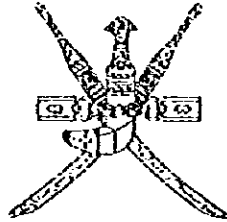



**SULTANATE OF OMAN**  
**MINISTRY OF COMMUNICATIONS**  
**DIRECTORATE GENERAL OF ROADS**



**CONSTRUCTION OF**  
**FLYOVER**  
**AT**  
**AQR**  
**BATINAH HIGHWAY**  
**TENDER DOCUMENTS**

**VOLUME 1**  
**SPECIFICATION**  
**AND**  
**BILL OF QUANTITIES**

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## **SPECIAL SPECIFICATION**

The Special Specification stipulated in these Tender Documents defines, modifies, extends, substitutes or deletes the relevant portions of the Sultanate of Oman General Specification for Roads, April 1994 and Highway Design Manual February 1994, referred to in the Prime Document.

The General Specification and Special Specification constitute the applicable specification referred to in this Tender.

Section and clause numbers in the Special Specification are related to those stipulated in the General Specification for Roads.

## **BRIEF DESCRIPTION OF WORKS**

The Project comprises of undertaking all works and services in connection with the Construction, Completion and Maintenance of Flyovers at Aqr the Batinah Highway. The Contractor is required to carry out all works, including surveying, setting out, excavations, temporary works, permanent works, erections, finishing, installation of ancillary facilities and maintenance for 1 year from the date of issue of the Certificate of Completion.

The Project includes construction of flyover bridges and embankment to bridge approaches and rampways, reconstruction of some affected service roads, removal and relocation of the facilities and some ancillary works.

The salient feature of this project is the construction of the proposed facilities over the existing highway. Special attentions are therefore required to minimize the interference with the operation of the highway and other human activities around the site(s). Contractor shall pay particular attentions to safety on site; such as traffic control or diversion, warnings during night work, and other traffic safety measures to avoid any accidental hazards as a result of the construction activities, especially during erection of structural members, .



**SECTION 100 GENERAL****104 ENGINEER'S OFFICE****104.1 ENGINEER'S OFFICE**Specification

This item shall consist of the provision, erection, furnishing, maintenance, including consumable items for prefabricated unit(s) or rented building for Engineer's Office as approved by the Engineer for the sole use of the Engineer and his staff together with the provision of installation and maintenance of services, including 2 local telephone lines and fax machine. It also includes replacement of any item provided in this section.

The Engineer's facilities shall consist of:

Engineer's office, 96 sq.m (Type A)	1 No.
Store for Survey Equipment, 9 sq.m	1 No.
Shaded Carport for 6 vehicles	1 No.
Fire Extinguisher	1 No.

The prefabricated unit's or rented building, furniture, equipment and service shall be made available in full working order within the time period stipulated in 'Appendix to Form of Tender' and shall continue to be so available during the progress of the work until the Certificate of Completion for the whole of the works has been issued or as directed by the Engineer.

Description

The office shall be air conditioned, furnished and with all the necessary utilities, i.e. power, water, sewerage, lighting and gas and waste disposal facilities and completely maintained during the contract period as approved by the Engineer.

The Contractor shall provide office for occupancy before start of construction, for the sole use of the Engineer. The office will have a minimum of 5 rooms and store and a floor area of not less than 96 square metres. Typical plan is attached as Figure 1. The Contractor shall provide adequate office furniture including filing cabinets, storage cupboards, bookshelves, adequate supplies of pencils, pens, drawing paper, writing pads, stationery and similar expendable materials etc.

The Contractor shall provide office furnishings equipment at least equal to the following list and as per approval of the Engineer. All furnishings and equipment are for the exclusive use of the Engineer.

(i) Resident Engineer's Office

Desk 150 cm x 80 cm with swivel chair.	1 Set.
Visitors chairs	2 Nos.
Conference Table, 240 cm x 120 cm with 8 chairs	1 Set.
Filing cabinet, 4 drawers	1 No.
Bookcase with 4 shelves	1 No.
Air Conditioner, 18000 B.T.U.	1 No.
 (ii) <u>Typist/Record Keeper</u>	
Ordinary Desk, 137 cm x 60 cm.	2 No.
Chair	2 Nos.
Filing Cabinets, 4 drawers	1 No.
Bookcase with 4 shelves	1 No.
Air conditioner, 18000 B.T.U.	1 No.
 (iii) <u>Supervisory Staff Office (3 rooms)</u>	
Engineer's Desk, 137 cm x 60 cm with chair	1 set each
Utility tables, 100 cm x 150 cm	1 set each
Visitors chair	2 No. each
Filing cabinet, 4 drawers	1 No. each
Plan file with 5 drawers	1 No. each
Plan stick file	1 No. each
Air Conditioner, 18000 B.T.U.	1 No. each
Word Processor (Computer)	1 No.
Printer	1 No.
Scientific Calculators	3 Nos.
A3 size paper copier	1 No.

The Contractor shall also provide kitchen/pantry and toilet facilities with Engineer's office, for the sole use of the Engineer's Staff, the following:

(i) <u>Kitchen/Pantry Utilities</u>	
Refrigerator, 350 litres.	1 No.
Utility table, 100 cm x 150 cm.	1 No.
Cupboards	1 No.
Electric Kettle	1 No.
Drinking Water	as required.
Cups, Saucers, Tea Spoons (12 pcs.)	1 set.
Cutlery (12 pcs).	1 set.
Drinking glasses (12 PCs).	1 No.
Chair/stall	1 No.
Exhaust Fan	1 No.
Air Conditioner, 12000 B.T.U.	1 No.
Sink with hot and cold water supply	1 No.
Tea Towels	10 Nos.

Waste Baskets	2 Nos.
Exhaust Fan	1 No.
<b>(ii) <u>Toilet Facilities (Type A)</u></b>	
European WC Suite	1 No.
Wash basin with cold and hot water supply	1 No.
Roller Towel Fitting	1 No.
Toilet paper roller fitting	1 No.
Mirror	1 No.
Exhaust fan	1 No.

In addition, the following manuals (latest edition) are to be supplied.

- ASTM Volume relevant to the project.
- AASHTO volumes relevant to the project.
- ACI volumes relevant to the project.
- BS Specification relevant to the project.
- Standard documents for Building and Civil Engineering Works, third edition July 1981, prepared by the Ministry of Finance and Economy, Financial Affairs, Sultanate of Oman.

Upon completion of project, the above documents/standard specification shall revert to the Contractor.

#### Plans, Specification and Availability of Office

In case of prefabricated unit(s), it shall be constructed of such materials and furnishings which shall be approved by the Engineer. The foundation shall be taken down to solid bottom and the finished floor level shall be at least 60 cms. above natural ground level. All floors shall have PVC tiles laid wall to wall as approved by the Engineer.

The Contractor shall furnish his plans and specification for these prefabricated units not later than (one) 1 week after the signing of the Contract and shall complete and make ready for occupation all these structures within (three) 3 weeks after receipt of Engineer's written acceptance of such plans and specification. If the completion is not effected within the specified time, the Contractor shall provide at his own expense adequate accommodation as approved by the Engineer until occupancy is possible.

No separate payment will be made for providing the Engineer and his staff with temporary offices as specified above, the cost of which will be deemed to be included in the items of mobilisation.

The Contractor shall provide adequate vehicular access to the offices.

Upon completion of the contract or at such time as the Engineer deems that it is no longer required the ownership of the prefabricated unit(s), furnishings and equipment shall return to the Contractor whose responsibility will be to remove them from the site in accordance

with Clause 33 of Conditions of Contract.

### 104.3 SURVEYING INSTRUMENTS

The surveying instruments to be supplied and maintained for the use of the Engineer include the following:

Sr. No.		Quantity
1	Suitable Theodolite centesimal system, with 4 decimal partition complete with adequate tripod	1
2	Suitable high precision automatic level complete with tripod	1
3	EDM measuring equipment, 2000 m minimum systems, complete with battery, battery charger, cabling, three (3) reflectors, related tripods and accessories to the satisfaction of the Engineer	1
4	Levelling staves 4 m with levelling plates, levelling bubbles	2
5	Fiber tapes 30 m in case	2
6	50 m steel tape	2
7	Steel pocket tapes, 5 m long	4
8	Surveying umbrella	1
9	Ranging rods, 2.5 m long	4
10	Printed level books	10
11	Field books	5
12	Water Cooler jug	1
13	String lines, 50 m long	2

### 104.5 ENGINEER'S ACCOMMODATION

#### Specification

This item shall consist of the provision, erection, furnishing and maintenance, including consumable items for prefabricated unit(s) or rented building for housing accommodation as approved by the Engineer for the sole use of the Engineer and his staff together with the provision of installation and maintenance of services. It also includes replacement of any item provided in this section.

The Engineer's accommodation shall consist of:

2 Bedroom unit, each 96 sq.m. (Type B)	1 No.
Dining/Kitchen Block (type D)	1 No.
2 Bedroom Unit (Type C)	4 Nos.
Fire Extinguisher for each type provided	1 No.

The prefabricated unit(s) or rented building, furniture, equipment and services shall be made available in full working order within the time periods stipulated herein, and shall continue to be so available during the progress of the work until the Certificate of Completion for the whole of the works has been issued or as directed by the Engineer.

The Contractor shall be responsible for the security of the buildings and its contents at all times.

#### Description

The accommodation shall be air conditioned, furnished with all the necessary utilities, i.e. power, water, sewerage, lighting and gas and waste disposal facilities, completed and maintained all as approved by the Engineer, of the types as follows:

#### a) Two Bedroom Unit Type "B"

Unit type B shall consist of 2 bedrooms, a sitting and dining room, a bathroom, a kitchen and having 96 sq.m. minimum overall floors space. See typical plan attached as figure 2.

All plans of standard fixtures and furniture shall be approved by the Engineer. No supply of standard fixtures and furniture shall be made without the Engineer's prior approval in writing. Each of these units shall be provided with single shaded carpet.

The Contractor shall provide all furnishings and equipment at least equal to the following list and as per approval of the Engineer in the two bedroom unit.

Dressing table	1 No.
Twin bed with side table	1 No.
Single bed with side table	2 Nos.
Chair straight back	4 Nos.
Almirah cum wardrobe	2 Nos.
Cupboard for dining room	1 set
Shelving and tables for kitchen	as required.
Air conditioners (24000 B.T.U.)	2 Nos.
Air conditioners (18000 B.T.U.)	1 No.
Refrigerator 350-400 litres	1 No.
4 plates cooking range	1 No.
Dining Table with six chairs	1 set
5 piece sofa set with central table set	1 set
Pressure cooker	1 No.

Kettle (coffee/tea)	1 No.
Set of pans (4 pans)	1 set
Set of kitchen knives and cooking spoons	1 set
Dinner set including tea set for eight persons	1 set
Cutlery for 6 persons	1 set
Mattresses	3 set
Bed sheets	6 Nos.
Electric Toaster	1 No.
Electric Kitchen set	1 set
Pillows	6 Nos.
Pillows covers	12 Nos.
Center table set	1 set
Blankets	3 Nos.
Portable vacuum cleaner	1 No.
Washing machines	1 No.
Electric iron	1 No.
Curtains for windows	4 Nos.
Table lamps	4 Nos.
Water set, 13 pieces	1 set

b) Hostel (Type C & D)

The hostel accommodation will comprise of 4 portacabins or rented building(s) of the type shown in Figure 3. The locations of the portacabin(s) will be as directed by the Engineer. The dining/kitchen unit(s) consist of a kitchen, a dining room, a store, a bathroom, a laundry and having 100 sq.m. minimum overall floor space. See typical plan attached as Figure 4.

The supervisory staffs accommodation/hostel shall be provided with covered carports for 6 vehicles. The above accommodation shall have electricity, water supply and sanitary facilities. Contractor shall provide all furnishings and equipment at least equal to the following list and as per approval of the Engineer in the hostel.

Beds w/side table and lamps	8 Nos.
Dining set with eight chairs	1 Set
Couch set	1 Set
Center tables set	1 Set
Electric kitchen set	1 Set
Easy chairs	8 Nos.
Almirah cum wardrobe	8 Nos.
Kitchen shelving tables etc.	as required.
Refrigerator 400 litres	1 No.
4 Plate cooking range	1 No.
Airconditioner, 18000 B.T.U.	11 Nos.
Deep freezer, 300 litres	1 No.
Pressure cooker	1 No.
Electric kettle	1 No.
Set of pans (6 pans)	1 set

Set of kitchen knives and cooking spoons	1 set
Dinner set, including tea set for 12 persons.	1 set
Cutlery for 12 persons	1 set
Water set for 12 persons	1 set
Mattresses	10 Nos.
Bad sheets	16 Nos.
Pillows	8 Nos.
Pillow covers	16 Nos.
Curtain for windows	16 set
Blankets	8 Nos.
Portable vacuum cleaner	1 No.
Washing machine	1 No.
Electric Iron with stand	1 Set

In addition to the above facilities, the Contractor shall also provide the following:

i) Kitchen Facilities for Types B & D

Sink with hot and cold water supply	1 No. each
Towels	5 No. each
Waste baskets (each room)	1 No.
Exhaust fan	1 No. each

ii) Toilet Facilities for Types B, C & D

European WC suite	1 No. each
Wash basin with hot and cold water supply	1 No. each
Roller towel fitting	1 No. each
Toilet paper roller fitting	1 No. each
Mirror	1 No. each
Exhaust fan	1 No. each

Plans, Specification and availability of accommodation

Engineer's housing accommodation shall be of prefabricated type or rented buildings and provided with suitable compound fence and shall be constructed on sites as approved by the Engineer.

In case of prefabricated unit(s), it shall be constructed of such materials and furnishings which shall be approved by the Engineer. The foundation shall be taken down to solid bottom and the finished floor level shall be at least 60 cms. above natural ground level.

The Contractor shall provide the prefabricated unit(s) or rented building by end of the mobilisation period to be approved and accepted by the Engineer, if the completion is not effected within the specified time, the Contractor shall provide at his own expense adequate accommodation as approved by the Engineer until occupancy is possible.

Upon completion of the Contract or at such time as the Engineer deems that it is no longer

required the ownership of Engineer's accommodation shall return to the Contractor whose responsibility will be to remove them from the site (if required) in accordance with Clause 33 of Conditions of Contract.

#### 104.7 LABORATORY AND ITS FURNISHINGS

##### Laboratory

The following clauses describes the type of Site Laboratory to be provided by the Contractor together with defining the responsibilities of the Contractor for such laboratory.

Whenever the term "Laboratory" is used, it shall include the building, utilities, sampling and testing equipment hereinafter detailed.

##### Type of Laboratory

Laboratory shall be stationary or mobile and located within the vicinity of Engineer's office. It shall be constructed of weather-proof prefabricated construction may be rented subject to the approval of the Engineer and have a floor area of not less than 100 square metres.

On completion of the project, or at such time as the Engineer deems that it is no longer required, the Laboratory and furnishing and equipment shall be reverted to the Contractor.

##### Use of Laboratory

The Engineer shall have exclusive use of the Laboratory at all times during the Contract period. When so ordered by the Engineer, the Contractor shall, at his own expense, provide one (1) technician and three (3) skilled labourers to perform sampling, testing and related duties under the direct supervision of the Engineer. The Laboratory provided shall not be used for other Contracts without written permission of the Engineer.

##### Details of Laboratory

The Contractor shall provide the field laboratory by the end of the mobilisation prior and to be approved and accepted by the Engineer.

The laboratory building shall have a net area of approximately 100 sq.m. divided into rooms with net areas as follows:

a)	Office	15 sq.m.
b)	Asphalt Laboratory	25 sq.m.
c)	Soils and Concrete Laboratory	25 sq.m.
d)	Washroom with Shower, Wash Basin and Mirror	7.5 sq.m.
e)	Store room with shelving	20 sq.m.

Concrete floors of approved quality shall be provided in the laboratory.



Services

All rooms except the store room, washroom and toilet shall be air conditioned to maintain a temperature as specified and or approved by the Engineer.

The Contractor shall provide sufficient power supply for laboratory requirements. The power supply shall be 220 volts 50 cycles, unless otherwise necessary to fit the equipment. Sufficient outlets shall be provided in the laboratory rooms.

The Contractor shall supply fuel-gas (natural or artificial) for ovens, burners etc. where required. All rooms shall be provided with standard office lighting of the fluorescent tube as approved by the Engineer.

Concrete pedestals for special equipment will be constructed as specified by the Engineer. All rooms shall have doors fitted with locks and keys. The water supply shall be maintained by an elevated or pressure tank with a capacity of 4500 litres. Water taps shall be provided in the aggregate testing room.

The toilet shall be connected to a septic tank of adequate capacity for 10 people with a 10 cm sanitary pipe and ventilation stack. A telephone shall be installed in the office.

Furnishings

The Contractor shall provide office furnishings at least equal to the following list. Substitution of type may be made only upon approval of the Engineer. All furnishings and equipment shall be for the exclusive use of the Engineer.

a) Laboratory Office

Filing cabinet 4 drawers	1 No.
Bookcase with 4 shelves	1 No.
Visitors chairs	2 Nos.
Air conditioner, 1800 B.T.U.	1 No.
Engineer's desk, 135 cm x 60 cm. with chair.	1 No.
Work tables, heavy duty, 1.5 x 2.5 m or as directed by the Engineer	2 Nos.
Chairs	2 Nos.
Plan file, 3 drawers	1 No.
Scientific calculator, programmable	1 No.
Air-conditioner, 24000 B.T.U. each.	2 Nos.
Fire extinguisher.	1 No.

Work counters at least 10 metres long along the walls with one stainless steel basin and water tap. Cabinets with shelves shall be under the counters. Location will be as directed by the Engineer.

b) Storage

Shelving as directed by the Engineer.

#### Approval of Laboratory

Prior to the start of work, the Engineer shall inspect the proposed laboratory to ensure its compliance with these specification. Should the Contractor fail to comply with these specification at any time during the Contract period, the Engineer may order any or all of the following:

1. Stoppage of all work until the specification have been complied with.
2. Stoppage of any portion or phase of the work until the specification have been complied with.
3. Sampling and testing to be performed at any other laboratory designated by the Engineer with such fees and charges to be deducted from any amounts due to the Contractor.

#### Testing Equipment, Test and Specification

The Contractor shall furnish and maintain the laboratory equipment, apparatus and supplies necessary to permit execution of all standard tests required by the Specification for the quality control of the executed works. The Contractor shall submit to the Engineer for his approval within (15) days after signing of Contract a complete listing of the equipment, apparatus and suppliers he proposes to furnish for the laboratory. The list shall include the manufacturer's name and descriptive literature.

The equipment apparatus and supply of materials for the laboratory shall permit the execution of all AASHTO and / or ASTM standard tests for soils, aggregates, bituminous materials and concrete as required by General and Special Specification.

#### Maintenance of Laboratory

The Contractor shall maintain the laboratory building, utilities, laboratory testing equipment and testing equipment for Field Control in the satisfactory working condition at all times to enable the Engineer for testing the material and workmanship of the works during the construction time. Whenever required, damaged testing equipment shall be replaced by the Contractor and consumable goods such as filter paper, trichlorethylene, speedy moisture reagent, S.E. stock solution etc. shall be supplied in sufficient quantities when ordered by the Engineer for the sole use of testing the construction works. All operational expenses shall be met by the Contractor.

#### Sampling and Testing

It shall be the responsibility of the Contractor to perform sampling and testing under the direct supervision of the Engineer, as and when required. The samples shall be collected/transported to the laboratory by the Contractor at his own cost.

Upon the completion of the project, laboratory and its furnishings shall become the property of the Contractor.

## **106 CONTRACTOR'S COMPOUND**

### **106.1 MOBILISATION AND DEMOBILISATION**

The Contractor shall mobilise all the necessary equipment, plant, material and personnel to the location approved by the Engineer to be used as the Contractor's site compound and shall substantially complete the construction of the site offices, stores, sheds, workshops, accommodation etc. by the end of the specified mobilisation period.

At the end of the construction period, the Contractor shall, with the agreement of the Engineer, remove all equipment, plant, site camp surplus material and personnel off the site compound, clean and restore the ground to its original character all to the satisfaction of the Engineer and the Employer. Unless otherwise stipulated any permanent buildings that the Contractor may build for his camp(s) on government land shall if desired by the Engineer and upon the completion of the works, become the property of the employer and shall be handed over in good condition unfurnished with all utility installations complete in place.

#### **CONTRACTOR'S CAMP FACILITIES**

The Contractor shall provide a temporary, weather tight site office for his own use complete with facilities for filing, drawings, specification, correspondence etc. and other appurtenances necessary for proper execution of the work. He shall also make his own provision for suitable accommodation and transportation of his personnel his workshop and all other elements of his camp(s) and shall provide all necessary power, water, sewerage, lighting and all other facilities necessary for his personnel, equipment, material and all other operations of his camp(s).

The Contractor's camp shall include an air conditioned clinic adequately furnished (including a refrigerator), provided with first aid and other medicines normally required on camp sites and operated by a qualified person approved by the Ministry of Health and the Engineer.

The location of the Contractor's camp(s) shall be at location(s) designated and approved by the Engineer. The Contractor shall be responsible for making all arrangements and payments in respect of any land required for the sitting of his camp(s).

The Contractor shall be paid a monthly payment for his camp as quoted by him for the corresponding rate in the Bill of Quantities (item 106.2, Maintenance of Contractor's compound) till the completion of whole of the works inclusive of works instructed as variation order and Additional works, if any. This payment shall be deemed to cover all costs related to the provision, running and maintenance of the Contractor's camp.

## **107 MAINTENANCE AND PROTECTION OF TRAFFIC**

Considering importance of maintaining the traffic on the Batinah Highway, temporally carriageway during construction works for public use shall be maintained properly. This temporally carriageway principally shall be constructed out side of bridge and retaining wall construction site.

The Contractor shall prepare a plan for the maintenance and protection of traffic in accordance with the Standards and regulations of Royal Oman Police (ROP), concerned authorities (if required) and Ministry of Communications, showing details of detours, locations of different types of signs and flashing signals, lights by night, flagmen, barricades, torches etc. and get the plan approved from the R.O.P. and concerned authorities (if required) and shall provide, erect and maintain all the facilities in accordance with the approved plan. He will remove all the above facilities after they are no longer required subject to the approval from the Engineer, R.O.P. and the concerned authorities at no additional cost.

The payment shall be full compensation for detours, handling of traffic during construction, for the provision and maintenance of barricades, signs, flares, torches, flagman, flashing signals and all other items necessary for proper completion of the works to the satisfaction of the concerned authorities. This item shall be paid as lump sum against BOQ item 107.1 over the construction period.

#### **108 PROGRESS PHOTOGRAPHS**

The Contractor shall supply colour photographs of size 15 cm x 10 cm, glued on an A-4 size paper with its corresponding caption, 6 photographs per set, complete with negative, for each month throughout the Contract period. These shall record the progress of the work during the month.

The name of the Project  
Chainage or other location data  
Type of work  
Serial number of the photographs  
Date of photography

#### **109 SIGN BOARDS**

Further to the General Specification, the Contractor shall provide Two (2) wooden sign boards, details of Contract Sign - Boards are included in Figure - 5, Page 23.

#### **110 COMMEMORATIVE PLAQUE AND OPENING CEREMONY**

##### **110.1 SUPPLY AND ERECTION OF COMMEMORATE PLAQUE**

Delete this Claus entirely in the General Specification for Roads, Sultanate of Oman, April 1994, and substitute with:

The Contractor shall erect one (1) Commemorative Plaque with a platform, detail as shown in Figure 6, page 24. The size of the Carrara Marble Plaque with Arabic inscription and Khanjar Emblem as shown in the drawing shall be 1.45 m. x 1.5m. x 30 mm. thickness. The location shall be at place designated by the Engineer and agreed with the Employer and Wali of the Wilayat.

The cost of the Commemorative Plaque shall deemed to include the platform erection, materials, and all related items necessary for the completion of the works, accepted and approved by the Engineer.

#### 110.2 OPENING CEREMONY

In addition to Clause 110.2 of the General Specification for Roads, Sultanate of Oman, April 1994, the Contractor shall provide, supply and erect a canvass tent, complete with accessories and posts, enough to cover the area of the designated ceremonial ground. All the works completed will be to the satisfaction and approved by the Engineer.

The cost of the Tent shall deemed to be included at the Opening Ceremony Lump Sum in the Bill of Quantities.

#### 113 AS BUILT DRAWINGS

Further to Clause 113.1 of the General Specification, the Contractor shall keep accurate records of executed work during the Contract period. The Engineer shall, at any time during the Contract, have the right to inspect these records and check that they are correct and up to date. Service drawings shall be colour coded.

The Contractor shall produce a sample of a finished drawings for the approval of the Engineer, and the approved drawings will be submitted with the Final Accounts within three(3) months from the last date of the construction period.

No separate payment shall be made for preparation and producing "As Built Drawings". The cost shall be considered subsidiary to other items of B.O.Q.

**SECTION 200 EARTHWORKS**

**201 CLEARING AND GRUBBING**

In addition to Clauses of the General Specification for Roads, Sultanate of Oman, April 1994, regarding removal of trees which have trunk diameter 300 mm or greater inside the construction limits, the Contractor shall remove and trans-plant the trees which have trunk diameter less than 300 mm, in case they were planted previously along the highway as landscaping works.

Also the Contractor shall remove and store the existing steel safety barriers along median side of the carriageway in the construction limits, and shall place along median side of the proposed flyover carriageway in embankment sections after completion of the said section.

**SECTION 500 CONCRETE AND CONCRETE STRUCTURE****502 CONCRETE MIXES**

In addition to the concrete class prescribed in Table 5.3: Concrete Classes of the General Specification of Roads, Sultanate of Oman April 1994, the Class 40 Concrete which is prescribed in the following table shall be added.

Class	Maximum Water Cement Ratio	Characteristic strength (N/mm <sup>2</sup> )		Normal Maximum size of Aggregate	Minimum Cement Contents (kg/m <sup>3</sup> )
		cylinder	cube		
40	0.45	(mm) 40	50	20	450

The Contractor shall test the concrete of the said class prior to the actual applications and shall get an approval of the Engineer.

Each concrete class shall be properly applied to the structure types as follows:

- Class 16/20 concrete shall be used for blinding and masonry works.
- Class 24/20 concrete shall be used substructure, retaining wall, box culvert
- Class 32/30 concrete shall be used floor slab, cross beam, ferro guard & parapet cast in place concrete pile
- Class 40/20 concrete shall be used only for prestressed concrete girder.

## **SECTION 1700 UTILITIES**

### **1701 UTILITIES**

In addition to clauses of the General Specification for Roads, Sultanate of Oman April 1994, the Contractor shall locate, protect, uphold, temporarily divert if necessary, and maintain all pipes, ducts, drains, sewers, service mains, overhead or underground electrical/telephone cables, etc., during execution of the works. The Contractor shall make good any damage to existing service and/or property, and to reinstate the same at his own expense to the satisfaction of the Engineer.

Existing services may not be fully shown on the drawing and the Contractor shall liaise with the relevant authorities to determine the exact nature and full extent to such services which require protection and maintenance.

Approval shall be obtained a minimum of two weeks in advance of any planned interruption of service.

Ministry of Electricity & Water and GTO regulations require certain works to be carried out by specialist Contractors approved by them and it is the responsibility of Contractor to establish the extent of such work. Contractor will be deemed to have allowed in their rates against the various items of work for employing with MEW and GTO regulations and where necessary, for employing MEW and GTO approved Contractors for such specialist works.



**NOTE:**

1. THIS SKETCH IS INDICATIVE ARRANGEMENT, ONLY DETAIL DRAWINGS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING OF UNITS.
2. ALL DOORS (D) AND WINDOWS (W) SHALL BE OF SIZES APPROVED BY THE ENGINEER.

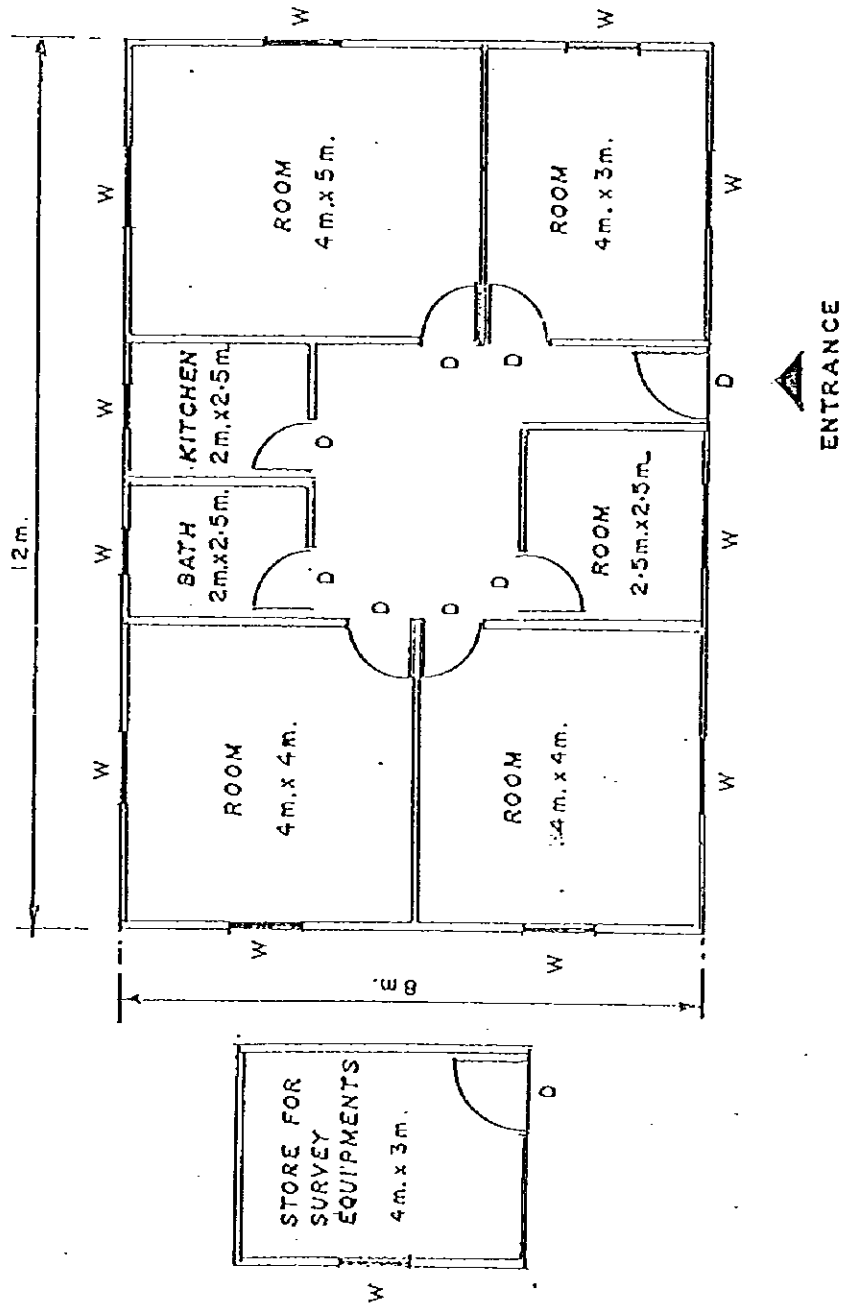
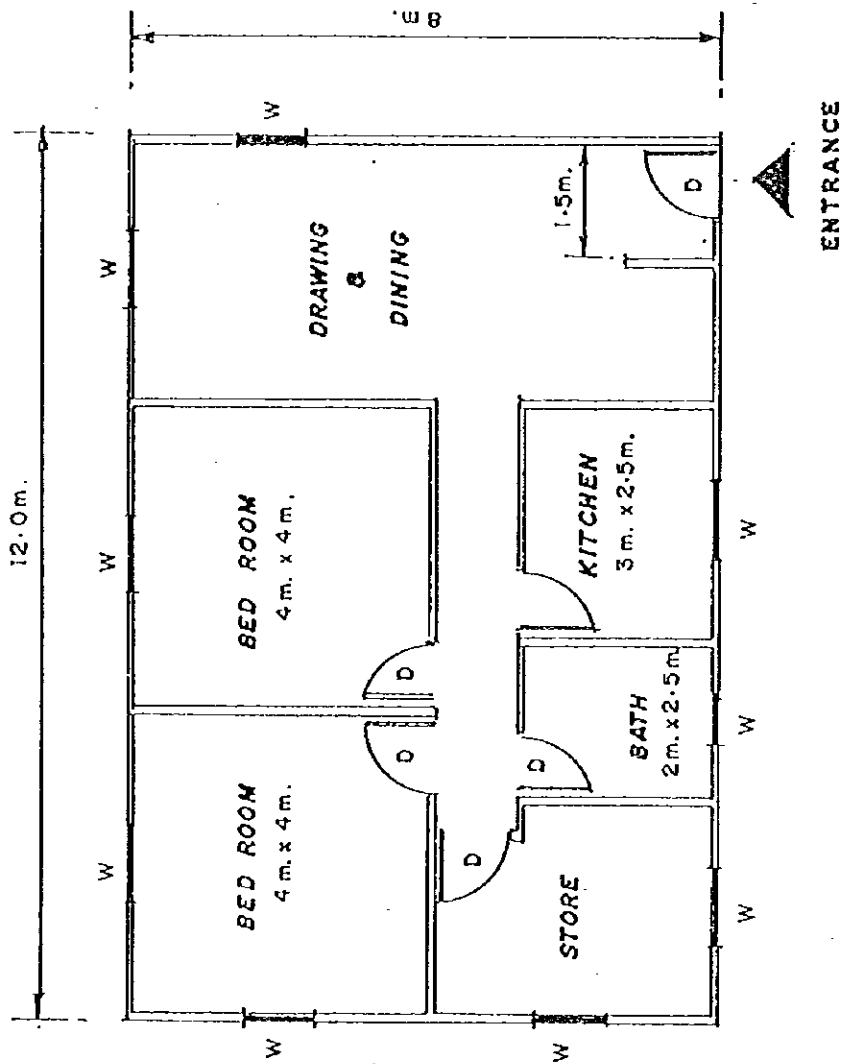


Figure 1

Typical Plan Engineer's Office (Type A)

**NOTE :**

- 1. THIS SKETCH IS INDICATIVE ARRANGEMENT, ONLY  
DETAIL DRAWINGS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING OF UNITS.
- 2. ALL DOORS (D) AND WINDOWS (W) SHALL BE OF SIZES APPROVED BY THE ENGINEER.



Total Covered Area 96 sq.m.

Figure 2

Two Bed Room Unit (Type B) for Engineer's Accommodation

**NOTE:**

1. THIS SKETCH IS INDICATIVE ARRANGEMENT. ONLY DETAIL DRAWINGS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING OF UNITS.
2. ALL DOORS (D) AND WINDOWS (W) SHALL BE OF SIZES APPROVED BY THE ENGINEER.

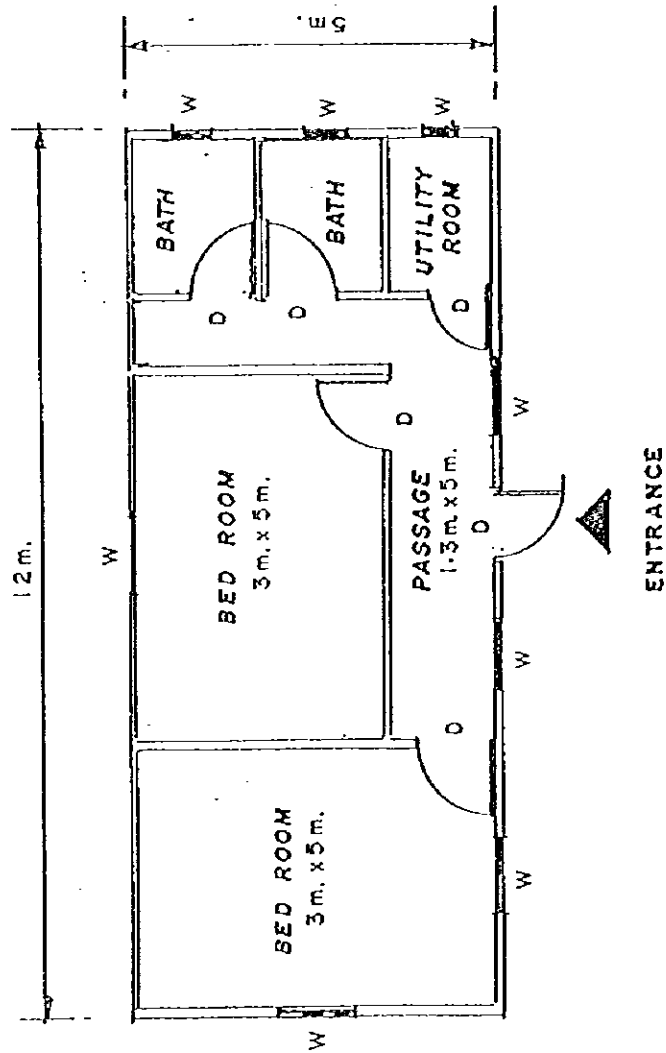


Figure 3

Accommodation (Type C) Typical Portacabin for Officers

**NOTE:**

1. THIS SKETCH IS INDICATIVE ARRANGEMENT, ONLY  
DETAIL DRAWINGS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING OF UNITS.
2. ALL DOORS (D) AND WINDOWS (W) SHALL BE OF SIZES APPROVED BY THE ENGINEER.

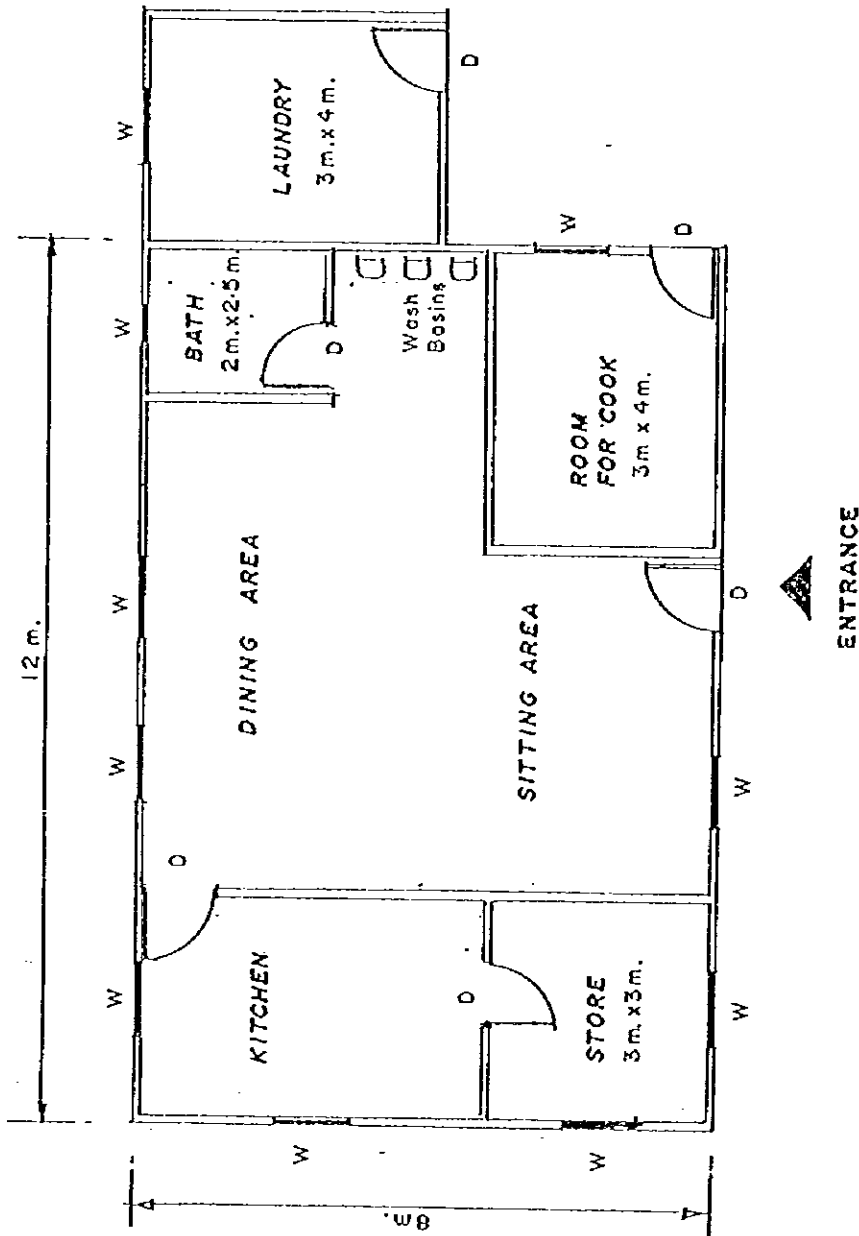


Figure 4

Typical Dinning / Kitchen Unit (Type D)

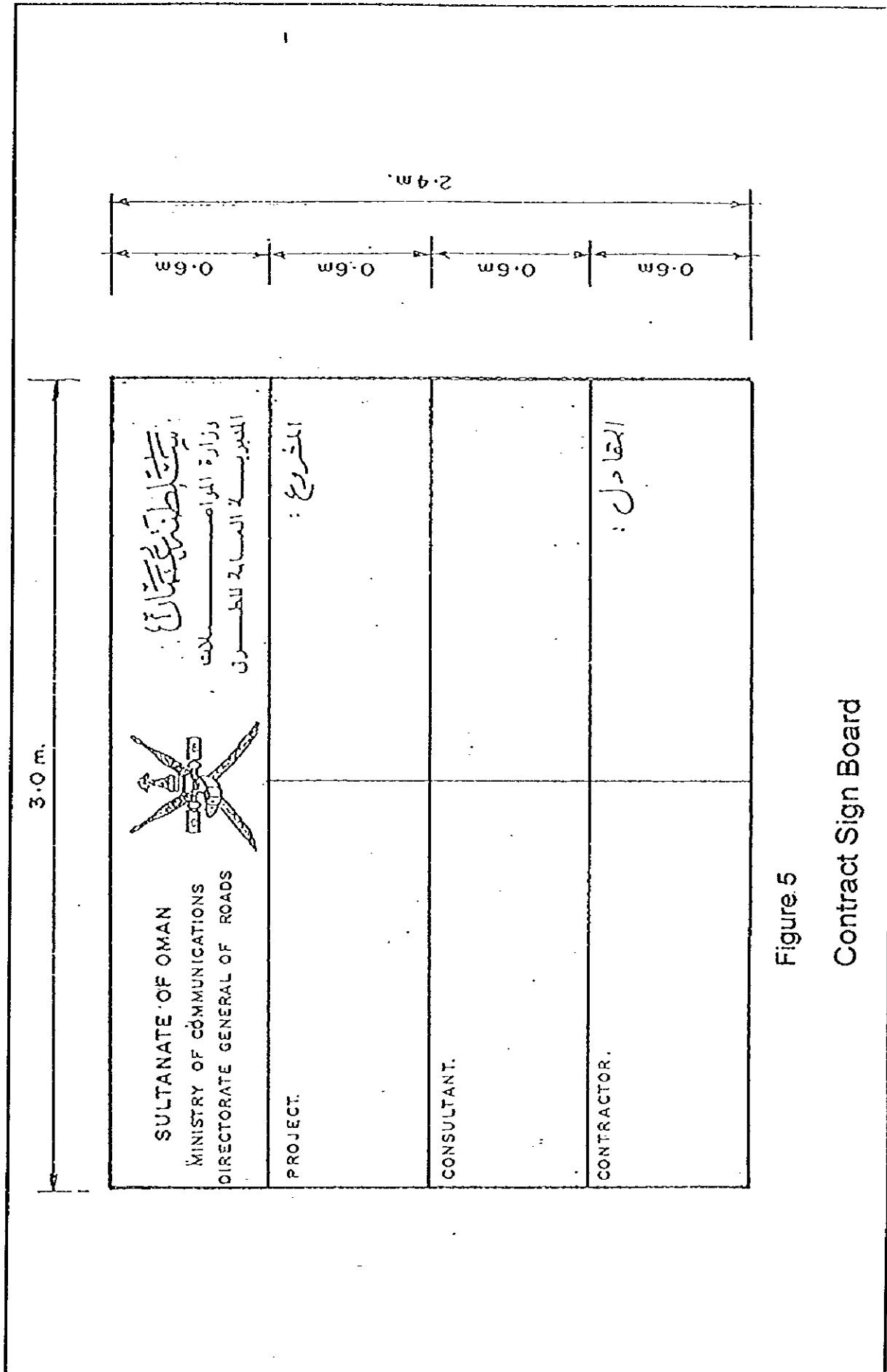
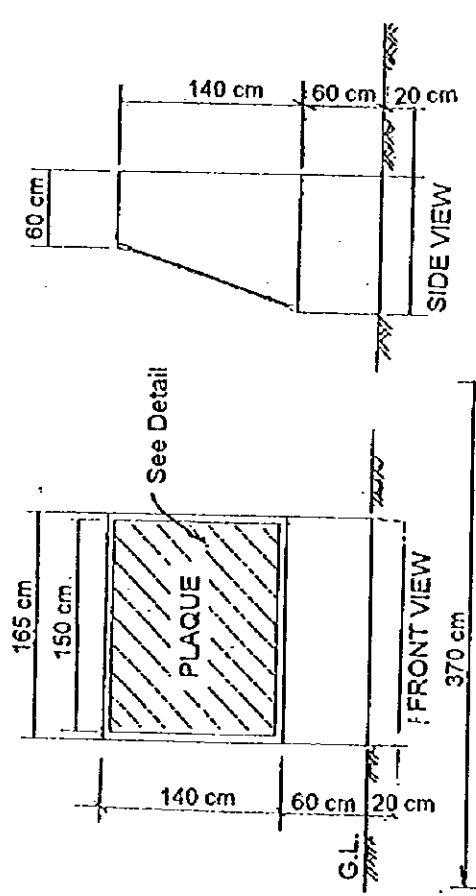
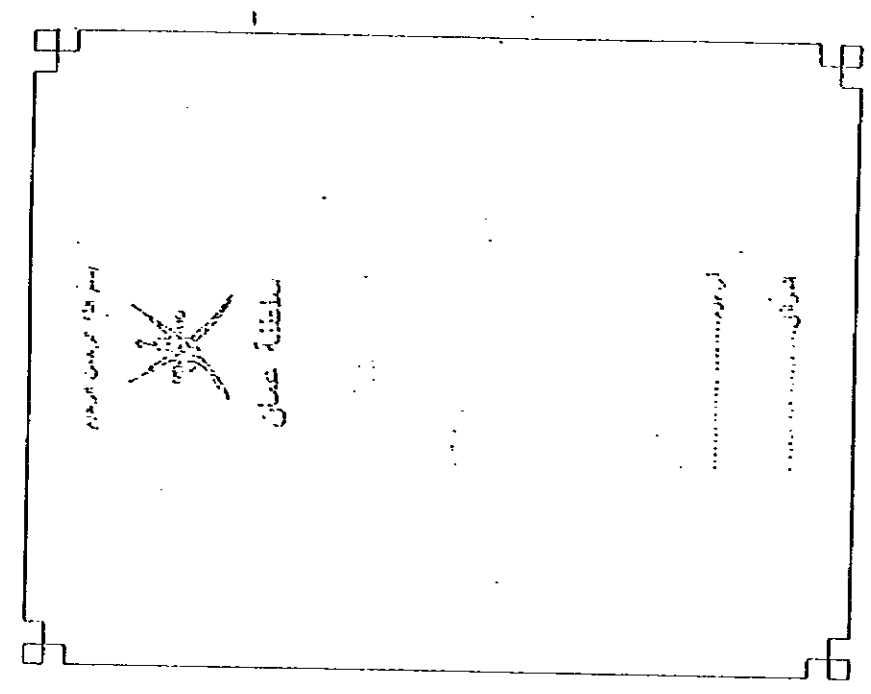


Figure 5

Contract Sign Board



NOTE:  
ARABIC WORD INSCRIPTION IN GOLD CLOUR  
KHANJAR EMBLEM IN RED COLOUR  
BORDER EDGE IN GOLD COLOUR

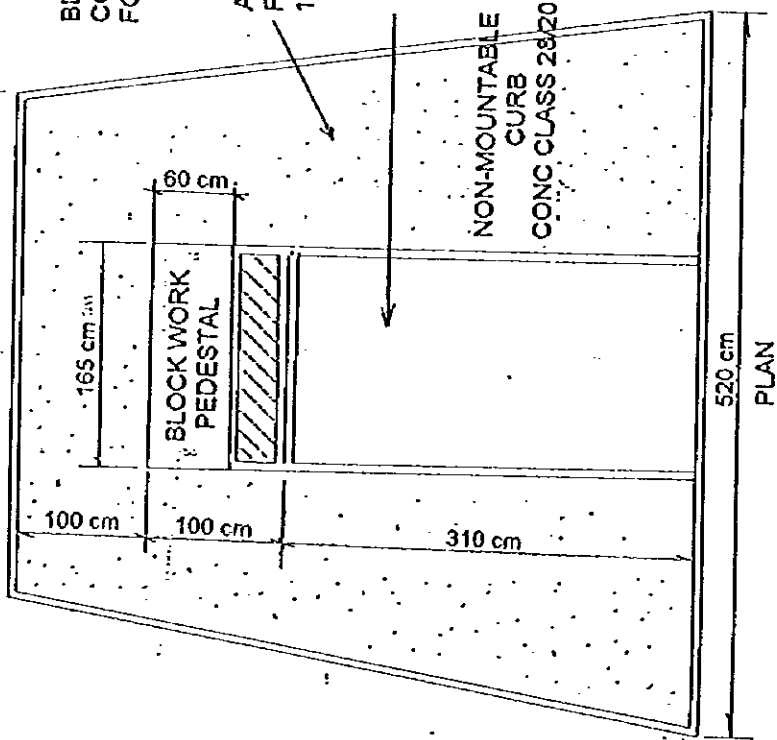


BLOCK WORK 20X20  
CONC CLASS 28/20  
FOR EDGING

AGGREGATE  
FILL MATERIAL  
10 CM

RED/GREEN COLOUR  
INTERLOCK PAVING TILES  
LAID ON SAND

NON-MOUNTABLE  
CURB  
CONC CLASS 28/20



PLAQUE DETAIL

Figure 6

Commemorate Plaque

**PREAMBLE TO THE BILL OF QUANTITIES**

1. General directions and descriptions of items of work given elsewhere in the Tender Documents are not generally repeated in the Bill of Quantities. Reference must be made to the Drawings, Specification and Conditions of Contract for this information.
2. The items of work given in the Bill of Quantities shall comply with the relevant sections of the Specification and with the instructions of the Engineer.
3. The initial part of the item numbers used in the Bill of Quantities correspond to the clause numbers used in the Specification, and the second part is consecutive within each clause reference.
4. In the Preliminaries Bill the Tenderer shall insert a lump sum or rate to each item which he considers has a financial value. Where the Tenderer considers that an item has no financial value he shall insert 'nil'. Lump sums shall not be inserted covering more than one item.
5. The value of services and obligations involved in the Preliminaries shall not be included in rates in other parts of the Bill of Quantities but shall be completely priced against the particular item in the Preliminaries.
6. Quantities of work and materials in the Bill of Quantities are estimated only and are not to be considered as limiting or extending the amount of work to be done and material to be supplied by the Contractor. The Contractor shall not use the quantities as an ordering schedule.
7. Each item in the Bill of Quantities shall be priced as indicated. No Tender will be considered complete unless this requirement has been fulfilled.
8. Unit rates shall be written in ink in the space specified in the Bill of Quantities.
9. The unit rate interested by the Tenderer in the Bill of Quantities for any item of work shall apply to completed work conforming to the Contract Documents covering all expenses of labour, materials and equipment required for executing that item of work as well as covering the share of that item for the other general expenses to be incurred by the Contractor during the execution of the Works. These general expenses shall include but are not restricted to, the following, unless entered as a separate pay item in the Bill of Quantities.
  - i) Preparation and submission of bids including the Site Inspection.
  - ii) Employment and accommodation of the Contractor's staff - local and expatriate - including official holidays, annual leave, sick leave, compensation, bonuses, insurances etc.
  - iii) Costs related to the Contractor's site Camp(s) including the provision

of all utility facilities..

- iv) Provision for wastage of materials and for consumable materials.
- v) Costs of laboratory testing, survey work and assistance to the Engineer as required in the Contract.
- vi) For electrical installation, costs shall also include providing, testing and commissioning of the complete installation.
- vii) Royalties, duties, customs, taxes, insurance and all other related costs.
- viii) Cost of bank guarantees.
- ix) Costs for permission to use private or public land.
- x) Cost of temporary works.
- xi) Cost of work items for which there are no direct payments and which are considered in the Specification and other Contract Documents as subsidiary to other items in the Bill of Quantities.
- xii) Overheads and Profit.
- xiii) All other expenses the Contractor may encounter in the proper execution of the Contract.

Compliance with the Tender Documents

- 10. The Tenderer/Contractor shall allow in the Bill of Quantities a lump sum for complying with the conditions and requirements stipulated in the Tender Documents and which are not covered separately in the various pay items of the Bill of Quantities.
- 11. The tendered lump sum for this item is deemed to cover the whole of the Contract period. Monthly payments against this item shall be made in instalments proportional to the time for completion as stated under Item 5 in the Appendix to the Form of Tender.



**CONSTRUCTION OF FLYOVER AT  
AQR**

**BILL OF QUANTITIES  
BILL 1 - PRELIMINARIES**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	<b>SECTION 100 PRELIMINARIES</b>						
	<b>101 Bonds and Insurance</b>						
101.1	Performance Bond (Clause 10 of Standard Conditions of Contract)	lump sum					
101.2	Insurance of the Works (Clause 21 of Standard Conditions of Contract)	lump sum					
101.3	Damage to Persons and Property (Clause 22 of Standard Condition of Contract)	lump sum					
101.4	Third Party Insurance (Clause 23 of Standard Conditions of Contract)	lump sum					
101.5	Accident or injury to Workmen (Clause 24 of Standard Condition of Contract)	lump sum					

1-1 Carried to summary

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 1 - PRELIMINARIES

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
104	Facilities for the Engineer						
104.1	Provision of Engineer's office (Type A, 1 unit x 24)	month	24				
104.2	Maintenance of Engineer's office (Type A, 1 unit x 24)	month	24				
104.3	Provision of surveying instruments	month	22				
104.4	Maintenance of surveying instruments	month	22				
104.5	Provision of Engineer's accommodation						
	(i) Resident Engineer's accommodation (Type B, 2 unit )	month	46				
	(ii) Engineer's accommodation (Type C, 4 units )	month	90				
	(iv) Dining/Kitchen (Type D, 1 unit x 22)	month	22				

1-2 Carried to summary

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 1 - PRELIMINARIES

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
104.6	Maintenance of Engineer's accommodation					
	(i) Resident Engineer's accommodation (Type B, 2 unit )	month	46			
	(ii) Engineer's accommodation (Type C, 4 unit )	month	90			
	(iv) Dining/Kitchen (Type D, 1 unit x 22)	month	22			
104.7	Provision of laboratory	month	22			
104.8	Maintenance of laboratory	month	22			
104.10	In situ soil bearing capacity tests	n.r.	20			
104.11	Sub-soil investigation by specialist Contractor	prov. sum				

1-3

Carried to summary

**CONSTRUCTION OF FLYOVER AT**

**AQR**

**BILL OF QUANTITIES  
BILL 1 - PRELIMINARIES**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	105 Assistance for Engineer						
105.1	Laborers to assist the Engineer ( no x months)	man month	N/A				
	106 Contractor's Compound						
106.1	Mobilization and demobilization of Contractor's facility	lump sum					
106.2	Maintenance of Contractor's facility	month	22				
	107 Maintenance and Protection of Traffic						
107.1	Maintenance and protection of traffic	lump sum					
107.2	Extra over item 107.1 for supply and compaction of subbase on diversions where ordered by the Engineer (10 cm. thick)	cu. m.					
107.3	Extra over item 107.1 for supply and compaction of bituminous basecourse on diversions where ordered by the Engineer ( 3 cm. thick)	cu. m.					

1-4

Carried to summary

**CONSTRUCTION OF FLYOVER AT**

AQR

**BILL OF QUANTITIES  
BILL 1 - PRELIMINARIES**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	<b>108 Progress Photographs</b>						
108.1	Provision of negatives and 5 sets of photographs (14 photos max.) (Mountable-Size 100 x 150 mm.)	month	22				
	<b>109 Sign Boards</b>						
109.1	Provision, erection, moving and maintenance of signboard (Wooden Type)	n.r.	2				
	<b>110 Commemoration Plaque and Opening Ceremony</b>						
110.1	Supply and erection of commemoration plaque (Optional)	n.r.	1		Option		
110.2	Opening ceremony (Optional)	lump sum					
			1-5	Carried to summary			

**CONSTRUCTION OF FLYOVER AT  
AQR**

**BILL OF QUANTITIES  
BILL 1 - PRELIMINARIES**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
115.1	<p>115 Compliance with the Tender Documents</p> <p>Allow for all costs and expense for complying with all the conditions and requirements stipulated in the Tender Documents, including all Clause of the Standard Conditions of Contract, which the Tenderer considers have financial implications on his tender and which are not covered separately in the various pay items of the Bill of Quantities</p> <p>Clause No .....</p> <p>Clause No .....</p> <p>Clause No .....</p> <p>Clause No .....</p> <p>Clause No .....</p> <p>Clause No .....</p> <p>Clause No .....</p> <p>Clause No .....</p>	<p>lump sum</p> <p>lump sum</p> <p>lump sum</p> <p>lump sum</p> <p>lump sum</p> <p>lump sum</p> <p>lump sum</p> <p>lump sum</p>				

1-6 Carried to summary

CONSTRUCTION OF FLYOVER AT  
AQR

BILL OF QUANTITIES  
BILL 1 - PRELIMINARIES

Item No.	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	SUMMARY						
	Page 1-1						
	Page 1-2						
	Page 1-3						
	Page 1-4						
	Page 1-5						
	Page 1-6						
				1.7	To Ground Summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 2 - EARTHWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate	
				R.O. Bz	Amount R.O. Bz
200	EARTHWORKS				
201	Clearing and Grubbing				
201.1	Removal and delivery of trees of 300mm trunk diameter or greater	n.r.	61		
202	Removal of Structures and Obstructions				
202.1	Removal of existing building (Shop, etc)	n.r.	1		
202.2	Removal of misc. reinforced concrete structures	cu. m.	35		
202.3	Removal of pipe culvert (D=0.6,0.75,0.9)	lin.m.	N/A		
202.4	Removal of asphaltic concrete pavement (100 mm thick)	cu. m.	4680		
202.5	Removal of damaged steel safety barrier (Gurdrails)	lin.m.	1058		

2-1 Carried to summary



**CONSTRUCTION OF FLYOVER AT**

AQR

**BILL OF QUANTITIES  
BILL 2 - EARTHWORKS**

Item No	Description	Unit	Estimated Quantity	Unit Rate	
				R.O. Bz	Amount R.O. Bz
202.6	Remove carefully and relocate sign boards and road signs (size)	n.r.	45		
202.7	Removal of damaged Irish crossing marker posts	n.r.	N/A		
202.8	Removal of damaged drainage protection works (gabions, conc. tiles, mortared riprap, dry rip rap)	cu. m.	N/A		
202.9	Removal of existing fences (wire mesh, chicken wire)	lin.m.	N/A		
202.10	Removal of existing fences (block or masonry wall)	lin.m.	N/A		
202.11	Removal of existing box culvert (2 x 1 m)	lin.m.	96		
202.12	Removal of existing interlocking tiles	sq. m	N/A		
202.13	Removal of existing crush stone	lin.m.	N/A		
202.14	Removal of existing plain concrete	cu. m.	6		
202.15	Removal of Curb Stone	m	N/A		
				2-2 Carried to summary	

**CONSTRUCTION OF FLYOVER AT  
AQR  
BILL OF QUANTITIES  
BILL 2 - EARTHWORKS**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
203	<b>Earthworks Excavation</b>						
203.1	Suitable excavation to embankment	cu. m.	14344				
203.2	Suitable excavation to waste	cu. m.	3571				
203.3	Unsuitable excavation to waste	cu. m.	N/A				
203.4	Borrow excavation to embankment	cu. m.	175546				
203.5	Extra over item 203.1, 2, 3 for excavation under water	cu. m.	N/A				
206	<b>Excavation and Backfilling for Structures</b>						
206.1	Structure excavation in soils to a depth of 2m	cu. m.	2517				
206.2	Structure excavation in soils to a depth more than 2m	cu. m.	N/A				
			2-3	Carried to summary			

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 2 - EARTHWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	SUMMARY						
	Page 2-1						
	Page 2-2						
	Page 2-3						
			2-4	To Grand Summary			

**CONSTRUCTION OF FLYOVER AT**

**AQR**

**BILL OF QUANTITIES**

**BILL 3 - GRANULAR AND STABILIZED SUBBASE, BASE COURSE, STABILIZED SUBGRADE**

Item No	Description	Unit	Estimated Quantity	Unit Rate	
				R.O. Bz	Amount R.O. Bz
	<b>300 GRANULAR AND STABILIZED SUBBASE, BASECOURSE AND STABILIZED SUBGRADE</b>				
	<b>302 Granular Subbase</b>				
302.1	Granular subbase (class B) (150 mm thick)	cu. m.	N/A		
	<b>303 Aggregate Basecourse</b>				
303.1	Aggregate basecourse (class B) (300 mm thick)	cu. m.	N/A		
303.2	Aggregate basecourse (class B) (250 mm thick)	cu. m.	N/A		
303.3	Aggregate basecourse (class B) (200 mm thick)	cu. m.	8611		
303.4	Aggregate basecourse (class B) (150 mm thick)	cu. m.	1427		

3-1

Carried to summary

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 3 - GRANULAR AND STABILIZED SUBBASE, BASE COURSE, STABILIZED SUBGRADE

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	SUMMARY						
	Page 3-1						
				3-2	Carried to summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 4 - BITUMINOUS PAVEMENT

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
400 BITUMINOUS PAVEMENT						
401 Bituminous Prime Coat and Tack Coat						
401.1	Bituminous prime coat (MC 70)	kg	54010			
401.2	Bituminous tack coat (RC 250)	kg	11599			
402 Bituminous Basecourse						
402.1	Bituminous basecourse (class B) 50 mm.thick	cu. m.	479			
402.2	Bituminous basecourse (class B) 70 mm.thick	cu.m	2958			
402.3	Bituminous basecourse (class B) 100 mm.thick	cu.m.	614			
402.4	Increase or decrease in bituminous content from nominal rate	kg	rate only			

4-1

Carried to summary

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 5 - CONCRETE AND CONCRETE STRUCTURE

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	500 CONCRETE AND CONCRETE STRUCTURE						
	504 Concrete for Structure						
504.1	Concrete Class 16/20 (OPC cement) Blinding, Gravity Wall	cu. m.	2171				
504.2	Concrete Class A 24/20 for retaining wall, abutment and piers (OPC cement)	cu.m	9089				
504.3	Concrete Class 32/20 for bridge deck, cross beam and joint	cu.m	N/A				
504.4	Cast-in-Situ Concrete Class 24/20 for bridge deck for cantilever	cu.m	N/A				
				5-1	Carried to summary		

CONSTRUCTION OF FLYOVER AT  
AQR

BILL OF QUANTITIES  
BILL 5 - CONCRETE AND CONCRETE STRUCTURE

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
506.1	<p>506 Prestressed Concrete for Bridge</p> <p><u>Cast in place, pre-stressed, bridge beam, reinforced concrete class AA40 including all reinforcement, tendons, tension cable strands, approved anchorage points "Freyssinet" system or equal and approved sheaths, de-watering, pipes, crouting in accordance with manufacturers recommendations, all complete and as detailed on tender drawings</u></p>					
	a) 3 span continuous P.S box girder 1 box 2 cells 90 m long	n.r.	8			

5-2 Carried to summary



CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 5 - CONCRETE AND CONCRETE STRUCTURE

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
509	Reinforcing Steel					
509.1	High yield steel bar reinforcement of any diameter	tone	741			
509.2	Mild steel bar reinforcement of any diameter	tone	N/A			
509.3	Mesh reinforcement of any size	tone	N/A			
				5-3	Carried to summary	

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 5 - CONCRETE AND CONCRETE STRUCTURE

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	SUMMARY						
	Page 5-1						
	Page 5-2						
	Page 5-3						
				5-4	Carried to summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 6 - STRUCTURAL STEEL AND OTHER METALWORK

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
600	STRUCTURAL STEEL AND OTHER METALWORK						
603	Bridge Parapets						
603.1	Bridge Handrails (Aluminum) (H=500 mm)	lin.m.	1443				
				6-1	Carried to summary		

CONSTRUCTION OF FLYOVER AT  
AQR

BILL OF QUANTITIES  
BILL 6 - STRUCTURAL STEEL AND OTHER METALWORK

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
	SUMMARY					
	Page 6-1					
				6-2	Carried to summary	

**CONSTRUCTION OF FLYOVER AT**

**AQR**

**BILL OF QUANTITIES  
BILL 8 - DRAINAGE AND SERVICE DUCTS**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
	<b>S00 DRAINAGE AND SERVICE DUCTS</b>					
	<b>S01 Pipe Culverts</b>					
801.1	Reinforced concrete pipe culvert ( 600 mm. dia.)	lin.m	100			
801.2	Reinforced concrete pipe culvert ( 750 mm. dia.)	lin.m	9			
	<b>S02 Reinforced Concrete Box Culverts, Box Culverts and Pipe Culverts Headwalls, Wingwalls and Aprons (SRP cement)</b>					
802.1	Concrete (Class 28/20), Box Culverts, Box Culverts and Pipe Culverts Headwalls, Wingwalls, Wingwalls and Aprons (SRP Cement), all complete and as detailed on drawings					
802.1.1	Box culvert 2 x 1 m 1 cell	lin.m	15			
802.1.2	Box culvert 2 x 1 m 2 cell	lin.m	94			
802.1.3	Box culvert 2 x 1 m 3 cell	lin.m	5			
802.1.4	Box culvert 4.5 x 5 m 2 cell	lin.m	35			
		8-1		Carried to summary		

CONSTRUCTION OF FLYOVER AT  
AQR

BILL OF QUANTITIES  
BILL 8 - DRAINAGE AND SERVICE DUCTE

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
804.1	804 Catch Basins, Catch Pits, Manholes, Curb Inlets, Ditch Inlets and Outlets  Reinforced concrete catch pit comprising excavation, backfilling, disposal, 100 mm thick plain in-situ sulphate resisting concrete class (12/20) blinding, concrete class (24/20) for structure, all complete and as detailed on drawing  Catch Pits 1 x 1 x 2 m	nr	4				
804.2	Reinforced concrete gullies comprising excavation, backfilling, disposal, 150 mm bed and walls of reinforces sulphate resisting concrete class (24/20) all complete and as detailed on drawings  Gullies 300 x 300 mm	lin m	613				

8-2 Carried to summary

**CONSTRUCTION OF FLYOVER AT  
AQR**

**BILL OF QUANTITIES  
BILL 8 - DRAINAGE AND SERVICE DUCTS**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	805 Water proofing for structure						
805.1	Waterproofing membrane	sq.m.	N/A				
805.2	Mastic asphalt waterproofing	sq.m.	N/A				
805.3	Bituminous paint	sq.m.	3000				
	807 Service Ducts						
807.1	Service duct (A.C. 150 mm dia. -1 way with concrete surround), including duct markers	lin.m.	N/A				
807.1.1	Service duct (A.C. 150 mm dia. -2 way with concrete surround), including duct markers	lin.m.	172				
807.2	Extra over for excavation in rock for service ducts	cu.m.	N/A				

8-3 Carried to summary

CONSTRUCTION OF FLYOVER AT  
AQR

BILL OF QUANTITIES

BILL 8 - DRAINAGE AND SERVICE DUCTE

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	SUMMARY						
	Page 8-1						
	Page 8-2						
	Page 8-3						
				8-4	Carried to summary		



CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 9 - SLOPE PROTECTION AND STABILISATION

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
900 SLOPE PROTECTION AND STABILISATION							
901 Riprap							
901.2	Mortared stone riprap (Class A), in Irish Crossing	cu.m.	N/A				
901.2.1	Mortared stone riprap (Class A), other than Irish Crossing	cu.m.	262				
				9-1	Carried to summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 9 - SLOPE PROTECTION AND STABILISATION

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	SUMMARY						
	Page 9-1						
				9-2	Carried to summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 11 - BRIDGE BEARINGS, EXPANSION JOINT, JOINTS SEAL AND FILLERS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	1100 BRIDGE BEARINGS, EXPANSION JOINT, JOINTS SEALS AND FILLERS						
	1101 Bridge Bearings						
1101.1	Synthetic Rubber Shoe 660 x 760 x 135 mm including anchor bar, cap, filler reinforcing bar, spiral bar and shrinkage mortar	n.r.	96				
	1102 Bridge Expansion Joints						
1102.1	Bridge expansion joint Movement Range W=100 mm	m	34				
1102.1.1	Bridge expansion joint Movement Range W=200 mm	m	50				
			11-1	To Grand Summary			

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 11 - BRIDGE BEARINGS, EXPANSION JOINT, JOINTS SEAL AND FILLERS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
	SUMMARY					
	Page 11-1					
				11-2	To Grand Summary	

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 12 - SIDEWALKS, PAVED AREAS AND CURBS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
	1200 SIDE WALKS, PAVED AREAS AND CURBS					
	1201 Sidewalks					
1201.1	Interlocking Block Pavement including granular Basecourse 150 mm thick	sq. m	972			
	1202 Curbs					
	All curbs are hydraulically pressed sulphate resisting concrete class A (45/20) ceded jointed and pointed in 10 mm thick sand cement grout including all necessary excavation, backfill, dispose, formwork and all necessary works for complete					
1202.1.1	Curb 100 x 200 (mountable)	lin. m	445			
1202.1.2	Curb 150 x 350 (mountable)	lin. m	80			
1202.1.3	Curb 150 x 350 (none mountable)	lin. m	1722			
				12.1	Carried to summary	

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 12 - SIDEWALKS, PAVED AREAS AND CURBS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
	SUMMARY					
	Page 12-1					
				12.2	Carried to summary	

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 13 - SAFETY BARRIERS, DELINEATORS AND FENCES

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	1300 SAFETY BARRIERS, DELINEATORS AND FENCE						
	1301 Corrugated Steel Beam Safety Barrier						
1301.1.1	Safety barrier beam (Type-A) including posts and end anchor	lin.m.	3562				
1301.1.2	Safety barrier beam (Type-C) including posts and end anchor	lin.m	4572				
	1302 Reflectorised Markers for Safety Barriers						
1303.1	Reflectorised markers attached to guardrail	n.r.	535				
1303.2	Reflectorised markers attached to concrete	n.r.	N/A				
				13-1	Carried to summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 13 - SAFETY BARRIERS, DELINEATORS AND FENCES

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
SUMMARY						
	Page 13-1					
		13-2			Carried to summary	



CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 14 - HIGHWAY SIGNS AND ROAD MARKING

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
	1400 HIGHWAY SIGNS AND ROAD MARKING					
	1401 Highway Signs					
1401.1	Highway sign, triangular, size (900 mm)	n.r.	10			
1401.2	Highway sign, circular, diameter (900 mm)	n.r.	10			
1401.3.1	Highway sign, rectangular, (600 x 2400 mm)	n.r.	4			
1401.3.2	Highway sign, rectangular, (750 x 1400 mm)	n.r.	11			
1401.6.1	Overhead sign post and support assembling cantilever	n.r.	4			
1401.6.2	Overhead sign post and support assembling gantry	n.r.	2			

14-1

Carried to summary

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 14 - HIGHWAY SIGNS AND ROAD MARKING

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
1402	Road Markings					
1402.1	Traffic lines (Mechanically sprayed)	sq. m	2432			
1402.2	Special markings (Hand sprayed)	sq. m	481			
1402.3	Curb painting (Black and yellow)	sq. m	552			
1402.4	Reflecting road studs type red	n.r.	1060			

14-2

Carried to summary

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 14 - HIGHWAY SIGNS AND ROAD MARKING

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	SUMMARY						
	Page 14-1						
	Page 14-2						
				14-3	To Grand Summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 15 - ELECTRICAL INSTALLATION

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
1500	ELECTRICAL INSTALLATION					
1502	Medium Voltage Switching Stations	prov sum				
1502.1	Medium Voltage Switching Stations	n.r.				
1503	Package Sub-stations					
1503.1	Package sub-station	n.r.				
1504	Package Medium Voltage Switching Stations					
1504.1	Packing medium voltage switching station	n.r.				

15-1

Carried to summary

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 15 - ELECTRICAL INSTALLATION

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	1505 33kV and 11kV Pole Mounted Transformer Stations						
1505.1	33kV pole mounted transformer station	n.r.					
1505.2	11kV pole mounted transformer station	n.r.					
	1506 Feeder Pillars						
1506.1	Feeder pillar	n.r.					
	1507 Cables						
1507.1	Cable (type) (size)	lin.m.					

15-2 Carried to summary

CONSTRUCTION OF FLYOVER AT  
AQR

BILL OF QUANTITIES  
BILL 15 - ELECTRICAL INSTALLATION

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
1508	Road Lighting Masts and Column					
1508.1	High mast assembly (type) (height)	n.r.				
1508.2	Lighting columns (type) (number of arms) (Height)	n.r.				
1509	Traffic Sign Illumination					
1509.1	Overhead sign lighting (gantry or cantilever ref no)	n.r.				
1509.2	Roadside sign lighting (sign ref no)	n.r.				
1510	Recessed Lighting					
1510.1	Recessed lighting (type)	n.r.				

15-3 Carried to summary

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 15 - ELECTRICAL INSTALLATION

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
1511	Traffic Signals						
1511.1	Traffic signal installation (location)	lump sum					
1512	Earthing						
1512.1	Twin rod earthing installation (location)	n.r.					
1512.2	Single rod earthing installation (location)	n.r.					
				15-4	Carried to summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 15 - ELECTRICAL INSTALLATION

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
	SUMMARY					
	Page 15-1					
	Page 15-2					
	Page 15-3					
	Page 15-4					
	Provisional Sum	Prov Sum				
				15-5	To Grand Summary	



**CONSTRUCTION OF FLYOVER AT  
AQR**

**BILL OF QUANTITIES  
BILL 17 - UTILITIES**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	<b>1700 UTILITIES</b>						
	<b>1701 Utilities</b>	prov sum					
1701.1	Remove carefully and relocate low voltage electric poles, telephone poles, including removal of lines, excavation, backfilling and other related works as directed by the Engineer	n.r.					
1701.1.1	Protect of existing utilities crossing the roadway as shown in Drawing, or as directed by the Engineer	lin. m.					
			17-1	Carried to summary			

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 17 - UTILITIES

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	SUMMARY						
	Page 17-1	Prov Sum					
				17-2	To Grand Summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 19 - DAYWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
A. WAGES						
	These include proper wages, all used allowance, medical expense and all other charges provided for by local laws					
A.1	Supervisor	hour	100			
A.2	Site Surveyor	hour	1000			
A.3	Foreman	hour	480			
A.4	1st Class Operator	hour	480			
A.5	2nd Class Operator	hour	100			
A.6	Mechanic	hour	190			
A.7	Driver	hour	480			
A.8	Skilled Labour	hour	1000			
A.9	Semi Skilled Labour	hour	1000			
			19-1	Carried to Summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 19 - DAYWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
A.10	Ordinary Labour	hour	1000				
A.11	Mason	hour	200				
A.12	Painter	hour	100				
A.13	Carpenter	hour	200				
A.14	Steel Fitter	hour	100				
A.15	Electrician	hour	20				

19-2 Carried to Summary

**CONSTRUCTION OF FLYOVER AT**

AQR

**BILL OF QUANTITIES  
BILL 19 - DAYWORKS**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
<b>B. OPERATING EQUIPMENT ON SITE</b>						
These rate include : fuel and lubricants cost, charges for depreciation interest, repairs, maintenance, spare parts, tyres, insurance, etc. Payment will not be made for mechanics or maintenance time which shall be include in and spread over the rates.						
B.1	Motorgrader from 100 hp up to 120 hp	hour	5			
B.2	Motorgrader from 120 hp up to 150 hp	hour	11			
B.3	Tractor from 60 to 100 hp	hour	5			
B.4	Bulldozer with ripper from 100 hp to 150 hp	hour	5			
B.5	Bulldozer with ripper from 150 hp to 200 hp	hour	7			
B.6	Bulldozer with ripper from 200 hp to 250 hp	hour	6			
B.7	Bulldozer with ripper from 250 hp to 300 hp	hour	4			
B.8	Wheel tractor up to 50 hp	hour	10			
				19-3	Carried to Summary	

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 19 - DAYWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
B.9	Wheel tractor over 50 hp	hour	10			
B.10	Motor scraper capacity up to 18 cu.m.	hour	10			
B.11	Motor scraper capacity from 18 to 24 cu.m.	hour	10			
B.12	Sheeps foot roller, from 5 tonnes to 10 tonnes	hour	10			
B.13	Grid roller	hour	4			
B.14	Vibratory compactor with prime mover up to 5 tonnes	hour	4			
B.15	Vibratory compactor with prime mover from 5 to 10 tonnes	hour	4			
B.16	Pneumatic compactor with prime mover from 30 to 50 tonnes	hour	4			
B.17	Pneumatic self-propelled rollers from 15 to 20 tonnes	hour	8			
B.18	Tandem roller up to 8 tonnes	hour	24			
B.19	Tandem roller from 8 to 12 tonnes	hour	8			

19-4 Carried to Summary

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 19 - DAYWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
B.20	Triaxle roller from 10 to 15 tonnes	hour	24				
B.21	Light frog- rammer 0.1 tonne	hour	20				
B.22	Heavy frog-rammer 0.5 tonne	hour	20				
B.23	Wheel loader 1.2 to 1.6 cu.m.	hour	20				
B.24	Wheel loader 1.6 to 2.0 cu.m.	hour	20				
B.25	Wheel loader 2.0 to 2.5 cu.m.	hour	20				
B.26	Excavator up to 0.8 cu.m.	hour	15				
B.27	Excavator from 0.8 to 1.2 cu.m.	hour	15				
B.28	Bituminous mixing plant with batching apparatus up to 80 t/h.	hour	5				
B.29	Bituminous mixing plant with batching apparatus from 80 to 150 t/h.	hour	5				
B.30	Finisher up to 80 t/h.	hour	10				
			19-5	Carried to Summary			

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 19 - DAYWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
B.31	Finisher from 80 t/h to 120 t/h.	hour	10			
B.32	Bitumen sprayer up to 6 tonnes	hour	10			
B.33	Tanker truck up to 6 cu.m.	hour	15			
B.34	Dump truck up to 10 tonnes	hour	17			
B.35	Dump truck from 10 to 15 tonnes	hour	20			
B.36	Screening plant from 80 to 100 t/h.	hour	5			
B.37	Crushing plant from 40 to 60 t/h.	hour	5			
B.38	Crushing plant with primary and secondary from 60 to 100 t/h.	hour	5			
B.39	Air compressor up to 6000 l/m.	hour	15			
B.40	Air compressor over 6000 l/m.	hour	15			
B.41	Mechanical broom	hour	7			

19-6 Carried to Summary



CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES

BILL 19 - DAYWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
B.42	Power water pump	hour	118				
B.43	Steel cutting machine	hour	5				
B.44	Steel bending machine	hour	5				
B.45	Belt conveyer	hour	5				
B.46	Concrete mixer up to 0.5 cu.m.	hour	10				
B.47	Concrete mixer over 0.5 cu.m.	hour	12				
B.48	Automatic concrete batch plant without mixing drum	hour	5				
B.49	Transmixer up to 5 cu.m.	hour	10				
B.50	Concrete vibrators	hour	59				
B.51	Crane up to 5 tonnes.	hour	9				
B.52	Crane with broom and jib 5 to 10 tonnes	hour	7				

19-7

Carried to Summary

**CONSTRUCTION OF FLYOVER AT  
AQR**

**BILL OF QUANTITIES  
BILL 19 - DAYWORKS**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
B.53	Crane with boom and jib over 10 tonnes	hour	7				
B.54	Generator 60 kw	hour	5				
B.55	Generator 75 kw	hour	5				
B.56	Drilling equipment	hour	5				
B.57	Generator 100 kw	hour	5				
B.58	Generator 150 kw	hour	5				
B.59	Generator 200 kw	hour	5				
B.60	Gravel strewer	hour	5				
				19-8	Carried to Summary		

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 19 - DAYWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
<b>C. MATERIALS</b>							
These rates include all the charges for the supply of the materials, loading, transport to site, unloading and stores as well as all the charges provided for in the General and Special Specifications and in the Contract.							
C.1	Aggregate for granular sub-base course in accordance with the General and Special Specifications, in place as specified.	cu.m.	50				
C.2	Aggregate for granular aggregate base course in accordance with the General and Special Specifications, in place as specified.	cu.m.	25				
C.3	Aggregate for bituminous base course in accordance with the General and Special Specifications, near the asphalt plant, in bulk	cu.m.	50				
C.4	Fine aggregate for concrete, in accordance with the General and Special Specifications, in place, in bulk	cu.m.	25				
C.5	Coarse aggregates for concrete, in accordance with the General and Special specifications, in place, in bulk	cu.m.	50				

19-9

Carried to Summary

**CONSTRUCTION OF FLYOVER AT  
AQR**

**BILL OF QUANTITIES  
BILL 19 - DAYWORKS**

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount
				R.O.	Bz	
C.6	Stone for drainage, masonry and slope protection, in accordance with the General and Special Specifications in place	cu.m.	25			
C.7	Asphalt cement, grade 60-70 on site	ton	1			
C.8	Asphalt cement, grade 50-60 on site	ton	1			
C.9	Emulsified asphalt, grade RS-1 on site	ton	1			
C.10	Cutback asphalt, MC and RC type on site	ton	1			
C.11	Portland cement on site	ton	1			
C.12	Deformed billet steel bars, AASHTO M 31 grade 60 (High Yield) of any diameter	ton	1			
C.13	Deformed billet steel bars AASHTO M 31 grade 40 (Mild) of any diameter	ton	1			
C.14	Highway signs	sq.m.	3			
C.15	Highway sign supports • 1 post	nr.	4			

19-10 Carried to Summary

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 19 - DAYWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
C.16	Highway sign supports - 2 post	nr.	2				
C.17	Timber plank, on site	cu.m.	2				
C.18	Timber props, on site	cu.m.	2				
C.19	Wire mesh gabions, on site	ton	0.5				
C.20	Explosive, on site	kg.	5				
C.21	Gas oil, on site	litre	100				
C.22	Gasoline, on site	litre	500				
C.23	Lubricant	kg.	5				
			19-11	Carried to Summary			

CONSTRUCTION OF FLYOVER AT

AQR

BILL OF QUANTITIES  
BILL 19 - DAYWORKS

Item No	Description	Unit	Estimated Quantity	Unit Rate		Amount	
				R.O.	Bz	R.O.	Bz
	SUMMARY						
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	Page 19-10						
	Page 19-11						
				19-12	To Grand Summary		

# BILL OF QUANTITIES

## GRAND SUMMARY

Bill No	Description	Amount
		R.O.
1	Preliminaries	
2	Earthworks	
3	Granular and stabilized subbase, basecourse and stabilized subgrade	
4	Bituminous Pavement	
5	Concrete and concrete structure	
6	Structural steel and other metal work	
7	Paint	N/A
8	Drainage and service ducts	
9	Slope protection and stabilization	
10	Piling	N/A
11	Bridge bearing, expansion joints, joint seals and fillers	
12	Sidewalks, paved areas and kerbs	
13	Safety barriers, delineators and fences	
14	Highway signs and road marking	
15	Electrical installations	
16	Landscape and irrigation	N/A
17	Utilities	
18	Plant and Equipment	N/A
19	Dayworks	
	Sub-total	
	Contingencies (10%)	
	<b>TOTAL CONTRACT VALUE (R.O)</b>	

(IN WORDS, THE TOTAL TENDER VALUE IS RIAL OMANI)

NAME OF TENDERER

DATE

-----  
SIGNATURE OF TENDERER  
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THE UNIVERSITY OF CHICAGO

PHILOSOPHY DEPARTMENT

PHILOSOPHY 101

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