QA/QC PLAN

Submitted by:

TECHNICAL DEVELOPMENT COMPANY FOR CONTRACTING

TABLE OF CONTENTS

I.
QUALITY MANAGEMENT SYSTEM (QMS)

1. Purpose

The purpose of this procedure is to highlight the processes needed for the quality management system for continual improvement.

2. Scope

This International Standard specifies requirements for a quality management system where an organization
a) needs to demonstrate its ability to consistently provide product that meets customer and applicable statutory and regulatory requirements, and
b) aims to enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable statutory and regulatory requirements.

3. References

U.B.C. & ASTM

4. Abbreviations & Definition of Terms

Top Management – Managing Director, Operation Director

Product – The end item result of meeting all contract terms and conditions.

5. Responsibilities

Top management shall provide evidence of its commitment to the development and implementation of the quality management system and continually improving its effectiveness by
a) communicating to the organization the importance of meeting customer as well as statutory and regulatory requirements,
b) establishing the quality policy,
c) ensuring that quality objectives are established,
d) conducting management reviews, and
e) ensuring the availability of resources.

Management representative

Top management shall appoint a member of the organization's management who, irrespective of other responsibilities, shall have responsibility and authority that includes
a) ensuring that processes needed for the quality management system are established, implemented and maintained,
b) reporting to top management on the performance of the quality management system and any need for improvement, and
c) ensuring the promotion of awareness of customer requirements throughout the organization.

6. Procedure

The benefits of a QMS

A fully documented QMS will ensure that two important requirements are met:
• The customers' requirements – confidence in the ability of the organization to deliver the desired product and service consistently meeting their needs and expectations.
• The organization's requirements – both internally and externally, and at an optimum cost with efficient use of the available resources – materials, human, technology and information.
These requirements can only be truly met if objective evidence is provided, in the form of information and data, to support the system activities, from the ultimate supplier to the ultimate customer.
A QMS enables an organization to achieve the goals and objectives set out in its policy and strategy. It provides consistency and satisfaction in terms of methods, materials, equipment, etc, and interacts with all activities of the organization, beginning with the identification of customer requirements and ending with their satisfaction, at every transaction interface.
Management systems are needed in all areas of activity, whether large or small businesses, manufacturing, service or public sector. A good QMS will:
• Set direction and meet UBC & ASTM
• Improve process control
• Reduce wastage
• Lower costs
• Increase market share
• Facilitate training
• Involve staff
• Raise morale
The major clauses and sub-clause are:
• **Scope**
• **Normative reference**
• **Terms and definitions**
• **Quality management system**
General requirements
Documentation requirements

Management responsibility
Management commitment
Customer focus
Quality policy
Planning
Responsibility, authority and communication
Management review
• **Resource management**
Provision of resources
Human resources
Infrastructure
Work environment
Product realization
Planning of product realization
Customer-related processes
Design and/or development
Purchasing
Production and service operations
Control of measuring and monitoring devices
• **Measurement, analysis and improvement**
General
Planning
Monitoring and measurement
Control of non-conforming product
Analysis of data
Improvement

Setting up a QMS

As illustrated in the Process section, for organizations to function effectively, they have to identify and manage numerous interlinked, cross-functional processes; always ensuring customer satisfaction is the target that is achieved. The schematic illustrates this concept:

The adoption of a QMS needs to be a strategic decision of an organization, and is influenced by varying needs, objectives, the products/services provided, the processes employed and the size and structure of the organization. A QMS must ensure that the products/services conform to customer needs and expectations, and the objectives of the organization. Issues to be considered when setting up a QMS includes its:

• Design
• Build
• Control
• Deployment
• Measurement
• Review
• Improvement

Taking each of these in turn:

Inhouse Design and **build** includes the structure of the quality management system, the process and its implementation. It's design must be led by senior managers to suit the needs of

the organization, and this is ideally done using a framework to lead the thinking. Design of the QMS should come from determining the organization's core processes and well-defined goals and strategies, and be linked to the needs of one or more stakeholders.

The process for designing and building the QMS must also be clear, with the quality function playing a key role, but involvement and buy-in to the system must also come from all other functions.

Deployment and implementation is best achieved using process packages, where each core process is broken down into sub-processes, and described by a combination of documentation, education, training, tools, systems and metrics. Electronic deployment via Intranets is increasingly being used.

Control of the QMS will depend on the size and complexity of the organization. ISO is a site-based system, and local audits and reviews are essential even if these are supplemented by central reviews.

Local control, where possible, is effective, and good practice is found where key stakeholders are documented within the process and where the process owner is allowed to control all of the process.

Ideally, process owners/operators are involved in writing procedures.

Measurement is carried out to determine the effectiveness and efficiency of each process towards attaining its objectives. It should include the contribution of the QMS to the organization's goals; this could be achieved by measuring the following:

- Policy definition completeness
- Coverage of business
- Reflection of policies
- Deployment
- Usage
- Whether staff find the QMS helpful in their work
- Speed of change of the QMS
- Relevance of QMS architecture to the job in hand

A form of scorecard deployed through the organization down to individual objective level can be employed, and the setting of targets at all levels is vital.

Review of the effectiveness, efficiency and capability of a QMS is vital, and the outcome of these reviews should be communicated to all employees. Reviewing and monitoring should be conducted whether or not improvement activities have achieved their expected outcomes.

Improvement should follow as a result of the review process, with the aim of seeking internal best practice. It is part of the overall improvement activities and an integral part of managing change within the organization.

- Customer focus
- Leadership
- Involving people
- Process approach
- Systems approach
- Continual improvement

• Factual decision making
• Mutually beneficial supplier relationships

Taking each one in turn, they are explained more fully as:

An effective QMS must ensure that the organization has a strong **Customer Focus**. Customer needs and expectations must be determined and converted into product requirements.

Top management has to demonstrate **Leadership**. Providing unity of purpose through an appropriate quality policy, ensuring that measurable objectives are established, and demonstrating that they are fully committed to developing, sustaining and improving the QMS.

Managers must ensure that there is **Involvement of People** at all levels in the organization. This includes ensuring that there is an awareness of the importance of meeting customer requirements and responsibilities in doing this, and people are competent, on the basis of appropriate training and experience.

An effective QMS must be a strategic tool designed to deliver business objectives, and must have, at its core, a **Process Approach**, with each process transforming one or more inputs to create an output of value to the customer. The key business processes may be supported by procedures and work instructions in those cases where it is judged necessary to rigidly define what rules are to be followed when undertaking a task. Most organizations will have core business processes that define those activities that directly add value to the product or service for the external customer, and supporting processes that are required to maintain the effectiveness of the core processes.

The understanding of the many interrelationships between these processes demands that a **Systems Approach** to management is adopted. The processes must be thoroughly understood and managed so that the most efficient use is made of available resources, to ensure that the needs of all the stakeholders –customers, employees, shareholders and the community - are met.

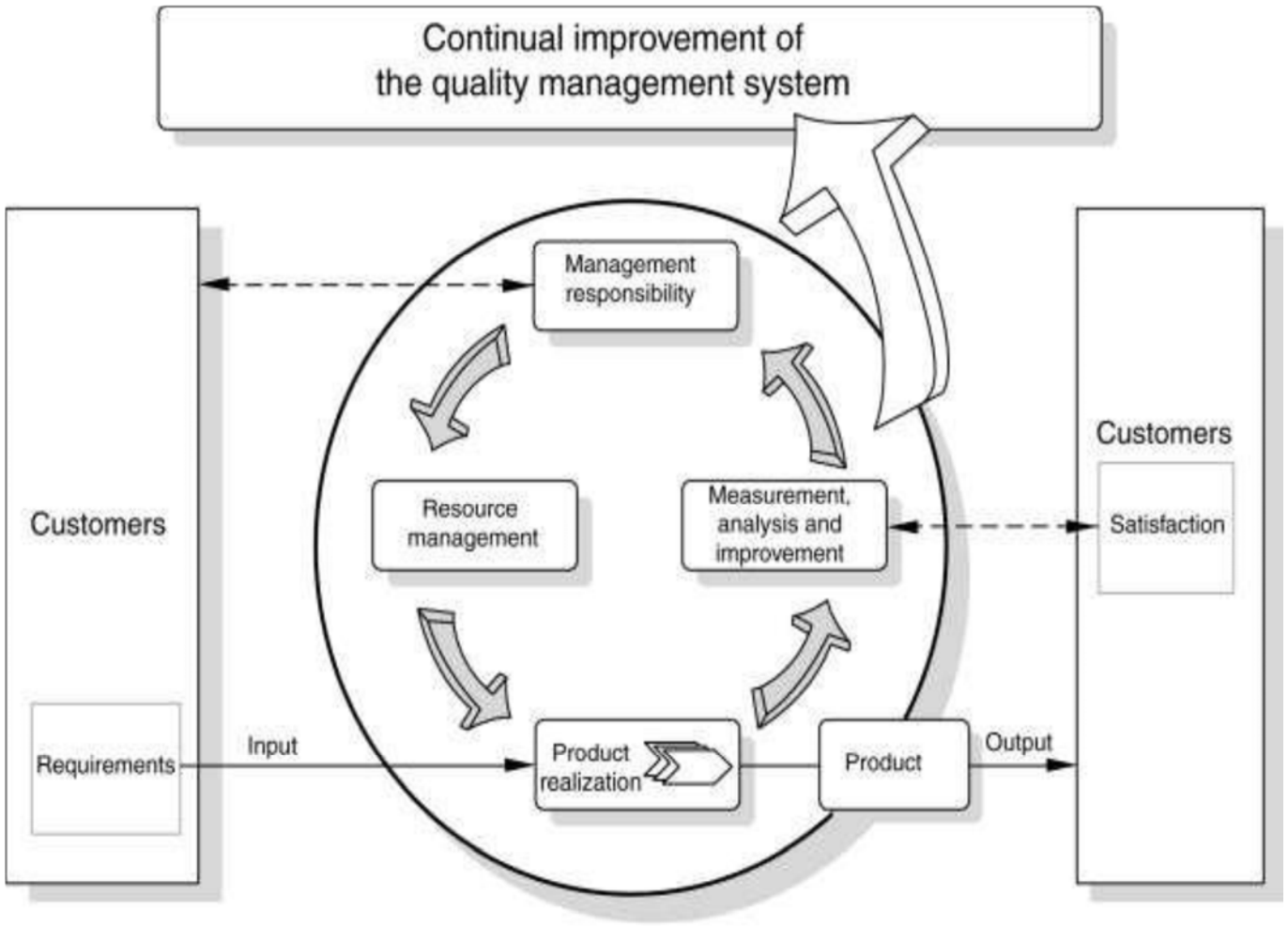
Reviews and Assessments

A good QMS will not function or improve without adequate review and assessment.

Review and Assessment are carried out to ensure that actual methods are adhering to the documented procedures, whilst system reviews should be carried out systematically, to ensure the system achieves the required effect.

There should be a schedule for carrying out reviews, with different activities possibly requiring different frequencies.

7. Flow Chart


Continual improvement of
the quality management system
Customers
Requirements
Input
Management
responsibility
Resource
management
Measurement,
analysis and
improvement
Product
realization
Product
Output
Customers
Satisfaction

II.
QUALITY ASSURANCE / QUALITYCONTROL PLAN

QUALITY ASSURANCE PLAN

1. Plan Objectives

This Quality Assurance Plan is applicable to all the works to be performed in the Project. The program involves the strict adherence and implementation in compliance with the specification for all construction activities, which comprises of the following but not limited to:

1. Field and off-site inspections (material & executed work);
2. Field and off-site testing (material & executed works);
3. Daily monitoring & inspection of field construction works;
4. Controlling of shop drawing and material submittal production;
5. Documentation and record quality control filling system;
6. Preparation of as-built drawing/O & M manuals by the end of the project;
7. Internal Quality audits.
8. Reporting to Client.

2. Quality Control Organization

2.1 The QC department will operate as a separate and independent section within the Project, report directly to the Project Manager its duty being to ensure conformance to applicable standards, specification and drawing with respect to materials, workmanship, construction, finish & functional performance, providing a state that assures the end product complies with specification.

2.2 TD may assign direct employees or sub-contractor employees for certain type of work but in all cases, all employees whether direct or sub-contractor will work under the control of the Q.C. organization.

3. Quality Control Personnel Authority

3.1 QC Personnel may at any time stop any work-in-progress not fully complying with the contract requirements. In stopping any sub-contract work, a notice stating the reasons for rejecting will be issued. Work will not proceed until these unsatisfactory conditions have been rectified / corrected.

3.2 Full authority on behalf of TD to implement all aspect of the QC program including authority to reject non-complying work and order removal is vested to the Quality Control Personnel.

3.3 Any deficiency will be corrected and the QC Manager shall be notified accordingly, before concealment of such work.

3.4 QC Personnel is authorized within his assigned areas of responsibility to approve/accept work that complies with the specification in coordination with CLIENT Representative.

4. Responsibility of the QC Manager

4.1 QC Manager

a. Coordinate with Client regarding quality matters.

b. Ensure all materials/equipment's received on site is inspected for compliance in accordance with Material vendor Approval request (MVAR) approvals and are proper stored

c. Ensure that all testing is performed as required under the technical provisions of the contract specifications.

d. Maintain records of QC activities and make these records available at any time to Client's authorized representatives.

e. Enforce "Hold-Points"

f. Deal directly with field supervisors to correct identified deficiencies and notify the QC inspector prior to concealment of corrected work.

4.2 QC Inspector

a. To assist the QC Manager in all QC activities.

b. To maintain filing & records system of all QC activities.

c. Conduct field and off-site inspection and testing as per specification and drawing.

d. Conduct hold point release inspections.

e. Ensure that all materials delivered on site are as per approved documents & standards.

f. Conduct testing and commissioning inspection.

5. QC Meetings

Each day, every member of the QC team will meet with the QC Manager, topic is to discuss progress and/or information. At the end of each day's work, each QC Inspector will submit a daily report.
A bi-weekly QC meeting will be held which will enable the week's progress/problems to be discusses and also formulate the Weekly QC Report to the Client.

6. Interfacing with other Company Departments

6.1 While the QC Section is a separate entity within TD it may, from time to time require the temporary assistance of specialists. The QC Manger is authorized to call upon anyone in TD Construction Team, to assist in the review of technically complex problems or for the resolution of certain problem, which may occur during construction.

6.2 Daily contact with the Construction Manager and site supervisors will be maintained to encourage the reduction and eventual elimination of site problems while still ensuring contract schedules and programs are maintained.

7. Materials and Sub-Contractor Approvals

7.1 The QC section will be responsible for evaluating all materials and goods specifications and approval prior to ordering thus determining their compliance with the Contract Specification prior to delivery on site. With QC visits to manufacturing plants and ocular inspection of site deliveries, it is assured that a material being used complies with the specifications. A Specification Comparison sheet shall be submitted from Client for approval prior to initiating procurement activities.

7.2 Sub-Contractors will be evaluated by the QC Section to assure TD that they are capable of providing the required materials, workmanship installed in manner acceptable to the client and within the contract Specification requirements. Pre-qualification data of Sub-Contractors' senior site personnel will be reviewed and get approval from Client.

8. Controlling of Shop Drawing & Material Submittals

8.1 The QC section will be aware of shop drawings and shall ensure that all component parts meet with Contract Specifications and Drawings, as received from the Client for construction.

8.2 QC material Engineer will be responsible for reviewing all material submittals in compliance with Contract Specifications and Drawings.

8.3 TD will be responsible for establishing and implementing a materials control program that describes control for procurement receipt and storage of materials, equipment, component parts, etc.

8.4 The Quality Control section will be responsible for reviewing all Purchase Orders, issued to the Project of permanent construction materials and verifying that all necessary quality-related requirements are incorporated on said requisitions will be verified as being placed with Client-approved vendors.

8.5 The Quality Control section shall implement an inspection program, visiting storage areas and warehouse on the construction site to ensure proper storage and protection of materials.

8.6 The Quality Control section shall implement a schedule of off-site inspections of approved manufacturers, to ensure products are made in accordance with required specifications and drawings.

9. Field and Off-site Inspection (material & executed work)

9.1 Inspectors shall inspect all materials received on site and satisfy themselves that these materials are acceptable as per Contract Specifications and are comparable to the Purchase Order placed, handled, stored and installed, in a manner not detrimental to the quality of the products. Receiving inspection result shall be recorded. Material Inspection Report to be filed up.

9.2 Inspectors shall be aware at all times of the progress of work on each individual plot, and shall carry out all necessary duties including “Hold-Point” imposition pending Client Inspection.

9.3 Inspectors shall prepare a request for inspection for the following day and submit a copy to Client 24 hours prior to inspection time.

9.4 The QC section will be constantly aware of the stages of construction on each plot and prior to the start of new phases, ensure that all materials and/or equipment have been submitted and approved.

9.5 The QC section will be responsible for surveying manufacturer’s facilities. And appropriate measures is to be applied and imposed throughout the manufacturer’s process of receiving raw materials, storing raw materials, producing the end product in a professional

and technical manner. Handling, storing and distributing these goods to ensure quality articles are received on site.
The manufacturer will be expected to exhibit an internal QC system, which precludes rejected materials and products being dispatched.

9.6 Definitions

(I) **"Witness Points":** Important steps in Manufacturing and/or testing whereby prior agreement, the supplier is obliged to advise Contractors inspection personnel a reasonable time in advance of the operations as that it may be witnessed by Client inspector. The supplier may proceed with the work past the witness point if the inspector is not available at the appointment. In the event the inspector cannot witness the first occurrence of a particular operation, a subsequent occurrence shall be witnessed at the opportunity.

(ii) **"Hold Points":** Critical steps in manufacturing and/or testing hereby contract document requirements, the supplier is obliged to advised Contractor's inspection personnel a reasonable time in advance of the operation so that it may be witnessed by the inspector. The supplier may not proceed the work beyond the hold point without witness by the Contractor's Client inspector.

10.00 Off-Site Quality Control Plan

10.10 Intention of Plan

The above plan, included as part of the Quality Control Program, is aimed at ensuring that only high quality products are processed for incorporation within contract works. Working closely with the procurement and expediting manager. The Quality Control section will arrange any necessary correction to a non-conformance item and coordinate all matters related to Off-Site Quality Control.

10.11 Inspection and Testing of Procured Items

All procured items will be inspected and tested by QC section. If deemed necessary an independent testing laboratory approved by Client will be hired to do the testing. For the overseas inspection and testing of major materials and equipment manufactured or procured off-site, TD will arrange and request for assistance through the Client's Representative. At all times access for

inspection by the Client will be provided by arrangement with the relevant Manufacturer/Supplier.

10.12 Quality Control Procurement Monitoring System

Materials and equipment to be procured from Suppliers and/or Manufacturer's both within and outside the Kingdom will be subject to an Off-Site Inspection and Testing Plan for quality control monitoring. The Suppliers and Manufacturer will be informed of the required procedures contained in the plan to ensure a smooth, orderly and high quality end result.

a) Award of Purchase Orders/Subcontracts
b) Supply and Procurement Documentation
c) Revisions/Changes and/or Substitute for Specified Items Procedure;
d) Provisions of Samples, Calculations and test Certificates by Supplier/Manufacturer;
e) Inspection and Testing Procedure for Major Items to be procured;
f) Delivery and Handling of Procured Items;
g) Inspection of procured Items upon Receipt at Site.

10.13 Awards of Purchase Orders/Subcontracts

A. Considering the selection and evaluation of Suppliers / Manufacturers, the following order of preference is to be observed:

(i) Client Authorized Support Industries:
(ii) Saudi Arabian Companies; and

B. Whenever possible three Suppliers/Manufacturers are to be invited submit quotations with selection based upon:

(i) Expertise;
(ii) Experience; and,
(iii) Manufacturing/Supplier capability.

C. Final selection of Supplier/Manufacturer is to be made after receipt and evaluation of their respective quotation, to be based upon:

(i) Conformity with the Specification
(ii) Price;
(iii) Availability;
(iv) Quality; and,
(v) Performance.

10.14 **Supply and Procurement Documentation**.

A system of proper documentation for procurement of material and equipment is to be established to ensure adequate control of quality in order that Suppliers/Manufacturers are aware of the Quality Control testing and Inspection requirements of the client. Such are to contain sufficient information on this matters and will make reference to any of the following items:

a) Physical requirements: numbers, dimensions, tolerances, etc.

b) Finish - color, painting, etc.

c) Specification as per approved Submittal/Contract Document , with Manufacturer/Supplier providing copy or copies of the appropriate Code(s)/Standard(s);

d) Construction/Fabrication processes;

e) Suppliers/Manufacturers quality control procedures: provision of material certificate, test results, etc. (

f) Manufacturer's Drawings: (1) prints (1) reproducible to be submitted to the Client prior to manufacture or construction for review with final submissions of (2) prints and (1) reproducible.

g) Operations and Maintenance Manuals: (60) days before Site is offered for acceptance, (1) hard copy is to be provided for review by client, with a further (2) hard copies after approval and at least (30) days in advance of initial start-up;

h) Samples to be submitted as required upon the request by the client.

i) Special Requirements: as listed in Contract Documents;

j) Witness and Hold Points;

k) Inspection reports;

l) Contractor's Inspector: name, address, telephone, and telex numbers of contractor or appointed overseas inspection agency, and/or in-Kingdom or overseas.

m) Access for Inspection: provision of safe access at all reasonable times Manufacturers/Suppliers for inspection and testing to be carried out on their premises including right-to-access by client.

n) Delivery date and Route: To be confirmed by an acknowledgment;

o) Acknowledgment: by Manufacturer to Confirm receipt of Procurement Documents and that all requirements could be met.
Note that, two copies of the Purchase Order

10.15 **Revisions/Changes, and/or Substitute for Specified Items Procedure**.

a) Proposal by the Manufacturer/Supplier for revisions/changes and/or substitution to specified items must clearly indicate any delay in completion delivery or change in performance and shall only be incorporated after approval by the Contractor and Client.

b) Proposals by the Contractor and/or the Client for revisions/changes are to be immediately acknowledge in writing by the Manufacturer/Supplier with clear indication of any increase or decrease in cost, delay in completion and delivery, and change in performance.

b) Proposals are to be in the form of a letter and/or drawings: (2) copies shall be sent to client with pricing and payment provisions deleted.

10.16 **Provisions of Samples, Calculations and Test Certificates by Suppliers/Manufacturers**

a) Samples, calculations, and/or certificates shall be provided by the Manufacturer/Supplier as requested for approval by the client.

b) Prior to approval by the client, materials represented by such samples, calculations or certificates may not be manufactured and/or delivered to the work site or incorporated into the works.

c) Test Certificate from Manufacturer/Suppliers are to be kept as soon as available upon completion of tests, with copies forwarded to the client for approval and (1) copy retained at the site.

d) Samples shall be forwarded to the client for approval with a covering letter and documentation shall be provided with identifying marks including Contract number, Specification details, Location, Duty and Supplier. Submission to be done with enough time long lead items to be submitted as early as possible to avoid delays in purchasing and incorporation in the project.

10.17 **Inspection and Testing Procedures for Major items to be Procured**

A. Inspection Reports

To cover in process and final assembly inspections of each major item, inspection reports shall be prepared providing information required thereon. These will also show date, inspector, type of observation results, acceptability and action taken to correct deficiencies and documentation.

B. Definitions

(I) **"Witness Points":** Important steps in Manufacturing and/or testing whereby prior agreement, the supplier is obliged to advise Contractors inspection personnel a reasonable time in advance of the operations as that it may be witnessed by inspector. The supplier may proceed with the work past the witness point if the inspector is not available at the appointment. In the event the inspector cannot witness the first occurrence of a particular operation, a subsequent occurrence shall be witnessed at the opportunity.

(ii) **"Hold Points":** Critical steps in manufacturing and/or testing hereby contract document requirements, the supplier is obliged to advised Contractor's inspection personnel a reasonable time in advance of the operation so that it may be witnessed by the inspector. The supplier may not proceed the work beyond the hold point without witness by the Contractor's inspector, for extreme conditions presented by written agreement from client.

10.18 **Delivery, Handling & Storage of Procured Items**.

A. Items to be procured will be delivered with responsibility for items in transit shared between the Contractor and the Manufacturer in their insurers. Notwithstanding this, the Contractor will require all precautions to be taken to obviate delays, damage, deterioration and loss in transit between the manufacturer premises and the delivery point.

B. Care will be taken to ensure effective crating, packaging and labeling with each crate, container or batch clearly marked with its contents, the Contractor's logo, and the Contract Number, in addition to the usual matter covering embarkation and delivery data requirements.

C. Notice of damage and/or deterioration of items in transit or storage shall immediately served on the manufacturer and his insurer at the earliest possible time as long as they remain responsible for such items, with emphasis given to early replacement should the items prove to be unusable.

D. In case items are to be procured inside the kingdom, similar precautions as prescribed above shall be taken.

E. Storage items will be carefully controlled as required per Contract Specification and as referred to in this On-site Plan of this Program.

10.19 **Inspection of Procured Items upon Receipt at the Site**

A. Upon receipt of purchase items at the site, they shall immediately be checked for quantity and dimension and a visual inspection carried out for finish and in conformity with the specification. The delivered materials shall be checked against copies of the original procurement documents and any discrepancy, breakage, loss or damage shall immediately report to the Procurement and Expediting Manager.

B. Inspection shall be carried out by the responsible Store man with assistance in cases of technical complexity by Quality Control Technicians/Inspectors.

C. Access shall be provided to the client at all reasonable times to verify deliveries.

D. Copies of inspection reports on produced items received at the site are to be retained at the Contractor's site office.

E. In the event of Non-compliance with the specified requirements, a certificate of Non-compliance is to be issued to the Project Manager by the Quality Control Engineer with inclusion of suggested remedial action. Such Certificates will be incorporated within the Weekly report on Quality Control presented to the client and will immediately on preparation, be copied to the procurement and Expediting Manager.

11.1 QUALITY CONTROL PLAN FOR THE FOLLOWING

A. CONTROL OF DOCUMENTS

1. Whenever there is a change or revisions of documents such as procedures. Instruction, the old documents will be removed from the file & discarded. The new or revised documents will take the place of the old documents. Old copies of the documents will be retrieved from the concerned personnel & replaced by the revised documents. All concerned personnel will be advised of the change and will be issued a copy of the new revised document.

B. CONTROL OF DRAWINGS

1. Any changes in the drawing will be marked-up in the preliminary As Built drawings. (As in technical query)

2. All concerned personnel will be notified about the changes.

3. All old drawings will be retrieved and replaced with the revised drawing, all concerned personnel, site workers will be issued a copy of the revised drawing.

4. A log showing the status of drawings will be established to ensure that all drawings being used are of the latest revisions.

C. CONTROL OF NON - CONFORMANCE

1. During the course of construction and something diverts or does not meet project specifications, submittals or drawings, a non-conformance report will be issued. (Whether involving construction, materials or equipment) A non-conformance report form will be filled up stating the description of the NCR. Disposition of the NCR. Cause of the NCR, and action taken to prevent the recurrence of the non-conformance (NCR). Any work connected with activity, material with the NCR will be stopped until a satisfactory corrective action has been taken. A statement on how to prevent the recurrence of the NCR will be submitted. The correction of the NCR shall be reworked. repair, reject or use as is depending on the decision of the client representative. after completion of corrective actions,

2. The NC will be subject to re-inspection, re-verification by client representative if the NC is found to be satisfactory the client representative shall sign the NCR as closed. All NCR corrected by repair or use as is to be included in the As-built drawings. A file, logbook to control NCR's from the date of issue to date closed out will be available at site for verification purposes

D. MATERIAL IDENTIFICATION

1. All materials in the bulk will be stored in the TD general warehouse. A Quality Controller representative checks the delivery of the material. A delivery note will be compared with the requisition note ensuring that the material is the correct material. The QC representative also checks the tags, labels. Stencils & other markings for the traceability of the material. These materials will then be stocked in the warehouse in an orderly manner.

E. RECORD CONTROL

1. All quality control documents will be filed in a cabinet. Each file has labels to show the contents and to ensure easiness in picking which file is needed. Each file is also labeled by discipline. All quality control records are open for verification of personnel concerned.

F. PRE – INSTALLATION QUALITY CONTROL

1. Prior to start of any activity, a meeting of all disciplines is held. Discussions on how to attack the work will be the topic. Also discussed in this meeting are problems to be met by other disciplines with relation to the activity, and how to avoid, correct such problems in the future by other incoming works. Coordination between the other disciplines is very important. Prior to start of work preparations such as cleaning of substrate, availability of materials and other pertinent matters will be inspected by QC personnel. If satisfied a request of inspection will be issued 24hrs before start of work. A hold point inspection will be signed by the client representative thus approving the start of the work

G. CONTROL OF MOCK-UP COSNTRUCTION

1. Approval of mock-up must have a prior approval from the client before starting of work. And make sure that there is always an available procedure for the construction of mock-up before starting the installation of work requiring mock-up.

2. The location and size of mock-up must come from the discretion of the client and they should be informed 10 days in advance of the dates & the times when mock-up is installed.

3. Mock-up sample is the representation of the proposed materials & construction so it must show the capability of product to comply with the necessary requirements and show the proposed range of aesthetic aspect and workmanship.

4. The mock-up sample will remain undistributed during the construction of similar work so as to have a good comparison standard for the remaining work and this should be demolished and remove after the completion of work.

H. INSTALLATION QUALITY CONTROL

1. Prior to installation works QC department will check all materials, drawings, procedures & other relevant matters regarding the installation. All materials should be as per approved material submittal, drawings & procedures to be of the latest revisions. All materials & drawings which are not approved are to be rejected & removed from the work site. All workers to be utilize in the installation to be qualified & well experience in the work they are doing. Follow manufacturer's recommendations if there is manufactured product to be incorporated in the installation tolerances to be adhered to. Routine inspection of ongoing work to be done by the QC department. Correct any deviations found out during surveillance of the work. Seek advice. Clarification from the client's representative if any doubt occurs. Upon completion of work & being satisfied issue request for inspection. Protect completed installation from any damages.

I. MANUFACTURER'S FIELD SERVICES

a. In case a manufacturer rendered a field services like providing a field quality control, there must be a specific requirements that is clearly outlined for the implementation of the services such as observing the site conditions, the condition for surfaces & installation, quality of workmanship, or supervision of the work installation, application of the products, commissioning start-up, & demonstration.

J. INSTALLATION INSPECTION &TESTING

1. The contractor shall have inspection & test plan approved by the client indicating in details the methods & timing for testing. measurements to assure compliance with the contact requirements.

2. Inspection & test plans shall have provisions for ensuring and recording that prerequisite's for any given test have been met.

3. The process for inspection, testing, & documentation shall abide the requirements of the technical specification, drawing, & supplier data as part of the attachment. Included herein are the following:

    a. Construction for inspection.
    b. Inspection acceptance criteria
    c. How and when inspection are to be done
    d. “Hold Points" documents include the description of work to be inspected appropriate pay item reference.
    e. This hold point should be made by the contractor requiring the signature of contractors QC manager as well as the signature of client field engineer.
    f. The contractor should advice client a written notice 24 hrs prior to inspection of the work.
    g. Any activities shall not proceed beyond any "hold point" until the client has inspected the particular activity.
    h. This documentation shall be recorded or made in the "Daily Quality control Report".

4. The Contractor will hire independent testing laboratory to do the testing works as per project requirements.

K. METHOD STATEMENTS

1. The Contractor will establish fabrication process and work procedures and controls before starting any activity to ensure that the work process comply with the requirements of the contract specifications and drawing.

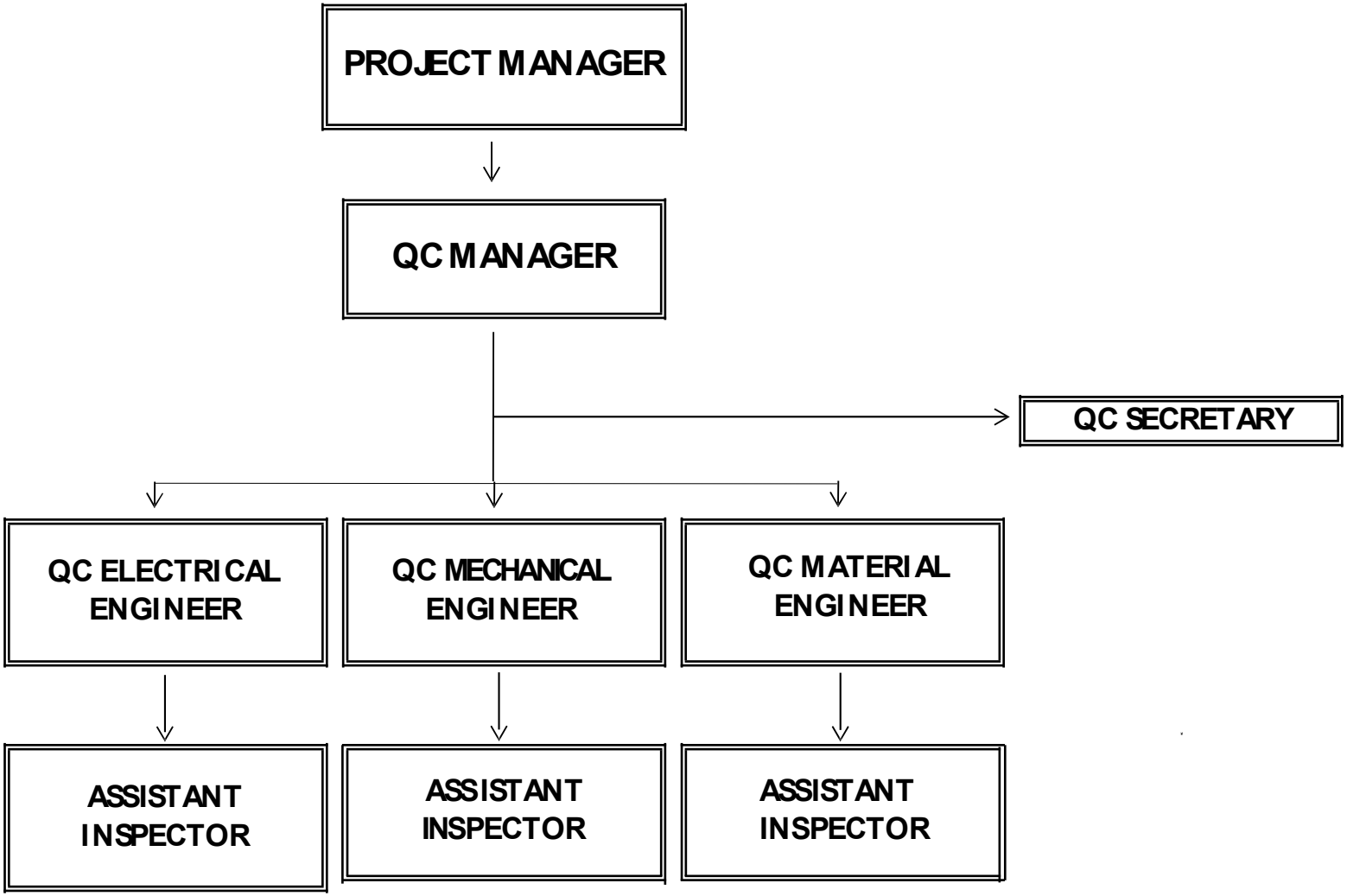
2. The contractor shall maintain a copy of all documents of all method statements, including special process procedures at the site office or at the fabrication yard in reference to the drawing and specifications including the inspection procedures of the materials.

L. CONTROL OF INSPECTION, MEASURING AND TEST EQUIPMENT

1. The frequency of inspection, measuring and test will be as per project requirements. Additional inspection or testing will be done if deem needed. Only specific equipments will be use in their intended use. Before any testing, measuring QC department will see to it that calibration of the equipment is valid. Tags or label should be visible on the equipment to be used. Calibration of equipment to be done every 6 months. Serial number, date of last calibration of equipment, and date of the next calibration should appear in the tag, label. Calibration to be done by certified independent body. A record showing the necessary information's regarding the calibration of equipment will be available in the work site. Validity of test results done with equipment that is out of calibration will be monitored and documented. All testings will be done by all independent testing laboratory approved by the Client.

III.
ORGANIZATIONAL CHART

QUALITY CONTROL ORGANIZATIONAL CHART



IV.
NON-CONFORMANCE REPORT FORM

NON-CONFORMANCE REPORT (NCR)

Project Title:	**Ref.**
Consultant:	**Date:**
Contractor:	**Contract No:**
Area:	**Site:**

Location: **Specification No:**

Part 1:For Completion by Consultant. Description of Non-conformity / Action required

Reported by consultant **Name:** **Signature:** **Date:**

Received by contractor **Name:** **Signature:** **Date:**

Part 2:Contractor's Response **Proposed Date of Action:**

Response ----------

Analysis of cause ----------

Corrective action----------

Preventive action----------

Reported by consultant **Name:** **Signature:** **Date:**

Received by contractor **Name:** **Signature:** **Date:-**

Part 3:- Consultant Approval: ☐ **Accept** ☐ **Repair** ☐ **Rework** ☐ **Reject**

Comments

-

Reported by consultant **Name:** **Signature:** **Date:**

Received by contractor **Name:** **Signature:** **Date:-**☐

Disposition Completion/Closure

Action complete on (**)**

Consultant: **Name**---------- **Signature**----------**Date**----------

Contractor: **Name**---------- **Signature**----------**Date**----------

V.
MATERIAL SUBMITTAL FORM

From:					To:		
TD Ref No. :		MATERIAL SUBMITTAL			ATTN:		
SUBMITTAL NO. :			Date:	NEW SUBMITTAL ☐		RE SUBMITTAL ☐	
TRANSMITTAL FOR :	SAMPLE ☐		SPECIFICATION ☐	CATALOG ☐		OTHERS ☐	
DISCIPLINE:	CIVIL ☐	STRC ☐	ARCH ☐	ELECT ☐	MECH ☐	GEN ☐	OTHERS ☐
					ATTACHMENT:		

ITEM NO.	DESCRIPTION	MANUFACTURER / SUPPLIER DETAILS	DOCUMENT NO.	REV. NO.	SPECIFICATION REF.	ACTION CODE

Note: WE CERTIFY THAT THE ABOVE SUBMITTED ITEMS HAVE BEEN REVIEWED IN DETAIL, AND ARE CORRECT AND IN STRICT CONFORMANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS.	Signature ---------- Procurement Manager	Signature ---------- Project Manager
Consultant Comment:-		Received by (Consultant) Name: Signature: Date:
		Received by (Contractor) Name: Signature: Date:
A. Approved B. Approved with Comments C. Revise & Resubmit D. Rejected E. Reference/Information only	Consultant Eng. Signature ----------	Signature ---------- Resident Engineer

VI.
REQUEST FOR MATERIAL INSPECTION FORM

FROM :		INSPECTION REQUEST			To :	
TD Ref No. :		MATERIAL DELIVERY ONSITE			ATTN.:	
IRM NO :		NEW IRM ☐		REVISION No ☐	DATE OF REQUEST	
DISCIPLINE :	CIVIL ☐	STRC ☐		ARCH ☐	DATE & TIME READY FOR INSPECTION	
	ELECT ☐	MECH ☐		OTHERS ☐		
ATTACHMENT :				LOCATION :		

MATERIAL DESCRIPTION	MANIFACTURER/ SUPPLIER	ACTION CODE

CONTRACTOR'S COMMENT :	

QA / QC MANAGER SIGNATURE	PROJECT MANAGER SIGNATURE	STAMP

Consultant Comments:

See Attachment ☐

DISCIPLINE	SIGNATURE
SURVEYOR	
CIVIL / STRUCTURAL	
ELECTRICAL	
MECHANICAL	
ARCHITECTURAL	

Received by : (Consultant)
Name:
Signature:
Date:

Received by : (Contractor)
Name:
Signature:
Date:

Resident Engineer
Signature

A. Approved
B. Approved with Comments
C. Revise & Resubmit
D. Rejected
E. Reference/Information only

VII.
REQUEST FOR INSTALLATION INSPECTION FORM

FROM :				To:		
TD Ref No. :		INSPECTION REQUEST		ATTN.:		
IR NO :		NEW IR ☐	REVISION No. ☐	DATE OF REQUEST		
DISCIPLINE :	CIVIL ☐	STRC ☐	ARCH ☐	DATE & TIME READY FOR INSPECTION		
	ELECT ☐	MECH ☐	OTHERS ☐			
LOCATION :			FLOOR/LEVEL :			
ATTACHMENT:		DWG / DOC REF.:				

WORK DESCRIPTION	TYPE OF INSPECTION REQUIRED	ACTION CODE

CONTRACTOR'S COMMENT :	

QA / QC MANAGER	PROJECT MANAGER	STAMP
SIGNATURE	SIGNATURE	

See Attachment ☐

DISCIPLINE	SIGNATURE
SURVEYOR	
CIVIL / STRUCTURAL	
ELECTRICAL	
MECHANICAL	
ARCHITECTURAL	

Received by : (Consultant)
Name:
Signature:
Date:

Received by : (Contractor)
Name:
Signature:
Date:

Resident Engineer
Signature

A. Approved
B. Approved with Comments
C. Revise & Resubmit
D. Rejected
E. Reference/Information only

VIII.
QUALITY CONTROL INSPECTION REPORT FORMS

CONSTRUCTION CONTROL

DEVELOPER: _____ **CONTRACTOR :** _____

LOT NO. : _____ **CONTRACT NO.:** _____

DATE : _____

QUALITY CONTROL
DAILY INSPECTION REPORT

SUMMARY	**ATTACHMENTS**
WORK INSPECTED/TESTED - RESULTS	
MATERIALS, EQUIPMENTS RECEIVED INSPECTED ON SITE/OFF SITE	
TEST / SAMPLES TAKEN - RESULTS	
NON-CONFORMANCE / ACTION	
INSTRUCTIONS RECEIVE FROM - CLIENT REPRESENTATIVE	

COMMENTS :

REVIEWED BY : **PREPARED BY :**

QC INSPECTOR	**DATE**	**QC ENGINEER**	**DATE**

CONSTRUCTION CONTROL

DEVELOPER: **CONTRACTOR :** _____

LOT NO. : **CONTRACT NO.:** _____

DATE : _____

QUALITY CONTROL
WEEKLY INSPECTION REPORT

SUMMARY	**ATTACHMENTS**
WORK INSPECTED/TESTED - RESULTS	
MATERIALS, EQUIPMENTS RECEIVED INSPECTED ON SITE/OFF SITE	
TEST / SAMPLES TAKEN - RESULTS	
NON-CONFORMANCE / ACTION	
INSTRUCTIONS RECEIVE FROM - CLIENT REPRESENTATIVE	

COMMENTS :

REVIEWED BY : **PREPARED BY :**

QC INSPECTOR	**DATE**	**QC ENGINEER**	**DATE**

IX.
CHECK LIST

HVAC CHECKLIST

Contractor : _____

Package ref. : _____ **Serial No. :** _____

Building Name : _____ Specified Location : _____

Control No. : _____ Drawing Reference : _____

Reference No. : _____

Description Activities	Disposition ACCEPT	Disposition REJECT	Disposition HOLD	Inspection Date (Initials)
1. Fabrication Materials				
a Duct	☐	☐	☐	
b Type of Joint	☐	☐	☐	
c Fittings _____	☐	☐	☐	
d Others _____	☐	☐	☐	
2. Installation				
a Level of Coordination	☐	☐	☐	
b Method of installation	☐	☐	☐	
c Joints	☐	☐	☐	
d Sealant / Gasket _____	☐	☐	☐	
e Supports	☐	☐	☐	
f Others _____	☐	☐	☐	
3. Insulation				
a Material _____	☐	☐	☐	
b Joints / Lap	☐	☐	☐	
c Cloth Wrapping	☐	☐	☐	
d Paint	☐	☐	☐	
4. Test				
a _____	☐	☐	☐	
b _____	☐	☐	☐	

REMARKS

_____

_____

_____

Checked By	Inspected By	Witnessed By
Contractor Representative	Q.C. Inspector, Contractor	Consultant
Date : _____	Date : _____	Date : _____

Distribution: ☐ Construction Manager ☐ Consultant ☐ Contractor ☐ Others

DUCT LEAKAGE TEST REPORT

Building Name :	Specific Material :	Report No. :
Particular Area :	Drawing Reference :	Date :
Date of Inspection :		

System :	Limits of Test :	Ref. No. :

Static Pressure :

Instrument Used :

Extent of Test :

Description of Findings:

Disposition: ☐ ACCEPTED ☐ REPAIR ☐ OTHER

Remarks:

Checked By	Inspected By	Witnessed By
Contractor Representative	Q.C. Inspector, Contractor	Consultant
DATE	Date	Date

Distribution: ☐ Construction Manager ☐ Consultant ☐ Contractor ☐ Others

SITE DEVELOPMENT
CONSTRUCTION CONTROL

DEVELOPER : _____ **CONTRACTOR :** _____

FACILITY NO.: _____ **CONTRACT NO.:** _____

DATE: _____

CHECKLIST
PIPE INSTALLATION

DESCRIPTION AND LOCATION:

ITEMS TO CHECK		CHECKED Q.C. ENGINEER	INSPECTED Q.C. INSPECTOR
1 The pipes are stored, handled, and protected from the effects of temperature to avoid stress and distortion.			
2 Pipes and fittings are handled with care and are subject to requirements as protected wrappings shall not be removed until they are about to be lowered into the trenches.			
3 Check excavation.			
4 Ensure pipe is correct in size, class, type, and is undamaged.	**		
5 Ensure cutting is carried out correctly.			
6 The lines and grades are to drawing and specification.			
7 Ensure open ends of pipes are plugged.			
8 Ensure trust/anchor blocks are in place.			
9 Ensure joints are left exposed for testing.	*		
10 Carry out testing.	*		
11 Check backfill.	*		
12 Carry out infiltration test.	*		
13 Ensure location posts are correctly silted.			
14 Ensure all details are recorded as built drawings and section is fully documented.			
REMARKS: * - Hold Point (Hold Point release to be initialed by the client. reps.) ** - Check against approved material submittal			

QUALITY CONTROL ENGINEER /DATE

Q.C. INSPECTOR /DATE

CLIENT ENGINEER /DATE