مؤسسة الأعمال الفنية الإنشائية والكهروميكانيكية للمقاولات

Technical Electro- Mechanical & Construction Est.

TEMCON

E- Mail : info@temconsa.com

Tel.03 8670062 – Fax.03 8677650

P.O.BOX 1307.Al Khobar 31952, Saudi Arabia.

1 SAFETY PROGRAM

Purpose

The following program is developed to provide the management and supervisory staff with the techniques and procedural guidelines essential for the protection of the company's prime asset: its personnel.

We emphasize that the topics covered in this program will become the bases of our safety policy. All levels of supervisory staff shall be responsible for the procedures and standards stipulated, and that they are strictly adhered to, therefore ensuring safer and more efficient operation in the field.

1.1 SAFETY POLICIES OF THIS COMPANY

The management of **TECHANICAL ELECTRO MECHANICAL AND CONSTRUCTION EST.** sets a high standard for the protection of its employees in safety health and welfare. Production is not that urgent that we cannot allocate time to ensure that our work is carried out in a safe manner. Recognizing this and in the best interest of modern management practice we will be constantly working for.

1.1.1 The application of the safety rules, regulations, general instructions, codes and procedures as laid down by the Engineer for this project.

1.1.2 The maintenance of safe and healthy working conditions.

1.1.3 Constant adherence to safe operating procedures and practices, so as to ensure effective control against accidents and illness.

1.1.4 Providing adequate and safe places to accommodate our personnel on site with sanitary, potable water and first aid facilities. Our manpower will take the lunch break within the lay down area utilizing the designated shaded area. Cleaning will be executed immediately after eating. Site cleaning will be carried out daily by disposing off all excess materials and rubbish to the dump yard.

1.1.5 Drinking water will be available at the site by means of disposable paper cups. Ice will be provided during the summer season.

1.1.6 Educating all personnel of the safety procedures, and the use of personnel protective equipment's, also make them aware of the existing restrictions on site.

1.1.7 Holding a ten minutes' safety discussion organized and implemented by each crew supervisor on Saturdays, at 7:00AM of each working week. Minutes of the meeting will be kept on file, and copy given to the site engineer.

2 ORGANIZATION

Please refer to the Safety Organization plan attached herein.

1.1 Project Manager

2.1.1 Defines and determines all the necessary requirements needed to comply with the safety standards and regulations.

2.1.2 Provides written instruction, explains the sequence of operations, outlines potential hazards and indicates precautions to be adhered to at each stage.

2.1.3 Organizes with site supervisors, working methods and related precautions before commencing work.

2.1.4 Ensures that applicable safety standards are complied with prior to starting work, and are strictly enforced by all members of the workforce.

2.1.5 Ensures that personnel protective equipment is used by all personnel entering into or working within the job site.

2.1.6 Coordinates with the safety officer and act on his recommendation.

2.1.7 Coordinates with the subcontractors working on site and ensures that they comply with established safe working practices.

2.2 SUPERVISOR

Our safety supervisor for this job will be:

To be determined later.

The safety supervisor will be provided with the full authority to stop any unsafe operation, and remove from the project site any hazardous material or equipment or persons not conforming to safety procedures or requirements.

The supervisor is responsible towards the Company's Safety Management and the CLIENT for the following:

2.2.1 Appoints qualified inspectors who may be holding other duties but shall be qualified and trained to ensure strict conformity with the Company's Safety Policy.

2.2.2 Organizes schedules and proposes the agenda of the foreman's toolbox weekly meetings, which must be done by the supervisory staff and foreman for all workers at least once in every week, Saturday at 7:00AM.

2.2.3 Conducts regular scheduled safety meetings at least once a month for all supervisors on the project, to review past activities, to plan ahead for new or changed operations, and establishes safe working procedures for anticipated hazards.

2.2.4 Timely reports on any accident related to the project.

2.2.5 Will keep the safety files and documents for presentation at any time.

2.2.6 Weekly safety meeting shall be conducted to discuss hazards on the job and to review and update procedures to prevent accidents. Weekly meeting shall be documented and such documentation shall be maintained and made available for review at the contractor's site office and copy submitted to the site engineer.

2.3 INSPECTOR

Provides a sufficient number of qualified inspectors indoctrinated and continually trained to carry out proper inspections.

2.3.1 These inspectors may be involved in other works such as clerical or quality control, but they must present on their worksheets as a major part of their activities, those regarding the safety duties.

2.3.2 They will make sure of the adequate utilization of the safety tools, clothes and equipment.

2.3.3 They are authorized to stop any work, reject from the site person, arterial or equipment that is not conforming to the safety requirements.

3 LOSS PREVENTION PROGRAM

The following safety procedures are provided to prevent losses:

3.1 ACCIDENT REPORTS

An immediate oral report shall be made by the Safety Officer to CLIENT Site representative and Loss Prevention and Company Management.

3.1.1 All fatal injuries.

3.1.2 All injuries requiring medical attention

3.1.3 All damage over SR 5,000.00 to contractor plant or equipment.

3.1.4 All damage in any amount to the company's plant or equipment

3.1.5 All fires

Initial oral reports of such incidents shall be followed by written report within 24 hours detailing the circumstances, corrective action taken and recommended action to prevent a recurrence.

3.2 EMERGENCY PROCEDURES

3.2.1 Action to be taken:

When any emergency condition exists, or hearing of "STOP ALARM" every foreman/supervisor shall ensure that:

3.2.1.1 All work stop at once

3.2.1.2 All equipment’s to be shut down by contractor.

3.2.1.3 A roll call is taken and every worker is accounted for. This is to be done by Site Engineer.

3.2.1.4 All workers to be sent back to camp.

3.2.1.5 No one shall be permitted to return to work until notification has been reviewed that it is safe to do so.

3.2.2 Contact after hours: (Tel. No. T.B.A)

The Safety Supervisor shall give his home address and telephone number (and that of his replacement) to APU representative so that he may be contacted after working hours in case of emergency.

3.3 HELP IN EMERGENCY

In the event of an emergency situation (serious) personnel injury, fire, critical damage to operating equipment, etc. help may be obtained by contacting the nearest emergency source.

Fire Brigade, Tel: No. 998
Police, Tel. No. 999
Ambulance, Tel. No. 997

At present our Medical facility is:
TO BE ADVISED

3.4 SAFETY TRAINING

An effective accident prevention program is an integral part of the proper job performance. When people are trained to do their job correctly, they will do them safely. Proper appreciation of accident prevention should be a part of all training.

Tool Box Safety briefings will be given to all workmen for at least ten minutes each week.

The following training will be given to supervisor and workmen at our main office in Khobar, once yearly in mid January.

3.4.1 Safety Training for Supervisors

Law and Safety
Policy and Administration
Safety and Supervision
Principles of accident prevention
Site Inspection
Human Behavior
Site Tidiness
Health
Personal Protective Equipment
Electricity
Oxygen and Acetylene Equipment

Light and Heavy Equipment
Transportation
Excavation
Working places, Ladders and Scaffoldings
Sand Blasting
Crane and other Lifting Equipment
Lifting Procedure
Fire Prevention and Control
Communications

3.4.2 Induction Safety Course for Workmen:

Potential Hazards at site
Precautions against hazards
Personal Protective Equipment
Health
Duties of company
Employee duties

4 GOOD HOUSEKEEPING

Good housekeeping is the first law of accident prevention at the construction site and should be the primary concern for all workers. Good housekeeping should be planned at the beginning of the job and carefully supervised and followed to the final clean-up. Drums, etc. must be provided at various locations throughout the work site. They must be clearly marked and emptied on daily basis at rubbish dumping area.
Contractor shall dump on daily basis all fire hazard debris. Also, excess excavated materials will be dumped on a routine basis.

5 SANITATION

One man will be assigned exclusively to clean toilets and lavatories on a daily basis. Toilets and lavatories will be cleaned with disinfectant cleaning materials.
Toilet paper, soap and paper towels will be available at sanitation facilities including labor clean up area.

Trash cans and drums will be provided on site for garbage, trash and unwanted materials. Garbage/trash will be removed from cans and drums on a daily basis and loaded into the trucks for transporting to approve dump area.

6 FIRST AID

6.1 TECHANICAL ELECTRO MECHANICAL AND CONSTRUCTION EST.

will provide first aid facilities on site for his employees as called for in the Company Safety Policy.
First aid supplies shall be kept readily available in first aid boxes.
At least one to two men shall be trained in first aid CPR.

6.2 List of First Aid supplies are as follows:

Adhesive Bandages	200
Gauze Pads, 2" x 2"	200
Gauze Pads, 3" x 3"	20
Cleaning Wipes	20
Stretch Bandages, 2"	40
Stretch Bandages, 3"	02
Burn Ointment, 1½ oz	04
Composite Pad, 5" x 9"	02
Scissors	02
First Aid Handbook	02
Cold Pack	02
Triangular Bandage, 40”	02
Waterproof Adhesive Tape, ½" x 5yd	04
Tourniquet	02
Contents Card	02
Absorbent Cotton, ½ oz	02
Eye wash pads	02
Oval Eye Pads	04
Ammonia Inhalants	06

6.3 First Aid cabinets shall be placed under the charge of

The First Aid Attendant who shall ensure that the cabinets are well stocked at all times. Personnel injury log is also to be maintained by the Attendant to keep an up-to-date record of first aid cases and other injuries and illnesses

6.4 TECHANICAL ELECTRO MECHANICAL AND CONSTRUCTION EST.

Will indicate by posted notice the following:

- The name of the person who is in-charge of the first aid cabinet.
- The hospital to which any injured person who requires hospital treatment is to be sent.
- The telephone number of the doctor or first-aid attendant employed by the contractor.
- The emergency telephone number to be called for assistance.

6.5 As may be required, a certified nurse, an ambulance

And a dedicated driver shall be provided at the job site once the manpower assigned reaches 50 persons including office personnel. TEMCON will provide a small clinic with the basic equipment necessary to provide medical services on a routine basis for a major portion of the contract period. The clinic will be kept supplied with medicines and other necessities on a bi-weekly basis.

In the event of a major-medical emergency, TEMCON will take the help of nearest Ambulances, or drive the patient to the nearest Hospital for further assistance.

7 PERSONAL PROTECTIVE EQUIPMENT

It is the responsibility of the safety supervisor to forecast potential hazards at site and stock-up on personal protective equipment. He will instruct all site personnel on the procedures and method of usage of the following equipment.

7.1 Head Protection

Safety hats or helmets will be provided to all workforce personnel and will be of a quality. No holes are permitted in hard hats and hard hats are not to be painted. Helmets to be worn at all times by all personnel on site.

7.2 Eyes and Face Protection

The protection of the eyes and face from injury by physical or chemical agents or light radiation is of primary importance in an industrial

environment. The type of protection must be selected, fitted and used with regard of both types of hazard and the optical condition of the user. Factors to be considered in selecting impact resistant eye protection include the degree of protection required and the comfort provided. Protection equipment will be worn while operating electric grinder, electric saw, etc.

Four Basic Types of Protection:

7.2.1 Spectacles used for protection against injury from impact.

7.2.2 Flexible fitting goggles.

7.2.3 Cushion - fitting goggles.

7.2.4 Chipping goggles.

In addition to damage from physical agents, the eyes are subject to the effect of radiant energy.

Energy such as that produced during welding. Visible and infra-red bands of the spectrum can produce harmful effects upon the eyes and special attention must be paid to the selection of eye protection from these hazards. Welding goggles are to be used by all personnel operating a welding machine or oxygen-acetylene set.

7.3 Face Protection

Face shields protect the face and neck from flying particles, sprays of hazardous liquids, splashes of melting metal and hot solutions. Face shield to be worn while welding by welders, fabricators and their helpers to avoid any flying particles.

7.4 Hand Protection

The kind of gloves used depends primarily upon the material of equipment being handled. Gloves should not be used near moving machinery as they can be caught and trap the hand before it can be released from the gloves.

7.5 Foot Protection

Safety foot wear with reinforced toe caps and with special soles to resist oil, abrasions, heat and spark will be used. They must be comfortable and fit properly. Safety boots are to be provided by the contractor and worn at all times by all personnel in the site.

7.6 Ear Protection

7.6.1 Ear Plugs

These are placed into the canal of the outer ear. These plugs materials are rubber, plastic, wax and cotton. Rubber and plastic types give good performance and are easy to keep clean.

7.6.2 Ear Muffs

These cover external ear to provide an acoustic barrier such as during jackhammer operation. A combination of ear plugs and muffs can be worn but their effectiveness

will be limited because of bone conduction noise to the middle ear. Ear protection is to be used when needed.

7.7 Dress

Must be of western style, loose clothing should not be worn because of the danger. No shorts or sleeveless shirts permitted. Cover all would be more suitable.

CONSTRUCTION SAFETY & ENVIRONMENTAL PROCEDURES

1. INTRODUCTION

The following program is developed to provide the site management and supervisory staff with the techniques and procedural guidelines essential for the protection of the company's prime asset: its personnel.

TEMCON emphasizes that the topics covered in this program will become the bases of our safety policy. All levels of supervisory staff shall be responsible for the procedures and standards stipulated, and that they are strictly adhered to, therefore ensuring safer and more efficient operation in the field.

2. SAFETY POLICIES OF THIS COMPANY

The management of TEMCON sets a high standard for the protection of its employees in safety health and welfare. Production is not so urgent that time to ensure that our work is carried out in a safe manner is allocated. Recognizing this and in the best interest of modern management practice TEMCON will constantly work for.

2.1. The application of the safety rules, regulations, general instructions, codes and procedures as laid down by the Client.

2.2. The maintenance of safe and healthy working conditions for its Employees.

2.3 Constant adherence to safe operating procedures and practices, so as to ensure effective control against accidents and illness.

2.4 Providing adequate and safe places to accommodate personnel on site with sanitary, potable water and first aid facilities. The manpower will take the lunch break within the lay down area utilizing the designated shaded area. Cleaning will be executed immediately after eating. Site cleaning will be carried out daily by disposing of all excess materials and rubbish to the dump yard.

2.5 Drinking water shall be available at the site by means of disposable paper cups. Ice will be provided during the summer season.

2.6 Educating all personnel of the safety procedures, and the use of personnel protective equipment, also make them aware of existing restrictions on site.

2.7 Holding a ten minutes safety discussion organized and implemented by each crew supervisor on Saturdays, at 7:00AM, of each working week. Minutes of the meeting will be kept on file.

3 ORGANIZATION

3.1 Project Manager shall:

3.3.1 Define and determine all the necessary requirements needed to comply with the safety standards and regulations.

3.3.2 Provide written instruction, explain the sequence of operations, outline potential hazards and indicate precautions to be adhered at each stage.

3.3.3 Organize with site supervisors, working methods and related precautions before commencing work.

3.3.4 Ensure that applicable safety standards are complied with prior to starting work, and are strictly enforced by all members of the workforce.

3.3.5 Ensure that personnel protective equipment is used by all personnel entering into or working within the job site.

3.3.6 Coordinate with the safety officer and act on his recommendation.

3.3.7 Coordinate with the subcontractors working on site and ensure that they comply with established safe working practices.

3.2 SUPERVISOR

The safety supervisor will be provided with the full authority to stop any unsafe operation, and remove from the project site any hazardous material or equipment or persons not conforming to safety procedures or requirements.

The supervisor is responsible towards the Company's Management and the Client for the following:

3.2.1 Appoint qualified inspectors who may be holding other duties but shall be qualified and trained to ensure strict conformity with the loss prevention program.

3.2.2 Organize, schedule and propose the agenda of the foreman's toolbox weekly meetings which must be

done by the supervisory staff and foreman for all workers at least once every week, Saturday at 7:00AM.

3.2.3 Conduct regular scheduled safety meetings at least once a month for all supervisors on the project, to review past activities, to plan ahead for new or changed operations, and establish safe working procedures for anticipated hazards.

3.2.4 Timely report on any accident related to the Project. Will keep the safety files and documents for presentation at any time.

3.2.5 Weekly safety meeting shall be conducted to Discuss hazards on the job and to review and update procedures to prevent accidents. Weekly meeting shall be documented and such documentation shall be maintained and made available for review at the contractor's site office and copy submitted to the site engineer.

4 LOSS PREVENTION PROGRAM

The following safety procedures are provided to prevent losses:

4.1 ACCIDENT REPORTS

An immediate oral report shall be made by the Safety Officer to Site representative and Loss Prevention and Company Management.

4.1.1 All fatal injuries.

4.1.2 All injuries requiring medical attention

4.2.3 All damage over SR 10,000.00 to contractor plant or equipment.

4.2.4 All damage in any amount to the company's plant or equipment

4.2.5 All fires

Initial oral reports of such incidents shall be followed by written report within 24 hours detailing the circumstances, corrective action taken and recommended action to prevent a recurrence.

5 EMERGENCY PROCEDURES

5.1 Action to be taken:

When any emergency condition exists or hearing of "STOP WORK ALARM" every foreman/supervisor shall ensure that:

5.1.1 All work stop at once

5.1.2 All equipment to be shut down by contractor.

5.1.3 A roll call is taken and every worker is accounted for. This is to be done by Site Engineer.

6 HELP IN EMERGENCY

In the event of an emergency situation (serious) personnel injury, fire, critical damage to operating equipment, etc. help may be obtained by contacting the nearest emergency source.

Fire Brigade, Tel: No. 998
Police, Tel. No. 999
Ambulance, Tel. No. 997

7 SAFETY TRAINING

An effective accident prevention program is an integral part of the proper job performance. When people are trained to do their job correctly, they will do them safely. Proper appreciation of accident prevention should be a part of all training.
Tool Box Safety briefings will be given to all workmen for at least ten minutes each week.

8 GOOD HOUSEKEEPING

Good housekeeping is the first law of accident prevention at the construction site and should be the primary concern for all workers. Good housekeeping should be planned at the beginning of the job and carefully supervised and followed to the final clean-up. Drums, etc. SHALL be provided at various locations throughout the work site. They must be clearly marked and emptied on daily basis at rubbish dumping area.
TEMCON shall dump on daily basis all fire hazard debris. Also, excess excavated materials will be dumped on a routine basis.

9 SANITATION

One man will be assigned exclusively to clean toilets and lavatories on a daily basis. Toilets and lavatories will be cleaned with disinfectant cleaning materials. Toilet Paper, soap and paper towels will be available at sanitation facilities including labor clean up area.

Trash cans and drums will be provided on site for garbage, trash and unwanted materials. Garbage/trash will be removed from cans and drums on a daily basis and loaded into the trucks for transporting to approve dump area.

10 PERSONAL PROTECTIVE EQUIPMENT

It is the responsibility of the safety supervisor to forecast potential hazards at site and stock-up on personal protective equipment. He will instruct all site personnel on the procedures and method of usage of the following equipment.

Head Protection

Safety hats or helmets will be provided to all workforce personnel and will be of a quality, which meets Industry Standards. No holes are permitted in hard hats and hard hats are not to be painted. Helmets shall be worn at all times by all personnel on site.

Eyes and Face Protection

The protection of the eyes and face from injury by physical or chemical agents or light radiation is of primary importance in an industrial environment. The type of protection must be selected, fitted and used with regard of both types of hazard and the optical condition of the user.

Factors to be considered in selecting impact resistant eye protection include the degree of protection required and the comfort provided.

Protection equipment will be worn while operating electric grinder, electric saw, etc.

Face Protection

Face shields protect the face and neck from flying particles, sprays of hazardous liquids, and splashes of melting metal and hot solutions. Face shield to be worn while welding by welders, fabricators and their helpers to avoid any flying particles.

Hand Protection

The kind of gloves used depends primarily upon the material of equipment being handled. Gloves should not be used near moving machinery as they can be caught and trap the hand before it can be released from the gloves.

Foot Protection

Safety foot wear with reinforced toe caps and with special soles to resist oil, abrasions, heat and spark will be used. They must be comfortable and fit properly. Safety boots are to be provided by the contractor and worn always by all personnel in the site.

Ear Protection

Ear Plugs: These are placed into the canal of the outer ear. These plugs materials are rubber, plastic, wax and cotton. Rubber and plastic types give good performance and are easy to keep clean.

Dress

Must be of western style, loose clothing should not be worn because of the danger. No shorts or sleeveless shirts shall be permitted.

11 FIRST AID CABINETS

TEMCON will provide first aid facilities on site for its employees as called for by the Saudi Arabia Government Regulation.

First Aid cabinets shall be placed under the charge of the first aid attendant who shall ensure that the cabinets are well stocked always. Personnel injury log is also to be maintained by the attendant to keep an up-to-date record of first aid cases and other injuries and illnesses.

QC

PLAN& ORGANIZATION

1. QUALITY ASSURANCE & QUALITY CONTROL REQUIREMENT

This Quality Control / Quality Assurance Program has been developed in accordance with the ISO requirements detailed in Standard ISO-9001 2001.

2. QUALITY ASSURANCE & QUALITY CONTROL COMPANY POLICY

TECHANICAL ELECTRO MECHANICAL AND CONSTRUCTION EST. will ensure that the procurement and construction activities of the project in all phases are in full compliance with the specifications and standards set forth in the drawings, specifications and terms of the contract. The Quality Control Supervisor assigned to the project will monitor the implementation of QA/QC plan throughout the duration of the project and report to the Project Manager, Procurement Manager and Quality Control Supervisor will ensure that the procurement of materials and equipment's for the project and the construction activities are in full compliance of the contract, drawings, specifications and various standards referred to in these documents.

_____
General Manager

3. QA/QC - GENERAL

The Project Manager will be in overall control of the Project and will be responsible for the timely completion of the project as per the drawings and specifications and applicable standards and code requirements.

The Procurement Manager is responsible for the procurement of the project requirements as initiated by the Project Manager. The Procurement Manager will ensure that the Client approves the material and equipment's being purchased and the deliveries of the items are as per the project requirements. The procurement process will be followed based on the terms and conditions set forth in the contract.

The Quality Control Supervisor will monitor the strict observation of Quality requirements at various stages and will report any variations or deficiency on quality requirements to the Project Manager. The Quality Control Supervisor will be assigned to this project as a full-time QA/QC Supervisor and his duties will not be combined with that of a site Foreman/Supervisor.

4. QA/QC PLAN:

TECHANICAL ELECTRO MECHANICAL AND CONSTRUCTION EST. Through its Project Manager, Quality Control Supervisor and supporting staff will ensure that all procurement conforms to the contract drawings and specifications of this project. The quality assurance activities include inspection, testing and visual examinations which will be followed in the procurement of materials for this project to make sure that the materials and equipment purchased are in accordance with the standards specified for its manufacture and fabrication.

All quality control activities required will be provided and properly documented, for the procurement of equipment and materials to be used and / or installed during the construction / installation of the facilities and in accordance with the requirement of the contractor's schedule.

The names, locations and qualifications of the proposed quality control personnel / agencies to be used in procurement inspection will be submitted to the Client's representative. We will ensure that only personnel qualified for the equipment being inspected perform the source inspection.

The manufacturers and vendors will be clearly instructed that any inspection by us or monitoring by the Client will not relieve them of (1) their obligation to

provide their own quality assurance / quality control and (2) their guarantees as to materials, workmanship and performance

Any material purchased which does not fulfill the Industry Standards and Specifications will be rejected. All such rejections will be documented on (NCR) non-conformance reports. A log of all non-conformance reports will be maintained and the status will be reported in a format as defined by the Client's representative. We will be responsible for all inspections, tests and examinations required at the point of manufacture. We will maintain an effective system for the continuity of order identification, which will ensure that all the drawings, specifications and inspection requirements are properly transmitted to all vendors, tiers of order placement.

We will ensure that all vendors and manufacturers have maintained an acceptable quality assurance / quality control programs. Quality audits and reports of these activities will be performed and maintained.

Immediately upon concurrence of our quality plan, all members of our project team will be given instruction on implementation of the quality plan. All personnel subsequently assigned to the project will also be instructed in the implementation of the quality plan prior to commencement of work on the project.

The quality control activity in the procurement phase will ensure that the materials and equipment ordered for this project specify the standards, referred to in the execution specifications. They are inspected and tested as per the specifications and reaching the warehouse; meeting all the requirements of the job specifications and various standards and codes referred in the job specifications.

The following standards or specification will apply for this procedure wherever applicable.

AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway & Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
ANSI	American National Standard Institute
ASTM	American Society for Testing and Materials
AWS	American Welding Society

BHMA	Builders Hardware Manufacturers Association
CRSI	Concrete Reinforcing Steel Institute
FM	Factory Mutual
SAMCSRBC	Saudi Arabian Ministry of Communications Standards for Road & Bridge Construction.
SASO	Saudi Arabian Standards Organization.
SDI	Steel Deck Institute
TCA	Tile Council of America.
UBC	Uniform Building Code.
UL	Underwriters Laboratories Inc.

The Quality Control Supervisor will inspect all materials and equipment as they arrive for compliance with the specifications and standards. He has the authority to reject any defective material immediately. The materials and equipment that are not inspected tested or examined in full compliance to Industry Standards will be rejected. However, The Client's Project Engineer/Inspector will inspect the material on the arrival at site for its requirement.

The Quality Control Supervisor will verify the purchase order to ensure all specifications and inspection requirements are properly transmitted to the equipment/material vendors at the time of order placement. The sub vendors will be required to provide copies of purchase orders to make sure that the vendors have properly conveyed inspection requirements to all tiers of order placement and the Client will have access to the purchase order inspection report files.

A weekly forecast of quality control activities will be furnished to the Client's Project Engineer in approved forms. The quality control supervisor will supply copies of reports of quality control activities to the Client on a weekly basis. On acceptance of a material or equipment which has been tested as per the Client's specifications, as Inspection Disposition Report will be prepared and supplied to CLIENT. This report will give details of quality control assurance activities performed during the manufacture or any problem encountered during inspection. If export packing is required, the final disposition will be prepared after acceptance of the export packing.

4.1 INDEPENDENT TESTING LABORATORY:

Qualified inspection and testing agencies will be engaged for the inspection and witnessing of tests as required. The approval of the Client will be obtained in advance for engaging the services of the

agencies. Normally, our qualified engineers will inspect and witness test at the vendor's plants, as per the quality control plans approved in advance.

All the quality control activities in the procurement of equipment and material to be used or installed during the construction of this project will be provided by TEMCON. Our quality control activities in the procurement of materials and equipment will conform to the quality control plans approved by the Client and all the applicable codes and standards.

The Materials Engineer prepares the material take off. Material take off identifies the relevant specification section. Material Request is initiated from the project site on the material request form.

Quotation Requests are prepared from the procurement section in the Head Office. The Client specifications and inspection requirements are included as part of the quotation request. Purchase Order is also issued incorporating the specifications and inspection requirements.

The Quality Control Supervisor will ensure that these standards and test requirements are made part of the above-mentioned documents. The Quality Control Supervisor will check all the purchase order to ensure that specs. and inspection requirements are being properly transmitted to vendors at all tiers of order placement. The manufacturers, vendors, sub vendors and subcontractors will be required to meet Industry Standards and specifications, and they will be specifically instructed that inspection from our part will not relieve them of their obligation to provide their own quality control and their guarantees as to the materials, workmanship or performance.

The Procurement Manager and Quality Control Supervisor are qualified to identify any quality problem in the procurement process and to initiate, recommend and provide solutions to these quality problems in consultation and with the approval of QA coordinator.

When any QC matter which requires coordination, or requires any instruction before manufacturing begins, meetings with sub-

contractors or vendors will be initiated and we will request meeting with the Client Project Engineer for establishing the QA/QC plan for any individual procurement order. Our quality

control supervisor will request assistance from the Client QA coordinator for interpreting codes and standards and construction specs.

The Quality Control Supervisor in procurement section will ensure that the manufacturers and suppliers meet the quality assurance requirements on the materials. The inspection and test reports related to any material or equipment arriving at the warehouse will be verified by the Quality Control Supervisor to confirm compliance with the applicable codes and standards and all other requirements. Any material arriving at the warehouse not conforming to the requirements of the job specification and standards will be rejected immediately.

The materials at the warehouse are received by the warehouse-keeper and properly accounted. The stock sheet identifies the point of use of the material with reference to the related drawings etc. The material when required is released on request by the construction engineer.

4.2 STRUCTURAL STEEL

All products will be designed in accordance with the **American Institute of Steel Construction (AISC)** "Specification for design, Fabrication and erection of Structural Steel for Buildings". All structural steel material will be purchased in accordance with ASTM standards. Any deviation from this policy will be noted in the purchase order.

Welding procedure operation qualification and welding quality standards will be in accordance with the American Welding Society (AWS). Structural Welding Code and the Welding Procedures Manual. Inspection other than visual inspection as defined by AWS paragraph 8.15.1 will be identified.

4.3 QUALITY CONTROL PROCEDURES:

Quality Control Inspector will report to the Project Manager, and will have the responsibility and authority to reject material and / or recommend repair procedure as necessary to meet established

quality standards as specified in the quality control procedure manual.

4.4 SHOP DRAWINGS

All design will be completed in accordance with the AISC (unless stated otherwise). A qualified engineer will check all design and drawings. Upon completion of design and the fabricated parts release, all information will be filled in the appropriate job file or drawings record file.

4.5 MATERIAL CONTROL:

All plate and structural steel material will be checked when received to verify that material agrees with the purchase order. Any discrepancies will be noted on the goods inwards when it is passed to purchasing. Mill reports will be received by the Engineering Manager and passed to Purchasing for with the appropriate purchase order. All materials will be purchased to meet ASTM standards and any material found not meeting ASTM, will be rejected.

4.6 FABRICATION:

The Quality plan includes schedule of Inspection and. The Plan is prepared for the implementation of inspection arrangements to verify conformance to the specifications. QA/AC Engineer will be responsible for the quality control activities.

Testing and inspection will be carried out in accordance with the requirements specified in the contract documents. In case the in-house testing facilities are not meeting the requirements, an independent testing agency will be arranged to perform the required testing and inspection and the test reports and certificates will be properly recorded. As per the inspection and testing procedure, documents identifying inspection and testing activities such as examination and measurements will be recorded.

In case of non-conformance the non-conforming items or activities are identified on the inspection report subsequently to investigate the causes of nonconformance and to determine the actions

necessary to prevent repetition. Detailed Inspection and test plan for the structural steel fabrication is furnished to the Client immediately.

4.7 DISPOSITION OF UNACCEPTABLE MATERIAL

a. The process by which we generate rejection data must have some format and guidelines if it is to be put in a workable and understandable form. The following is a guideline to that end:
When material which has had labor performed on it is found to be defective, miss fabricated, damaged, miscoded unidentified, it will be "tagged" by quality control personnel. Complete information on the tag will include the date, part name and number, quantity, deformation and the Quality Control Inspector's initials. A tag must be attached before defective material is moved or scrapped.

b. Part Marking
To ensure accurate inventory, complete shipment and efficient erection of product, parts must display a part number. The following criteria will be observed.
1- Parts will be coded accurately.
2- Length and color suffixes as required.
3- Must be in legible form and appropriate location.

c. Inspection Result Forms
All rejected materials must be tagged and reported on a "discrepancy report"

4.8 WELDING

a. All welding works should be complying with the following:
AISC - Manual for Steel Construction
AWS D.I.I - Structural Welding Code

All the material certification and mill reports will be reviewed in a timely manner. The inspection record will identify the welding joints. The method of identification of welds will be non-destructive to the element. Visual inspection will be conducted for cracks in welds and base metals and other discontinuities and the observation recorded on the inspection reports. Non-destructive testing other than visual

inspection will be conducted on welds when specified by the contract documents.

b. Welding Consumable Control

All electrodes having low hydrogen coverings conforming to AWS A5.1 will be purchased in hermetically sealed containers or will be dried at least two hours between 260°C and 430ºC before they are used. Electrodes having a low hydrogen covering conforming to AWS A5.5 will be purchased in hermetically sealed containers or will be dried at least one hour at temperatures between 370ºC and 430ºC before being used. Electrodes will be dried prior to use if the hermetically sealed container or removal of the electrodes from the drying oven, the electrodes will be stored in ovens held at temperatures of at least 120ºC. After the opening of the hermetically sealed containers or removal from drying or storage ovens, electrode exposure will not exceed the values shown in column A, Table 4.5.2 or column B in Table 4.5.2 of AWS D1.1. Electrodes that conform to the provisions of Tables 4.6 Section 4.5.2 will be subsequently re-dried not more than one time. Electrodes that have been wet and damaged will not be used.

c. General Inspection:

All parts will be checked at each workstation to verify that the proper material and thickness is being used. If the material used is questionable, it will be reviewed with the Production Manager for action to be taken.

5. QA/QC CONSTRUCTION PLAN

The QA/QC activity at the work site will be in accordance with the QA/QC plans approved for construction. Construction practices as per the Client systems and specifications will be followed in this work. We will ensure that the sub-contractor conforms to Industry Standards. Construction documents will be in English and of microfilm quality. We shall provide proper document on all Quality Activities in the fabrication/construction and pre-commissioning of the facilities. We will perform and document all quality functions to ascertain that all fabrication / construction and

recommissioning activities are performed in accordance with the requirements of

a. The Client Engineering Standards.
b. The Client Engineering Procedures.
c. Approved fabrication & construction drawings.
d. Approved fabrication/construction procedures and specification.
e. Contractor's Quality Manual, Quality Plan, Inspection & Test Plan & supporting procedures

TECHANICAL ELECTRO MECHANICAL AND CONSTRUCTION EST. shall submit to the Client's Projects Inspection Unit the resumes of all QA/QC personnel for review and approval. We will ensure that, only personnel with suitable experience and qualifications perform all inspection. The inspection personnel will be able to read, interpret and apply the Client Specifications and Standards. We will ensure that all sub-contractors conform to this procedure. We will reject any work, which does not comply with, or which was not inspected, tested or examined in full compliance with, the requirements of the Client system standards and specifications and our quality plan and procedures. We will be responsible for all required inspections, tests and examinations at the fabrication yard and work sites. This will include repair of defects discovered by non-destructive examination or destructive testing or inspection performed by or on behalf of us. Our quality plan for fabrication/construction and pre-commissioning will be prepared to a detailed level appropriate for the work to be performed and will cover all fabrication, construction and pre-commissioning activities through final construction and mechanical completion. Immediately upon concurrence of our Quality Plan, we will instruct all members of our project team in the implementation of the Quality Plan. All personnel subsequently assigned to the team will undergo the same instruction prior to commencement of work on the project.

The following standards or specifications will be applied for the construction wherever applicable:

ACI	American Concrete Institute.
AISC	American Institute of Steel Construction
AISI	American Iron & Steel Institute.
AMCA	Air Moving & Conditioning Association

SAMS	The Client Material System
SAMSS	The Client Material Specification Standards
ANSI	American National Standards Institute
ARI	Air Conditioning Refrigeration Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASHRAE	American Society of Heating, Refrigeration & Air Conditioning Engineers.
ASTM	American Society for Testing & Materials
AWS	American Welding Society
CRSI	Concrete Reinforcing Steel Institute
IEEE	Institute of Electrical & Electronic Engineers
NESC	National Electrical Safety Code
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NEC	National Electric Code.
NEMA	National Electric Manufactures Association.
NFPA	National Fire Protection Association
SMACNA	Sheet Metal & Air Conditioning Contractors National Association
PDI	Plumbing and Drainage Institute.

The Client will be provided with Construction QA/QC data as may be required for The Client records.

All subcontractors' activities will conform to the requirements in the approved QA/QC plan and specs.

Our Quality Control Supervisor will control QA/QC activities on sub-contractors works at the site.

Construction activities of all sub-contractors have properly conveyed construction standard requirements to all tiers of activity.

A copy of the construction specification drawings and other relevant documents will be maintained in the site office for ready reference.

The quality Control Supervisor will do the testing including requests and reports. Services of The Client approved Independent Testing agency will be utilized for soil compaction tests, compressive strength of concrete cylinders, chemical analysis of samples and welding. Two

copies of each report will be furnished to the Client summarizing the result of each test and inspection. Each report will clearly distinguish the type of test, location and other related information. The Client Projects Inspection will be informed a minimum of 48 hours in advance of such test or inspection

5.1 DRAWING APPROVAL & CONTROL:

The sub-contractor's drawings, designs and specifications will be reviewed to conformance to the project drawings and specifications. The sub-contractor's drawings and designs will be returned promptly to them after approval from the Client. During the performance of the work, a set of construction drawings will be maintained at the site office to reflect the current as-built status of the project.

The quality control supervisor has the authority and organizational freedom to identify any quality problem in the construction activity or the material being incorporated in constructional and he is qualified and experienced to initiate, recommend and provide solutions to any quality problem noticed during construction Quality Control supervisor will reject any material not conforming to the specification or drawing at the construction site. The rejection or disapproval of the work or material will be reported in writing to the Project Manager and The Client site representative as well as the corrective action recommended and taken on the quality problem. Meeting with The Client Project Engineer will be initiated when any QA/QC matter required coordination or instruction prior to construction activity.

The quality control supervisor will ensure that the welders working on this project are QUALIFIED.

The quality control supervisor will collect and file all documents related to inspection, tests and other examination. Various stages of construction at which the Client inspection and approval is required to proceed further with the work on different activities will be specifically checked and inspected by our Quality Control Supervisor prior to the Client inspection.

The Quality Control Supervisor will use sign off cards to keep track of the clearing of hold points in various activities of the project such as:

1. Layout of the Building
2. Concrete forms and reinforcing steel prior to concrete pavement
3. All concrete pouring
4. Steel erection and panel erection.
5. Installation of damp proofing membrane
6. Finish site grading
7. Asphalt paving
8. Back-fill
9. Floor surface prior to tile work
10. Prior to enclosing of any wall, locations of outlets and fixtures
11. Any other items specifically requested by Client Representative Pressure test piping.

Before requesting the Client inspection, the quality control supervisor will inspect the work and prepare the necessary documents for sign off by the Client inspection. The Client project inspection will be notified 48 hours in advance of any work-taking place. Sign off hold point will constitute removal of the hold and authorize further work to proceed. The contractor will engage a third-party testing agency; to witness and perform testing which will be advised to the Client project inspection team in advance.

5.2 SITE WORK

5.2.1 Earth Work

The earthwork will be performed in compliance with the following standard and specification:

After establishing and identifying the required line, limit, levels, contours and datum or field layout (setting and maintaining of location stake for each pier) the work will be performed per the construction specification and applicable The Client engineering standard. Samples of fill material will be submitted to the Client Representative for the Client

Evaluation and approval, prior to delivery to site. The contractor will engage testing service to inspect and approve sub grade and fill layers before further construction work is performed. The field density test will be performed in accordance with ASTM D 1556 or d 2922. The test result will be submitted to Saudi Aramco.

Check lists:

The independent Testing Laboratory prior to using at the site to meet the construction specification will test select fill materials.

All filling will be in layers not exceeding 200mm and compacted to a minimum of 95% standard proctor density as per ASTM D698 or 70% relative density as defined by ASTM D4253 and D4254

5.2.2 Excavation & Backfilling:

After examining the areas and condition under which excavation and back filling are to be performed, all excavation of every description to the depths indicated in the drawing will be performed.

Before commencing excavation, the existing underground utilities will be located and work permit, if required will be obtained. Since the area of construction falls under rocky terrain, no shoring will be required. If it is required, the shoring will be provided, as required in conformance with the Client standard drawing AB-036899. The bottom of trench will be free of rock, and will be covered with 150mm layer of compacted sand as per ASTM D 698. Backfilling will not commence until necessary tests have been performed to the satisfaction of the Client. Back filling will be done with sand above utilities to a minimum depth of 300mm and the rest will be by fill material in site, which will be tested by an independent agency for compaction. The result will be submitted to Client.

Check Lists:

For excavation over 1.20m deep, the sides of pits and trenches will be sloped back to the natural repose of the soil to avoid caving.

When the excavation is close to an existing structure, enough bracing and supports will be provided.

All back filling will be in layers not exceeding 200mm thickness and each layer compacted to 95% of maximum density as per ASTM D 698 of relative density as per ASTM D 4253/4254.

5.3 CAST IN PLACE CONCRETE:

The quality Control Supervisor will check the concrete form for the thickness and quality of plywood used, chamfer strips on all edges and covers of beams and pedestals exposed, the spacing supports considering the anticipated form deflection due to weight of fresh concrete, form ties and anchors metal chains and spacers to the required covering and re-bar size and spacing to conform drawings.
The removal of forms will be after the time specified for each work. Job site sampling and testing of the concrete will be done by a minimum of 1 set of 4 cylinders per 40m³ per day of fraction thereof any the cylinders will be tested by an approved independent laboratory as per ASTM C-31 and C-39. Cylinders will be tested 3 days (1 cylinder), 7 days (1 cylinder) and 28 days (2 cylinder) and the compressive strength will be evaluated.

An independent testing laboratory will carry out the concrete sampling test cylinder curing and the compressive strength analysis. Periodical sampling of the aggregate and water will be carried out by the same agency and reports furnished to APU.

Mix design and strength test reports will be submitted for approval. Cement used will conform to ASTM C-150 type V cement. All aggregate will be as per 09AMSS-088 and SSA 278/1982. Fine aggregate will conform to ASTM C-33 and water will not contain more than 500ppm of total dissolved solids as per requirements of 09-AMSS-097. Concrete

finishing and curing will conform to AES-Q-001 and ACI-305-R77.

Check Lists:

Before starting the form work, the sub grade should be compacted to 95% of maximum density as per ASTM D 698.
All form work should be level and supported well.
All re-bar should be epoxy coated and if there is any damage on the coating, it should be repaired with the same epoxy coating material.

All vapor barriers should be fixed properly. Prior to concreting clean all the form work and re-bar.
Concrete should not be dropped from a level of more than one meter.
The temperature of concrete at the time of pouring should be less than 32°C. The concrete slump should be between 3" to 4" maximum.

5.4 STEEL BAR AND WIRE FABRIC REINFORCEMENT:

Copies of mill certificates as per ASTM A 775 will be submitted to Saudi Aramco. Welded wire fabric will be electrically welded cold drawn wire in conformance with ASTM A-185. The site wire and supports for reinforcement will be in accordance with SAES-Q-001 and CSRI-3.

The bending, placing, spacing and splicing steel will comply in all case with the Client Engineering standard SAES-Q-001 and ACI 311 and 318.

Check List:

All re-bars should be tied with galvanized tie wires. All spacers used should be plastic spacers. Welded wire fabric should be electrically welded cold drawn as per ASTM A-185. Welded wire fabric should not have any rust prior to using at site.

5.5 STRUCTURAL STEEL:

Reports from The Client approved lab about welding; bolting of members and erection procedure will be submitted to Saudi

Aramco. All beams, purling, channels, angles, and plates will conform to ASTM-A-500 Grade B.
Bolts will conform to ASTM-A-193, A-320, A-352, A-307. Welding electrodes will conform to AWS code 5.5 and E-70 series.

5.5.1 Steel Erection:

Provide anchor bolts and anchors with necessary templates for correct placement into concrete, masonry and other supporting materials. Align column bases and bearing plates for beams and similar structural members with shims. After alignment and positioning fill area with no shrink, non-metallic grout. Remove steel shims and grout voids. Hold steel work securely in place with adequate temporary bracing stays to resist all vertical and lateral loads, until members are permanently fastened and floors/roof is completed. Workmanship and techniques for bolted construction shall conform with requirements of AISC Specification for Structural

Joints. Install ASTM A325 bolts with hardened washer under element being turned in tightening. As erection progresses, perform sufficient temporary bracing and bolting of work to support construction live load and combined dead, wind, earthquake, and erection loads. Burning of holes and gas cutting is prohibited on major members.

5.6 METAL ROOFING:

Manufacturers will be required to prepare and submit their samples and the work will be carried out to conform to ASTM A-446. Galvanizing will be in accordance with ASTM A 525, G 90 coating designation. Welders and welding procedure will be qualified as per AWS.

5.6.1 Erection of Roofing:

Accurately position roofing units on supporting framework and adjust to final position with proper bearing before permanently securing.

5.7 INTERNAL AUDITS:

At the commencement of Procurement activities and at the beginning of each quarter thereafter, we will submit a quarterly Quality Audit Schedule for audits to The Client for concurrence. Routine quality surveillance of areas of concern shall be conducted in addition to the scheduled audits.

We will submit reports of each audit and surveillance activity, including findings, areas of concern and required corrective action, immediately on completion of the audit or surveillance. Where surveillance is ongoing, periodic reports shall be provided.

All audit findings cited shall be recorded and specifically maintained for this purpose, as well as in the audit or surveillance report. Corrective action shall be verified by us and is subject to the Client concurrence.