



GENERAL AUTHORITY  
FOR ROADS, BRIDGES AND LAND TRANSPORT  
MINISTRY OF TRANSPORT AND COMMUNICATIONS  
THE GOVERNMENT OF THE ARAB REPUBLIC OF EGYPT

THE PROJECT FOR CONSTRUCTION OF  
THE SUEZ CANAL BRIDGE  
IN EGYPT

BILL OF QUANTITIES

(JAPANESE PORTION - CENTRAL SECTION)

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January 1997

PREPARED BY  
PACIFIC CONSULTANTS INTERNATIONAL  
CHODAI CO., LTD.

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### **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 corresponds to the clause numbers used in the Specification, and the second part is consecutive within each clause reference.
4. Payment for Mobilization will be made at the lump sum prices for "Mobilization" as listed in the Bill of Quantities. This item shall include all preparatory work within and outside the work areas, site preparation, supply, installation and maintenance of temporary facilities including project signs, site and roadway maintenance, water treatment facilities, erosion and siltation control; all costs related to establishing construction offices for the Engineer, the Contractor and his subcontractors, communication and other temporary utilities which may be required; site security and fencing as necessary; and transportation to and from the site of construction equipment as required for the performance of the Work. The first progress payment for Mobilization will be made upon full establishment of the Working Site, including all offices, vehicles, and related equipment and will amount to 50% of the Total of this Bill less retention. The remaining of 50% will be due for payment upon the issue of the Taking Over Certificate.
5. The value of services and obligations involved in the Mobilization 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 Mobilization.
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 and amounts shall be written in ink in the space specified in the Bill of Quantities.
9. The unit rate inserted 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 costs 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 costs to be incurred by the Contractor during the execution of the Works. These general costs shall include but are not limited to, the following, unless entered as a separate pay item in the Bill of Quantities.
  - (i) preparation and submission of tender 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.

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 installments proportional to the time for completion.

## Japanese Grant Aid Portion

### Summary of Bill of Quantities

	Item	Amount (Yen)
1.0	Mobilization and Demobilization	
2.0	Earthworks	
3.0	Concrete Mixtures and Concrete Structures	
4.0	Foundations	
5.0	Incidental Concrete Works	
6.0	Structural Steel Works	
7.0	Incidental Bridge Works	
8.0	Road Pavement Works	
9.0	Safety Facilities	
10.0	Electrical and Telephone Works	
11.0	Supplementary Works	
	Grand Total	







**Bill No.3 Concrete Mixture and Concrete Structures (J)**

Item No.	Concrete and Concrete Structures	Unit	Estimated Quantity	Unit Rate (Yen)	Estimated Amount (Yen)
	<b>Reinforcing Steel</b>				
	High yield steel bar of any diameter				
3.1.1	Pile Cap for Auxiliary Piers	tonne	387		
3.1.2	Pile Cap for Approach Bridges	tonne	2,538		
3.1.3	Columns for Auxiliary Piers	tonne	1,807		
3.1.4	Columns for Approach Bridges	tonne	7,411		
3.1.5	Pylons	tonne	2,298		
3.1.6	PSC Girders of Approach Bridges	tonne	2,805		
	<b>Concrete for Structures</b>				
3.0.2	240 kg/cm <sup>2</sup> Pile Cap for Auxiliary Piers	cu m	3,173		
3.0.2	240 kg/cm <sup>2</sup> Pile Cap for App. Brs. Piers	cu m	17,969		
3.0.3	240 kg/cm <sup>2</sup> Columns for Auxiliary Piers	cu m	9,609		
3.0.3	240 kg/cm <sup>2</sup> Columns for App. Brs. Piers	cu m	28,566		
3.0.4	300 kg/cm <sup>2</sup> Pylons	cu m	8,825		
3.0.5	350 kg/cm <sup>2</sup> Pylons	cu m	2,174		
3.0.6	350 kg/cm <sup>2</sup> PSC Girders of App. Brs.	cu m	15,921		
	<b>Prestressing Steel for Structures</b>				
3.2.1	Strands 12 T 15.2 for PSC Girder of App. Brs.	tonne	495		
3.2.2	Strands 12 T 15.2 for Pylons	tonne	10		
3.2.3	Bars Ø 32 mm for Pylons	tonne	9		
	<b>Bridge Loading Test</b>				
3.6	Bridge loading Test	L.S.	0		
<b>Total to Summary</b>					

**Bill No.4 Foundations (J)**

Item No.	Foundations	Unit	Estimated Quantity	Unit Rate (Yen)	Estimated Amount (Yen)
	<b>Piling</b>				
4.1.1	Piling	lin. m	9,180		
4.1.2	Loading test of piles	nr	2		
	<b>Diaphragm Wall</b>				
4.2.1	Diaphragm Wall (fc=240kg/cm2)	cu m	6,728		
4.2.2	Top Slab	cu m	2,304		
4.2.3	Loading test (1 panel only)	nr	1		
<b>Total to Summary</b>					

**Bill No.5 Incidental Concrete Works (J)**

Item No.	Culverts, Access Bridges, Drainage and Service Ducts	Unit	Estimated Quantity	Unit Rate (Yen)	Estimated Amount (Yen)
	<b>Pipe Culverts</b>				
5.1	Pipe Culverts Ø 1800	lin. m	37		
	<b>Box Culverts</b>				
5.2.1	Box Culverts 2.7 m × 3.4 m	lm	0		
5.2.2	Box Culverts 2.7 m × 6.5 m	lm	0		
5.2.3	Box Culverts 2.7 m × 7.0 m	lm	0		
	<b>Access Bridges</b>				
5.3.1	Small Bridge	sq m	0		
	<b>Catch Basins</b>				
5.5.1	Catch basin (size)	nr	0		
	<b>Drainages of Structures</b>				
5.6.1	Gully grate and frame for Main Bridge	nr	58		
5.6.2	Gully grate and frame for App. Bridges	nr	56		
5.6.3	Drainage pipe in structure for Main Bridge	lin. m	0		
5.6.4	Drainage pipe in structure for App. Bridges	lin. m	0		
	<b>Service Duct</b>				
5.7	Service duct	lin. m	3,700		
<b>Total to Summary</b>					



### Bill No.7 Incidental Bridge Works (J)

Item No.	Bridge Bearings and Expansion Joints	Unit	Estimated Quantity	Unit Rate (Yen)	Estimated Amount (Yen)
	<b>Bridge Bearings</b>				
7.1.1.	Pendrum Bearing at Main Bridge End	nr	4		
7.1.2	Pendrum Bearing at Auxiliary Piers	nr	8		
7.1.3	Vertical Rubber Bearing at Pylons	nr	4		
7.1.4	Horizontal Bearing at PM1 to PM6	nr	12		
7.1.5	Horizontal Bearing at Pylons	nr	4		
7.1.6	Bearing (Free) for Approach Bridges	nr	32		
7.1.7	Bearing (Fixed)for Approach Bridges	nr	0		
	<b>Bridge Expansion Joints</b>				
7.2.1	Finger Joints at Main Bridge End (20.8m)	nr	2		
7.2.2	Rubber Expansion Joints (8.65m on piers)	nr	8		
7.2.3	Rubber Expansion Joints (8.65m on abutment)	nr	0		
<b>Total to Summary</b>					

**Bill No.8 Road Pavement (J)**

Item No.	Road Pavement	Unit	Estimated Quantity	Unit Rate (Yen)	Estimated Amount (Yen)
	<b>Subbase</b>				
8.1.1	Subbase	sq. m	0		
	<b>Granular Basecourse</b>				
8.1.2	Granular basecourse	sq. m	0		
	<b>Bituminous Binder Course</b>				
8.2.1	Bituminous binder course 5cm on Main Bridge	sq. m	11,899		
8.2.2	Bituminous binder course 4cm on App. Brs.	sq. m	18,256		
8.2.3	Bituminous binder course 5cm on App. Rds.	sq. m	0		
		sq. m	0		
	<b>Bituminous Surface Course</b>				
8.2.4	Bituminous surface course 3cm on Main Br.&App.Brs.	sq. m	30,155		
8.2.5	Bituminous surface course 3cm on App. Brs.,	sq. m	0		
8.2.6	Bituminous surface course 5cm on App. Rds.	sq. m	0		
8.2.7	Bituminous surface 4 cm on Maintenance Rd.	sq. m	11,019		
8.2.8	Increase or decrease in bituminous content	tonne			
<b>Total to Summary</b>					



**Bill No.9 Safety Facilities (J)**

Item No.	Safety Facilities	Unit	Estimated Quantity	Unit Rate (Yen)	Estimated Amount (Yen)
	<b>Guard Rail and Guard Fence</b>				
9.1.1.	Guard Rail on Steel Bridge	lin. m	1,458		
9.1.2	Guard Rail on Embankment Roads	lin. m	0		
9.1.3	Guard Chain Link Fence on Steel Bridge	lin. m	1,448		
	<b>Concrete Barrier and Steel Railing</b>				
9.2.1	Concrete Barrier on Concrete	lin. m	2,240		
9.2.2	Concrete Barrier on Approach Roads	lin. m	0		
9.2.3	Steel Railing on Concrete Barrier	lin. m	2,240		
	<b>Traffic Signs and Road Markings</b>				
9.5	Traffic Signs	L.S.	1		
9.6	Road Markings	L.S.	1		
	<b>Curb</b>				
9.8.1	Curb on Seel (Main Bridge)	lin. m	1,460		
	Curb on Concrete (APP.Brs)	lin m	2,240		
9.8.2	Curb on Roads (App.Rds)	lin. m	0		
	<b>Side walk</b>				
9.9.1	Sidewalk on Main Bridge	sq. m	1,825		
9.9.2	Sidewalk on App.Brs.	sq. m	1,232		
	Sidewalk on App.Rds.	Sq.m	0		
	<b>Median</b>				
9.9.3	Median on Main Bridge	lin. m	730		
9.9.4	Median on App. Bridges	lin. m	1,120		
9.9.5	Median on App. Roads	lin. m	0		

**Total to Summary**

**Bill No. 10 Electrical and Telephone Works (J)**

Item No.	Electrical and telephone Works	Unit	Estimated Quantity	Unit Rate (Yen)	Estimated Amount (Yen)
	<b>Medium voltage package unit</b>				
10.2.1	Supply, install, test and put into operation the medium voltage package unit with transformer 100 KVA and, complete with all accessories required to complete the Work as per the Specification and the regulations of the electric companies.	nr	1		
	<b>Distribution Boards</b>				
	Supply, install, test and put into operation the following distribution boards, outdoor type and complete with all accessories required to complete the Work as per the Specification, the Drawings and the regulations of the electric companies.				
10.2.3	Distribution Board DB-1	nr	1		
10.2.4	Distribution Board DB-2	nr	1		
10.2.5	Distribution Board DB-3	nr	0		
10.2.8	Distribution Board DB of Box A	nr	0		
10.2.9	Distribution Board DB of Box B	nr	0		
10.2.10	Distribution Board DB of Box C	nr	0		
	total to next page				

	total upto previous page				
	<p><b>Feeding Cables</b></p> <p>Supply, install, test and put into operation the following low voltage PVC 1000 V armoured copper cables laid underground in trenches and/or inside PVC conduits, etc. The work should include all other accessories required to complete the Work according to the Specification and the Drawings and with the cross section areas as follows:</p>				
10.2.11	(3x185 +95)+70 mm <sup>2</sup>	l m	0		
10.2.12	(3x120+70)+50 mm <sup>2</sup>	l m	1,060		
10.2.13	(3x25+16)+10 mm <sup>2</sup>	l m	0		
10.2.14	(4x16+10) mm <sup>2</sup>	l m	2,100		
10.2.15	(5x10) mm <sup>2</sup>	l m	0		
10.2.16	(3x6) mm <sup>2</sup>	l m	0		
	<p><b>Grounding System</b></p>				
10.4	Supply, install and put into operation the grounding system with all accessories required to complete the Work as specified.	L.S.	1		
	<p><b>Lighting Fixtures</b></p>				
10.5.1	Supply, install, test and put into operation the lighting pole fixtures with sodium lamp 250 W. The Work should be completed with all accessories and as specified and shown on the Drawings.	nr	188		
	total to next page				

	total upto previous page				
	<b>Lighting Poles</b>				
	Supply, install, test and put into operation the lighting poles fixed on the ground or on the concrete bridge and complete with all accessories as specified and shown on the Drawings.				
10.5.3	Fixed on ground	nr	76		
10.5.4	Fixed on the concrete bridge	nr	112		
	<b>Intercommunication System</b>				
10.6.1	Supply, install, test and put into operation the equipment of the main stations and complete with all accessories required to complete the Works as specified.	L.S.	7		
10.6.2	Supply, install, test and put into operation the equipment of the slave stations and complete with the cabinet, telephone, terminal box and all other accessories required to complete the Works as specified.	Nr	0		
	<b>Telephone Cables</b>				
	Supply, install, test and put into operation the telephone cables laid underground and/or in conduits inside concrete with all accessories required to complete the Work as specified and with following sizes.				
10.6.3.	10 pairs telephone cable	l m	0		
10.6.4	5 pairs telephone cable	l m	13,500		
<b>Total to Summary</b>					

**Bill No. 11 Supplementary Works (J)**

Item No.	Supplementary Works	Unit	Estimated Quantity	Unit Rate (Yen)	Estimated Amount (Yen)
	<b>Supplementary Works</b>				
11.1	Lightning Rod (4 Nos)	L.S.	1		
11.2	Air Hazard Warning Light (8 Nos)	L.S.	1		
11.5	Wind Velocity meter (1 Nos)	L.S.	1		
11.4	Seismic Meter (2 Nos)	L.S.	1		
11.3	Navigation Lights (6 Nos)	L.S.	1		
11.6	Suez Canal VTMS Remedial Measures	L.S.	1		
11.7	Microwave System Remedial Meraasures	L.S.	0		
<b>Total to Summary</b>					

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