SAFETY OFFICER / ENGINEER.

- ◆ As outlined in the HSE (Health & Safety Engineer) Plan.

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STOREKEEPER.

Reports to the Project Manager and is responsible for the following:

- ◆ Receipt, issue, transfer and storage of material at the site.
- ◆ Accounting of materials, assets, equipment and tools.
- ◆ Proper documentation of all material movement.
- ◆ Proper filling of all inventory documents.
- ◆ Preparation of material requisitions.
- ◆ Follow the demobilization procedures of stocks and records.
- ◆ Keep track of materials where expiry dates are applicable and issue accordingly.
- ◆ Through awareness of all inventory control procedures.
- ◆ Disposal of scrap in accordance with the procedure.
- ◆ Updating of tool issue / receipt cards.

SITE SUPERVISOR.

Reports to the Site Engineer and is responsible for the following:

- ◆ Read and understand construction drawings, Technical specifications, inspection and test plans, planning schedules etc.
- ◆ Monitors site quality aspects through QC (*Quality Control*) checklists.
- ◆ Assign jobs to foremen / workforce in co-ordination with the Site Engineer.

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- ◆ Control the skilled / unskilled workforce at site to achieve the required progress.
- ◆ Ensure and control quality and safety in works.
- ◆ Prepare daily reports and inform the Site Engineer about problems encountered at site or regarding drawings / documents etc.,
- ◆ Prepare daily reports and inform the Site Engineer about problems encountered at site of regarding drawings / documents etc.
- ◆ Prepare site sketches wherever necessary for easy understanding by Foremen/Charge hands.
- ◆ Liaise and comply with Client / Engineer instructions.
- ◆ Responsible for site housekeeping aspects and to ensure proper access is provided at work site for movement of workforce / material / equipment.
- ◆ Conduct tool box talks regularly especially at start of new activity.
- ◆ Ensure proper utilization of material, machinery and workforce.
- ◆ Inspection of works in progress and after completion.
- ◆ Assist QC (*Quality Control*) inspectors to carry out inspections.
- ◆ Co-ordinate with stores for receipt/handling/ storage of materials on site.
- ◆ Ensure the all Monitoring and measuring devices are calibrated / checked before use.
- ◆ Assist site engineer to evaluate productivity / performance of workforce.
- ◆ Ensure personnel protective equipment PPE (*Personal Protective Equipment*) requirements are strictly adhered to by the workforce.

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- ◆ Inform the site engineer in advance regarding the requirement of additional resources for smooth execution of work and assist the Site Engineer with the raising of requisitions.
- ◆ Guide and train foreman / crew leaders / workforce to execute works in an acceptable manner.
- ◆ Ensure compliance with Method statements.
- ◆ Co-ordinate with the Surveyor for lines and levels.
- ◆ Ensure worker welfare facilities like Rest area / Dinning area, First aid box, Drinking.

FOREMAN.

Reports to the Site Engineer and is responsible for the following:

- ◆ Read and understand construction drawings, Technical specifications, inspection and test plans, planning schedules etc.
- ◆ Monitors site quality aspects through QC (***Quality Control***) checklists.
- ◆ Assign jobs to foremen / workforce in co-ordination with the Site Engineer.
- ◆ Control the skilled / unskilled workforce at site to achieve the required progress.
- ◆ Ensure and control quality and safety in works.
- ◆ Prepare daily reports and inform the Site Engineer about problems encountered at site or regarding drawings / documents etc.,
- ◆ Prepare daily reports and inform the Site Engineer about problems encountered at site of regarding drawings / documents etc.
- ◆ Prepare site sketches wherever necessary for easy understanding by Foremen/Charge hands.

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- ◆ Liaise and comply with Client / Engineer instructions.
- ◆ Responsible for site housekeeping aspects and to ensure proper access is provided at work site for movement of workforce / material / equipment.
- ◆ Conduct tool box talks regularly especially at start of new activity.
- ◆ Ensure proper utilization of material, machinery and workforce.
- ◆ Inspection of works in progress and after completion.
- ◆ Assist QC (*Quality Control*) inspectors to carry out inspections.
- ◆ Co-ordinate with stores for receipt/handling/ storage of materials on site.
- ◆ Ensure the all Monitoring and measuring devices are calibrated / checked before use.
- ◆ Assist site engineer to evaluate productivity / performance of workforce.
- ◆ Ensure personnel protective equipment (PPE) requirements are strictly adhered to by the workforce.
- ◆ Inform the site engineer in advance regarding the requirement of additional resources for smooth execution of work and assist the Site Engineer with the raising of requisitions.
- ◆ Guide and train foreman / crew leaders / workforce to execute works in an acceptable manner.
- ◆ Ensure compliance with Method statements.
- ◆ Co-ordinate with the Surveyor for lines and levels.

Ensure worker welfare facilities like Rest area / Dining area, First aid box.

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9.0 DOCUMENTS & DATA CONTROL



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SL. NO.	DESCRIPTION	GM	Sr. PM	PM	QA/QC	SAFETY OFFICER	PROJ. ENGR	SITE ENGR	SITE SUPERVISOR	STORE KEEPER	REMARKS
01	Tender Specifications			X							LEGEND
02	Tender Drawings			X							X ¹ To share with PM
03	Contract Specifications			X			X ²	Y	Y		Y To share with Project Engineer
04	Contract Drawings			X			X	X	X		0 Originator
05	Method Statements			X			X	X	X		
06	Approved Material Submittals			X			X	Y	Y		
07	Project Quality Plan			X			X	Y	Y	X	
08	Approved Shop Drawings		X	X			X	X	X	X	
09	Baseline Programme		X	X			X	Y	Y	Y	
10	Material Schedule	X	X	X			X	Y	Y	X	
11	Manpower Histogram	X	X	X			X	Y	Y		
12	Cash flow	X	X	X							
13	Shop Drawings Schedule	X	X	X			X				
14	As Built Drawings		X	X			X	Y	Y		
15	Handing Over Documents	X	X	X			X				
16	RFIs (Request for Information)			0	X		X	Y	Y		
17	CVIs (Confirmation of Verbal Information)			X	X		X	Y	Y		
18	Internal Audit Reports			X	X	X ¹	X	Y	Y	X	
19	HSE Plan. (Health & Safety Engineering Plan)			X	X	X	X	X	X	X	
20	Quality Control Checklists.					0/X	0/X	0/X	0/X		
21	Variation	X	X	X							

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9.1 DOCUMENT AND DATA CONTROL

- 9.1.1 In order to have proper control, all the documents and drawings shall be routed ONLY through the Project Manager and he is the final authority for approval of all / any documents.
- 9.1.2 All Incoming and Outgoing documents shall be logged by the Document Controller. This will be done on-line and logs will be available for all key project staff on the network.
- 9.1.3 At site, only Project Manger is authorized to change and documents or formats. However, if there is a major deviation from the established Quality systems or Procedures of the company approval for the deviation MUST be obtained from the company Quality Manager.
- 9.1.4 The QA/QC Engineer shall revise the formats or other documents and procedures as necessary and records the same in the project QA plan.
- 9.1.5 All the amendments and revision shall be recorded and documented.
- 9.1.6 It is the responsibility of the Project Manager to promptly issue these revised formats to all concerned for use.

9.2 INCOMING CORRESPONDENCE

- 9.2.1 All the Incoming correspondence and drawings from the Main Contractor, Consultants, Contractors, Suppliers etc., shall be received by the Document Controller.
- 9.2.2 The Document Controller stamps the date and time of receipt and enters the details into "Incoming Correspondence Register"
- 9.2.3 Then the Document Controller stamps the correspondence with "Distribution Stamp" and passes it on to the Project Manager.
- 9.2.4 Project Manager marks the distribution appropriately to the concerned staff for necessary action or information as required.

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9.2.5 The correspondence is then copied by the Document Controller and distributed to the concerned as marked by Project Manager.

9.2.6 The Document Controller retains the original correspondence and is responsible for maintaining the Master file and log.

9.3 OUTGOING CORRESPONDENCE

9.3.1 All types of Correspondence to Main Contractor shall be signed by the Project Manager.


9.3.2 Correspondence with the Sub-contractors and suppliers may be also signed by the Project Engineer, Construction Engineer as required.

9.3.3 All outgoing correspondence including drawings shall be logged by the Document Controller in the “Outgoing Correspondence Register.”

9.3.4 The Project Manager shall mark the distribution as necessary / required and the Document Controller should ensure all concerned have received the copies.

9.3.5 The maintenance of Master file of Correspondence and the log will be the responsibility of the Document Controller.

9.3.6 All correspondence to the client or consultant shall be directed through main contractor or in case of direct correspondence, copied to the Main Contractor.

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9.4 DOCUMENT FLOW CHART:

SCHEDULE OF APPROVALS REQUIRED

Sl. No.	Description	Stage	Authority
1	NOC's	Mobilization	DEWA / ETISALAT
2	All Structural Works (except columns)	All Stages.	Consultant / Client
3	Fire Fighting & Fire Alarm	Shop Drawing	Civil Defense
4	Sub-station Room	1. Shop Drawing (civil work) 2. Completion of Substation work	DEWA
5	Telephone Room & Junction Box.	Shop Drawing	ETISALAT / DU (as required)
6	Handing Over	Completion of Project	Client / Consultant ETISALAT / DU CIVIL DEFENSE DEWA



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The Site Office Secretary receives and logs all incoming correspondence on the incoming document, register and retains a copy of the cover page in the respective file. Complete set of documents shall be returned to the Secretary on completion of necessary actions.

The Project Manager reviews all incoming documents and forwards to the connected function through the discipline.

The concerned function provides necessary information to the Project Manager.

All outgoing correspondence except enquiries to suppliers shall be lodged in the outgoing document, register and authorized by the Project Manager.

Project document shall be maintained in accordance with the Project File Index and shall be retained for 2 years from the date of completion of project.

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9.5 MATERIAL SUBMITTALS:

- 9.5.1 The material submittals shall be submitted to Main contractor via transmittal as per the procedure advised. The complete submittals (one original and 2copies) will be submitted to the Main Contractor under cover of a transmittal.
- 9.5.2 The manufacturer / make and country of origin of the proposed equipment / material will be clearly indicated on the transmittal. The items proposed will be highlighted in the catalogues.
- 9.5.3 The Master file of all technical submittals for material equipment shall be maintained by the Document Controller.
- 9.5.4 The Correspondence with the suppliers and Manufacturers with the regards to the Material / equipment submittals shall be maintained by the concerned Engineers or at head office, as applicable.
- 9.5.5 Engineers / Supervisors are responsible for maintaining design files and records of all design calculations and related documents shall be maintained by individual discipline Engineers. The Engineers / Supervisors shall check periodically and ensure the records are maintained appropriately.
- 9.5.6 All the superseded documents shall be clearly marked and maintained separately by the respective engineers / supervisors for the purpose of records. Similarly, all obsolete and superseded Catalogues, Manufacturer's technical literature and Drawings, etc. shall be promptly destroyed.
- 9.5.7 Document Controller is responsible for maintaining the tracking logs of all materials submittals to monitor and have proper control. The tracking log will be online and will be available for all key staff for monitoring and control as required.

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9.6 DRAWINGS:

- 9.6.1 The incoming drawings from Main Contractor / Consultants shall be received and distributed to respective Project Engineer / Construction Engineer as marked by the Project Manager.
- 9.6.2 The Document Controller shall arrange for the distribution of the drawing copies as required.
- 9.6.3 Based on the Consultant's design drawings, the shop drawings will be developed by the respective Draughtsmen, under guidance of the Engineer.
- 9.6.4 The project Engineer shall supervise the preparation of drawings and provide all the inputs required for the Draughtsmen.
- 9.6.5 Request for Information (RFI) shall be raised for any missing information, additional information or any clarifications required from Consultants. The Project Engineer shall follow up with the Consultants / Main Contractor and obtain the information / details as required.
- 9.6.6 The Project Engineers will interact with the respective Draughtsmen and co-ordinates the layout of all services.
- 9.6.7 Once the drawings are prepared with all the information, the Draughtsmen will produce a check print for the Project Engineers, who will check and return the drawings to the Draughtsmen, with comments if any.
- 9.6.8 Draughtsmen will produce the required no. of copiers of the drawings. Project Engineers will check and sign the drawings before submission.
- 9.6.9 Document Controller will submit (3 copies) of the drawings to Main Contractor through drawing transmittal form.
- 9.6.10 When the drawings are received back from Consultant's review, the comments, if any, will be addressed and re-submitted , if code "C" or major comments.
- 9.6.11 The drawings which are approved by the Consultants ('A' or 'B' code) will be distributed to Construction Staff with "Issued For Construction" stamp. The construction staff shall ensure the construction drawings used are latest as per drawings register available online. If any revised "Issued for Construction" drawings are issued, the respective construction staff **MUST** ensure the superseded drawings are destroyed to prevent any inadvertent use.

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9.6.12 Project Engineer will monitor and ensure the logs are maintained for all the Incoming and Outgoing drawings. The Project Engineer will follow up with the Consultants as required for technical clarifications and approval.

9.6.13 The drawings register will be maintained by the Document controller online and will be available for all key staff for control and monitoring as required.

9.7 AS BUILT DRAWINGS

9.7.1 Prior to Cover-up of any MEP works, Marked-up drawings shall be prepared as per the actual work completed at site, with actual dimensions etc.

9.7.2 These Marked-up drawings shall be prepared by the site supervisor and checked and verified by the respective Engineers / QC Engineers.

9.7.3 After verification, the marked-up drawings are passed on to the Draughtsmen for preparation of 'As Built' drawings.

9.7.4 'As Built' drawings will be produced and submitted to Main Contractor in accordance with the contract procedure.

9.7.5 The list of all "As Built" drawings will be included in the O & M Manuals.

9.8 PROJECT FILING SYSTEM & RESPONSIBILITIES

9.8.1 All the files in the **Project** are clearly labelled and all documents shall be filed systematically.

9.8.2 The responsibility of maintaining the Master file is identified and shall be maintained accordingly.


9.8.3 The Project Manager / Divisional Manager are responsible to ensure the above filing system is followed and maintained.

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10.0 QUALITY RECORDS



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10. QUALITY RECORDS

Documented procedures are established and maintained for identification, filing storage and disposition of quality records.

These records are maintained to demonstrate conformance to specified requirements for effective operation of quality system.

- Following records are maintained at site / site store.

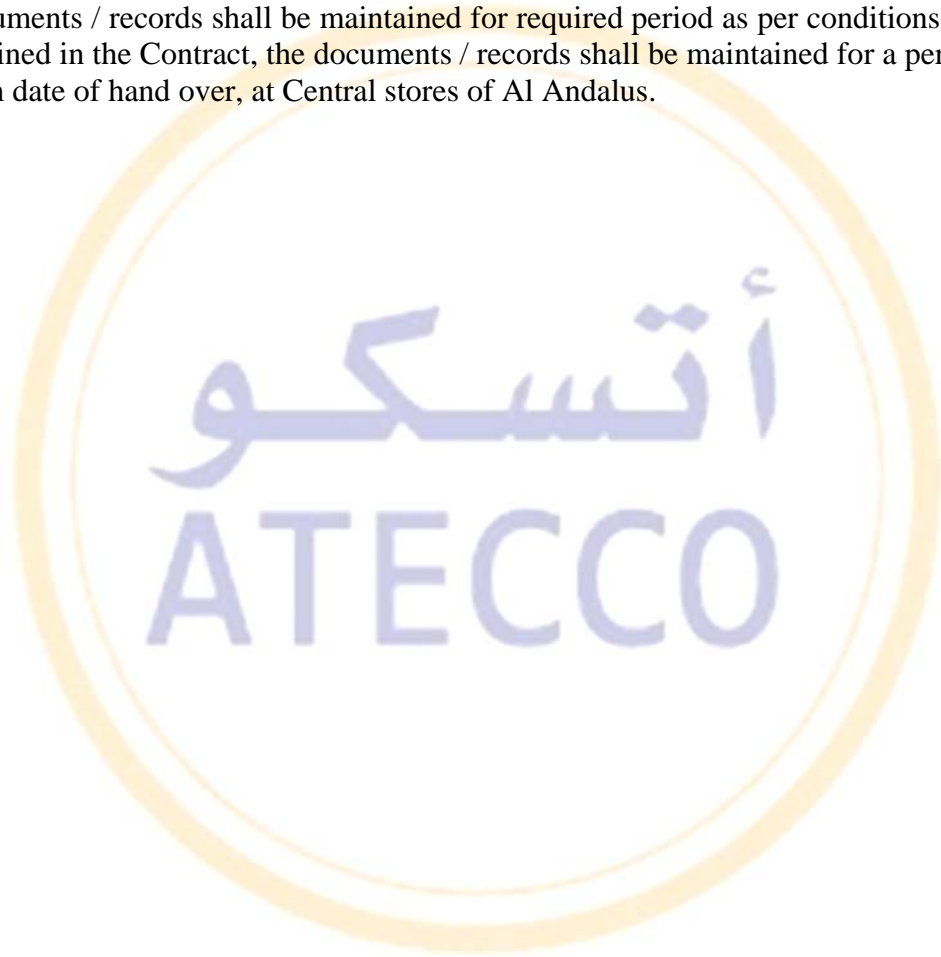
- ◆ Project Quality Assurance Plan
- ◆ Material Test Certificates for material received at site (wherever applicable)
- ◆ Approved material submittals
- ◆ Approved ' As Built' Drawings
- ◆ Request for Information (RFI) and tracking documents.
- ◆ Non- Conformance Reports
- ◆ Job Site Notices
- ◆ Site Work Notices
- ◆ Calibration Certification and records
- ◆ Inspection Requests and Tracking Logs
- ◆ Method Statements
- ◆ All Testing & Commissioning Records

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- ◆ O & M Manuals
- ◆ Any other documents as required by the contract.

All the documents / records shall be maintained for required period as per conditions of contract. If is not defined in the Contract, the documents / records shall be maintained for a period of ONE YEAR from date of hand over, at Central stores of Al Andalus.



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11.0 PROJECT CONTROL





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MEETING SCHEDULE


No.	Meeting	Frequency	Purpose of Meeting
1	Progress Meeting	Weekly	<i>To monitor and review progress of work against schedule, quality and cost.</i>
2	Schedules meetings Co-ordination meetings Safety meetings Other meetings	As Required.	-
3	Internal project Co-ordination Meetings.	Weekly	<i>To review site progress. To review the performance of MEP Sub contractor.</i>
4	Internal Safety Meetings	A rigorous routine of Safety Meetings is held, details of which can be found in the Project Specific Safety Plan.	<i>To ensure safety at site.</i>

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12.0 STORES CONTROL AND INSPECTIONS



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12.1 HANDLING, STORAGE, PACKING AND DELIVERY

12.1.1 HANDLING

- 12.1.1.1 All major equipment such as Heat Exchangers, AHUs, Pumps, Motor Control Centres, MDBs, etc., rigging and handling will be done as per the instructions of manufacturers / suppliers. Where necessary, method statements will be prepared and distributed to all concerned prior to commencement of work.
- 12.1.1.2 For handling fragile material like Light Fixtures, procedures as recommended by the manufacturers / suppliers will be adopted and carried out under proper supervision to prevent damages and deterioration.

12.1.2 STORAGE

- 12.1.2.1 All items with shelf life will be issued on 'First-in First-out basis. The store Keeper will monitor and conduct periodic checks to ensure items such as duct sealant, adhesives etc., are not used after the expiry dates.
- 12.1.2.2 Bin cards will be maintained and check list will be developed and followed to control and monitor the items with shelf life.
- 12.1.2.3 For the stacking of packed items, manufacturers instructions will be strictly followed where applicable.
- 12.1.2.4 To prevent inadvertent use of material, which are not inspected, if any, will be stored in separately designated area. If any un-inspected material is issued for site use, as separate record will be maintained to facilitate easy recall of such items in case they are not approved.
- 12.1.2.5 Stores issue vouchers will be maintained to control the issued of various material to site.
- 12.1.2.6 Documentation i.e., material indents, LPOs and Delivery Memos, shall be filed together for easy reference and traceability.

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- 12.1.2.7 Wherever required / possible, material stored will be segregated according to size, type, model etc. as applicable.
- 12.1.2.8 Material requiring storage in controlled environmental conditions such as paints, adhesives, Glues etc. will be stored as per manufacturer's instructions.
- 12.1.2.9 The pipes and tubes stored at site will be provided with end caps as per specifications.
- 12.1.2.10 Defective / non-conforming material will be stored in a separate designated area. A signboard indicating 'Defective Material' shall be displayed to prevent any inadvertent use.

12.1.3 PACKAGING AND DELIVERY

- 12.1.3.1 Appropriate procedures are adopted and implemented to ensure that packaging / preservation and delivery aspects of the contract are handled as per the specification requirements to prevent the damage, deterioration of materials / equipments, consumable used for MEP services.
- 12.1.3.2 For handling major equipment method statement will be developed and will be submitted for approval prior to equipment delivery.

After delivery of material / equipment storage is done in site store with proper identification by designating locations for type of material / equipment. Flammable materials will be kept separately to avoid fire hazards.

- 12.1.3.3 Proper stacking of materials / equipment will be done to avoid damage / deterioration. Manufacturer's recommendation / instructions shall be followed where required.
- 12.1.3.4 After installation or during installation all the open ends of pipe, ducts, insulation at open ends will be covered properly to avoid dust entry etc.


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- 12.1.3.5 All the duct work / pipe work insulation will be protected to avoid damages during civil work around ducts, piping as required.
- 12.1.3.6 All the electrical equipments (DBs / MCCs, VFDs etc.) are covered properly to avoid dust and moisture entry.
- 12.1.3.7 For delicate and fragile items such as light fixtures, grills / diffusers, sanitary fixtures etc., packing and protection shall be provided as necessary to prevent damages.

12.1.4 PREPARATORY INSPECTION AND TESTING

- 12.1.4.1 This inspection shall be performed prior to beginning of any work or any definable phase of construction.
- 12.1.4.2 Incoming products are verified by Storekeeper for conformance with the requirements mentioned in purchase order as per procedures detailed in "Receiving Inspection". All equipment and material will also be checked and verified by the respective Engineers and QC Engineer to ensure compliance with the project requirements.
- 12.1.4.3 Storekeeper / QA/QC Engineers will ensure that all verification records, certificates are documented and recorded that materials / equipments have been tested, submitted and approved.
- 12.1.4.4 If material received is not as per the purchase order or is found to be defective, the vendor is informed and this defect is documented in non-conformance report.
- 12.1.4.5 Materials / equipments shall be offered for inspection to Consultant whenever required, at site store in accordance with the contract requirements. Material inspection request will be raised for requesting inspection by consultant for materials received at stores at least 24 hours before. The responsibility of initiating this MIR lies with the QA/QC department.

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- 12.1.4.6 At site store for receipt of material and maintenance of record are the responsibilities of store-in-charge.
- 12.1.4.7 Mock-ups and examination of work area to ascertain that all preliminary work has been completed shall be jointly conducted by the respective Engineer along with the QA/QC Engineer.
- 12.1.4.8 The Consultant / Main Contractor representatives shall be notified. In advance of the preparatory inspection by QA/QC and such inspections shall be recorded in the form of inspection requests.

12.2 RECEIVING INSPECTION

12.2.1 There will be a three level check of all incoming material and equipment, as described below.

- a) Upon receipt of any material the store keeper shall verify the same for physical damages, quantity and general conditions of the delivered material. Store Keeper shall inform the same day the respective engineers for their inspection and route the document such as Delivery memos, Indents, LPOs etc to the respective engineers.

If the Store Keeper finds any damages or any discrepancy as compared to the 'Purchase order', he will immediately inform the Purchase Manager at Head Office, and the Project Manager at site for further action as required.

- b) The Engineer checks the delivered material for compliance with the approved submittal and purchase order.
- c) The Original O & M Manuals, Test Certificates, etc., shall be promptly forwarded to the QA-QC and will be included in the overall project Operation & Maintenance Documentation.

12.2.2 The Store Keeper is responsible for maintaining all the records related to the material delivered.

The material indents, Delivery Details, etc., shall be filed and maintained by the Store Keeper and should be able to easily present the same for inspection and verification, at any time.

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- 12.2.3 The Store Keeper shall promptly update the bin card system and must submit a stock statement once in every 30 days or as directed, to the Project Manager.
- 12.2.4 When any material is released to the site without checks / verification, the Store Keeper shall keep a separate record of such issues for easy recall and replacement in case the material is later found to be non-conforming.
- 12.2.5 When any received material is found defective or not as per the purchase order or approved submittal, the Purchase Manager is promptly informed and the defect is documented by issuing a non-conformance report (NCR) to the vendor.
- 12.2.6 All non-conforming material shall be promptly removed from the site. If any non-conforming materials are required to be stored, the same shall be clearly identified and kept in designated place, to prevent inadvertent use.

12.3 IN-PROCESS INSPECTION AND TESTING

- 12.3.1 At each stage of installation, the works are checked and verified at three levels as below:
- Regular inspection of complete works - Respective Supervisors
 - Checking & Verification - Respective Site Engineers.
 - Random Quality control checking and
Verification prior to Consultants inspection - Quality Control Engineer.
- 12.3.2 All inspections are documented in the installation check lists which are prepared for each activity. These check lists, after due verifications shall be signed by the respective engineers / QCE.
- 12.3.3 Respective Engineers / QCE shall ensure Inspection Request (IR's) are promptly raised, as required, for Consultant's inspection.

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12.4 FOLLOW-UP-INSPECTIONS

Follow up inspections shall be performed daily by the QA / QC Engineers / Inspectors randomly to assure continuing compliance with contract requirements until completion of the particular phase of construction. After such inspection a snag list will be prepared and issued to the respective engineers for rectifications. Non-conformance, if any, will be reported to the project Manager for corrective action... QA/QC Engineers check and verify corrective action and close the non-conformance accordingly.

12.5 FINAL INSPECTION AND TESTING

12.5.1 Prior to cover-up of any MEP Installations, Inspections requests shall be raised for Main Contractor / Consultants Inspection and witness of testing, as applicable.

12.5.2 The complete installation of the system shall be checked and verified prior to commissioning.

Pre-commissioning check lists will be developed for each system where applicable, which shall be used for final inspections, prior to start-up and commissioning.

12.5.3 Inspection request shall be raised for Main Contractor / Consultants inspection and witness of testing and commissioning of all MEP systems.

12.5.4 Manufacturer's or their authorised representative's services shall be engaged as required by the contract, for system like, Fire Alarm System, Emergency Central Battery System etc.

12.5.5 The International standards such as CIBSE, BSRIA shall be followed for Testing and commissioning of various MEP systems as indicated in the contract specifications.

12.5.6 For Testing and Commissioning of each system, a Method statement and test forms shall be developed and followed.

12.5.7 Independent verification agencies will be employed for checking testing and balancing of systems if required by the contract.

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12.6 INSPECTION AND TEST RECORDS

12.6.1 Al Andalus shall establish and maintain the following records which cover the inspection and test conducted on MEP installations within the project.

1. Method Statements as required
2. Work Inspection Requests / Installation check lists.
3. Pressure test certificates of piping system for tests conducted during various stages of installations
4. pre-commissioning check sheets
5. Factory Test Reports
6. Field test results and reports
7. Installation Certificates from manufacturers where applicable.

12.6.2 The authority for releasing the Hold points rests with the QA/QC Manager of Al Andalus and / or the authorised representative of Main contractor / consultant as applicable.

12.7 CONTROL OF INSPECTION, MEASURING AND TEST EQUIPMENT

12.7.1 All the measuring and test equipment/instruments shall be identified when testing and commissioning method statements are prepared for each MEP system.

12.7.2 The test instrument / equipment shall be calibrated by a third party calibration agent.

12.7.3 All instruments shall have stickers with calibration dates.


12.7.4 Calibration certificates and records shall be maintained and verified prior to commencement of testing.

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- 12.7.5 The Calibration shall be valid for a period of ONE YEAR from the date of calibration, subject to the instrument being in good working condition.
- 12.7.6 QA/QC Engineers are responsible for maintaining the calibration and records
- 12.7.7 Respective engineers are responsible for safe keeping and storage of the test and measuring instrument and equipment.



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13. METHOD STATEMENT SCHEDULE

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13.1 METHOD STATEMENTS FOR ELECTRICAL SYSTEMS

- a. Method Statement for the Installation of GI Conduit & PVC Conduits.
- b. Method Statement for the Installation of Cable Tray & Trunking.
- c. Method Statement for the Pulling of Wires.
- d. Method Statement for the laying Cables & its Termination.
- e. Method Statement for the Installation of Isolators.
- f. Method Statement for the Installation of Fire Alarm System.
- g. Method Statement for the Installation Emergency Lighting System.
- h. Method Statement for the Installation of SMDB's.
- i. Method Statement for the Installation of Capacitor Banks.
- j. Method Statement for the Installation of DB's.
- k. Method Statement for the Installation of Bus Bar Ducting System.
- l. Method Statement for the Installation of LVP's & MDB's.
- m. Method Statement for the Installation of MCC's & VFD's.
- n. Method Statement for the Installation of Public Address System.
- o. Method Statement for the Installation of Generator Set

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14. INTERNAL AUDITS / NON- CONFORMANCE REPORT (NCR)

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14.0 INTERNAL AUDITS / NON-CONFORMANCE REPORT (NCR)

14.1.1 Internal Quality Audit will be conducted at site as per the company quality manual requirements and the schedule of Audits from Head Office.

14.1.1 When a product or work has been found to non-conformant, a report (NCR) is immediately raised by the QA/QC Engineer and issued to the Project Manager / respective engineer / Store Keeper, as applicable.

The NCR is reviewed by the concerned engineer for:

- ◆ Reworking to meet the specified requirement
- ◆ Acceptance with or without repair
- ◆ Regarding the product or work for an alternative application
- ◆ Rejecting or scrapping the product or work
- ◆ Recommendations / actions to prevent similar occurrences.

It is further reviewed with the Project Manager for verification of acceptability of the disposition and recommendations.


14.1.2 All care and precautions shall be taken by the concerned person to ensure the non-conforming product is prevented from inadvertent inclusion in the works by removing the product to a designated location and by clearly identifying the product as non-conforming.

14.1.3 To prevent inadvertent use of wrong material, random inspection of tool boxes and work spots will be conducted at site, to check and ensure, after completion of work, excess materials are returned to the store.

The prevention measures shall remain in place until the 'NCR' is approved for 'Close-out'.

The QA/QC Engineers shall discuss with Construction Engineer and Project Manager the methods to prevent recurrences.

14.1.4 When a NCR is issued by the Main Contractor / Consultant the close-out shall be done in accordance with their procedure. A Copy of such NCRs upon issue shall be sent to the MR for his review and records.

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14.2 CORRECTIVE & PREVENTIVE ACTION

- 14.2.1 The Purpose of this internal procedure is to define the responsibilities for prescription of corrective action, and also to implement and verify the same, to prevent recurrence of non-conformance and/ or eliminate potential causes of non-conformance.
- 14.2.2 The purchase department will be informed by the Project Manager, when required, of failure on the part of Supplier / Manufacturer to comply with the requirements. The Purchase department will take further action in the matter as required and may issue a NCR to the vendor, if necessary.
- 14.2.3 The Quality Control Engineer after holding discussions with the Project Manager and the other concerned personnel will prescribe a corrective action in response to the particular problem raised in the defect report. A time frame will be stipulated as agreed, for the corrective action.
- 14.2.4 The Project Manager will implement the corrective action as prescribed, within the stipulated time. The site QA/QC Engineer will verify the same.
- 14.2.5 The Quality Manager will further verify the corrective action taken and “Close-Out.” if found satisfactory.
- 14.2.6 A record of all defect reports will be maintained at the head office by the Quality Manager for study and statistical records.

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15. SERVICING

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15.0 SERVICING

- 15.1 The Electrical installations are guaranteed for defects for a period of 12 Months from the date of Completion.
- 15.2 The completion dates of each Milestone will be informed in writing by the Project Manager to the respective Service Engineer. The Engineers will be responsible to attend defects as required, during the defects liability period.
- 15.3 The Client will be provided in writing the names of the services personnel along with telephone and fax numbers, to be contacted when required.
- 15.4 Whenever a defect is attended, a service report will make in the prescribed format and signed-off by the Client's Representative.
- 15.5 A Service call register and a record of defects reports is maintained to track and control the service operations.
- 15.6 Further the address and telephone numbers of all major equipment / system manufacturers shall be provided in the O & M Manuals.

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16. INSPECTION & TEST PLAN

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16.0 INSPECTION & TEST PLAN

16.1 LIST OF INSPECTION & TEST PLAN


- 16.1.1 Inspection & Test Plan for Installation of PVC Conduits
- 16.1.2 Inspection & Test Plan for Installation of GI Conduits
- 16.1.3 Inspection & Test Plan for Installation of Cable Tray, Trunking & Ladder
- 16.1.4 Inspection & Test Plan for Installation, Termination of LV Cable & Wires
- 16.1.5 Inspection & Test Plan for Installation of LV Switch Board, MCC's, Capacitor Bank, VFD's, SMDB's & DB's
- 16.1.6 Inspection & Test Plan for Installation Bus Bar
- 16.1.7 Inspection & Test Plan for Installation of Fire Alarm System
- 16.1.8 Inspection & Test Plan for Installation of Diesel Generator Set
- 16.1.9 Inspection & Test Plan for Installation of Switch, Socket and Wiring Devices
- 16.1.10 Inspection & Test Plan for Installation of Earthing & Lightning
- 16.1.11 Inspection & Test Plan for Installation Light Fixture
- 16.1.12 Inspection & Test Plan for Installation of Central Battery System
- 16.1.13 Inspection & Test Plan for Installation of Lighting Control System

16.2 INSPECTION & TEST PLAN FORMS

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17.0 CHECKLIST

17.1 LIST OF CHECKLIST


- 17.1.1 Checklist for Installation of PVC Conduits
- 17.1.2 Checklist for Installation of GI Conduits
- 17.1.3 Checklist for Installation of Cable Tray, Trunking & Ladder
- 17.1.4 Checklist for Installation, Termination of LV Cable & Wires
- 17.1.5 Checklist for Installation of LV Switch Board, MCC's, Capacitor Bank, VFD's, SMDB's & DB's
- 17.1.6 Checklist for Installation Bus Bar
- 17.1.7 Checklist for Installation of Fire Alarm System
- 17.1.8 Checklist for Installation of Diesel Generator Set
- 17.1.9 Checklist for Installation of Switch, Socket and Wiring Devices
- 17.1.10 Checklist for Installation of Earthing & Lightning
- 17.1.11 Checklist for Installation Light Fixture
- 17.1.12 Checklist for Installation of Central Battery System
- 17.1.13 Checklist for Installation of Lighting Control System

17.2 SAMPLE OF CHECKLIST FORMS

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18. STANDARD FORMATS

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18 STANDARD FORMATS

18.1 INDEX OF STANDARD FORMATS

18.1.1	Labour Daily Attendance
18.1.2	Daily Site Activities
18.1.3	Contractor Request for Inspection
18.1.4	Request for Information
18.1.5	Material Submittal
18.1.6	Shop Drawing Submittal
18.1.7	Document Approval Form
18.1.8	Material Inspection Request
18.1.9	Method Statement
18.1.10	Delivery Note
18.1.11	Site to Main Store Transfer Voucher
18.1.12	Site to Site Transfer Voucher
18.1.13	Letters Tracking Sheet – Outgoing, Incoming (Main Contractor and Supplier)
18.1.14	Electrical Material Tracking Schedule
18.1.15	Electrical Shop Drawings Tracking Schedule
18.1.16	Inspection Request Tracking Sheet
18.1.17	Request for Information Tracking Sheet
18.1.18	Site Instruction Tracking Sheet
18.1.19	Non Conformance Report Tracking Sheet
18.1.20	Delivery Report from Store Tracking Sheet
18.1.21	Site to Main Store Materials Tracking Sheet
18.1.22	Other Site to our Site Transfer Tracking Sheet
18.1.23	Our Site to Other Site Transfer Tracking Sheet
18.1.24	Electrical Physical Progress Summary Sheet

18.2 SAMPLE OF STANDARD FORMATS

NOTE:

*** The formats attached in this section are prepared based on the initial assessment of the project requirements. The formats may be revised or new formats may be added as necessary during the project.**