

SECTION V-A : SITE INFORMATION

The site of the Project is located within the premises of KISR Shuwaikh main campus – Jahez street.

The area to be developed under this TOR is around 15,000 m².

The attached plan shows the proposed location of the project site.

SECTION V-B : SPECIAL CONSIDERATIONS

Air circulation

The ventilation and air conditioning system should be divided into zones depending on the type of work carried out in different rooms to facilitate exchange of fresh air and to take necessary precautions against transfer of fumes between labs. / offices.

100% fresh air intake may be required in many labs. Temperatures and relative humidity should be comfortable for workers and suitable to the requirements of the laboratory equipment. Normally an ambient temperature of 21-23°C and a relative humidity of 40-50% are recommended.

Lighting

It is recommended that laboratory lighting be maintained at an average intensity of 0.5-1klux. Dependence on natural sunlight during the day is discouraged; direct exposure to sunlight is known to alter the performance of chemicals and reagents. Likewise, analytical work must not be performed in direct sunlight since final results are affected.

Storage

Sufficient storage space should be provided for equipment and materials and samples. The laboratory wall space should be utilized for additional shelving, protected by glass-enclosed cabinets to provide a dust-free environment for storage of chemicals and other materials.

Future Expansion

Future expansion of activities, increases in workload and staff should be considered when designing a laboratory. The design should include provision for a minimum of 25% of expansion. The design should also be flexible to allow room functional changes and allocation of new activities.

Safety

The safety of the laboratory personnel should be given priority in the design specially possible in house explosion due to chemical reactions.

Access

Adequate exits should be provided for the building for prompt exit in the event of fire or other emergencies. Entrances should be designed to minimize pedestrian traffic.

Smart Building

The facility must be design in accordance with the latest control systems and computer technology in the area of **energy saving** and be considered as a state-of-the-art “Smart Building”.

Security

A security system must be provided to restrict unauthorized entry into the laboratory building. Laboratory rooms should be separated from offices and equipped with access cards.

Supply of Services

Proper supply of services such as electrical connections, gasses, hot water, demineralized and distilled water, compressed air, vacuum, telephone and data networks, fire protection systems, smoke detection system and alarms, emergency showers, sprinklers, eye-wash stations, etc. is essential for efficient running of a laboratory. The services should be installed in appropriate places in each room in accordance with a predefined equipment layout. Centralized services for gases, demonized or distilled water, etc., are preferred.

Electrical Connections

It is essential to determine the total electrical load of each room. In order to achieve this, the equipment to be placed in each room must be decided upon and its power requirements (voltage, current rating, etc.) listed and supplied to the consultant or contractor. Equipment such as autoclaves and washing machines may require three phase connections. These have to be identified and separated from equipment of low-energy consumption. It is recommended that items of high electrical rating are placed in different rooms to balance the power consumption. Proper earth connections must be provided with bonding resistance per earth of less than 1 ohm. The minimum resistance of the earthing net should be 1.2 ohm. Circuit breakers must be installed at each workbench.

Gases

Most laboratories require the following gases:

- nitrogen
- oxygen
- helium
- Argon

The rooms and the locations in each room requiring supply of different gases should be identified and listed. It is possible to provide all laboratory rooms with a supply of piped gases; the gases are supplied in bulk cylinders and stored in an outhouse built for the purpose. The piped supply runs along the corridors,

with branches into the laboratory rooms. Each branch should be equipped with a valve enabling the supply to be shut off in an emergency. Stainless steel tubing with Swagelock® fittings is recommended for piping the gases. Welding should be avoided. Pressure checks and certification from the contractor duly approved by the consultant. All the lines must be accessible for future leak checks. Gases such as nitrogen and CO₂, may be required only for anaerobic work stations. If the use of such gases is limited to one or two rooms, the cylinders may be housed in a purpose-built cabinet / services shafts near to the point of use or within the laboratory, as they are not inflammable or hazardous.

Compressed Air and Vacuum

Laboratories requiring compressed air may be supplied from a centrally located compressor connected to the laboratory by a system of copper or high-pressure plastic pipes. The air should be dried to a dew point of 15°C and freed from oil droplets with the aid of filters. The pressure in the system as far as the branches into the laboratories should be 7 bar, which in the laboratories should be reduced to a working pressure of 3 bar. Vacuum may be supplied through a central system if it is required in many rooms, otherwise, small vacuum pumps may be used.

Hot and Cold Water

The building should be provided with a supply of potable clear water. Wherever necessary, hot water should be provided from closed-in boilers. The minimum temperature of the water should be 60°C. Medical mixing taps with a lever should be provided for mixing cold and hot water, in order to avoid contamination from the hands of the microbiologist.

Demineralized and Distilled Water

A supply of demineralized and distilled water should be available in all the laboratories. Demineralized water can be prepared with the aid of an automatic double-column demineralization system housed in a centrally located room. Distilled water can be prepared with the aid of electrically operated distillation equipment. In both cases, the water should be transported through plastic tubing to the laboratories. The demineralized water should have specific conductance less than 5 $\mu\Omega\text{cm}^{-1}$.

Telephone and Data Network Connections

All rooms and laboratories require telephone connections. Most modern laboratories use client-server technology to manage information and analytical data. Several laboratory information management systems (LIMS) are commercially available, and could be customized. Data network connections are provided in the laboratories to facilitate data entry and necessary approvals. They should be located preferably on the side workbenches at a height of 75cm or near the desk, slightly away from the working

area. Network connections are also required on island benches where analytical instruments with data stations are located, to hook up with LIMS for direct transport of instrumental data.

Fire Protection, Smoke Detectors and Alarms

For the purpose of preventing fires, and quelling any fires that break out, it is necessary to draw up plans for fire prevention and fire fighting systems in accordance with Kuwait Fire Brigade rules and regulations. The laboratory building should be divided into compartments separated by fireproof walls and ceilings. The floor surface area of a compartment may vary from 500m² to 750m² or as necessary to achieve a logical arrangement of the compartments. In accordance with internationally accepted test methods, the fire retardance of floors and ceilings should not be less than 1h. All electric and other cables should be passed through fireproof blocks. All spots within the building should be within reach of the jet of a fire hose connected to the process water mains. The reels should be hung on the walls of the corridors, and the hoses should not exceed 30m in length. In addition to the fire hoses, fire extinguishers should be distributed throughout the building. Their filling should be in accordance with the types of fires they are likely to be used against. The building should be equipped with an automatic fire alarm system. Smoke detectors should be mounted in all rooms or spaces where fires may start, and are mandatory in rooms where people are at work. A (repeater) fire alarm should accompany each fire-hose reel. The system should be combined with an acoustic alarm system (hooters or sirens) and should be independent of the building control system and emergency power system is needed to eliminate and mark escape routes, enabling people to leave the building in the shortest possible time in emergencies. It should be equipped with a no-break unit. The emergency power supply must serve all the electrical equipment that must be kept in operation in emergencies.

Eye-Washes and Emergency Showers

All laboratory rooms should be provided with eye-wash stations if possible. Emergency showers are required in laboratories where hazardous chemicals or other materials are being used and must be easily accessible.

Design of Furniture and Choice of Finishes

Laboratory furniture normally consists of workbenches, cupboards, wall units, desks and drawers. Each laboratory will have a separate bench layout with identification of equipment to be used in it.

Benches

Workbenches can be free standing wall or island type. The framework should comprise a mild steel tubular framework based on a modular construction with an epoxy based plastic coating,

and should incorporate adjustable leveling jacks, pipe clips and cableways. The bench top should be set at a height of 90-95 cm for normal work in a standing position. The desk tops or sit down benches can be at a height of 65-79 cm as needed to accommodate microscopes, plate counting, computer usage or paperwork. The low level benches should be mounted on the window side walls to accommodate microscopes, network computers, etc. It is also necessary to keep instruments on low level island benches for easy access to the reverse of the instrument. Services such as electrical sockets and gas connections on island benches meant for installing instruments should run at the side of the bench for optimum utilization of the bench space. The storage cabinets and drawers should be suspended from the bench connections, and there should be a combination of cabinets and drawers on each bench. Cabinets may be built with WBP grade plywood with an inert and corrosion-resistant finish with minimum seams (e.g. seamless melamine). Drawers may be constructed with corrosion resistant faced plywood. The cabinets and drawers on the workbench should be fixed in such a way that adequate legroom remains. Ample space should be allowed for refrigerators and writing desks when installing wall mounted workbenches.

Bench Tops

The bench tops may be constructed from solid melamine, WBP plywood with a seamless melamine finish, WBP plywood with stainless steel top and edges, or solid hardwood with a laminate finish. The bench tops should have a smooth surface and be easily disinfected. Cracks and crevices should be minimal as they provide an opportunity for the build-up of debris which may contribute to cross contamination of samples. Stainless steel tops must be provided on the benches in the washing room.

Sinks

At either end of the benches (apart from benches meant for installing instruments) stainless steel sinks should be mounted with 60 cm side adjoining them, a 50 cm side jutting out, and a depth of 25 cm. Medical mixing taps (cold and hot water) and a deionized or distilled water tap should be mounted above the sinks, as required.

Seating

Laboratory stools and chairs of adjustable or fixed heights should be provided. Stools should be used at the workbenches, and chairs may be used at computer desks.

Environment

The building must be pleasant to work in. The beautiful natural setting of the facility must be enjoyed by as many occupants as possible without discomfort.

Flexibility

The project must be able to accommodate both long and short term changes.

Initially the users will be most interested in short term adaptability of their facilities, in particular the ability of the laboratory within its boundaries to accommodate new equipments. This ability is dependant on the flexibility of the furniture and servicing systems related to both bench and floor mounted equipments.

The facility therefore must be designed to be able to be systematically modified as well as expanded over future years.

Flexibility is generally expensive and the appropriate degree of flexibility tailored to this particular project must be established.

Permanence

The facility must be designed and constructed to be a physical asset. Low maintenance and low energy consumption materials and systems must be used to the extent that is affordable. Cost in use must be predicted.

SECTION V-C : DESIGN SERVICES PHASES AND DELIVERABLES

A. PHASE I – DATA COLLECTION, ANALYSIS and SURVEYS

1. DATA COLLECTION

Before designing a laboratory, a data collection study report should be prepared by the Consultant having good knowledge and experience of designing laboratories. The technical experts of the Consultant should meet the management and technical staff of the Project's users and discuss in detail their requirements. Due consideration should be given to their views and recommendations while preparing the study report, which should consist of the following:

- Scope and objectives of the Project facilities
- Organization chart indicating the various functions
- Number of researchers, professionals, technical, administrative and support staff
- Expected number of samples to be analyzed
- Functions and components of each laboratory
- Service requirements
- The interrelationships between the functions of the laboratory and other disciplines
- Budget limitations

The study report should also address the scientific and technical issues and make provisions for future expansion of the facilities.

The Consultant shall also conduct a soil test survey prior to any Structural design works.

The consultant shall carefully study the end users requirements to validate the preliminary space program requirements outlined in Section I.

The Consultant shall contact appropriate governmental agencies such as Kuwait Municipality, Ministry of Public Works, Ministry of Electricity and Water and the Ministry of Communications to obtain relevant data related to the Project and to determine the location, availability and capacity of public facilities and services.

K I S R and other governmental agencies will assist the Consultant in obtaining available relevant information related to the project. It shall be the responsibility of the Consultant to collect and collate such information and verify its accuracy. All data collected, computer printouts, the results of analysis, studies and findings shall be fully documented and presented to K I S R . Subsoil surveys will be carried out by the Consultant. All the required surveys shall be priced and included in the Consultant's fee.

Data collected shall include but not be limited to :

- Preparation of base map(s) showing site boundaries, peripheral and uses, topography, surrounding circulation networks and site accessibility, existing site features such as trees and buildings and utilities including location, size and capacity of sanitary sewers, power supply, water lines (fresh and brackish), natural gas lines, fire protection system, and telephone lines.
- Survey of environmental conditions such as subsoil conditions and constraints, depth to ground water, areas subject to flooding, noise (including flight patterns) existing vegetation, wind direction and solar design constraints.
- Survey of existing and project pedestrian and vehicular traffic flows, car parking distribution, public transport operations and emergency and services routes.
- User organization chart clearly showing organization framework and hierarchy.
- Survey of the user departmental operation procedures and the interdepartmental relationships.
- Review and validation of the projects specific staff needs including administrative and service personnel, as well as those needs of the principal users of the facility.
- Review of all applicable Kuwait Government regulatory requirements.
- Review of all applicable cost and financial data.

2. ANALYSIS

The product of Phase I shall culminate in a Data Collection and Analysis Report. This report shall include, but is not limited to the following:

- An analysis of all of the collection information, i.e. regulatory, physical, financial, environment, traffic, parking, utility and demographic opportunities and constraints and their effects upon the design process and intent.
- An analysis of the purpose of the project, including a clear statement of goals and more specific objectives.
- Space analysis, including standards and requirements for each category of user function.
- All maps, charts, graphs, matrices, sketches and similar graphic material necessary to provide a clear understanding of the above analyses.
- Project Delivery Approach : to recommend on the most effective means for organization and delivery of the project.
- Building Program and Definitive Design Brief :

The goal of a good Building Program is to define a building that will have ample space, meet the technical requirements of the user, function safely and meet the allocated budget. The design team with the assistance of the laboratory management and technical staff will develop the building program from the analysis of the data collected on the following:

- the range and type of analysis to be carried out
- the number and categories of personnel who will occupy the building
- the interrelationships of functions and personnel
- the expected workload.

The Program should describe the architectural, mechanical, electrical, plumbing and fire protection criteria for the functions to be accommodated. It should also identify areas of special concern for safety such as high hazard areas containing flammable, toxic or pathogenic materials, and should also address the problem of waste treatment / removal.

The main tasks and sequence of a Building Program are as follows:

- analyze the data collection study report
- interview management, technical staff and other users
- establish space standards
- list various activities and room types required for such activities
- draw a layout diagram for different room types
- determine the number and area of each room type
- develop room data sheets specifying details of functions

- establish building net and gross areas
- describe basic mechanical, electrical, electro-mechanical and plumbing systems
- describe the services
- estimate the preliminary cost of construction.

The consultant shall submit to K I S R **four (4) sets of the Data Collection and Analysis Report** for review and approval.

B. PHASE II – CONCEPT DESIGN ALTERNATIVES

The consultant shall develop THREE distinct architectural studies and appropriate site plans which take into account the data analysis gathered in Phase I. The studies shall form the basis for a Concept Design Alternatives Report. The report shall include but not be limited to the following elements.

- Organization plans in the form of spatial relationship diagrams.
- Conceptual site and landscape plans.
- Conceptual traffic plan, to include vehicular, pedestrian, services, public safety and parking arrangement
- Conceptual building plans, single line drawings with all areas labeled.
- Conceptual elevation showing architectural treatments.
- Conceptual sections.
- Volumetric character sketches and block model(s). (for each of the three concepts)
- Conceptual engineering systems in graphic & written form.
- Cost estimate in Unifomat (Level 3) for each alternative, in accordance with the MPW Project Estimating Requirement Manual (PERM).
- Space analysis (net to gross ratios etc.) in accordance with international laboratories facilities standards.
- Cost effectiveness recommendations based upon a Value Engineering study conducted by a firm / specialist experienced in Value Engineering Management. State-of-the-art techniques and construction practices shall be adopted to ensure minimum cost yet optimum balance between functionality, flexibility, safety and durability.
- Evaluation criteria of the three alternative concepts and consultant's recommendations (without final grading or scoring).

It is emphasized that each of the three conceptual studies will address architectural form, character and space relationships that are unique to that particular study alternative. K I S R shall review the Consultant's analysis and respond with comments. To reduce the possibility of rejection, interim discussions with KISR for the purposes of guidance and direction is required. If none of the three conceptual designs is approved, the Consultant shall incorporate the suggestions of K I S R and promptly resubmit new conceptual designs. The consultant shall not proceed to Phase III until an approved conceptual direction is established and approved.

The Consultant shall submit to K I S R **four (4) sets of reports, drawings and presentation material** for review and approval. **ONE (1)** set shall be reduced to one-half size or A3 size as appropriate.

C. PHASE III – PRELIMINARY DESIGN

The end product of this phase shall consist of :

1. DESIGN DEVELOPMENT REPORT AND DRAWINGS

During this phase the concept design approved earlier is to be further refined to establish detailed site and buildings development plans. Design development shall include, but not necessarily limited to the following:

- Site Plan showing proposed buildings, parking, pedestrian and vehicular circulation, landscaped spaces, boundary walls, special features such as retaining walls, grading and drainage plans, terracing or other elements unique to the project. A site area analysis shall be conducted, indicating the total area (and percent to total) in each land use.
- Architectural Design :
 - Architectural plans with appropriate labeling.
 - Architectural elevations and sections.
 - Perspective drawing(s) showing overall architectural character and style.
 - Sketches indicating architectural treatments.
 - Space analysis (net to gross ratio) supported by floor area calculation sheets.
 - Definitive interior layouts for every room and lab showing proposed distribution of all the equipments to be used .
 - Fixed laboratories furniture (benches) layouts.
 - Laboratories fixed equipments (Fume hoods, autoclaves, cold rooms, freezers etc.)
 - Interior and exterior signage
 - Interior landscaping.
 - Equipment layouts.
 - Material Selections.
 - Finishes and fittings designations.
 - Loose furniture layouts (offices and laboratories)
- Structural Design :
 - Structural system layouts and sections.
 - Live and dead loads, wind loads and indirect bomb blast loads.
 - Structural materials, allowable stress, applicable design codes and method of analysis.
 - Permissible drift for lateral forces.
 - Type of construction of frames, roofs, walls and floors.
 - Foundation design including permissible differential settlement and type of protection to be used against surface and sub-surface water.

- Expansion joints, construction joints, tanking details, lift core pits, sump pit trenches etc.

- Roads Network :
 - Roads network layout.
 - Roads network level plan.
 - Longitudinal sections.
 - Cross-sections.
 - Parking facilities, vehicular circulation, ingress and egress drawings(s).

- Pedestrian Paths Network :
 - Pedestrian circulation.
 - Layouts.
 - Cross sections.
 - External work details.

- Landscaping :
 - General landscaping use layout.
 - Zones landscape treatment.
 - Plants layout and list of plants.
 - Infrastructure layout.
 - Irrigation drawings showing brackish water mainline and reservoir (two-day water capacity) location.

- External Installations Drawings :
 - Sewage and storm water drainage.
 - Electrical installations.
 - Mechanical installations.
 - Telephone installations.
 - Natural gas installations.

- Internal Electrical Installations :
 - Electrical system layout based on the latest Smart Buildings techniques.
 - Lighting layout.
 - Telecommunication system layout.
 - Security system layout and CCTV system.
 - Recommended energy conservation measure as agreed by the Ministry of Electricity and Water.
 - Audio visual system in seminar / training rooms.
 - Computer network.

- HVAC Installation :
 - Central cooling and heating equipment plans and sections.
 - Air handling units plans and sections
 - Air distribution layouts.

- Air distribution sections.
- Ducts layouts
- Machinery layouts.
- Building Automation System (BAS)
- Latest Energy Saving Techniques / equipments.
- Drainage & Water Supply Installation :
 - Drainage and sewage
 - Chemical waste treatment plant
 - Fresh water supply network (cold and hot)
 - Deionized / distilled water system.
- Special Installation :
 - Fire fighting system (alarm, alternative of protection & sprinkler system).
 - Laboratories gazes network.
 - Mechanical transport system (passenger lifts, goods lift, sample hoists).
 - Other special installations.
 - Building's mechanical, electrical, communications and security systems.
- Preliminary Cost Estimate Submittal Package as detailed and required.
- Market Survey to confirm the availability of building materials at source by suppliers at the sizes, quantities and rates of production required by the project's construction schedule.
- System Analysis is to be achieved by factors such as energy conservation, value engineering and life cycle costing to select, from a predetermined set of optional approaches, the best engineering system for the project. Analysis of the proposed building and engineering system in relation to existing Kuwait building codes and regulation.
- Outline Specification including operations and maintenance manuals in CSI/CSC Master format, 16 divisions.
- Implementation Plan & Development Schedule, to indicate flexibility and future expansion.

An interim review may be scheduled during the midpoint of the Design Development Phase to review facilities layouts, massing, equipment and systems.

This phase will result in a formally submitted Design Development Report to K I S R for review and approval. The report should include a list of all required approvals from Kuwait Municipality and other relevant government ministries and agencies.

The report shall address the above elements with narrative and graphic materials as appropriate. Included in the narrative portion shall be a description of approximate dimensions of structural components, engineering/architectural materials, claddings, equipments, volumes and capacities. Also included in the report shall be a prioritized construction implementation schedule, including on and off site infrastructure, buildings and site works.

The Consultant shall submit to K I S R **Four (4) sets of reports drawings and other required items for review and approval. Three (3) drawing sets shall be full size (A1 or A2 as appropriate) and One (1) set shall be reduced to one half size or A3 size as appropriate.**

D. PHASE IV – FINAL WORKING DRAWINGS and TENDER DOCUMENTS

During this phase, the Consultant shall prepare and submit for approval final designs, working drawings and Tender Documents to the required scales and / or Formats including the following:

1. THE WORKING DRAWINGS (Estimated min of 250 drawings)

The scale of the drawings will be as per the known international standards

- Title Sheet and Drawing Index Sheet.
- Site Plan : Working details and drawings encompassing all required refinements from Phase III review.
- Architectural
 - Final drawings (layouts, sections, interior and exterior elevations).
 - Working drawings and details of all characteristic elements of architecture including fixed furnishing and furniture.
 - Detailed layout for each lab showing benches and equipments distribution.
 - Working drawings for benches design and components.
 - Working drawings of architectural finishes.
 - Specifications, elements and final finishing definition.
 - Doors and windows schedule.
 - Color and finishes schedules and sample boards.
- Structural
 - Final structural drawings with key legend (layouts, section, elevations).
 - Structural details of elements, reinforcement details.
 - Technical description of all elements and materials.
- Road Network :
 - Necessary details for roads and elevated roads.
 - Technical description of all elements and materials.
- Pedestrian Paths Network :
 - Details of elements for final finishing.
 - Technical description of all elements and materials.
- Landscaping :
 - Details of special features (fountains, atrim, etc.)
 - Final plant list.
 - Technical description of all elements and materials (hard and soft).
- External Installation :
 - Sewage and storm water drainage details.

- Electrical installations details.
 - Mechanical installations details.
 - Telephone.
 - Natural gas.
- Internal Electrical Installations :
 - Electrical system details.
 - Light fittings details.
 - Telecommunications system details.
 - Specialists Electrical installations.
 - Security installations (fire alarm and CCTV).
 - Electronic access system.
 - Computer network
 - Audio Visual network
 - HVAC installations :
 - Equipment installation details.
 - Automatic temperature control details.
 - Additional sections.
 - Drainage & Water Installations :
 - Sewage and drainage elements details. With sanitary fittings and equipment.
 - Water installation details.
 - Irrigation system details.
 - Sprinkler system details.
 - Special Installations :
 - Fire fighting system details.
 - Mechanical transport system details (lifts).
 - Safety installation details.
 - Building Automation System.
 - Cold stores, walk in freezers, refrigerators.
 - Fume hoods
 - Final design / Working Drawings and Cost Estimate Submittal Package
 - Final Specifications – Five complete drafts of the specifications in A4 paper CSI/CSC MASTERFORMAT (latest edition).

An interim review will be scheduled during the midpoint of the final design/Working Drawings Phase to review progress and content of work including site grading, roads, road profiles, storm water drainage, sewage mains, electrical and telephone networks, water mains, landscaping, street lighting and site work details and fittings as required for the proper function of the project.

All final detailed drawings shall be to the highest standards, complete and fully coordinated and detailed, dimensioned in the metric system.

2. THE TENDER DOCUMENTS

For each bid pack, the consultant shall prepare and submit complete tender documents in the form of Books of Tender, as detailed below, to enable Kuwait Municipality to invite contractors to tender for the project. The current organization and format of these documents is shown below. The Consultant should however, check at the time as to the latest requirements.

Document I : Tendering Procedure

K I S R shall provide Tender Document I in Arabic for guidance to the consultant. The consultant shall rewrite Document I in Arabic to suit the particulars of the project and submit it for review and approval. Upon final approval, the Consultant shall print the required number of document and bind them in a **color printed cover**.

Document II : Conditions of Contract

Comprising Legal Clauses and Conditions, MPW General Conditions (II-1) for Building and Engineering works (latest edition) and Particular Conditions (II-2). The ministry shall provide as example of Tender Document II-2 in Arabic for guidance to the consultant. The consultant shall propose clauses, which shall complement and complete the Conditions for tender and contract purposes. The consultant shall rewrite the Document in Arabic to suit the particulars of the project and submit it for review and approval. Upon final approval, the consultant shall print the required number of documents and bind them in a **color printed cover**.

Document III : Technical Conditions

Comprising the following:

Document (III-1) General Specifications

MPW General Specifications for Building and Engineering Works of the Government of Kuwait (latest edition) and MPW General Specification for roads and Drainage works and MEW General Specification for Electrical Installations MEW/s-1, latest Edition. Reference shall be made to these General Specifications. Recipients of documents are expected to purchase their copies if they do not already possess them.

Document (III-2) Particular Specifications and Conditions

To be prepared, printed and bound by the consultant (and approved by K I S R), in color printed covers. Any additional requirements provided by K I S R shall be incorporated in this document by the Consultant.

Document (III-3) Drawings

Comprising the Final Detailed Drawings (Approx. 250 drwgs), as prepared by the consultant and approved by KISR in A0 or A1 size binded **in a color printed cover**.

Document III-4 Bills of Quantities

Comprising the Bills of Quantities as prepared by the Consultant in CSI Master format and approved by Kuwait Municipality, **in color printed covers.**

Along with the Bills of Quantities, the consultant shall provide detailed calculations of the quantities stated therein. These shall include one copy of quantity take-offs, abstract sheets, etc., all indexed filed and readily understandable. One copy of take-off drawings, marked up to explain detail calculations, shall be provided.

In the final Bills of Quantities, a breakdown of every total quantity shall be scheduled under item description stating the quantity in each location. The buildings, services, etc. shall be suitably subdivided into locations to facilitate subsequent valuations of network activities and interim valuations/payments.

All works are to be measured accurately and included in the Bills of Quantities, and descriptions encompassing more than one item of work shall generally be avoided.

Document (III-5) - Analysis of Prices

Comprising analysis of prices to be filled by the Bidders, **in color printed covers.** Each set of the Tender documents, excluding the drawings, shall be provided in an approved box file with printed cover.

The consultant shall submit **Two (2) sets of draft final drawings and typed draft of the Particular Conditions, Specifications and Bills of Quantities (BOQs) and a priced copy of the approved BOQs for KISR review and approval.**

Upon completion of all KISR comments, the Consultant shall submit **Six (6) hard binded copies and twenty Five (25) CDs of complete Final Tender Documents and Drawings** in accordance with the above requirements to enable inviting contractors to tender for the construction of the project through CTC.

Following approval of the Tender Documents in their final form, the Consultant shall assist K I S R during the Tendering process. The Consultant shall also attend pre-bid meeting and prepare any required addenda to the Tender Documents to be delivered to all bidders at least one week prior to the bid closing date.

After bids are received, the Consultant shall evaluate these bids and ensure its compliance with the requirements of the Tender Documents and shall prepare and submit to K I S R **Four (4) copies of a detailed “ Bids analysis report”** with recommendation on the award of the Tender.

If the cost of the lowest Tender exceeds the agreed upon final estimated cost by more than 10 percent, K I S R shall have the right to instruct the Consultant to amend, without any additional fees, the final design and reissue the required number of Tender Documents, unless the increase in cost resulted from specific changes requested by the KISR

The Consultant shall prepare **Three (3) sets of the final complete Tender Documents** for the Contract signature between K I S R and the successful bidder.

SECTION V-D : CONSTRUCTION SUPERVISION SERVICES : (Optional)

Prior to construction contract award, KISR may initiate Stage 2 “on site construction supervision”. The scope of work for construction supervision is detailed in Article (14) (Duties of the Consultant During Supervision) of the MPW Standard Agreement. A copy of the Standard Agreement is available at the Ministry of Finance for Consultant’s review. The Consultant should carefully study Article (13) to (18) prior to preparing a work program for Stage 2. The total duration of Stage 2 is expected to be around (20) months.

As a guide for the consultant’s, the following supervision team is recommended:

<u>POSITION</u>	<u>MinimumExperience</u>	<u>Attendance</u>
Resident Engineer (civil)	15 years	F*
Site Engineer (civil/Architect)	10 "	F*
Mechanical Engineer	10 "	P*
Electrical Engineer	10 "	P*
Secretary	5 "	F*

F : Full time - P : Part time (50%)

DUTIES OF THE CONSULTANT DURING SUPERVISION

The Consultant, if requested by K I S R, shall undertake to supervise the execution of the works. For that, the Consultant shall appoint Engineers, technicians and other personnel needed for the supervision of such works.. The Senior Civil Engineer in charge of the supervision staff shall be referred to as the Resident Engineer and shall commence his duties to be agreed upon written instruction from K I S R . The engagement of the personnel or their replacement shall be approved by K I S R before appointment. The supervisory staff shall not be employed on any other works.

Complete resume (including qualifications, training, experience, monthly remunerations, etc.) of the resident engineer and other supervisory staff shall be presented for approval at least one month before the agreed start date.

K I S R shall have the right to assign a number of its employees to be part of the supervisory staff for the execution of the works.

The Consultant shall provide the supervisory staff on site with tools and equipment needed for surveying, engineering works, and for the preparation and reproduction of plans, drawings, calculations and reports related to the proper execution of the works.

The Consultant, shall carry out the supervision services satisfactorily, honesty and in good faith. For this, he has the right to issue the necessary orders and instructions to the Contractor to execute the works in accordance with Contract Documents. He shall also ensure compliance of the Contractor with the terms and conditions of such documents.

However, the Consultant shall not be entitled to amend any term or provision of the contract document and shall neither issue any variation orders to the Contractor, nor impose penalties on him. Should it transpire that it is necessary to institute any such measures, he shall notify K I S R Representative who will take appropriate action.

The Consultant shall, through the Resident Engineer and the supervisory staff, fully supervise the execution of the works. He shall particularly and without restriction carry out the following:

1. Study any work program presented by the Contractor and submit comments and /or recommendation to the Ministry regarding deficiencies or potential problems.
2. Supervise the work done by the Contractor to ascertain that it is proceeding in accordance with contract documents and accepted practice.
3. Issue to the Contractor the necessary orders and instructions to execute the works in accordance with the contract documents.
4. Make recommendations as necessary for the execution of the project in the best manner.
5. Determine the suitability of on-site and off-site materials to be used in the project and conduct field and laboratory tests on construction materials to ascertain their compliance with the specifications and to determine their acceptability for use on the project.
6. Check construction locations and levels established by the contractor and conduct field investigations and surveys necessary for the detailed solution to any problem which may arise during construction, and prepare detailed drawings as necessary for variations in the works. Prepare preliminary cross sections for measurements of quantities for such variations.
7. Prepare all necessary correspondence required for proper administration of the construction Contractor's claims (if any). Submit a final report within fifteen (15) days after the provisional taking over of the project.
8. Take necessary measurement and prepare accounts, including priced final accounts and Contractor's claims. Submit a final report within fifteen (15) days after the provisional taking-over of the project.
9. Take necessary measurement and prepare accounts, including priced final accounts and monthly payment certificates due to the Contractor, to be checked and certified by K I S R Representative..
10. Take necessary photographs of the works in various stages of development and attach to reports to the Ministry. Follow-up to insure that the photographs to be submitted by the Contractor are submitted in accordance with the contract documents.
11. Arrange in collaboration with K I S R representative for the provisional, as well as the final, taking-over of the works.
12. Within ten (10) days after the provisional taking-over of the works, review and revise contractor's drawing reflecting in detail as-built conditions.
13. Exert the maximum possible effort to avoid contractor's claims and in case that the contractor may submit any claim, the consultant shall study the same and forward detailed reports to K I S R which include his comments and recommendations about the claims and their settlement. The Consultant shall study such claim(s) and the Engineer's orders and variations orders, and forwards his recommendations regarding the same in due course to K I S R .
14. Keep in his site office site complete records concerning the execution of the works. One copy of all site transactions shall be forwarded to K I S R Representative.
15. The Resident engineer shall be directly responsible to K I S R Representative.

WORKING HOURS

The consultant shall have an adequate supervisory staff on the site of the project at all times when the Contractor is working. In the event that early morning, night weekends, or public holiday operation is scheduled by the Contractor, the Consultant shall provide sufficient supervisory staff as required for the supervision of the work.

REPLACEMENT

Should K I S R, for any reason whatsoever, find that any of the supervisory staff is unsatisfactory, the Consultant shall, upon receipt of written instruction from K I S R, make arrangements for a suitable replacement within seven (7) days.

Should the Consultant fail to make such arrangements for the replacement within the specified time, K I S R shall have the right to make such replacement at the expense of the consultant, or take any other commensurate action with the character and nature of such default.

REST AND LEAVE DAYS

Members of the Consultant's staff shall be entitled to weekly rest days and public holidays as recognized by the State of Kuwait and shall be entitled to a paid annual leave and sick leaves in accordance with the Kuwait private labor law. The Consultant shall provide replacement for his key staff personnel who are on long sick leaves or on annual leaves to ensure the proper supervision of the works. Such replacement must be approved by K I S R.

No additional compensation will be allowed for staff members assigned as temporary replacements for key staff personnel.

PERFORMANCE BOND

Prior to signing the Agreement, the Consultant shall provide at his own expense an unconditional letter of guarantee in favor of K I S R issued from an approved local bank in the sum 10% of the total supervision fee.

SUPERVISION INSURANCE

In case the Consultant is assigned the supervision services, then he will submit an insurance policy /policies in his name and in favor of K I S R, equal to 10% of the agreement cost, to indemnify it against any damages, losses, costs, claims and liability due to fault in the supervision works performed by the Consultant, his employees or agents. All costs of such policy/policies shall be included in the supervision fees.

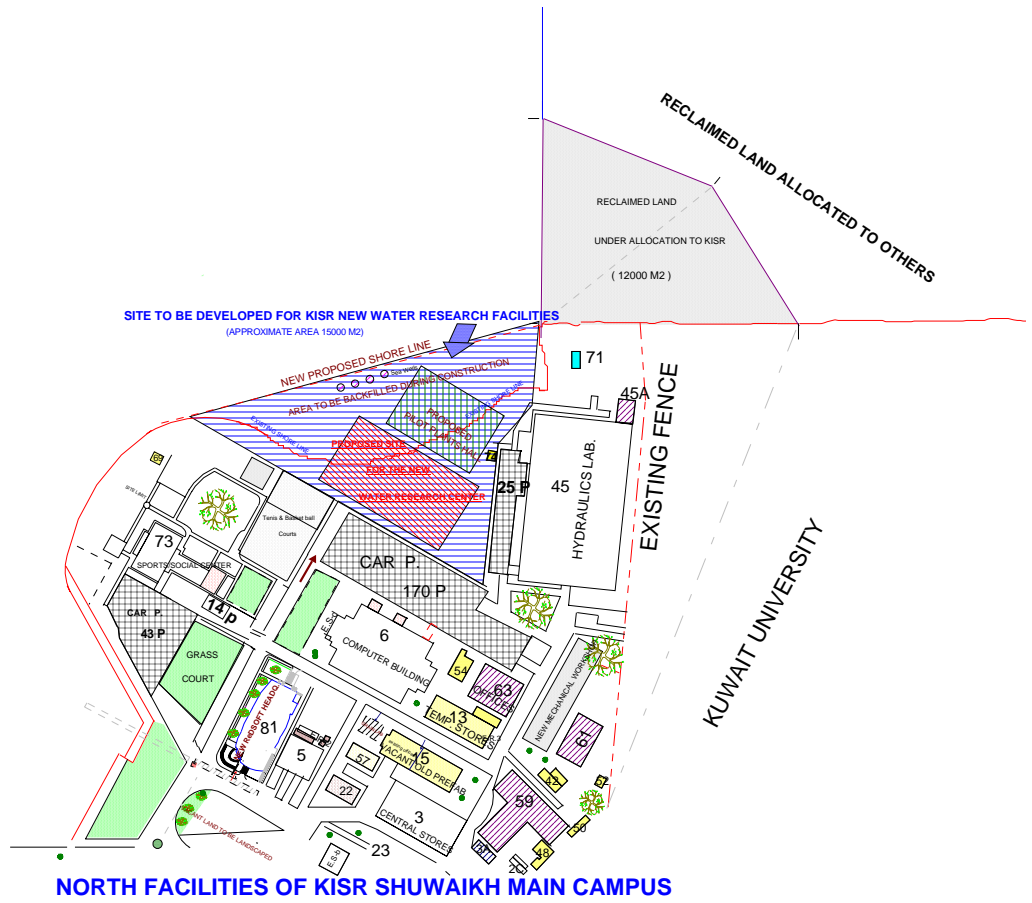
SECTION V–E : PROGRESS REPORTS **REQUIREMENTS**

Progress Report shall be submitted by the Consultant to K I S R one month after authorization to proceed with the work and every consecutive work month thereafter for the duration of the project. Report shall identify progress on work tasks, estimated completion date of tasks, issue and problems, and upcoming events, milestones and meetings during the forthcoming month.

During the first ten days following every reported Month, the Consultant shall submit Four (4) sets of the Progress Reports.

With the Progress Report, the Consultant shall also submit a revised project schedule for K I S R's approval if, for any reason, the mile stone dates have changed.

The Progress Report shall be submitted in the following formats :



NORTH FACILITIES OF KISR SHUWAIKH MAIN CAMPUS