Contractor Quality Control (CQC) Plan

Construction of Head Office Building at Korangi Creek Industrial Parks Karachi

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Project Name

_____

MAL PAKISTAN LIMITED APPROVAL DATE

PARADIGM ENGINEERING

CONTRACTOR

Project Manager

Submitted By

paradigmengineering@outlook.com

Email Address

03333616721

Phone

Contractor Quality Control Plan Acknowledgement

Project Name: _____

Project Number: _____

The undersigned have read and concur with this Contractor Quality Control Plan:

_____ _____

Quality Control Manager Date

_____ _____

Project Manager Date

_____ _____

Project Superintendent Date

_____ _____

Electrical Foreman Date

_____ _____

Mechanical Foreman Date

_____ _____

Civil Foreman Date

_____ _____

Site Safety Manager Date

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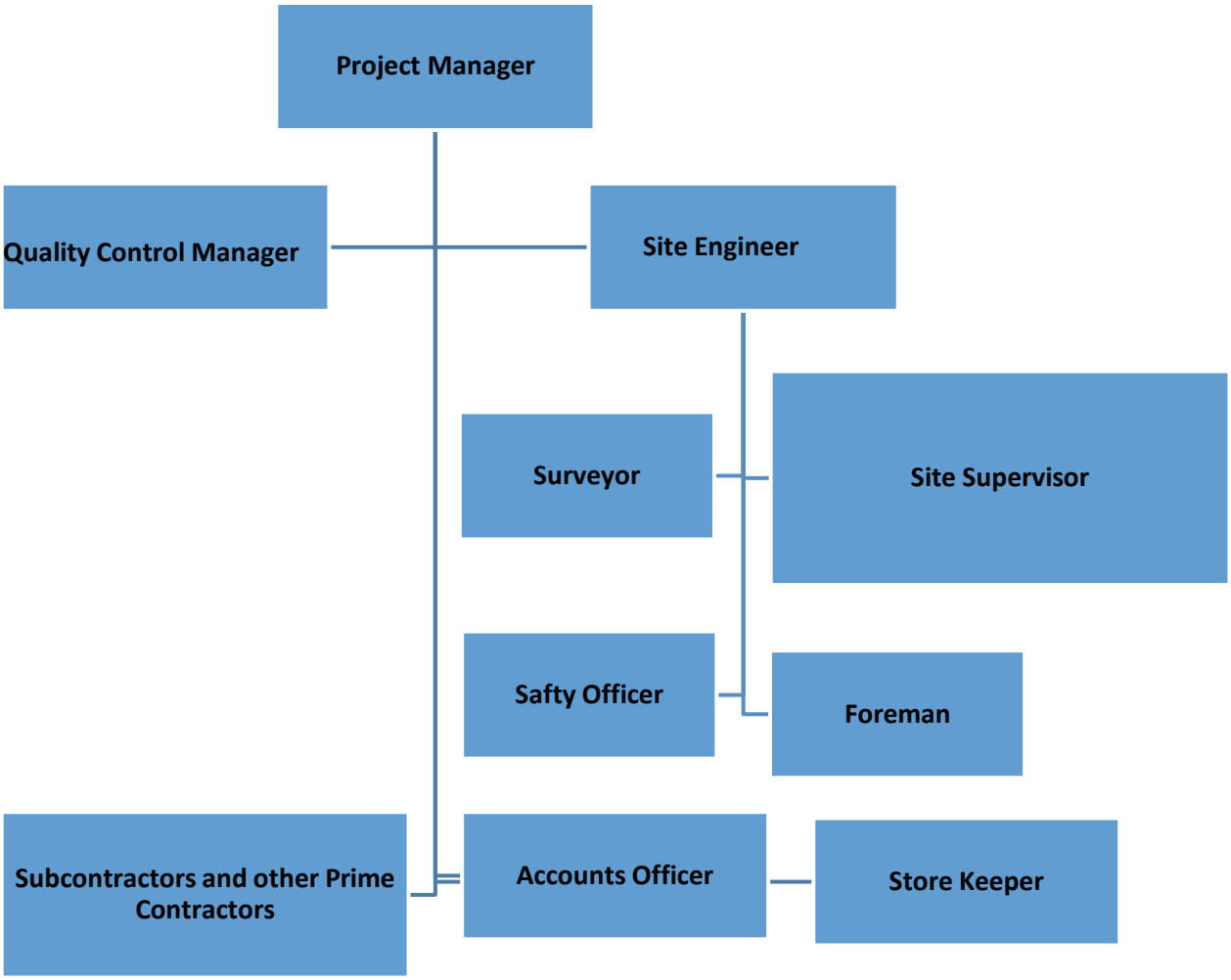
Organizational Chart

This is a recommended organizational chart. It may be modified provided the responsibilities are covered in the positions presented.



Quality Control Manager Responsibility Form

The Quality Control (QC) Manager, is responsible for overseeing the overall implementation of the Quality Control Plan and coordinates all project testing, inspections and reporting matters directly with the Project Manager. The QC Manager has the authority to intercede directly and stop unsatisfactory work and control further processing, delivery or installation of non-conforming material.

Duties:

- Preparation, approval and implementation of the CQC Plan
- Verification of materials as per project plans and specifications
- Development of means and methods to store and protect materials
- Maintain documentation of inspection status of materials
- Maintain documentation for material and administrative approvals
- Ensure that all materials and construction are in accordance with the requirements for the completeness, accuracy and constructability in accordance with applicable building codes
- Carry out and participate in weekly progress and QC meetings
- Maintain documentation of inspection of work executed by subcontractors

Stop Work Authorization Letter

Project Name: _____

Project Number: _____

From: Company President _____

To: QC Manager _____

This Letter of Authorization outlines your responsibility as our site Quality Control Manager for the project referenced above. As the site Quality Control Manager, you report directly to the Project Manager. You review the specifications, addendums and plans in their entirety and implement the Quality Control Program. The Quality Control Program encompasses three phases of inspection: Preparatory Meetings and Initial and Follow-Up Inspections. All inspections and testing are recorded in the Contractor Quality Control Report (CQCR) and submitted to the Project Manager. Test reports are submitted no later than three (3) working days after the test was performed. You and/or your staff are responsible for reviewing specifications, submittals, as-builts, plans and shop drawings for compliance to the contractural requirements.

Additionally, this applies to all subcontractor documents. You and/or your staff conduct daily inspections to ensure that the workmanship and materials used in the construction of the project are in compliance with the plans, drawings and specifications.

You are authorized to stop work that does not comply with the plans and specifications. You and/or your staff witness all tests required by the specifications and coordinate such tests with **Paradigm Engineering**. You and your staff must document all non-conforming conditions, items and/or workmanship noted and constantly monitor and alert Safety personnel to safety violations. If, at any time, you require assistance with the implementation of the Quality Control Program, contact the Project Manager.

_____
Company CEO

Acknowledgements

_____
Subcontractor “A”

_____
Subcontractor “B”

Major Definable Features of Work

Check all definable features of work and describe how each feature will be accomplished. (You may add or delete items based on the project. All items will be reviewed and approved by **Paradigm Engineering**.)

Construction Activities	Contractor	Primary Contact
☐ Trenching & Excavation 1. Trenching 2. Excavation Work 3. Form Work		
☐ Gravity Sewer		
☐ Force Mains		
☐ Erosion Control		
☐ HVAC		
☐ Plumbing		
☐ Electrical		
☐ Roofing		
☐ Masonry		
☐ Concrete		
☐ I & C		
☐ Landscape		
☐ Bridges		
Construction Site Activities	Contractor	Primary Contact

☐ Fire Alarm		
☐ Fire Suppression		
☐ Hazardous Material Abatement		
☐ Elevators		
☐		
☐		
☐		
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☐		
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☐		
☐		

Three Phases of Inspection

Preparatory Meetings

Preparatory Meetings are performed prior to the beginning of any major Definable Feature of Work. A meeting is held for each crew performing such feature or when members of the crew change. Preparatory Meetings are conducted by the Quality Control Manager and/or designee after a complete review of all applicable plans, specifications, shop drawings and related submittals. A Preparatory Phase Meeting Checklist (pp 23-25) is completed for each Definable Feature of Work and distributed at the meetings. At the Preparatory Meeting, the Project Manager and Foreman (involved in this phase of construction) coordinate with Quality Assurance, Quality Control and Safety personnel and introduce their plan for accomplishing the work. **Paradigm Engineering** is notified at least 48 hours in advance of the Preparatory Meeting. The following items are discussed at each meeting:

1. Review of applicable specifications.
2. Review of applicable plans and shop drawings.
3. Review of related submittals and a check that all related submittals, shop drawings and materials have been tested (if applicable), submitted and approved.
4. Review of the detailed sequence of the execution of the work.
5. Discuss required testing and frequency.
6. Review provisions to ensure controlled inspection and testing.
7. Examination of the work area to ensure that all required preliminary work has been completed and is in compliance with the plans and/or specifications.
8. Examination of the related material, review of the Receiving Material Inspection Reports (p 29) and verification that the items received are in compliance with the contract and are properly stored.
9. Review of the Site Safety Plan to ensure that all safety precautions are met and the required safety equipment has been purchased and is available.
10. Review the document and the workmanship expected for the Definable Feature of Work.
11. Meeting Minutes are recorded and sent to **Paradigm Engineering** Document Control within 48 hours of the conclusion of the meeting.

Initial Inspections

Initial Inspections are performed at the beginning of any Definable Feature of Work and must be repeated at any time new workmen or new crews are assigned to the work or if the required standard of work is not being met. An Initial Phase Checklist is completed for each Definable Feature of Work and distributed at the initial inspection. **Paradigm Engineering** is notified at least 8 hours in advance of the Initial Inspection. The same personnel who attended the Preparatory Meeting also attend the Initial Inspection. These include the Superintendent and Foreman, Safety Personnel and the Quality Control Staff. The following is accomplished during these meetings:

1. Review the minutes of the Preparatory Meeting and verify that the work complies with the design documents (ie, submittals, specifications and/or shop drawings).
2. Resolve all differences.
3. Verify adequacy of inspection and testing.

4. Establish a level of workmanship and verify that it meets the requirements.
5. Provide documentation of the previous inspection of the work area.
6. Re-examine the work area for compliance.
7. Meeting Minutes are recorded and sent to **Paradigm Engineering** Document Control within 48 hours of the conclusion of the meeting.

Follow-Up Inspections

Follow-Up Inspections are performed daily to ensure that the control established during Preparatory Meeting and Initial Inspection continues to provide a product that conforms to the contractural requirements.

1. Construction daily activities are inspected by Quality Control in accordance with Quality Control Procedures and the Quality Control Report (CQCR) (pp 18-19) is completed.
2. Installation and testing activities which do not comply with the requirements are documented on a Non-Conformance Report (NCR) (p 20).
3. Modifications, repairs and/or replacement of materials and/or parts performed subsequent to Final Inspection require replacement of materials and/or parts installed. Re-inspection and re-testing are required to verify acceptability. Inspection and testing documents are submitted to **Paradigm Engineering** Document Control and are filed and maintained in accordance with Quality Control Testing and Verifications (p 11).

Signature of acknowledgement indicate that the Three Phases of the Quality Control Inspection Program are understood and will be followed.

_____ _____

QC Manager Date

Quality Control Testing and Verifications

PURPOSE

To ensure that tests of the Contractor's and Subcontractor's work is adequately planned and that the necessary testing procedures are available to perform the tests in a satisfactory manner. This procedure establishes the methods to be used when performing the tests listed in the specifications. Test reports are submitted to **Paradigm Engineering** Document Control and are filed and logged with other project documentation.

TESTING (Onsite, Factory/Offsite)

A list of tests required to verify that control measures are adequate are delineated in the specifications and/or determined upon the completion of the design. The list includes the test name, specification paragraph, feature of work to be tested, the test frequency and the organization's name that will perform the test. **The QC Manager provides written notice to Paradigm Engineering of the proposed test 3 days in advance (5 working days for factory or other offsite tests). The QC Manager witnesses the test with the appropriate organization representatives present and/or with the individual(s) qualified to perform the designated test(s).**

FAILED TEST

Failing tests are cleared by one of the following methods:

1. Retest – Retest if there is any doubt that the first test was not adequate.
2. Rework – Re-inspect and re-test.
3. Failed Material – Remove, replace, re-inspect and re-test.

PROCEDURES

1. The Quality Control Manager reviews the testing requirements to ensure that the planned test is in accordance with the design documents: ie, plans, specifications, shop drawings and/or other documents.
2. Instruments used for testing are calibrated in accordance with established calibration procedures. Specialists experienced in such work perform the calibration.
3. Technicians performing tests provide copies of calibration certificates and their field notes and reports to the Quality Control Manager.
4. The Quality Control Manager witnesses all required tests detailed in the design documents (plans, specifications, shop drawings, etc).
5. **Paradigm Engineering's** witnessing of tests does not relieve the Contractor and Subcontractor of their obligation to comply with the requirements of the Contract Documents.
6. **Paradigm Engineering** is notified 3 days in advance of all scheduled tests (5 working days for Factory/offsite tests).
7. Test reports, when completed, are attached to the Contractor's Quality Control Report and submitted to **Paradigm Engineering**.

Tests and Records

PURPOSE

This section establishes a system for the control of documentation and records which provide objective evidence of the quality of items and activites performed in accordance with the programmatic requirements. The Quality Control Manager is responsible for the control, review, verifications and maintenance of the documentation delineated in the specifications.

REPORTING AND DISTRIBUTION OF REPORTS

1. After reviewing reports (including Subcontractor reports) the Quality Control Manager submits documentation to **Paradigm Engineering** Document Control.
2. All inspections and testing are summarized and recorded in a Contractor's Quality Control Report (CQCR). A copy of the CQCR is sent to MSD Document Control and to the Project Manager. "Original" reports are retained by the Quality Control Manager. Field notes, inspection forms and test reports are filed and available for review by PARADIGM ENGINEERING.
3. The Contractor's Quality Control Report includes the following:
    a. Contractor and Subcontractor areas of responsibility.
    b. Working, idle and downtime hours for equipment.
    c. Work accomplished each day, indicating the location, activity and by whom.
    d. Laboratory test reports, including the test results (passing or failing), location of tests and specification references.
    e. Deficiencies and corrective actions.
    f. Material received onsite.
    g. Safety violations and corrective action implemented.
    h. Conflicts encountered in the plans and/or specifications.

RECORDS STORAGE AND RETENTION

1. Project records are stored in areas that protect them from damage, deterioration and/or loss at the site Field Office during the construction period. Records are accessible to **Paradigm Engineering** personnel.
2. Project records are stored for a period of time as determined by the contractual documents. Records, designated for storage, are not to be destroyed or otherwise disposed of within that period of time. Control and final disposition of Subcontractor and Supplier records, both onsite and offsite, are to be in accordance with the contractural documents.

Testing Agency Schedule

Project Name:	Date:	Project Number:
Agency	**Discipline**	**Estimated Date of Test**

Submittals

SUBMITTALS

All submittals shall be reviewed, certified and managed by the Quality Control Manager. Copies of the manfacturer's data (material, equipment, etc.), including catalogue cut-sheets showing dimensions, performance characteristics, capacities, wiring diagrams, schedules, operation and maintenance manuals and any other relevant information are reviewed by the Quality Control Manager. The Quality Control Manager is an authorized submittal reviewer and testing lab report reviewer. One (1) copy of the submittal remains with the Contractor and one (1) copy is retained by MSD's Document Control.

Filing of Submittals

Submittals (material, design, data, samples, shop drawings, etc) are filed according to the specification section and paragraph number in a secure place for reference and coordination. Color and mock-up samples are maintained in a secure place at the job site for comparisoin with the finished product. A tag or sticker identifying the submittal number and the date of approval is attached to the sample. When a color or mock-up sample is not approved, it is labeled as "Rejected" and removed from the job site (if requested). The record is maintained along with a photograph of the disapproved item with a copy submitted to **Paradigm Engineering** Document Control.

SUBMITTAL REGISTER

The Submittal Register is maintained by the Project Manager. Revised copies of the Submittal Register are provided to **Paradigm Engineering** Document Control on a monthly basis.

QUALITY CONTROL MANAGER REVIEW AND APPROVAL

Prior to submittal, all items are checked and approved by the Quality Control Manager. If found to be in strict conformance with the contract requirements, each item is stamped, signed and dated by the Quality Control Manager. Copies of review comments indicating action(s) taken are included within each submittal.

QUALITY CONTROL MANAGER GUIDELINES FOR PREPARING AND REVIEWING SUBMITTALS:

1. Be familiar with the submittal procedures.
2. Review all of the information attached to the submittal.
3. Ensure that all of the pages associated with the enclosures are attached to the submittal.
4. Thoroughly review the applicable design documents.
5. Ensure the attachments are legible.
6. Direct all questions to the Project Manager.
7. Submit a detailed written report pertaining to the review of the submittal in a timely manner to the Project Manager.
8. Ensure that the sample received and/or material received complies with the submittal.
9. Notify the Project Manager if material is installed without a submittal; then request a submittal.
10. Maintain and file submittals so they are readily retrievable.

STAMPS

Stamps are used by the Contractor to certify the submittal meets contract requirements and are similar to the following:

Contractor (Firm Name): _____

Project Name: _____

Project Number: _____

I certify that this submittal is accurate, is in strict conformance with all contract requirements, has been thoroughly coordinated and cross-checked against all other applicable disciplines to prevent the omission of vital information, that all conflicts have been resolved, that repetition has been avoided, and that it is it complete and in sufficient detail to allow ready determination of compliance with contract requirements by the Contracting Officer.

Printed Name of the Quality Control Manager: _____

Signature of the Quality Control Manager: _____

Date: _____

Tracking Deficiencies

NON-CONFORMING ITEMS

1. Non-conforming items are those conditions that deviate from the requirements detailed in the specifications, plans and /or shop drawings. The Quality Control Manager is responsible for the control and documentation of non-conforming items.
2. The Quality Control Manager prevents non-conforming items from being installed.
3. Minor non-conforming items, which are corrected in the same day, are documented in the Contractor's "Weekly Report."
4. All other non-conformances are documented on a Non-Conformance Report prepared by the Quality Control Manager, sequentially numbered and dated and include the following information, as appropriate:
    a. Description of the non-conformance including relevant details of the occurrence.
    b. Identification of material, component or system by part number, plan, shop drawing and/or specification number and intended installation location.
    c. Source of material or item (name of supplier, owner or subcontractor).
    d. Current status or item in shop, warehouse, lay-down yard or structure.
    e. Individual and organization which detected the non-conformance.
    f. Recommendation for corrective action including sketches, test data and/or repair procedures necessary to substantiate the recommendation.
    g. Cause of the non-conformance and steps taken to prevent reoccurrence indicating action(s) taken, positions or titles of persons contacted, letters written and/or procedural changes proposed.
5. The Quality Control Manager signs and forwards the Non-Conformance Report to **Paradigm Engineering** Document Control.
6. Each Non-Conformance Report is recorded on the Non-Conformance Report Log by the Quality Control Manager.
7. Actions to be taken are entered on the Non-Conformance Report Log. The Engineer of Record initiates the disposition(s) necessary to clear the item.
8. Verification of "Corrective Action" (eg, completion of repair) by Quality Control after the work in question has been re-inspected and re-tested. Entries are made in the Non-Conformance Report (NCR) log documenting the Final Disposition of each NCR.
9. Non-Conformance Reports, logs and documents are filed and maintained. Reports and Records are submitted to **Paradigm Engineering** Document Control.

INITIAL PUNCH LIST

The QC Report reports Punch List items (deficiencies) throughout the life of the project and demonstrates that the QC Staff is correcting the deficiency(ies) in a timely manner. An Initial Punch List is developed as a result of initial inspections and then maintained throughout the life of the project. The Punch List is consistently updated and submitted to the Project Manager for corrective actions. Corrections are accomplished within the time stated. The QC Manager performs Follow-Up Inspections to ensure the deficiencies have been corrected before notifying **Paradigm Engineering** of a Pre-Final Inspection.

PRE-FINAL INSPECTION

After the completion of the Initial Punch List Inspection, the Quality Control Manager and **Paradigm Engineering** Representative conduct a Pre-Final Inspection and develop a joint "Punch List" of noted deficiencies. The Punch List is formally documented along with the estimated date by which the deficiencies will be corrected. The Quality Control Manager conducts Follow-Up Inspections to ensure that all deficiencies have been corrected before requesting a Final Inspection by **Paradigm Engineering**.

FINAL INSPECTION

Upon completion of the items listed in the Pre-Final Inspection "Punch List," the QC Manager notifies **Paradigm Engineering** 14 days prior to the Final Inspection (or as agreed to) with the assurance that all items listed in the Pre-Final Inspection and all other remaining work has been completed and will be acceptable by the date of the Final Inspection.

CONTRACTOR'S QUALITY CONTROL REPORT (CQCR) WEEKLY LOG OF CONSTRUCTION	Report Number: Page 1 of 2 Date:
Project Name:	**Project Number:**
Contractor:	**Weather:**

1 – Were there any delays in work progress?
Response:
2 – Verbal instructions given by PARADIGM ENGINEERING:
Response:
3 – Did anything develop that may lead to a change order/claim?
Response:
4 – Activities in process:
Response:
5 – General comments:
Response:
6 – Safety Inspection/Safety Meetings:
Response:
7 – Prep/Initial Dates (Preparatory and initial dates held and advance notice)
Response:

CONTRACTOR'S QUALITY CONTROL REPORT (CQCR) WEEKLY LOG OF CONSTRUCTION	**Report Number: Page 2 of 2** **Date:**
Project Name:	**Project Number:**
Activity Start/Finish:	
QC Requirements:	
QA/QC Punch List:	
Contractors/Visitors on Site:	
Equipment Hours (Total Operating Hours to Date):	
Accident Reporting (Describe Accident):	

Contractor Certification	On behalf of the contractor, I certify that this report is complete and correct and all equipment and material used and work performed during this reporting period are in compliance with the contract, plans and specifications, to the best of my knowledge, except as noted above.

Non-Conformance Report

<Project Name>			<Project Number>
Structural ☐	Mechanical ☐	Electrical ☐	Civil ☐
Date:	Location:	Spec. Section:	Spec. Paragraph:
Non-Conforming Condition:			
Reported By (Quality Control Representative):			Date:
Disposition:			
Dispositioned By (Project Engineer):			Date:
Re-Inspected By (Quality Control Representative):			Date:
Accepted By (Quality Control Manager):			Date:

Construction Punch List

Project Name:			Project Number:
Structural ☐	Mechanical ☐	Electrical ☐	Civil ☐
Inspected By:		Date:	Page: ___ of ___

Item No.	Description	Completed by Construction (Sign/Date)	Accepted by Quality Control (Sign/Date)

Weekly QA/QC Definable Feature Meeting Minutes			
Project Name:			**Project Number:**
Date:	**Time:**	**Location:**	**Page: ___ of ___**

Attendees

PARADIGM ENGINEERING	Contractor	Subcontractors	Other

No.	Description of Item Discussed	Action Date	Action By

Preparatory Meeting Checklist (to support each DFOW)

Project Name:			Project Number:
DFOW:			
Date:	Sheet:	Spec. Section:	Page: 1 of 3

PERSONNEL PRESENT	PARADIGM ENGINEERING Representative Notified? YES ☐ NO ☐ _____ Hours		
	Name	**Position**	**Company/Government**
SUBMITTALS	Review submittals and/or submittal register. Have all submittals been approved? YES ☐ NO ☐		
	If no, what items have not been submitted?		
	Are all materials on hand? YES ☐ NO ☐		
	If no, what items are missing?		
	Check approved submittals against delivered material. (This should be done as material arrives)		
	Comments:		
MATERIAL STORAGE	Are materials stored properly? YES ☐ NO ☐		
	If no, what action is taken?		

Preparatory Meeting Checklist (to support each DFOW)

Project Name:			Project Number:
DFOW:			
Date:	Sheet:	Spec. Section:	Page: 2 of 3

SPECIFICATIONS	Review each paragraph of specifications.
	Discuss procedure for accomplishing the work.
	Clarify any differences.
PRELIMINARY WORK & PERMITS	Ensure preliminary work is correct and permits area on file.
	If no, what action is taken?
TESTING	Identify test to be performed, frequency and by whom.
	When required?
	Review testing plan.
	Have test facilities been approved?

Preparatory Meeting Checklist (to support each DFOW)

Project Name:			Project Number:
DFOW			
Date:	**Sheet:**	**Spec. Section:**	**Page: 3 of 3**

SAFETY	Site Safety Plan Approved? YES ☐ NO ☐
	Review Site Safety Plan:
MEETING COMMENTS	Comments during meeting:
WORKSHEETS	Worksheets:
OTHER ITEMS OR REMARKS	Other items or remarks:

Reported By:	Reviewed By:	Reviewed By:
(Quality Control Inspector)	(Quality Control Manager)	(MSD QA Representative)

Initial Inspection Checklist

Project Name:			**Project Number:**
DFOW:			
Date:	**Sheet:**	**Spec. Section:**	**Page: ___ of ___**

No.	Item	Yes	No	N/A
1	Was the production foreman present?			
2	Material			
a)	Were materials inspected for compliance?			
b)	Were corrective actions taken for defective material?			
c)	Were corrective actions appropriate?			
d)	Were any deviations accepted?			
3	Installation Requirements			
a)	Did work comply with specifications or plans?			
b)	Was workmanship satisfactory?			
c)	Were corrective actions appropriate?			
d)	Were any deviations accepted?			
4	Tests			
a)	Were tests being performed?			
b)	Was testing frequency satisfactory?			
c)	Were test samples or locations appropriate?			
d)	Was testing quality coordinated with Mechanical/Electrical technicians?			
5	Inspections			
a)	Was inspection done by the QC Inspector in the Prep. meeting?			
b)	Was the inspection frequency as established in the Prep. Meeting?			
c)	Were critical inspections satisfactory?			
d)	Was the inspection satisfactory?			
6	Safety			
a)	Was the safety officer present?			
b)	Were the safety requirements followed?			
c)	Were the safety requirements modified?			

Remarks (explanations required for “No” responses and if deviations were accepted):

Reported By:	Reviewed By:	Reviewed By:
(Quality Control Inspector)	(Quality Control Manager)	(Quality Assurance Representative)

Receiving Material Inspection Report

Project Name:			Project Number:
DFOW:			
Date Received:	Order Number:	Date Inspected:	Inspected By:

Ref No.	Item Description	Quantity	Partial or Full?	Okay or Damaged?	Special Storage?

Remarks (explanations required for partial and damaged material):

PARADIGM ENGINEERING QC Worksheets

Check worksheets that apply based on those listed in bid package and attach:

- ☐ Cable Test Data Form
- ☐ Calibration Sheet
- ☐ Circuit Breaker Schedule
- ☐ Control Circuit Piping Leak Test Form
- ☐ Controller Calibration Test Data Form
- ☐ Cut-in Schedule Form
- ☐ Dry Transformer Test Data Form
- ☐ Equipment Record Form 1
- ☐ Equipment Record Form 2
- ☐ Equipment Test Report Form
- ☐ Individual Loop Test Data Form
- ☐ Installed Motor Test Data Form
- ☐ Loop Commissioning Test Data Form
- ☐ Loop Wiring and Insulation Resistance Test Data Form
- ☐ Manufacturer's Installation Certification
- ☐ Manufacturer's Instruction Certification Form
- ☐ Misc Instrument Calibration Test Data Form
- ☐ Motor Control Center Test Form
- ☐ Motor Data Form
- ☐ Operation and Maintenance Transmittal Form
- ☐ Requrest for Contractor Proposal
- ☐ Submittal Transmittal Form
- ☐ Substitution Request Form
- ☐ Unit Responsibility Certification Form
- ☐ Wire and Cable Resistance Test Data Form
- ☐ Work Directive Change Instructions and Form

Contractor QC Documentation

(Attach resumes and applicable worksheets including Contractor recommended forms)