

JAPAN INTERNATIONAL COOPERATION AGENCY

THE GOVERNMENT OF
THE HASHEMITE KINGDOM OF JORDAN
THE MINISTRY OF TOURISM AND ANTIQUITIES
THE MINISTRY OF PLANNING

DRAFT
TENDER DOCUMENTS
FOR
CONSTRUCTION
OF
DEAD SEA PARKWAY SUB-PROJECT
THE TOURISM SECTOR DEVELOPMENT PROJECT

VOLUME II
SPECIFICATIONS

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SPECIFICATIONS FOR CONSTRUCTION WORKS

**PART (I) - SPECIFICATIONS FOR HIGHWAY AND BRIDGE
CONSTRUCTION**

PART (II) - PARTICULAR SPECIFICATIONS

PART (I)

**SPECIFICATIONS FOR HIGHWAY
AND BRIDGE CONSTRUCTION**

PART (1) -Specification for Highway and Bridge Construction

Volume (I)

Part(1) : General Provisions

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Part(2) : Earth Works

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Part(4) : Bituminous Construction

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Part(5) : Concrete, Steel & Structures

Volume (IV)

Part(6) : Lighting, Traffic Signals & Electrical Installations

Part(7) : Land Scaping & Irrigation

Part(8) : Incidental Construction

All volumes were issued by The Directorate of Planning & Development Ministry of Public & Housing in 1991.

PART (II)

PARTICULAR SPECIFICATIONS

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TECHNICAL SPECIFICATIONS

These Technical Specifications comprise of:

1. Standard Specifications
2. Special Specifications

The Standard Specifications, provided in a separate volume that the contractor has to obtain and at his own expense from MPWH, are the Standard Specifications for Highway and Bridge Construction issued in 1991 by the Hashemite Kingdom of Jordan, Ministry of Public Works and Housing.

The Technical Specifications shall be read in conjunction with the other parts of the Bidding Documents, Form of Bid, Conditions of Contract, Contract Data, Drawings and Bill of Quantities ... etc. All these documents and plans are to be regarded as mutually explanatory and completing each other. In case of discrepancy being found, the Contractor shall immediately inform the Engineer of the matter in writing. Subsequently, the Engineer will issue his instructions in the matter and the Engineer's instruction shall be final and binding.

In the event of discrepancy between the documents and drawings the governing order is as follows:-

- a) Addenda issued by the Employer
- b) Conditions of Contract
- c) Special Specifications
- d) Standard Specifications
- e) Drawings
- f) Bill of Quantities

1. STANDARD SPECIFICATIONS

The Standard Specifications forming an integral part of the tender documents shall be the "Specifications for Highway and Bridge Construction", issued in 1991 by the Ministry of Public Works, Directorate of Planning and Development, and shall hereinafter be referred to as Standard Specifications.

A copy of the Standard Specifications will be furnished to the tenderers and at their own expense with the Tender Documents.

Whenever General Specification is mentioned in the contract documents, it shall stand for the above referenced Standard Specification.

Section numbers, sub-sections, clauses and items in the Special Specifications refer to corresponding sections in the Standard Specifications.

2. SPECIAL SPECIFICATIONS

2.1 General

The Special Specifications shall be read in conjunction with the “Standard Specifications for Highway and Bridge Construction” of Ministry of Public Works and Housing of the Hashemite Kingdom of Jordan, 1991.

The Special Specifications shall amend, supplement, delete or modify the Standard Specifications. The provisions of these Special Specifications shall prevail over those of the Standard Specification.

The Special and Standard Specifications shall be read together in conjunction with the Bills of Quantities, Drawings and other Tender Documents, which shall be considered as mutually explanatory.

2.2 General Description of the Project

2.2.1 The Work comprises the construction of an 11.643 kilometers two lanes asphalt road with the related parking facilities and emergency escape ramps, including drainage structures; bridges and other related works as indicated and / or directed. This road shall connect the existing Dead Sea Highway (Route 65) with the existing Ma'in – Hot Spa Road.

2.2.2 The principal items of work to be carried out under this Contract include, but are not limited to, the following:

1. Carrying out the necessary geotechnical investigations as clearly indicated in drawing no. DSPW – 10 and in the Preambles to Bills of Quantities.
2. Clearing and grubbing of the area over which the new embankment and other works are to be constructed. All potential rock-fall zones shall be adequately cleaned from boulders and all other potential falling objects.
3. All earthworks necessary to the completion of the work, including embankment, roadway excavation including removal and disposal of existing asphalt pavement, ditches, sub-grade preparation, back-filling, filling and compaction, watering, rolling, sheathing, and sub-grade and slope finish.
4. The construction of all necessary drainage structures including pipe and box culverts, together with inlet and outlet works, lined and unlined ditches, energy dissipaters, storm water drainage facilities, grouted rip-rap and all necessary protection works.
5. The construction of road granular sub-base, aggregate base course, bituminous concrete binder and wearing courses, tack and prime coats, etc. all as shown on the Drawings.
6. The construction of road shoulders comprising the construction of bituminous and aggregate courses, sub-grade preparation, etc. as shown on the Drawings.

7. The construction of two bridges namely, Wadi Abu El-Asal Bridge and Wadi Himara Bridge as shown in the drawings.
8. The construction of the Parkway Facility with all necessary landscaping, parking, drainage and road furniture works all as shown on relevant drawings.
9. The construction of all miscellaneous related works such as road signs, sidewalks, pavement marking, roadway markers, etc. and any other work which may be ordered by the Engineer under the provisions of the Contract.

2.3 Drawings

- 2.3.1 The Contract Drawings consist of General Drawings, which show general features and such details as are necessary to give a comprehensive idea of the construction contemplated. Roadway alignment, profile grade, typical sections and pavement, locations and size of drainage structures, dimensions of all structural elements, reinforcement details, protection works and other ancillary items as shown on the Drawings.
- 2.3.2 The Contractor shall be responsible for preparing, such working drawings as may be required or directed. In general, and prior to starting any construction work, the contractor has to submit working drawings to the approval of the engineer.

The Contractor shall prepare working drawings and details including, but are not limited to the following:

1. Plan – Profile drawings with all necessary details and field adjustments based on the design plan profile drawings.
2. All drainage provisions including culverts, ditches, channels, inlets, outlets, etc. according to site conditions.
3. Cut and fill slopes geometry according to the natural ground cross-sections to be taken by the Contractor.
4. Traffic control devices and barriers.
5. Facilities for the supervision staff.
6. Protection measures.
7. The super and substructures of the bridges and its associated concrete works.

These working drawings shall be based on the Contract Drawings, field surveys, and shall be coordinated with the Contract Documents including compliance with the Standard and Special Specifications.

The Contractor shall also prepare such working drawings as may be necessary to show in details the temporary works and methods of construction he proposes to use including formwork.

No separate payment shall be made in respect of the preparation of the working drawings whose cost shall be considered subsidiary to other pay items in the Bill of Quantities.

2.4 Amendments to the Standard Specifications

The following sections, subsections, clauses, items of the Special Specifications shall amend, supplement, modify or delete the pertinent sections, subsections, clauses, items etc., of the Standard Specifications except for **Landscaping and Stone Assemblies** where the sections in the special specifications shall prevail and shall not have the same numbers of the sections in the general specifications. If any works in landscaping and stone assemblies are not covered, then the general specifications of MPWH shall govern.

The Special Specifications may include new sections that shall be considered as part of these Specifications.

PART (1): GENERAL PROVISIONS

SECTION 1.02 ABBREVIATIONS AND DEFINITIONS

1.02.1 ABBREVIATIONS

Add the following:

Additional list of abbreviations used in this project is shown in the drawings.

SECTION 1.03 SCOPE AND CONTROL OF WORKS

1.03.3 CONTRACTOR'S WORK AREAS

Add and amend as follows:

Noise, Pollution, and Nuisance: The Contractor shall ascertain and comply with any regulations concerning noise, pollution and other nuisance in addition to the obligations imposed by the Conditions of Contract and by **law**. The contractor must not disrupt the sensitivity of the area. It is the responsibility of the contractor to protect the wild life in the work area including, but not limited to trees, grass, running water, animals and wadi banks.

Nuisance: The Contractor shall take necessary precautions to prevent nuisance from smoke, dust, rubbish, water, polluted effluent and other causes.

Roads and Footpaths: The Contractor shall protect public and private roads, footpaths and the like from damage by site traffic or other causes arising from the execution of the Works and shall repair any damage to the satisfaction of the relevant public authority or private owner.

Existing Features: The Contractor shall prevent damage to existing buildings, and archeological sites, fences, gates, walls, roads, paved areas and other features on the Site or adjacent thereto which are to remain in position during the execution of the Works.

Adjoining property: The Contractor shall:

- a) Take all reasonable precautions to prevent damage to adjoining property and, if any damage is caused as a result of the execution of the Works, make good to the satisfaction of the owner.
- b) Preserve trees, planted fields, fences and the like in areas adjoining the Site and shall replace or re-plant as necessary the trees, crops etc. which are damaged or removed, and shall re-erect or replace fences, etc., in their original condition.
- c) Advise owners of adjoining property of the dates on which work will be done, which may affect them and obtain their consent on temporary works on their land.

Water: The Contractor shall ensure that his operations do not cause damage to adjoining land by flooding; he shall provide temporary drains and ditches and shall pump away excess water if necessary.

Existing condition of roads, paths, fences and other features shall be recorded by photographs or surveys if necessary before work is carried out adjacent to them.

1.03.4 WATER SUPPLY

Add the following:

"It is the Contractor's obligation to provide water with approved quality for the works, temporary works and for the Engineer's facilities. Where water main supplies are not available, the Contractor as agreed with the Engineer must provide suitable water supply and storage facilities.

1.03.5 ELECTRICITY SUPPLY

Add the following:

3. The Contractor shall also provide at his expense electricity supply for the Engineer's facilities.

1.03.6 EXISTING UTILITIES AND OTHER OBSTRUCTIONS

Add and amend as follows:

- 1) Contractor must immediately upon being awarded the contract, contact all Authorities concerned with all the utilities. The Jordan Electricity Company (JEC), The Telephone Authorities (J.T.C), Ministry of Water and Irrigation, The Jordanian Armed Forces, The Civil Aviation Authority, ... etc, and make sure of the exact location and depth of all utility ducts, cables, pipes ... etc. Contractor shall relocate all utilities that may cause any obstruction with his work, especially the relocation of the overhead and underground electric and telephone cables and posts or arrange for relocation to be done by the respective authorities, all to the approval of the Engineer's representative and the authorities concerned.
- 2) For the different utilities locating, it shall be the responsibility of the Contractor to obtain all information available from the Utility Authorities, and he shall make this information available to the Engineer's Representative as soon as he obtains it.

All locating works shall be carried out in advance of further excavation work. The Contractor shall obtain all information and assistance available from the Utility Authorities for the locating of different utilities, and shall agree with the Engineer's Representative about any trial excavation that may be necessary to confirm and establish these locations.

All costs for executing such boreholes and trial holes shall be deemed to be included in the Contractor's rates for excavation.

The absence of such information shall not relieve the Contractor of this liability for the cost of any repair work necessitated by damage caused by him to such utilities in the course of his work and for cost of all losses arising from their disruption.

Any temporary or permanent diversion will only be permitted after agreement with the appropriate Utility Authority and the Engineer's Representative.

Temporary diversions and restorations of the original utility shall be at the Contractor's expense.

- 3) Concerning safeguards to existing pipes, cables, structures, ... etc, it shall be the Contractor's responsibility to safeguard by means of temporary or permanent supports, or otherwise, all pipes, cables, structures, or other things which would be liable to suffer damage if such precautionary measures were not taken.

Temporary safeguards shall be to the approval of the Engineer's Representative and of the Authority, Ministry of Owner concerned.

Permanent safeguards shall be to the approval of the Authority, Ministry or Owner concerned and the Engineer.

All temporary and permanent safeguards will be at the Contractor's expense.

Any additional costs, due to difficulty of working or to any other reason arising from the presence of the aforementioned, shall be borne by the Contractor.

1.03.9 SURVEYING EQUIPMENT

Add the following to Clause No. (1):

The Contractor shall provide the Engineer, to his satisfaction, with a complete set of survey equipment necessary for checking the works as follows:

Item No.	Description	No.
1.	- Electronic Total Station for angles, distances, and coordinates measurements. - Angle accuracy (1-2). - Distance accuracy higher than (2) MM + 2PPM. - Equipped with two keyboard and display in both faces. - Pemica memory card compartment in one face build-in. - Integrated with surveying programs. - Facilities to load and erase programs. - Plug-in battery (rechargeable). - External battery (rechargeable) + battery cable. - Recharger for both batteries. - Pemica memory card min. 1MB. - Heavy-duty wooden tripod.	1 1 1 1 1 1
1.1	- Single prism holder. - Reflector pole. - Prism.	3 3 3
2.	- Automatic level. - Standard deviation not more than 2mm/1km double run. - Telescope magnification not less than 30 X	1
2.1	Wooden tripod	1
2.2	Leveling staff / Cm. Gradation 4m.	2
3.	30m Steel Tape with extra length before zero point.	5
4.	Steel Pocket Tape, 2.5m long.	5
5.	Surveying Umbrella	1
6.	Ranging Rods, 2.5m. long	10
7.	Level Books	20
8.	Field Books	20

1.03.13 USE OF EXPLOSIVES

No explosive shall be used for the Work unless otherwise stipulated in the Conditions of Contract and approved by the Engineer.

1.03.17 MEASUREMENT

Add and amend as follows:

- 1) The work prescribed in this section shall not be measured for direct payment but shall be considered as a subsidiary work, the costs of which will be deemed to be included in the Contract prices for pay items, except items shown in Bill No. 1 “General Provisions”, which shall be paid according to the units of measurement and rates.

SECTION 1.05 CONTROL OF MATERIALS AND STANDARDS FOR SAMPLING AND TESTING

1.05.5 SOURCES OF SUPPLY AND QUALITY REQUIREMENTS

Add Clauses 4 and 5 as follows:

4. Where A.S.T.M., B.S.S. and other technical standard specifications are specified for materials and equipment, the Contractor shall submit for the Engineer's approval a Certificate of Origin certifying that the material purchased is in conformity with the Specifications.
5. If a single source is specified for any material or a product, then the Contractor shall be bound by the same, and shall not change the said single source approval of the Engineer, and the Employer.

1.05.8 SAMPLING AND TESTING STANDARDS

Clause No. 1.1:

Modify the first paragraph to read as follows:

"The contractor shall, at the commencement of the contract furnish for use on site by the Engineer and the Contractor one complete set of the Standards as stated in the Standard Specification.

Clause No. 2.2:

Modify the last statement to read as follows:

"In the case of absence of an appropriate AASHTO Specification, the ASTM, B.S and J.SS Specification shall be referred to subject to the approval of the Engineer".

SECTION 1.06 SUPERVISION STAFF OFFICES, HOUSING AND FACILITIES

Delete this section and substitute with the following:-

1.06.1 SUPERVISION STAFF OFFICES AND FACILITIES

1. Scope

The works shall consist of the provision of Engineer's Site Offices and facilities either by renting existing building or erection of a prefabricated building or by mobile homes type

at the discretion of the Engineer, including furnishing and maintaining, for the contract duration. Also the provision, installation and maintenance of all services.

2. General Requirements

- 2.1 The office facility shall be suitably insulated from the heat and protected from direct sun-rays through windows. The walls shall be sound insulated to acceptable levels and the general construction and fixtures shall be to the approval of the Engineer. All rooms shall be furnished with new curtains and venetian blinds, light fittings and with new furniture and equipment.
- 2.2 The supervision staff office facilities' doors and windows shall have suitable fly screens. The doors shall be fitted with night latches and keys. Every room shall be adequately air-conditioned (heated in winter and cooled in summer), to the satisfaction of the Engineer. The facilities shall be provided with the required services including a header tank, potable hot and cold water supply, water-born sewage disposal system, drainage, utilities, electric power and lighting, telephone line and telephone extensions in each office if main telephone lines are within acceptable range from the site, otherwise, mobile phones shall be provided for the supervision staff, all to the approval of the Engineer.
- 2.3 The Contractor shall submit for the Engineer's approval working drawings and details relating to the supervision staff office facilities.
- 2.4 Within two weeks from the Order to Proceed, the Contractor shall submit to the Engineer and the Employer catalogues, brochures, specifications and prices, etc. relating to the various required main items of the office furniture and equipment for approval. Details shall be supplied from at least three manufacturers/suppliers unless a particular make is specified to be purchased.
- 2.5 The Contractor shall proceed immediately with the purchase of selected office furniture and equipment and shall arrange for their delivery to the site offices and hand over to the Engineer/Employer.
- 2.6 Site offices and facilities, furniture and equipment including all utilities shall be completed, fully operational and ready for use by the Engineer within 30 days from the Order to Proceed.
- 2.7 Only, all office furniture and equipment shall become the property of the Employer on completion of the Works and handed over to the Employer in good condition.

3. Site for Supervision Staff Facilities

The Contractor shall coordinate with the Engineer for the selection of the site for the supervision staff offices. The Supervision Staff offices shall be detached completely from the Contractor's own facilities.

4. Supervision Staff Offices

- 4.1 The Engineer's site office shall provide a minimum area of 150 square meters.

4.2 Site offices shall include at least four rooms, a conference room, two toilet rooms and a kitchen and shall conform to the general requirements.

4.3 The Contractor shall provide, at his expense, at least one external telephone line and switchboard capable of handling both external and internal connections together with all necessary wiring and equipment. Extensions or external telephone line shall also be provided in the laboratory. In the case of difficulties in obtaining telephone lines, the contractor shall provide mobile phones with the necessary chargers all to the approval of the Engineer.

The Contractor shall provide both the Engineer and the Employer with two mobile phones (one for each) if other ordinary telephone lines are available and being provided as previously mentioned. In case of inavailability of ordinary telephone lines, the Contractor shall provide the Engineer and the Employer with a total of five Mobile Phones to the approval of both the Engineer and the Employer.

The cost of national and local telephone calls from the telephone sets, and the mobile telephone invoices which include the monthly subscription fees and airtime charges (with a maximum of 60 JD per mobile telephone per month) and the provision of telephones shall all be at the Contractor's expense as described in 1.08 hereinafter.

4.4 The Contractor shall furnish, install and maintain the following new furniture and equipment in the facilities. The relevant prime costs inserted in the Bill of Quantity will be used for the provision of these furniture and equipment.

	<u>Item</u>	<u>Quantity</u>
-	Computer and laser printer according to the following requirements:	2
a.	<u>Microprocessor:</u> Pentium III Intel 500 MHz with 512 cach memory	
b.	<u>Memory:</u> 64 MB SDRAM	
c.	<u>Data Storage:</u> 6" G.B. Hard Disk Drive 3.5" Floppy Disk Drive	
d.	<u>Input Devices:</u> Two serial and one parallel parts 101/102 A/E keyboard (win95) Microsoft mouse	
e.	<u>Video and Monitors:</u> AGP Color graphic card 4 MB RAM 15" MAG Monitor	
f.	<u>Features:</u> Mini Tower Case Dust cover for the computer, monitor and keyboard	

h.	<u>Printer:</u>	
	- Laser printer	
	- A4 paper size	
	- 4 MB Ram (min)	
	- Multi media type (paper, envelopes, transparencies, ...)	
	- 600 x 600 Resolution	
	- Control panel and display	
-	Pocket electronic calculator, scientific	6
-	Computer table	2
-	Desk, double pedestal, 150cm x 75cm	8
-	Conference Table	1
-	Typist Desk	1
-	Cupboard with Shelves and locks	4
-	Chair, swivel	6
-	Chair, without arms	18
-	Stool, drafting	1
-	Drafting table with parallel motion tee square	1
-	Table, reference 900mm x 2400mm	1
-	File cabinet, 4 drawer, legal size with lock	6
-	Steel drawing file cabinets capable of storing A1 size drawings in a hanging position	2
-	Storage cabinet 600cm deep by 900mm by 2000mm high with lock	2
-	Bulletin board 1200mm x 2000mm	1
-	Magnetic Whiteboard 1200mm x 12	2
-	Shelving	4
-	Fire Extinguishers 1 kg capacity	5
-	Metal Waste Baskets	6
-	First Aid Kit	2
-	Refrigerator 0.28 cu.m.	1
-	Photocopying machine (Xerox 1038 or similar)	1
-	Drafting instruments (pens, lroy sets, set square, template, erasing machine, etc.)	2 sets
-	Kitchen equipment including gas cooker, electric kettle, crockery and cutlery	As needed
-	<u>Office Supplies</u>	
	Any other items reasonably necessary to the user of the facilities	As needed

The computers shall have legally installed Windows 2000, AutoCAD 14, MS Office and road design & survey software similar to the software used by the Contractor.

1.06.2 SUPERVISION STAFF HOUSING

Provisions of fully furnished, equipped and maintained, rented apartments in the surrounding area of the project for the use of the supervision staff members. Each apartments shall include the minimum furniture, equipment, services and utilities including telephone lines, air conditioning and heating, and shall be subject to the Engineer's approval.

The needed apartments will be:

- 2 bedroom apartments – 2 No.(with a minimum area of 120 square meters each)
- 3 bedroom apartments – 2 No.(with a minimum area of 180 square meters each)

The provisional sum inserted in the Bill of Quantity will be used to reimburse apartments' owners for renting and utility services cost of the supervision staff housing. The utility services

shall include apartments maintenance (of whatever type), water and electricity supply, telephone bills, cooling and heating costs.

1.06.3 MEASUREMENT AND BASIS OF PAYMENT

- (1) Measurement and payment for items 1.06 shall be made as shown in the Bill of Quantities, which prices shall be full compensation for furnishing all necessary items.

SECTION 1.07 FIELD CONTROL LABORATORY

1.07.2 MATERIALS

Add the following at the end of item 2.11:

- (iii) British Standard and other relevant standards, materials manuals and codes of practice referred to in this Contract.

SECTION 1.08 MAINTENANCE OF BUILDINGS AND UTILITY SERVICES

1.08.1 SCOPE

Delete item 1.1 and replace by:

1.1 Supervision Staff Offices and Facilities

Delete Clause 2 and replace by:

2. The work to be done under this section consists of maintaining the offices and facilities as well as maintaining the operation of the internal and external utility systems and providing all necessary services, including periodic cleaning of septic tanks.

The Contractor shall furnish, make arrangement for a carry out customary maintenance and janitorial services for the offices of the Engineer's Representative and his staff. The Contractor shall provide on a continuing basis all supplies and utility services which shall include, but are not limited to, electrical supply, water supply telephone services, gas supply, sewerage and waste disposal, and shall pay all costs of supplies and services.

The services provided shall include the provision of cleaning materials and other necessary supplies. It shall also include the cost of national and local telephone calls from the telephone sets (if any) and mobile telephones invoices which include the monthly subscription fees and airtime charges with a maximum of 60 JD per mobile per month.

The Contractor shall be responsible for the safety and security of the supervision staff offices on site, including provision of watchmen and external lighting at night.

1.08.2 MEASUREMENT

Amend Pay item to read as shown in the BOQ.

**SECTION 1.10 PROVISION OF VEHICLES FOR USE BY
SUPERVISION STAFF**

1.10.1 SCOPE

Delete Clause 1 and substitute by the following:

1. These works shall consist of the purchase and delivery to the site of new motor vehicles of the types and in the number as specified hereunder, including payment of all clearance charges and fees, registration, comprehensively insured for the duration of the contract, and handed over in undamaged condition and fully operational in all respects, for use by the Engineer and his supervision staff. Upon completion of the works the Contractor shall transfer the ownership of the cars from his name to the Employer's name or as the Employer'.
 - a) Two air-conditioned four wheel drive station wagon (2500 cc) vehicles with white number plates equipped with all items required by the Jordan Traffic Department, with the same year model of the Contract award.
 - b) Three vehicles four wheel drive double cabin pick-ups (2500 cc) with white number plates equipped with all items required by the Jordan Traffic Department, with the same year model of the Contract award.

Delete Clause 4 and substitute by the following:

4. The vehicles shall be maintained and served by the Contractor who shall bear all running costs (fuel, oil, washing, cleaning etc.), repair costs, registration renewals cost, comprehensive insurance costs for the whole contract period... etc. and shall be kept at all times in first class condition by the Contractor.

1.10.2 PURCHASE AND DELIVERY OF VEHICLES

Delete Clause 1 and substitute by the following:

1. Within two weeks from the Order to Proceed, the Contractor shall submit to the Employer, catalogues, brochures, specifications and prices, etc. relating to the various types of motor vehicles required. Details shall be supplied from at least three manufacturers unless a particular make of vehicle is specified to be purchased.

Delete Clause 3 and substitute by the following:

3. All vehicles shall be delivered new, clear, registered and insured in the name of the Contractor within two weeks, or as otherwise directed, after selection by the Employer of the types and makes of vehicles required.

In the event of any delay in handing over any vehicles, the Contractor shall immediately provide on a temporary basis at his own expense, acceptable equivalent vehicles in new or near new condition for the sole use of the Supervision Staff. The operating and maintenance costs of all such temporary vehicles shall be paid for by the Contractor.

Upon the request of the Employer or completion of the works, the Contractor shall transfer the ownership of the vehicles to the name of the Employer (with red number plates) and hand over all the vehicles to the Employer immediately.

Add the following at the end of Clause 4.

The cost of changing the status of the Engineer's vehicles upon the request of the Employer or completion of the Contract from white number plates to Government vehicles (red number plates) shall be borne by the Contractor.

1.10.3 MEASUREMENT

Amend Pay items and unit of measurement to read as shown in the BOQ.

SECTION 1.11 FIRST AID CENTERS, ACCIDENT PROCEDURES AND PREVENTION

1.11.4 MEASUREMENT

Delete this sub-section and replace by:

Contractor shall provide one first aid facilities. No measurement or payment shall be made for this work which shall be considered subsidiary to all other pay items in the Bill of Quantities.

SECTION 1.13 MEASUREMENT PROCEDURES

1.13.8 EARTHWORK VOLUME MEASUREMENTS

Delete Clause No. 6 and replace by:

6. The Contractor shall use personal computers in the computation of earthworks. The Contractor shall submit for the Engineer's approval details of the computer hardware, the earthwork software programs, the input and output, and a complete summary of the methods and procedures used. The continuance of such approval is contingent upon satisfactory results being achieved. If results are not as represented or are otherwise deemed unsatisfactory, the Contractor shall re-compute the earthwork quantities by the cross section method.

Add and amend as follows:

- Immediately following the order to proceed, the Contractor shall take jointly with the Client and the Engineer cross-sections along the proposed road centerline to serve as the basis of earthwork volume measurements.
- The cross-sections shall cover an area of at least 30m each side of the centerline. However, where required or directed, the Contractor shall increase the width of the area covered by the survey sufficiently to show the full extent of the proposed earthworks (cut and fill) and any other works to be executed under this Contract, and/or to establish the stability of the proposed earthwork slopes.
- Each section shall be identified by its chainage, and coordinates (X, Y, Z) in the National Grid system and description shall be given for all the survey points.
- Cross-section shall be plotted by the Contractor at an approved scale by the Client and the Engineer and delivered in AutoCAD files.
- Computer diskettes or CD's shall be delivered containing the above survey work along with the files containing the listing of the surveyed points (point number easting, northing, elevation and description) in an approved format suitable for input into AutoCAD and SOFTDISK or any other approved software.
- All the survey works shall be done by a Total Station, or, alternatively the angles shall be measured by a theodolite T2 (or similar) and the distance by an electronic instrument (Distomat) all subject to the approval of the Engineer.

Add the following Section:

SECTION 1.15 GEOTECHNICAL INVESTIGATION

1.15.1 SCOPE

The Contractor shall carry out Geotechnical Investigation as follows

1. Confirmation Boring Survey
2. Seismic prospecting Investigation

1.15.2 QUALITY ASSURANCE

The Geotechnical Investigation shall be carried out by the approved and licensed agency have specialized in this work for at least 10 years and having preformed satisfactorily work of this type.

1.15.3 SUBMITTALS

1. The Contractor shall submit detail information of proposed Geotechnical Investigation Agency for the Engineer's approval.
2. The Contents and format of Geotechnical Investigation Report shall be agreed with the Engineer prior to commencement of the Investigation.
3. The Contractor shall submit schedule of Geotechnical Investigation with detailed description of the proposed sequences for the Geotechnical Investigation.
4. The Contractor shall submit five (5) copies of Geotechnical Investigation Report to the Engineer.

PART (2): EARTHWORKS

SECTION 2.01 CLEARING & GRUBBING

2.01.1 Scope

Add and amend as follows:-

No clearing and grubbing operations shall commence before the surveys of the existing ground profiles have been carried out jointly and the plotted records have been approved by the Client and the Engineer. The clearing and grubbing shall include also removal of potentially falling rocks that might endanger the road both during and after construction. The Rock-Fall Zones are clearly stated in the design drawings but might be revised, extended and new ones added upon the request of the Engineer. Removal of those potential falling rocks shall not be limited to the ROW. Safety of the road and its users during and after construction shall govern.

SECTION 2.02 REMOVAL OF OBSTRUCTIONS AND UTILITIES

2.02.1 SCOPE

Add and amend as follows:

1. It is the Contractor's responsibility to liaison and to cooperate with the Official Authorities for the removal of any properties which fall within the limits for the right-of-way (ROW) and/or nearby areas as per the Engineer's request. The obstructions shall include, but not be limited to culverts, retaining walls, wing-walls, grouted rip-rap ditches and slopes, fences, small buildings ... etc.
2. The Contractor should get familiar with all obstructions and utilities by site visits and coordination with utility owners.

SECTION 2.03 HIGHWAY EXCAVATION

2.03.2 CONSTRUCTION

Add and amend as follows:

Prior to any excavation work commencing, the Contractor shall conduct at his expense a comprehensive series of trial borings or trial pits along the highway reserve to obtain samples and carry out all testing necessary to determine the locations and quantities of material available for use in the selected unclassified excavation meeting the requirements of Article 2.06 for placing embankment.

The details of all borings or pits, the characteristics of all materials encountered and the results of all tests shall be submitted to the Engineer before any excavation work may commence. Based on this information the Contractor shall submit to the Engineer for approval his proposals for his methods and programme for winning the required quantity of each material and handling it into the completed works. This shall be done in full coordination with the Contractor's additional Geotechnical obligations mentioned in the drawings and other contract documents.

The Contractor shall determine the total quantity of embankment required in the finished works as shown on the drawings. He shall select from the unclassified excavated volumes materials designated by the Engineer as best of the available for the purpose.

The Contractor shall stockpile in locations all to the approval of the Engineer. He shall rework such stockpiled material into the works in accordance with his approved programme submitted under relevant clauses of the General conditions of contract. No separate measurement or payment will be made for this work which is deemed to be included in the rates and prices for the item of work included in the Bill of Quantities.

2.03.3 MEASUREMENT

Replace this Sub-Section by:

1. All excavated material (to the top of subgrade) of whatever type shall be measured as “unclassified” which shall be deemed to include all materials encountered of any nature, including silts, clays, sand, gravel and granular materials, fractured, jointed and solid rock, unsuitable material, existing pavements, and curbs.
2. Highway Excavation (including side ditches, channels, excavation of diversion channel trenches, steps used for side wadi stabilization and additional steps if required near stilling basins and drop inlets) shall be measured by cubic meter (cu.m.) of material excavated, hauled away and either wasted, stockpiled, or deposited on or in vicinity of highway embankment areas, completed and accepted. Measurements shall be of volumes computed from the cross sections shown on the Drawings and the original ground elevations taken jointly by the Consultant and the Contractor before clearing and grubbing operations. These excavations shall be referred to as Unclassified Highway Excavation.
3. Excavation of Unstable Material (from areas outside the ROW) where indicated or directed shall be measured as Unclassified Highway Excavation. Measurements shall be volumes computed from surveyed cross sections of original and final ground elevations.
4. Rock blasting, back of over-breakage, excavation required for the drainage of excavation areas, obliteration of disused roadways, and other ancillary excavation Works shall not be measured for direct payment, but shall be considered as subsidiary Works the costs of which will be deemed to be included in the Contract prices for Pay Items.

Pay Items

Unit of Measurement

- | | | |
|-----|---------------------------------|--------------------|
| (1) | Unclassified Highway Excavation | Cubic Meter (cu.m) |
|-----|---------------------------------|--------------------|

SECTION 2.06 EMBANKMENT CONSTRUCTION

2.06.3 CONSTRUCTION

3. Foundation Preparation

Add and amend to Item No. 3.1 the following:

The top asphalt layer/s of the existing road shall be excavated, removed and treated as unsuitable material covered in (SECTION 2.03 HIGHWAY EXCAVATION). The existing pavement layers underneath the existing top asphalt layers shall be plowed, scarified or otherwise broken up regardless of the height of the embankment to be placed thereon. Existing asphalt shall not be removed and as per the Engineers request if only additional asphalt layer/s shall be applied directly on top of it. This might be applied only at intersection areas both at the start and the end of the project.

SECTION 2.07 SUBGRADE CONSTRUCTION AND TOPPING

2.07.3 CONSTRUCTION

1. Subgrade in Cut

Delete Items No. 1.2 and 1.3 and replace by:

- 1.2 Construction should be carried out in accordance with the typical cross sections shown on the drawings.

2.07.4 MEASUREMENT

Delete the Pay Items and replace by:-

<u>Pay Item</u>	<u>Unit of Measurement</u>
(1) Sub-grade layer (topping)	Cubic meter (cu.m)

SECTION 2.09 EXCAVATION AND STRUCTURAL BACKFILL

2.09.4 MEASUREMENT

- Add and amend to Clause No. 3 the following:-

energy dissipaters shall include check dams – concrete or stone -, loose and mortared stone rip-rap, stilling basin, drop inlet, ditch inlet and all types of catch-pits.

- Modify Clause No. 4 to read as follows:

4. Structural Excavation shall be measured by cubic meter of material excavated for the major structures other than those specified in Clause 3 above, hauled away and disposed of as directed, or stockpiled on or in the vicinity of the Works, and the excavated areas back-filled, completed and accepted.

-
- Amend Clause No. 6 to read as follows:

6. Sub-excavation of unsuitable material after the removal of all unclassified highway excavation, hauled away and disposed of as directed, and back-filling with approved material of the excavated areas shall be measured and paid for as Unclassified Structural Excavation.

- Delete the Pay Items and add the following Pay Item:

<u>Pay Item</u>	<u>Unit of Measurement</u>
(1) Unclassified Structural Excavation (for structural element)	Cubic Meter (cu.m)