

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

NORTH SINAI DEVELOPMENT ORGANIZATION
MINISTRY OF WATER RESOURCES AND IRRIGATION
THE ARAB REPUBLIC OF EGYPT

THE NORTH SINAI INTEGRATED RURAL DEVELOPMENT PROJECT
(PHASE III)

(DETAILED DESIGN STUDY)

VOLUME III : TENDER DOCUMENT OF PACKAGE 2
(KM 108.466 TO KM 118.560)

(VOL. III-3 : TECHNICAL SPECIFICATIONS AND
SCHEDULE OF TECHNICAL DATA)

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SANYU CONSULTANTS INC.
PACIFIC CONSULTANTS INTERNATIONAL

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ARAB REPUBLIC OF EGYPT

**MINISTRY OF WATER RESOURCES AND IRRIGATION
MECHANICAL AND ELECTRICAL DEPARTMENT
ON BEHALF OF
NORTH SINAI DEVELOPMENT ORGANIZATION**

NORTH SINAI DEVELOPMENT PROJECT

**CONVEYANCE SYSTEM OF
EL SHEIKH GABER EL SABBABH CANAL
BETWEEN KM 108.466 AND KM 118.560
EL SALAAM NO.7 (BIR EL ABD) PUMPING STATION**

TENDER DOCUMENTS

VOLUME II

**PART I
TECHNICAL SPECIFICATIONS**

**PART II
SCHEDULE OF TECHNICAL DATA**

(month) 200x

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TENDER DOCUMENTS

VOLUME II

**PART I
TECHNICAL SPECIFICATIONS**

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DIVISION 1 GENERAL

SECTION 1000 GENERAL REQUIREMENT

1001 General

The Specifications shall be read in conjunction with all other Contract Documents, and the Contractor shall comply with all the provisions contained within the Contract Documents and the Employer's/Engineer's instructions.

The Contractor shall fully understand the site conditions and the detail extent of the Works and carry out the Works in accordance with the Specifications and Drawings as well as the instructions of the Engineer.

It is the intent of the Contract Documents to provide for the execution and completion of all details of the Works, and it is understood that the Contractor, for all or any part, shall furnish all man-power, materials, constructional plant and equipment, transportation and necessary supplies, such as may be required to execute the Contract in a satisfactory and workmanlike manner in accordance with the Contract Documents.

These Technical Specifications describe the minimum required standards or criteria to be applied to the Works.

Should any thing lack in the Specifications and other Contract Documents which is necessary for a clear understanding of the work, or should it appear that various instructions are in conflict, then the Contractor shall secure written instructions from the Engineer before proceeding with the work affected by such lack or discrepancies. It is understood and agreed that the Works shall be performed and completed according to the true spirit, meaning, and intent of the Contract.

The Contractor shall fulfil all the requirements and obligations of all descriptions of the Contract Documents. Where there is not a specific item in the Bill of Quantities and where no statement is made in the Specifications to the contrary, the cost of requirement of obligation such as furnishing of man-power, material, constructional plant and equipment, transportation and necessary supplies, as well as overhead, profit, etc, shall be included in appropriate pay items in the Bill of Quantities.

In principle, all documents to be submitted by the Contractor shall be described in English, and the spoken language to be used in meetings or discussions shall be English.

1002 Project Description

The Site is located in Bir El Abd within North Sinai governorate, 280 km north-east of Cairo.

The projected works under the Contract consist of:

- a) General requirements
- b) Sand settling basin: 380 m with 2 roller gates
- c) No.7 Pumping Station: 130 m with suction sump and pump room, 4 units vertical shaft volute pump, 4 units 13,000 kw electric motor, 2,100 m² pumping house, header pipes, supersonic flow meters and appurtenant facilities
- d) Pressured Delivery pipeline: 9,350 m long 3 rows steel pipe with diameter 2,400 mm, two units one-way surge tank with valves and equipment for each row of pipeline, 9 places of air valves and 3 places of blow-off
- e) Discharge tank: Total length 200 m with three pools of effective width 7.5 m each and height 6.m
- f) No.3 Access road: Total length 5,060 m with effective width 14.0 m

1003 Standards

Throughout the present Technical Specifications reference is made to internationally recognized standards. In all such cases reference to a standard shall be deemed to include the wording “or equivalent standard subject to approval by the Engineer”.

In cases where the Contractor proposes to submit alternative standards for approval, he shall submit two copies of the proposed standards and two copies of the authenticated English translations, if the originals are in other languages. The Contractor shall allow sufficient time for the Engineer to check such standards and for carrying out any test as directed by the Engineer in order to confirm that materials supplied under the alternative standards are acceptable. Two English copies of all standards must be provided at the site office of the Contractor by the Contractor for use of all the concerned during the Works.

No claim for delay arising as a result of time required for conducting any test will be accepted, it being the Contractor’s responsibility to ensure sufficient time is available in advance for testing any materials required for the Works. Nor shall any claim for delay as a result of rejection of such proposed standards or materials by the Engineer be accepted.

For all materials incorporated in the construction of the civil works set out in this Division or elsewhere such as cement, steel reinforcement, structural steel etc., the Egyptian Standard Specifications shall have the priority to be applied, wherever the standards are available. Otherwise the indicated standards set out in these Specifications shall be applied

The following refers to internationally accepted standards, codes of practice and other publications published by the listed organizations. The respective abbreviation is given for each standard for clarity.

AASHTO	- American Association of State Highway and Transportation Officials
ACI	- American Concrete Institute
AGA	- American Gas Association
AIJ	- Architectural Institute of Japan
AGMA	- American Gear Manufacturers Association
AISC	- American Institute of Steel Construction
AISI	- American Iron & Steel Institute
ANSI	- American National Standards Institute
API	- American Petroleum Institute
ARI	- Air-conditioning and Refrigeration Institute
ASCE	- American Society of Civil Consultants
ASME	- American Society of Mechanical Engineers
ASTM	- American Society for Testing and Materials
AWS	- American Welding Society
AWWA	- American Water Works Association
BS	- British Standard
CIPRA	- Cast Iron Pipe Research Association
CISPI	- Cast Iron Soil Pipe Institute
CP	- Code of Practice (British Standards Institution)
DEMA	- Diesel Engine Manufacturers Association
DIN	- Deutsche Industrie-Normen (German Industrial Standards)
ESS	- Egyptian Standard Specifications
Fed. Spec.	- United States of America Federal Specification
IEC	- International Electro-Technical Commission
IEEE	- Institute of Electrical and Electronics Engineers
ISO	- International Organization for Standardization
JEC	- Japanese Electromechanical Committee
JEM	- Japanese Electrical Manufacturers Association
JIS	- Japanese Industrial Standards
JRS	- Japanese Railway Standard
JSCE	- Japan Society of Civil Engineers
JWWA	- Japanese Water Works Association
NEMA	- National Electrical Manufacturer's Association

1004 Construction Materials and Workmanship

Construction materials to be supplied for the Works shall be subjected to the Engineer's approval.

The Contractor shall submit samples of construction materials and list of their supply sources and/or manufacturers to the Engineer for his approval sufficiently in advance but not later than twenty-one (21) days before the start of the actual work. Construction materials being

subjected to the Engineer's approval include cement, aggregates, sand, water for concrete mixing, materials for riprap, reinforcing bar, structural steel, etc.

All soil, turf, gravel, stone, timber and other materials obtained in the excavation, clearing of the site of the Works and soil stripping, shall belong to the Employer and must not be removed from the site of the Works without the consent of the Employer. The Contractor, however, may use the materials such as timber felled on the site and any of the materials excavated under the Contract to the construction of the Works upon approval and directions of the Employer/Engineer.

When any item is not provided in the Bills of Quantities for the furnishing of any materials required to be furnished by the Contractor, the cost of furnishing, hauling, storing and handling shall be deemed to be included in the unit price or price of the work for which the materials are required.

All workmanship shall be of the best quality in each respective category of the Works. Except where otherwise stated, or approved by the Engineer, all materials used in the Works shall be of the best quality, in the respective kinds specified or described in the Specifications, Drawings and Bill of Quantities, and shall comply wherever possible with the current issue of the reference Standards or other equivalent standards, subject to the approval of the Engineer.

1005 Constructional Plant and Equipment

The Contractor shall furnish constructional plant and equipment which will be efficient and appropriate to secure the satisfactory quality of the Works and a rate of progress which will ensure the completion of the works within the time stipulated in the Contract. If at any time such plant and equipment should appear to the Engineer to be inefficient, inappropriate or insufficient for securing the required quality of the Works or for producing a satisfactory rate of progress, then the Engineer may order the Contractor to increase the efficiency, change the character or increase the numbers of the plant and equipment and the Contractor shall conform to such order. The Contractor shall not be entitled to any extra payment or any other claims in complying with the above Engineer's order.

The Contractor shall prepare and submit to the Engineer two (2) copies of an itemised statement showing the quantities and specifications for major items of construction plant and equipment required for the Works. The description of each item shall be sufficiently clear to easily determine its classification, as to type, durability and utility.

1006 Mobilization Program

In accordance with the Conditions of Contract, Part II, Sub-Clause 14.1, within a period of thirty (30) days after receipt of the Order to Commence, the Contractor shall submit to the Engineer a Mobilization Program giving full details of his intended mobilization procedure.

This shall be such as will ensure completion of mobilization within a period of 90 days after receipt of the Order to Commence.

1007 Sub Contractors

When and in case the Contractor intends to employ subcontractor(s) for the minor part of the Works, in addition to those which are accepted by the Employer at the time of Contract, such subcontractor(s) shall be proposed by the Contractor for acceptance by the Employer/Engineer.

1008 Work Schedule

The Contractor shall submit the Program of Works and the Detailed Program in accordance with the stipulations of the Conditions of Contract, Part II, Sub-Clause 14.1. The Contractor shall state and allow in the Detailed Program a reasonable margin of time for contingencies and shall state his intentions regarding the use of reasonable numbers of shifts for any work. In addition to the detailed work schedule, weekly or monthly progress schedule of principal works shall be prepared for controlling the progress throughout the construction period.

In addition to the revisions effected every three months as specified in Sub-Clause 14.1 of the Conditions of Contract, Part II, the Detailed Program shall be revised at any time in accordance with any change in the work condition or the Engineer's direction and no additional payment shall be made to the Contractor for any such revisions to the schedule which the Engineer considers necessary in order to meet the contracted completion date.

At every one month period, actual progress for each work shall be compared with the intended progress indicated in the Detailed Program. The result shall be reported in the monthly progress reports mentioned in Sub-Section 1018 "Monthly Progress Reports and Photographic Record". Should the Contractor's activities be delayed, then the Contractor shall include in the monthly progress report a detailed description outlining all corrective actions he proposes to adopt to retrieve the intended schedule status.

1009 Hand-over of the Site

The site shown in the relevant Contract Drawings of the Projected Works is, in general, handed-over to the Contractor within fifteen (15) days from the date of issuance of the Order to Commence by the Engineer.

The Contractor shall dispatch his authorized staff to the Site on the date stipulated in the Order to Commence or otherwise notified by the Engineer to be handed-over the Site. All available benchmarks and other reference points shown in the relevant Contract Drawings shall be handed-over to the Contractor, who shall be responsible to preserve the benchmarks and other reference points thereafter till the completion of the Works.

In case any part of the Site is not handed-over to the Contractor on the date stipulated in the Order to Commence or other notice issued by the Employer/ Engineer, the Contractor shall request the time limit of hand-over of remaining part of the Site in accordance with his Detailed Program of works.

The Contractor shall provide the minutes of hand-over of the Site with detailed description on the conditions of the Site at the time of hand-over in accordance with Sub-Section 1019. The minutes shall be signed by the representatives of the Employer, the Engineer and the Contractor.

1010 Setting Out and Survey

Benchmarks and reference survey stations have been established at certain points on the site as shown on the Contract Drawings. Before using any of these reference points for setting out the Works, the Contractor shall undertake a survey check using the basic benchmark and satisfy himself as to their accuracy.

The Contractor shall carry out all additional survey works necessary to extend the survey network to the area of the Works and shall establish, maintain and preserve permanent monuments, temporary benchmarks and reference stations.

The Contractor shall carry out surveys of profile and cross section to be required for setting out of structure in accordance with the instructions of the Engineer.

These survey results shall be submitted to the Engineer for his approval.

The permanent benchmarks shall be the control benchmarks for elevation and location control of setting out on this Contract. The benchmark NSDO BM 7 shall be the control benchmark for elevation control of setting out on this Contract and the elevation of the benchmark is EL. 21.978 m MSL.

The benchmark NSDO BM 6 and the benchmark BM 7 shall be the control benchmarks for location control in setting out on this Contract. The coordination of the benchmarks are as follows.

NSDO BM 6	:	N 1,212,834.85 m,	E 138,084.58 m
NSDO BM 7	:	N 1,211,254.91 m,	E 140,001.69 m

The permanent benchmarks and reference benchmarks for setting out are shown on the Drawing No. GNL-202.

The concrete-made temporary benchmarks and survey stations shall be installed on the Site by the Contractor.

Prior to commencing the Works, the Contractor shall undertake the check survey of the reference benchmarks and satisfy himself as to their accuracy.

The Contractor shall solely be responsible for the true and proper setting-out of the Works for the correctness of the position, levels, dimensions and alignment of all parts of the Works and for the provision of all necessary instruments, appliances and man-power in connection therewith.

The Contractor shall, in parallel with or immediately after the setting-out, survey all sites of work and provide plane map and/or cross-section and profile thereof in accordance with the instructions, if any, issued by the Engineer for the purpose of preparation of the Construction Drawings and Shop Drawings.

If at any time during the progress of the Works, any error appears or arises in the position, level, dimension or alignment of any part of the Works, the Contractor, upon the instructions of the Engineer, shall, at his own cost, rectify such error to the satisfaction of the Engineer.

1011 Tender Drawings and Contract Drawings

The Tender Drawings shall automatically become the Contract Drawings, when the Contract is signed.

1012 Drawings for the Contract Works

The Drawings for the Contract Works consist of Contract Drawings, Instruction Drawings, Construction Drawings, Shop Drawings and As-built Drawings. The Drawings shall be accurate and clear, denoting the scope of Works. The Drawings shall, in principle, be described in English.

The Large-scale Drawings shall take precedence over the identical parts of original Drawing. All rights due to Drawings shall be reserved to the Engineer.

(1) Contract Drawings

The Contract Drawings form a part of the Contract documents and show the layout, configuration, type, extent and location of the Works to be constructed or supplied under the Contract.

(2) Instruction Drawings

Instruction Drawings may be issued from time to time by the Engineer during execution of the Works to show sufficient dimensions, specific details and typical details defining the various

features of the Works as required by the Engineer, based on the Contract Drawings or to revise the Contract Drawings taking into account the latest conditions which may be revealed during the progress of the Works.

The Contractor shall cooperate with the Engineer for preparation of the Instruction Drawings by submitting the information resulting from site and works conditions.

The Contractor shall prepare Construction Drawings and/or Shop Drawings in accordance with the Instruction Drawings.

(3) Construction Drawings and Shop Drawings

The Construction Drawings are prepared by the Contractor and used for construction, fabrication or procurement purposes of the Contract Works. They shall show the overall layout of the Contract Works and the overall configuration of the plant and equipment.

The Shop Drawings shall be provided by the Contractor in accordance with the Contract Drawings, the Construction Drawings and/or the Instruction Drawings to supplement them and illustrate the details for actual construction, fabrication or procurement for the execution of the Contract Works.

In case the Contractor judges that the Contract Drawings of the relevant work are not sufficiently explanatory, he shall request the Engineer for issuing of the Instruction Drawings or other means of interpretation thereto. The Contractor shall not execute the Works unless he makes himself sufficiently ensured the function and correctness of the Works.

The Contractor shall dispatch sufficient number of well qualified man-power and provide necessary equipment and supplies at his site office to prepare the required Construction Drawings and the Shop Drawings.

All drawings supplied by the Contractor shall be, as far as possible, of a uniform size, and numbered and dated at the bottom right-hand corner.

Any drawings provided by the Contractor for the purpose of execution of the Works shall not be considered as the Construction Drawings or the Shop Drawings unless the drawings are signed by the authorized person of the Engineer for approval.

All works shall be carried out in accordance with the levels, dimensions and details shown on the approved Construction Drawings and/or Shop Drawings. If requested by the Engineer for certain work items, the Contractor shall also submit the descriptions for materials, equipment, construction plans, standards and workmanship related to such Drawings to the Engineer for his approval.

(4) As-built Drawings

The Contractor shall prepare and submit As-built Drawings in compliance with Sub-Section 1014 of these Specifications.

1013 Construction Drawings, Shop Drawings and Other Data

(1) Construction Drawings

The Construction Drawings are similar in nature to the Contract Drawings. They both show the overall layout of the Contract Works and the overall configuration of the plant and equipment. Only difference is that the Construction Drawings are used directly for the construction, fabrication or procurement purposes of the Contract Works. Contract Drawings can be copied and remade as the Construction Drawings with new title blocks, if the Contractor finds them sufficient for such purposes and the Engineer approves them as the Construction Drawings.

(2) Shop Drawings

The Shop Drawings shall be prepared by the Contractor to supplement the Construction Drawings. The Shop Drawings are divided into two categories, i.e., those for the Civil and Architectural Works portion of the Contract and those for the Mechanical and Electrical Equipment portion, as described below.

- a) The Shop Drawings for the Civil and Architectural Works portion shall be prepared to indicate more detail than the Construction Drawings, so that the actual construction work of the object civil or architectural works can be performed on Site. Compared to the Construction Drawings the Shop Drawings shall include more construction details such as the reinforcement bar arrangement, formwork arrangement, etc. and/or more information based on the approved survey results whenever the work is affected with the survey results qualitatively and/or quantitatively.

In addition to the Shop Drawings, when so required by the Engineer, the Contractor shall submit to the Engineer other data such as the detailed methodology statement and construction plans for certain construction works.

- b) The Shop Drawings for the Mechanical and Electrical Equipment Works shall indicate the detailed design drawings, installation layouts, structural configuration with detailed dimensions, structural cross-sections with schedules of parts names, their materials and manufacturer's parts identification numbers, etc.

In addition to the Shop Drawings, the Contractor shall submit the detailed design reports and detailed specifications for the Mechanical and Electrical Equipment Works listed

below:

- Pumping Units
- Steel Pipes
- Gate Equipment
- Flow Meters and Valves
- Control System & Electrical Facilities

When requested by the Engineer, the Contractor shall also submit other data for the above items.

For other items of the Mechanical and Electrical Equipment than listed above different arrangement shall apply, for which refer to Sub-Clause 1015 below.

The Construction Drawings, the Shop Drawings and other documents as specified above shall be submitted to the Engineer for his approval.

Should the detailed design reports, detailed specifications and/or other data mentioned above be approved by the Engineer, they shall be deemed a part of the Technical Specifications of the Contract.

(3) Schedule of Construction Drawings, Shop Drawings and Other Documents

Within fifteen (15) days after receipt of the Order to Commence, the Contractor shall submit a schedule showing presentation plan of the Construction Drawings, Shop Drawings, detailed design reports, detailed specifications and/or other data which are specified to be in this Sub-Section 1013 to as the Drawings and Documents). submitted for the Engineer's approval in Articles (1) and (2) above (hereinafter referred

This schedule shall show the proposed dates of submission of the Drawings and Documents to be furnished to allow ample time to permit the Engineer to check these Drawings and documents, but in no case less than twenty-one (21) days ahead of the commencement of the respective works unless otherwise specified. The dates shall be subject to approval or revision by the Engineer.

The schedule shall be updated and re-issued once every two months until substantial completion of all the Drawings and Documents, or such time as directed by the Engineer.

(4) Submission of Construction Drawings, Shop Drawings and Other Documents

The Drawings and Documents required to be approved by the Engineer shall be submitted to the Engineer in the following manner.

- a) Three (3) clear blue prints or copies of the Drawings and Documents shall be submitted to the Engineer for approval.
- b) Revisions shall be described by number, date and subject in a revision block on Drawings, on the front page of the detailed design reports and specifications and in a similar, readily identifiable place on other data. Additionally, each revision shall be clearly delineated on Drawings, marked in the margin or other clearly identifiable place on other Documents.
- c) For the Engineer's use, a blank space, measuring approximately 9 cm by 14 cm, shall be provided on the Drawings immediately above the title block, on the front page of other Documents.

(5) Approval of Construction Drawings, Shop Drawings and Other Documents

One (1) copy each of the Drawings and Documents submitted for approval will be returned to the Contractor marked either APPROVED, APPROVED EXCEPT AS NOTED or EXAMINED AND RETURNED FOR CORRECTION (with relevant reasons determining rejection duly indicated), as applicable.

The Drawings and Documents marked APPROVED shall be deemed to authorize the Contractor to proceed with the fabrication, construction, ordering or purchase of materials or equipment covered by such Drawings and Documents. The Contractor shall then submit to the Engineer three (3) additional copies each of such Drawings and Documents for authentication of them for "APPROVED" marking.

Where the Drawings and documents are marked APPROVED EXCEPT AS NOTED, three (3) copies of the revised Drawings and Documents showing the necessary corrections shall be submitted as mentioned before to the Engineer for approval.

This procedure shall be repeated until the Engineer's final approval is granted. Thus at the end the Contractor shall have four (4) APPROVED copies of the Drawings and Documents, which shall be used by the Contractor for fabrication, construction or procurement purposes.

The approval of the Drawings and Documents by the Engineer shall not be considered as a complete check, but will only indicate that the general method of construction and detailing or general type and configuration of the equipment are satisfactory, and shall not exonerate the Contractor from any of his responsibilities under the Contract. The Contractor shall not carry out the relative work prior to approval of the Drawings and Documents. Any execution of such work prior to their approval shall be totally at the Contractor's risk.

No departure from these approved Drawings and Documents shall be allowed without the approval of the Engineer.

The Engineer shall have full power and authority to order the Contractor to suspend or stop

such works that are not in accordance with the approved Drawings and Documents or commenced before the issuance of such approved Drawings and Documents.

The Engineer's approval of the Drawings and Documents shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has informed the Engineer in writing of such deviation at the time of submission, nor shall the Engineer's approval to the specific deviation relieve the Contractor from responsibility for errors or omissions in the Drawings and Documents.

1014 As-built Drawings

As-built Drawings shall be prepared and submitted by the Contractor and approved by the Engineer. The As-built Drawings shall show all facilities under the Contract, thereby incorporating all changes, revisions and corrections including the delineation thereon of any physical changes made during construction, assembly or erection, such that the Drawings accurately represent that part or portion of the Works delineated thereon as it was completed and accepted by the Engineer.

Some or all the Construction Drawings and Shop Drawings can be copied and renamed to create some or all As-built Drawings, if the Contractor finds it suitable to do so. They shall, however, contain added information as mentioned above.

The Contractor shall submit two (2) copies of As-built Drawings for the Engineer's approval. The Contractor shall discuss and agree on the submission and approval schedule of As-built Drawings so that the Engineer shall have sufficient time for checking of the Drawings and that the approved As-built Drawings shall be ready at the time of the Final Inspection.

The As-built Drawings without the approval signature of the authorized person of the Engineer shall not be considered as the As-built Drawings. When one approved copy of each As-built Drawing is returned to the Contractor, he shall submit another three (3) copies/blue prints and one (1) original polyester reproducible to the Engineer for their authentication

1015 Technical Proposal, Data and Samples to be Submitted

Contractor shall submit drawings, catalogues, diagrams and other descriptive data as well as samples of the materials and equipment of mechanical, electrical and architectural works other than the items listed under Sub-Clause 1013 (2) b), which he proposes for use under this Contract, for the approval of the Engineer. For certain materials and equipment, data may be required to be submitted in accordance with a detailed form furnished by the Engineer. The above-mentioned technical papers and samples of materials and equipment to be used shall be submitted for the approval of the Engineer with sufficient time in advance, but not later than 60 days prior to their purchase, fabrication, construction or use.

- 1) The Contractor has no right to claim for the time spent for any test and the Engineer's approval relating to his construction schedule.
- 2) One of each approved sample will be retained for reference by the Engineer. Finished work shall match with the respective approved samples.

1016 Testing of Materials

All materials intended for use in the permanent work shall be tested either at the place of manufacture or fabrication, on the Site or whichever laboratory instructed by the Engineer in order to determine, to the satisfaction of the Engineer, whether they comply with the requirements of the Specifications. If such testing is undertaken at the place of manufacture or fabrication, the Contractor shall submit the supplier's test certificates to the Engineer before the dispatch of the relevant consignment. All cost relating to the testing of materials shall be borne by the Contractor.

1017 Assistants for Engineer

The Contractor shall provide competent assistants and laborers for the Engineer to help him in carrying out the checking of survey in works and the testing of concrete and soil at the field laboratory, etc. as required by the Engineer. Qualifications of the assistants and laborers shall be approved by the Engineer and the cost of their provision shall be borne by the Contractor.

1018 Monthly Progress Report, Photographic Record and other Reports

- 1) Before the 10th of every calendar month during the course of construction, the Contractor shall submit to the Engineer five (5) sets of the Monthly Progress Report for the preceding month which shall at least include the following:
 - a) List of engaged staff and laborers during the report period.
 - b) List of construction equipment on site in working order indicating their number of working days.
 - c) List of activities scheduled to be in progress and actually in progress during the report period, together with the Contractor's estimate of progress achieved up to the report date and actual/forecast start and/or completion date for each activity.
 - d) List of activities scheduled to be started within two (2) months with forecast starting dates.
 - e) A progress graph chart showing the monthly progress of major work items together with their scheduled total achievements and their actual total achievements.
 - f) Physical records such as climatic conditions such as rain, minimum and maximum temperature, relative humidity, etc.
 - g) Record of correspondence, Instructions, Drawings and Proces-verbaux, etc.
 - h) Accidents and dispensary frequency
 - i) Special events, trouble shooting, etc.

- 2) Five (5) sets of the Photographic Record containing first quality color photographs (with automatic dating) of all significant aspects of construction works during the report period shall also be submitted in addition to the Monthly Progress Report. This monthly Photographic Record shall contain approximately thirty (30) color photographs of 86 mm by 126 mm in size with brief explanation of aspects, sites and date both in Arabic and English. The Contractor shall first submit fifty (50) probe photos to the Engineer who shall select thirty (30) to be included in the Photographic Record.
- 3) Daily or weekly reports shall be required for the special works directed by the Engineer in a form approved by the Engineer. These reports shall be submitted to the Engineer by 9 a.m. of the following day or the first day of the following week.
- 4) The Contractor shall take video recording of the construction and other activities throughout the course of the Contract under the supervision and instructions of the Engineer. The recording shall be by PAL system on VHS tapes. The recording shall be edited to the length of about 90 minutes in two separate versions of Arabic and English. The Contractor shall submit ten (10) sets of each approved version to the Engineer within thirty (30) days after the completion of the Contract Works.

Besides, the Engineer may instruct the Contractor from time to time to perform recording of special events. The Contractor shall follow these instructions without any extra cost to the Employer. Its contents shall be edited to the length of time specified by the Engineer and superimposed both in Arabic and English in separate versions. The edited tapes shall be submitted to the Engineer within 2 weeks after the recording or other time as specified by the Engineer. The number of tapes to be submitted shall be as per the Engineer's instructions.

1019 Site Meetings

The Contractor shall participate in the site meeting which will be conducted by the Engineer on a regular basis and at any time when called for.

For the purpose of interpretation of any of the stipulations or provisions in the Contract Documents, consultation or discussion to solve the problems, difficulties, disputes, etc., meetings shall be held at the Employer's office, the Engineer's office in the Site or elsewhere. The Contractor shall, when such meeting is held, provide the minutes of meeting with signatures of all attendants of the meeting, and submit it to the Employer/Engineer within three (3) days for their approval.

All interpretation, decision, promise, understanding and agreement mentioned in the signed minutes of meeting are to bind the parties concerned for execution or observance.

1020 Monthly Statement Forms

The Contractor shall submit the monthly statements for payment including a summary sheet. Before any of the forms are printed, proof copies shall be submitted to the Engineer for approval. Seven (7) copies of the completed statement with eight (8) additional copies of the summary sheet will be required each month.

1021 Final Inspection and Take-over

(1) Final Inspection

When the whole of the Contract Works has been substantially completed and has successfully passed the commissioning tests, the Contractor shall give a notice to that effect to the Employer and the Engineer in accordance with the stipulations of the Conditions of Contract, Part I, Sub-Clause 48.1, whereupon the Engineer shall conduct the Final Inspection in view of issuing the Certificate of Completion.

The wording “substantially completed” means that the Contract Works are completed to such a degree that the Works can be put to use functionally without any practical difficulty.

The Contractor shall provide the following data and evidences for the purpose of the Final Inspection:

- a) Commissioning tests results
- b) Performance tests results of equipment and facilities.
- c) All As-built Drawings of the Works.
- d) All instructions issued by the Engineer in relation with the Works.
- e) All results of testing on the material incorporated in the Works during the progress of construction.
- f) All operation and maintenance manuals and specifications for mechanical installations incorporated in the Works.
- g) Photographs of portions of the Works before being covered with size of 86 mm x 126 mm.

All labor, materials, instruments, equipment and means of transportation in the Site required for the Final Inspection shall be provided by the Contractor.

The Works shall be inspected by the Engineer as to the conformity with the Specifications and other Contract documents. All details of data and evidences provided as above by the Contractor for the Final Inspection shall also be checked for their conformity and correctness.

At the end of the Final Inspection, if the Works are evaluated as “substantially completed”, the outstanding works shall be clearly identified, enumerated and described in the Final

Inspection Report. The Engineer shall then issue the Certificate of Completion to the Contractor in accordance with the stipulations of the Conditions of Contract, Part I, Sub-Clause 48.1. On the other hand if the Works are evaluated as “not substantially completed”, the Engineer shall issue written instructions to the Contractor on the defects, shortcomings or the outstanding works, which are necessary, in the opinion of the Engineer, to be rectified or completed before the Works are considered to be “substantially completed”.

Provided always that the Engineer shall not finalize the evaluation, whether the Works are “substantially completed” or not, nor issue the Certificate of Completion without the consent of the Employer.

(2) Take-over of the Works

At the issuance of the Certificate of Completion the Employer is regarded to have taken over the Works from the Contractor.

Immediately after the issuance of the Certificate of Completion, the Employer will introduce his operation and maintenance crew of the Works, to whom the Contractor shall hold an explanation session about the Works.

The Contractor shall explain to the crew all details of process of construction, results of tests, conditions of covered parts of the Works and other information required for operation and maintenance of the Works using the As-built Drawings, Photographic Records and Video recording as prescribed in Sub-Section 1018, and other data and evidences available.

At the end of the explanation session, the Contractor shall provide the minutes of meeting in such manner as prescribed in Sub-Section 1019 "Site Meeting" and submit the same to the Employer and the Engineer.

After issuance of the Certificate of Completion, the Maintenance Period of the Works shall start.

1022 Measurement and Payment

No separate payment will be made for complying with the provisions of Sub-Sections 1001 to 1021 and all costs thereof shall be deemed to be included in the prices entered into other pay items in the Bill of Quantities.

SECTION 1100 TEMPORARY WORKS

1101 General

This section covers site preparation, temporary access, electrical power supply, water supply, sewage disposal, telecommunication for construction purposes, Contractor's camp, health services, safety requirements and other temporary works.

The Contractor shall submit to the Engineer for his approval, the drawings and full particulars of the temporary works.

The submission to, or approval of, the Engineer of any such proposals by the Contractor shall not relieve the Contractor of any of his responsibility for the adequacy and safety of the temporary works for their intended purpose.

The Contractor shall also obtain any necessary approval from the local, statutory or other authorities concerned before construction.

No house, office, store, workshop or other habitable buildings will be permitted to be established underneath or within 10 meters of the nearest point in plan of any conductor of an overhead power line.

Upon completion of the Works, the Contractor shall leave on Site such parts of the Temporary Works including the appurtenant facilities and equipment, furniture, furnishings, appliances, and the like which the Employer shall take over free of charge (The vehicles provided shall be excluded from this arrangement). Contractor shall destroy, remove, or otherwise dispose of all other temporary works and facilities and clear away waste materials or rubbish of whatever kind remaining on the Site. Such refuse material shall be deposited at the place instructed by the Engineer. The site of the discarded temporary works shall be cleaned up, reinstated or arranged by such time to the approval of the Engineer.

1102 Site Preparation

The area of works nominated in the Contract and handed over to the Contractor as the Site is shown in the Contract Drawing No.GNL-203 and specified in Sub-Section 1010. The Contractor shall keep the Site free from any damage after receipt of Order to Commence.

The lands for quarries, borrow areas, spoil areas, the Contractor's camping facilities, the Contractor's workshops, stores, the Contractor's other temporary works and facilities, etc. are not specified in the Contract. When the Contractor intends to use additional lands which are not provided by the Employer, the Contractor shall obtain such lands at his own effort and expenses, after obtaining the approval of the Engineer.

When it is necessary to compensate for existing houses, walls, fences, trees, crops, other artificial obstacles, etc. in the land area not handed over by the Employer, such compensation shall be made at the Contractor's own expense after obtaining the approval of the Engineer.

The Contractor shall clear the site in accordance with the Specifications and the instructions of the Engineer. The clearing work shall consist of removal and disposal of trees, bushes, roots and vegetation and elimination of unnecessary structures such as buildings, roads, waterways and other obstacles for the Works.

All usable materials such as trees recovered during the clearance of the land handed over by the Employer belong to the Employer as defined in Sub-Section 1005. If the Employer orders such materials under the Contract to be stored, the Contractor shall store them in the place to be defined by the Employer.

The destruction of vegetation by fire cannot be carried out without the Engineer's prior approval. The Contractor shall be, however, entirely responsible for consequences of such destruction by fire even though it may have been approved by the Engineer.

1103 Notice of Operations

No important operation and particularly no blocking of any road, track, water pipe or other service shall be carried out without the consent in writing of the Engineer, which shall not be given unless the approval of the concerned authorities is obtained, nor without full and complete notice being given to him in writing sufficiently in advance of the operation as will enable him to make such arrangements as may be necessary for its inspection and the provision of all relevant safety precautions.

1104 Temporary Access Road

The Contractor shall construct and maintain temporary access roads to, in and around, the various working sites. Maintenance of temporary access roads shall include measures to control dust such as regular spraying of the road surface with water during dry periods.

The temporary access roads shall be made by the Contractor's own design and specifications, as approved by the Engineer.

1105 Power Supply for Construction

There is no electricity supply for construction purposes by the Employer. The Contractor shall install a substation at the existing public power line or an electric generating plant and a distribution system of sufficient capacity and adequate reliability to meet the demand for construction and operation of the Employer's and Engineer's offices and residences as well as the Contractor's temporary camp and facilities on a twenty-four hour per day basis up to the

end of the Contract Period.

1106 Water Supply

The Contractor shall supply a sufficient amount of water of provable quality to meet all the requirements relating to the Works under the Contract including the demands of Employer's and Engineer's offices and residences, field laboratories, etc. as well as the requirements for testing on a twenty-four hour per day basis throughout the Contract Period.

The Contractor shall supply a sufficient amount of domestic and potable water to all offices and residential buildings throughout the Contract Period. He may be allowed to provide a suitable treatment plant at his own expense in order to obtain the potable water. The provided potable water shall be in compliance with the appropriate Egyptian quality standard.

1107 Telecommunications

The Contractor shall provide a telecommunications system at the working sites of sufficient capacity and adequate reliability to meet all of his telecommunications needs for the construction of the Works.

The Contractor shall submit the proposal of his own telecommunications system with sufficient details and drawings to the Engineer for his approval prior to construction.

The Contractor shall make all the necessary kinds of arrangements to obtain approval of the authorities concerned for providing his telecommunications system.

In addition to his own requirements, the Contractor shall provide and maintain telephone lines, the number of which is indicated by the Employer, connected to the public telephone system for the uses of the Employer and the Engineer including its telephone charge during the Contract Period.

1108 Treatment, Disposal of Refuse, Garbage, Trash and Constructional Remains

The Contractor shall always collect, treat and dispose of refuse, garbage, trash and any constructional remains in order to keep the Site and the Works clean, including storage areas used by him during the Contract Period.

- 1) The refuse, garbage, trash and constructional remains shall be separately collected, classifying into inflammables and incombustible. The Contractor shall provide the necessary incinerator in suitable places approved by the Engineer and properly treat the inflammables. Incombustible shall be collected, conveyed and neatly disposed of at the designated areas on the Site.

- 2) The Contractor shall make and maintain such temporary works by his own arrangement, responsibility and at his own expense.

1109 Contractor's Offices, Camps, Stores and Workshops

The Contractor shall establish his offices, staff quarters, labor camps, stores and workshops, etc. at the locations approved by the Engineer.

- 1) The Contractor shall provide and maintain such temporary buildings, offices, workshops and adequately fenced stores and delivery compounds as are necessary for the execution of the Works.

All such facilities shall be designed by the Contractor and submitted to the Engineer for approval prior to construction.

- 2) The Contractor shall provide and maintain temporary accommodation and living facilities including all necessary services for water supply, drainage, lighting, roads, paths, parking place, sanitation and refuse disposal, fire protection, commercial and recreation facilities for his staff and labor force and for the employees of his sub-contractors as well as their dependants living on the site.
- 3) All temporary and permanent buildings shall at all times be open to the inspection of the Governmental Health Officer and any instruction given by him for the proper cleansing, disinfection and general maintenance in a sanitary and hygienic condition of any building shall forthwith be carried out by the Contractor. Before any temporary or permanent buildings are occupied, the Contractor shall draw up a code of rules and regulations for their control which shall be submitted to the Engineer for his approval. The Contractor shall provide necessary transport for his employees between the camp and the Site.

1110 Sanitary Arrangements

The Contractor shall arrange for a high standard of sanitation to be maintained throughout the Contract period. He shall construct and maintain at his own cost a system of waste disposal, which shall be approved by the Engineer before any work commences. Sanitary conveniences shall be provided and maintained by the Contractor in accordance with the appropriate regulations to the extent and in such manner and at such places as may be approved by the Engineer, and all persons connected with the Works shall be obliged to use them.

The Contractor shall arrange for the duration of the Contract for the disposal off site of sewage effluent arising from site toilets, Contractor's and Employer's/Engineer's offices, canteen and the like. Such arrangements shall be subject to the Engineer's approval and it shall be noted that a connection from the site into an existing public sewer may not be available.

1111 Health Services

The Contractor shall make satisfactory arrangements for the provision of all medical, and health services for all persons employed by him and by any sub-contractors employed by him on the Works including the dependants of such persons (provided such dependants are resident at the site).

The Contractor shall also provide on-site medical, surgical and health services free of charge to such other persons (hereafter called Registered Persons), who may be designated by the Employer, including employees of the Employer and the Engineer and their immediate dependants on the site. The standard of services and facilities to Registered Persons shall not be lower than that laid down for ordinary public hospitals and the extent of the services shall not be less than customarily provided by commercial firms of ordinary standing for persons, in the opinion of the Engineer, of equal status in their employ. The services listed below shall be excluded:

- a) Special medical attention.
- b) Surgical attention apart from first aid and minor injuries.
- c) Hospital attention where the illness would normally require residence in hospital for more than fourteen days.
- d) Dental treatment.

The Contractor shall draw up a contract with a doctor and hospital located near the Site to enable him to fulfil his obligations under this Section. The doctor shall have had about ten years professional experience or more and be adequately experienced in medicine, surgery and obstetrics.

The Contractor shall provide, maintain and service a properly equipped and staffed ambulance with driver which shall be in readiness on the site for use at all times.

1112 Safety Precautions

(1) General

In the performance of the Works, the Contractor shall exercise every reasonable precaution to protect persons or property from injury. He shall erect and maintain all necessary temporary fencing, barricades, barriers, multilingual signs, and lights and provide fire alarm, fire extinguishing and fire fighting services at strategic points on the Site. The Contractor shall adopt and enforce such rules and regulations as may be necessary, desirable or proper to safeguard the public, all persons engaged in the Works and its supervision and all traffic adjacent to thoroughfares.

The Contractor shall appoint a safety engineer and hold regularly scheduled safety meetings

with the Engineer and with his own supervisors and foremen.

Safety measures shall include but not be limited to the specific safety measures specified in this section.

(2) Lighting

The Contractor shall provide sufficient lighting, in all places where the Works are done at night, to ensure that:

- a) Safe working conditions are provided both for the Contractor's personnel and for personnel of the Engineer.
- b) The Works can be carried out in complete compliance with the Contract.
- c) A complete inspection of all works in progress can be made by the staff of the Engineer.

Not less than fourteen (14) days before he proposes to start night operation, the Contractor shall submit to the Engineer for approval his proposals for lighting in the areas in which he proposes to work at night.

The submission to or approval by the Engineer for lighting shall not relieve the Contractor from his liabilities or obligations under the Contract.

(3) Work in the Vicinity of Electrical Equipment

Once any permanent electrical plant has been connected to any electricity supply, its operation and the completion of any outstanding work (such as painting, handrailing, etc.) on the plant shall be subject to a "permit to work" system in a form agreed between the Contractor and the Employer in accordance with the Employer's Standard Safety Regulations for such work.

1113 Fire Protection

The Contractor shall be responsible for all fire protection precautions, programs and provision in connection with the Works. Compliance with all fire protection codes and regulations and the initiating, maintaining, and supervision of all fire protection precautions, programs and provisions in connection with the Works shall be solely the responsibility of the Contractor.

1114 Protection of Materials and Works

The Contractor shall at all times take care to protect and preserve all materials, supplies and equipment of any description and all works to be performed. All requests by the Engineer to enclose or satisfactorily protect such property shall be complied with accordingly.

- 1) Materials shall be stored so as to ensure preservation of their specified quality and fitness for the Works. When so directed they shall be placed on wooden platforms or other hard and clean surfaces and not on the ground. When purposes of the Contract at the time of installation remains the responsibility of the Contractor, stored materials shall be located so as to facilitate prompt inspection and control.
- 2) Concrete, piling and other works shall not be started if they are to be exposed to inclement weather, except under conditions whereby the Engineer may specifically direct or permit such works. This is subject to the protection of finished works and such other measures which may be deemed necessary by the Engineer.
- 3) If suspension of the works is on account of inclement weather or from any other cause, the Contractor shall, at his own expense, protect carefully his materials and works against any damage or injury and the Site shall be cleaned up and left in good order during the period of such suspension. If, in the opinion of the Engineer, any work or materials shall have been damaged or injured, by reason of failure on the part of the Contractor (or any of his sub-contractors) to protect the Works, such work and materials shall be removed and replaced at the expense of the Contractor.
- 4) The Contractor shall at all times comply with all laws, ordinances, rules and regulations relating to the performance of the Works, the protection of adjacent property and the maintenance of passageways, guard fences, lights or other protective facilities.
- 5) The Contractor shall at all times safely guard the Employer's property from injury or damage in connection with this Contract. He shall at all times also safely guard and protect his own work and that of adjacent property from damage. Such damage or injury that occurs shall be replaced or made good at the expense of the Contractor.

1115 Maintenance of Traffic Safety

The Contractor shall have full responsibility for the safety at the Site.

Where the Works will be carried out at the site near the exiting road, the Contractor shall maintain vehicular and pedestrian traffic at all times. If the Contractor's operations constitute a traffic hazard, he shall repair or fence or take other measures of safety to the satisfaction of the Engineer.

Detours around construction sites will be subjected to the approval of the authorities concerned. Where detours are permitted, the Contractor shall provide all necessary barricades and signs as required to divert the flow of traffic. While traffic is detoured, the Contractor shall expedite construction operations and the period shall be strictly controlled by the Engineer.

1116 Protection and Relocation of Existing Structures and Utilities

All ruins, relics, coins and other artistic or antique objects of any nature and value discovered during the performance of the Works belong to the Arabic Republic of Egypt. The Contractor, upon discovery of such objects, shall immediately inform the Engineer and, pending such action on his part, shall take all necessary measures, including suspension of the Works, for preserving intact and guarding said objects. No rights whatsoever shall accrue to the Contractor and no compensation of any nature shall be due to him for the discovery of said objects, and all rights accruing under the Law to the discovery shall belong exclusively to the Employer.

1117 Care and Protection of Property

All fences, walks, bushes, trees, shrubbery and physical features shall be protected and restored in a thoroughly workmanlike manner.

All existing pavements and sidewalks which are disturbed by the Contractor's operation shall be restored to their original or better condition by using similar materials approved by the Engineer.

1118 Signposts and Notice Board

The Contractor shall provide signposts and notice boards at the places indicated by the Engineer.

The signposts shall show the direction to the work site and the names of the work site, the Employer, the Engineer and the Contractor. The signposts for traffic control shall be required according to the regulations of the authorities concerned in case a part of the existing road will be occupied by the Works and detours will be provided.

The notice board shall describe the outline of project and illustrate the general plan of project.

The following items shall also be indicated on the notice board:

- Name of the Project, address, telephone number and NSDO Logo.
- Financing Agency of Foreign Currency Component: Kuwait Fund
- Kind of construction work.
- Quantity of Work.
- Name, address and telephone number of the Contractor.
- Construction Period, Start and Finish.
- Name of construction Supervisory Authority and telephone.

2 notice boards are required, one shall be installed at the access entrance, and the other at the construction site.

1119 Measurement and Payment

- 1) Costs for all kinds of common temporary works specified in Sub-Sections 1101 to 1118 in these Specifications will not be separately paid as Pay Items but shall be distributed to other Pay Items in the Bill of Quantities, and the prices included in such other Pay Items shall cover supply, installation, operation, maintenance and removal of all kinds of temporary facilities and temporary works except otherwise particularly itemized in the Bill of Quantities. The Employer/Engineer reserves the right to approve the design, Construction Drawings and Shop Drawings and the construction schedule of temporary works and facilities.
- 2) For the Temporary works in Division 2 to 9 of the Bill of Quantities, the Contractor shall submit the detailed schedule of works and the Construction Drawings and Shop Drawings of the expected Temporary works to the Engineer.