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SARAWAK, MALAYSIA

KUCHING PORT AUTHORITY

KUCHING PORT EXPANSION PROJECT

CONTRACT DOCUMENT
VOLUME 3

INSTRUCTIONS TO TENDERERS,
TENDER, TENDER GUARANTEE,
SPECIFICATION
and
BILLS OF QUANTITIES
for
ELECTRICAL WORKS

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Consulting Engineers and Architects

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CONTRACT DOCUMENT

VOLUME 3

TABLE OF CONTENTS

	<u>Page Nos.</u>
Instructions to Tenderers	vi
Tender	x
Tender Guarantee	xiv

SPECIFICATION

	<u>Chapter 1. General and Preliminaries</u>	1
E101.	General.	1
E102.	Nominated Sub-Contractor.	1
E103.	Payment.	1
E104.	Time for completion.	1
E105.	Drawings, Specification, etc.	1
E106.	Examination and test.	2
E107.	Regulations and Rules.	3
E108.	Materials and workmanship.	3
E109.	Uniformity.	3
E110.	Method of describing items.	3
E111.	Nominated Sub-Contractor to keep Engineer informed	3
E112.	Foreman.	3
E113.	Cooperation with Prime Contractor and other contractors.	3
E114.	Supply of plant materials and labour.	4
E115.	Liability for damage and injury.	4
E116.	Hours of works.	4
E117.	Facilities.	4
E118.	Variations.	5
E119.	Guarantees.	5
E120.	Cleaning up.	5
E121.	Completion documents.	5
E122.	Maintenance.	6

	<u>Chapter 2. Scope of the Works</u>	7
E201.	Scope of the Works.	7
	<u>Chapter 3. Installation of Main and Submain Cabling</u>	9
E301.	Laying cables.	9
E302.	Installation of switchboard.	9
E303.	Labelling.	11
E304.	Earthing.	11
E305.	Painting.	11
	<u>Chapter 4. Installation of Lighting Equipment</u>	12
E401.	Wiring works.	12
E402.	Local switch.	13
E403.	Sub-switchboard.	13
E404.	Lighting fixtures.	14
E405.	Wiring works.	16
E406.	Lighting pole.	17
E407.	Roadway lighting.	17
E408.	Lighting for open storage area.	17
E409.	Wharf lighting.	17
E410.	Extremity lights on the wharf.	18
E411.	Perimeter lights.	18
	<u>Chapter 5. Power Equipment Works</u>	19
E501.	Socket outlets.	19
E502.	Cycle fans.	19
E503.	Wiring to sewage pumps.	19
E504.	Control switchboard.	19
E505.	Power circuits.	19
	<u>Chapter 6. Lightning Conductor System</u>	20
E601.	Lightning conductor system.	20
	<u>Chapter 7. Installation of Telephone Conduit</u>	21
E701.	Extent of works.	21
E702.	Outlet box.	21
E703.	Conduits.	21

BILLS OF QUANTITIES

PREAMBLE

P1.	General.	22
P2.	Application to additional work.	22
P3.	Entry of amount.	22
P4.	Rates and sums to be for work complete.	22
P5.	Rate to be individually entered.	23
P6.	Method of measurement.	23
P7.	Measurement to be taken on net finished work.	23
P8.	Material rates.	23
P9.	Manholes.	24
P10.	Concrete trough.	24
P11.	Lighting poles.	24
P12.	Mounting base.	24
P13.	Appliances.	24
P14.	Wiring pit in switchboard room.	24
P15.	Conduit pipe.	24
P16.	Electric wire and cable.	24
P17.	Excavation.	24
BILL NO.1 -	GENERAL.	25
BILL NO.2 -	EXTERNAL	26
	(a) Main and Submain Cabling.	26
	(1) Piping for High Tension Cable.	26
	(2) Main Cabling.	27
	(3) Switchboard Room.	28
	(4) Submain Cabling.	29
	(i) From Switchboard Room to Sub-switchboard "L1"	29
	(ii) From Switchboard Room to Sub-switchboard "L2"	29
	(iii) From Switchboard Room to Sub-switchboard "L3"	30
	(iv) From Switchboard Room to Sub-switchboard "L4"	30
	(v) From Switchboard Room to Sub-switchboard "L5"	31
	(vi) From Switchboard Room to Sub-switchboard "L6"	32
	(vii) From Switchboard Room to Sub-switchboard "L7"	33

(viii)	From Switchboard Room to Sub-switchboard "L8".	33
(ix)	From Switchboard Room to Sub-switchboard "L9".	34
(x)	From Switchboard Room to Sub-switchboard "L10".	35
(xi)	Spare Conduit Line.	35
(b)	Lighting Equipment Works.	36
(1)	Perimeter Lighting.	36
(2)	Roadway Lighting.	37
(3)	Lighting for Open Storage Area.	38
(4)	Extremity Lights on Wharf.	39
(5)	Wharf Lighting.	40
(c)	Power Equipment Works.	43
(1)	Power Supply for Sewage Pump.	43
(i)	Toilet & Washroom.	43
(ii)	Toilet.	44
(iii)	First Aid & Fire Stations.	44
(iv)	Labourers Canteen.	45
(2)	Power Supply for Vessels.	46
(d)	Lightning Conductor System.	47
(1)	Transit Shed.	47
(2)	Vehicle Shed.	48
(3)	Labourers Canteen.	48
(4)	Fire Hose Tower.	49
(e)	Telephone Conduit.	50
BILL NO.3. - INTERNAL.		51
(a)	Transit Shed.	51
(1)	Lighting Equipment Works.	51
(2)	Power Equipment Works.	52
(b)	Transit Shed: Offices & Lockup Stores.	53
(1)	Submain Cabling.	53
(2)	Lighting Equipment Works.	53
(3)	Power Equipment Works.	55
(c)	Vehicle Shed.	57
(1)	Submain Cabling.	57

(2) Lighting Equipment Works.	57
(3) Power Equipment Works.	59
(d) Labourers Canteen.	61
(1) Lighting Equipment Works.	61
(2) Power Equipment Works.	62
(e) Security & Timekeepers Office.	64
(1) Lighting Equipment Works.	64
(2) Power Equipment Works.	65
(f) First Aid & Fire Station.	67
(1) Lighting Equipment Works.	67
(2) Power Equipment Works.	68
(g) Toilet.	70
(1) Lighting Equipment Works.	70
(2) Power Equipment Works.	71
(h) Toilet & Washroom.	72
(1) Lighting Equipment Works.	72
(2) Power Equipment Works.	73
SUMMARY	74
List of Abbreviation used in this Document.	75

INSTRUCTIONS TO TENDERERS

Inspection of Tender Documents for Main Contract Works

1. The electrical work is a part of the Kuching Port Expansion Project. The main Works of the Project comprise civil engineering, building and sanitary works and will be executed by the Prime Contractor.

The tender documents for the Main Contract Works may be inspected, on application, at the General Manager's Office, Kuching Port Authority, Tanah Puteh, Kuching.

The successful tenderer of the electrical work will be required to enter into a subcontract with the Prime Contractor as a Nominated Sub-Contractor.

Visiting site and examining documents

2. Persons tendering for the electrical works must inspect and examine the site of the proposed works at Kuching and its surroundings and obtain for themselves on their own responsibility all information that may be necessary for the purpose of making a tender and of executing the works, and before tendering must carefully study and examine the documents provided herewith.

Neglect to obtain information

3. Any neglect or failure on the part of persons tendering to obtain reliable information and physical conditions on the spot or elsewhere or any other matters affecting the execution, completion and maintenance of the works, the Tender Price and Contract, shall not relieve the persons whose tender is accepted from the responsibility of completing and handing over the works as defined in the Contract.

Preparation of tender

4. The Tender shall be signed with all blanks filled in.

Entry of rates and amounts

5. The Tenderer must fill in rates and amounts to each item in the Bills of Quantities whether quantities are stated or not. Any item against which no rate or amount is entered by the Tenderer shall be deemed to have been covered by the other rates or amounts in these Bills, and will not be paid for by the Employer.

Tender Price

6. The Tender Price must include all increases in the cost of labour materials plant transport and other things.

The submission of a Tender shall be deemed to be an undertaking that the Tender Price includes the above.

The Tenderer may be required by the Employer to submit a breakdown of any of the rates and/or amounts during the period in which the Tender is being considered and he shall do so without undue delay.

Foreign currency requirement

7. The Tenderer shall complete the schedule given in the Appendix to the Tender for all payments he will require to be made in currencies other than Malaysian Dollars.

Currency

8. All rates and prices and monetary statements shall be calculated in Malaysian Dollars. Payments will be made in Malaysian Dollars, unless otherwise submitted by the Tenderer as stated in paragraph (7) above and shown in the Appendix to Tender.

No alteration allowed

9. No alteration shall be made in the form of Tender, Bills of Quantities or other documents.

Error or omission

10. If the Employer discovers errors or omissions in any Tender he will require the same to be corrected and in such cases a compensating adjustment will be made but the Tender Price shall remain unaltered.

Programme

11. The Tenderer shall submit with his Tender a detailed programme showing the method and order of procedure in which he proposes to carry out the Works.

Samples and catalogues

12. If the quality and/or dimensions of any materials and equipment to be used are not fully specified in the Specification or Drawings, the Tenderer shall submit with his Tender the samples or catalogues and drawings of materials and equipment he proposes to use.

For any imported materials, the Tenderer shall submit the names of the country of origin, manufacturer and Malaysian Agent, if applicable, in addition to the said samples or catalogues.

Alternative equipment or materials

13. Should the Tenderer propose to use equipment or materials different from that shown on the Drawings or in the Specification, he shall submit with his Tender detailed descriptions and drawings of his proposals showing all particulars and important dimensions. Any alternative equipment or materials submitted shall be capable of fulfilling the capacity and performance requirements and shall also conform with the materials and workmanship requirements of the Specification.

The Tenderer shall also submit with the Tender his priced Bills of Quantities of the alternative equipment or materials in addition to the original Bills of Quantities issued with this Tender.

Tender Guarantee

14. (a) The Tenderer shall submit with his Tender a guarantee in the sum of Malaysian Dollars Two Thousand only (M\$2,000.-) in either of the following forms:-

(i) A bank receipt for the cash deposit to the credit of the Employer made at a licensed bank operating in Malaysia and approved by the Employer.

(ii) A written guarantee in a Form as set out on Page xiv from a licensed bank operating in Malaysia.

(b) The cash deposit or the bank guarantee shall be retained by the Employer for not less than one hundred and eighty(180) days from the closing date until a Tender has been finally accepted; thereafter the unsuccessful Tenderers may withdraw their deposits if all the documents provided with this Tender have been returned to the Employer. In the case of the successful Tenderer the deposit or the bank guarantee will be retained by the Employer until a subcontract has been signed with the Prime Contractor for the execution of the Works.

Validity of Tender

15. The Tender shall remain valid for one hundred and eighty(180) days beginning at 12:00 noon East Malaysia time on the closing date of tenders and no tenderer may withdraw his tender within that period.

No payment

16. The Employer shall not be responsible for nor pay for any expenses or losses which may be incurred by any Tenderer in the preparation and submission of his Tender.

Doubt or ambiguity

17. Should there be any doubt or ambiguity as to the meaning of any of the Tender Documents, these Instructions to Tenderers or any other matter or thing, the Tenderer must set forth in writing in English such doubt or ambiguity and submit same to the Chairman, Kuching Port Authority, Kuching, with a copy to the Consulting Engineers at Tokyo, Japan, not later than three weeks before the closing date of the Tender, for elucidation.

Treatment of documents

18. The Tenderer whether he submits a Tender or not shall treat the details of the Documents and Drawings as private and confidential.

Delivery of Tender

19. The Tenderer shall deliver his Tender together with all accompanying documents in triplicate to the Chairman, Kuching Port Authority, Kuching, Sarawak, Malaysia not later than 12:00 noon East Malaysia time on 1970, if sent by post they shall be registered and posted so as to be received by the Chairman not later than the same date and time.

The Tender shall be enclosed in a sealed cover endorsed clearly on the outside with the words "Tender for Electrical Works, Kuching Port Expansion Project at Pending Point, Kuching".

Rejection of Tender

20. The Tender of any Tenderer who has not complied with any of the foregoing instructions may not be considered.

Returning of Documents, etc.

21. The unsuccessful Tenderer shall upon the notification of the results of the Tender forthwith return to the Employer all the Documents and Drawings he received for this Tender.

Accept lowest or any Tender

22. The Employer does not bind itself to accept the lowest or any tender and will not assign any reason for the rejection of any tender.

Withdrawing Tender

23. The Tender may be withdrawn by the Tenderer by despatch of a written request so as to be received by the Chairman, Kuching Port Authority before 12:00 noon on the same day of the closing date.

TENDER

(Notes:- The Appendix forms part of the Tender, Tenderers are required to fill up all the blank spaces in this Tender Form and Appendix.)

The Chairman,
Kuching Port Authority,
Kuching, Sarawak,
Malaysia.

Sir,

Electrical Works of
Kuching Port Expansion Project

Having examined the Specification, Drawings and Bills of Quantities for the construction of the above-named Works, we, the undersigned, offer to construct complete and maintain the whole of the said Works in conformity with the said Specification, Drawings and Bills of Quantities for the sum of Malaysian Dollars
(M\$.....).

2. We undertake if our Tender is accepted to commence the Works within 30 days of receipt of the Employer's order to commence, and to complete and deliver the whole of the Works comprised in the Contract within the time specified in Clause E104 calculated from the last day of the aforesaid period in which the works are to be commenced.

3. Under paragraph 14 (a) and (b) of the Instructions to Tenderers, we attach herewith a receipt from the
..... Bank, approved by you, for the sum of Malaysian Dollars (M\$.....) in respect of the cash deposit made to your credit/we submit herewith a Tender Guarantee executed by the
..... Bank, approved by you, in the sum of Malaysian Dollars (M\$) being the amount of earnest money required in accordance with the Instructions to Tenderers for the Electrical Works of the Kuching Port Expansion Project aforesaid.

4. We agree to abide by this Tender for the period of six calendar months beginning at 12:00 noon East Malaysia time on the closing date and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

5. Unless and until a formal Agreement is prepared and executed this Tender, together with your written acceptance thereof, shall constitute a binding Contract between us.

6. We understand that you are not bound to accept the lowest or any tender you may receive.

APPENDIX

Clause

Period for commencement, from Employer's order to commence	41	Thirty (30) days.
Time for completion	43	As specified in Clause E104, Specification.
Amount of Liquidated Damages	47(1)	M\$.....per week or part of week.
Period of Maintenance	49	Twelve months.
Percentage for Adjustment of P.C. Sum	58(2) per cent.
Percentage of Retention	60(5)	Ten per cent of any sums payable.
Limit of Retention Mondy	60(5)	Ten per cent of final contract sum.
Minimum Amount of Interim Certificates	60(6)	M\$50,000/-.
Time within which payment to be made after Certificate	60(10)	30 days.
Currency in which payment against each certificate is to be made	60(20) per cent in Malaysian Dollars.

APPENDIX (Cont'd)

Schedule for Foreign Currency Requirement

Country	Currency Unit	Items and Tender Price covered by such Payment	Amount expressed in per cent of (c)	Place and Approx. Date of Payment
(a)	(b)	(c)	(d)	(e)
1. U.S.A.	US\$			
2. U.K.	£			
3. Japan	¥			
4. W.Germany	DM			
5.				
6.				
7.				
8.				

TOTAL OF FOREIGN CURRENCY REQUIREMENT = per cent of Tender Sum.

- Notes:-
- a) Foreign currency requirement will be paid to the Contractor at the exchange rate of Malaysian Dollar in term of the par value of the currency as declared by the International Monetary Fund at the time of payment.
 - b) At present, the par value of one Malaysian Dollar (M\$1.00) equals to U.S. Dollar 0.32667 (US\$0.32667).

Date this day of, 1970.

Signature in the capacity of
 duly authorised to sign
 tenders for and on behalf of

Address:

Witness:

Address:

Occupation:

The Chairman,
Kuching Port Authority,
Kuching,
Sarawak,
Malaysia.

Sir,

Tender Guarantee

As requested by the Tenderer Mr./Messrs.
.....
of
we hereby guarantee that the sum of Malaysian Dollars
..... only (M\$.....) being the amount of earnest money
required to be deposited to the credit of the Kuching Port Authority,
Kuching, Sarawak, (hereinafter called the Authority) in accordance with
the Instructions to Tenderers for THE ELECTRICAL WORKS OF KUCHING PORT
EXPANSION PROJECT AT PENDING POINT, KUCHING, shall become payable by us
immediately on receipt of notice in writing given to us by the Authority
or its authorised representative.

This guarantee is effective from the date of the Tender Docu-
ments submitted by the Tenderer, namely
..... 1970, and is to remain in force until
after a notice in writing to discontinue the same is given by the Authority
or its authorised representative or until the Tenderer is notified in
writing that his Tender is unsuccessful.

The Common Seal of
..... Limited
was hereto affixed in the presence of:-
.....
.....
Address:
.....
Date:

or

SIGNED SEALED AND DELIVERED BY THE:

said

.....

in the presence of:

.....

SARAWAK, MALAYSIA

KUCHING PORT AUTHORITY

KUCHING PORT EXPANSION PROJECT

SPECIFICATION

FOR

ELECTRICAL WORKS

CHAPTER 1. GENERAL AND PRELIMINARIES

General:

E101. This Specification shall apply to the electrical work of the Kuching Port Expansion Project.

The main work of the Kuching Port Expansion Project consists of civil, building and sanitary works, and will be executed by the Prime Contractor.

The Conditions of Contract of the main work are the "Conditions of Contract (International) for Works of Civil Engineering Construction" as have been prepared by the Fédération Internationale des Ingénieurs-Conseils (F.I.D.I.C.) jointly with the Fédération Internationale du Bâtiment et des Travaux Publics (F.I.B.T.P.).

Nominated Sub-Contractor.

E102. The Nominated Sub-Contractor shall be required to enter into a sub-contract with the Prime Contractor and shall observe all terms and conditions, where relevant, as stipulated in the Conditions of Contract for the main Works.

Payment.

E103. Payment to the work done by the Nominated Sub-Contractor shall be made in accordance with Clauses 59(2) and 60 of the Conditions of Contract of the main Works.

Time for completion.

E104. The time for completion of the electrical works by the Nominated Sub-Contractor shall be determined by the Prime Contractor and approved by the Engineer, but the whole of the electrical works must be completed and handed over before the contract period of completion for the main Works, which date will be notified to the Nominated Sub-Contractor by the Engineer immediately on the award of the Prime Contract.

Drawings, Specification, etc.

E105. The Drawings relative to this Specification consist of the following:-

<u>No.</u>	<u>Title</u>
E-1	Site plan.

- E-2 Switch room arrangement.
- E-3 Connection diagram, main and submain cabling and external light system.
- E-4 External wiring schedule and lighting pole.
- E-5 Lighting pole, and connection diagram to sewage pumps.
- E-6 Transit shed - Sheet 1.
- E-7 Transit shed - Sheet 2.
- E-8 Wharf lighting, and services to ships.
- E-9 Vehicle shed.
- E-10 Labourers' canteen.
- E-11 Security office, timekeepers office and sheltered exit.
- E-12 First aid and fire stations.
- E-13 Toilet.
- E-14 Toilet and washroom.
- E-15 Lightning conductor system - Sheet 1, and
- E-16 Lightning conductor system - Sheet 2..

The Drawings and Specification are intended to be mutually explanatory and complete, but all work called for by one, even if not by the other, shall be fully executed.

Examination and test.

E106. All materials, equipment and workmanship shall be subjected from time to time to such tests or examinations as the Engineer may direct at the place of manufacture or fabrication or on the Site or at all or any of such places.

The Nominated Sub-Contractor shall at his own cost provide such assistance instruments machines labour and materials as are normally required for examining measuring and testing any work and the quality weight or quantity of any materials used.

Any materials, equipment and workmanship revealed by such tests or examinations to be in the opinion of the Engineer not in accordance with the Specification or Drawings shall at the cost of the Nominated Sub-Contractor be substituted with new materials and equipment or re-executed, and be subjected to further tests or examinations until the satisfaction of the Engineer is obtained.

Performance test shall be carried out by the Nominated Sub-Contractor upon the completion of the electrical work and before commencement of the Maintenance Period.

The Nominated Sub-Contractor shall fully schedule the results of all tests and shall submit through the Prime Contractor three copies of the scheduled results to the Engineer within two weeks of completion of testing.

The final completion certificate will not be issued until after receipt of correctly scheduled test results.

Regulations and Rules.

E107. The whole of the Works shall be carried out in accordance with the requirements for the time being in force of "The Regulations for the Electrical Equipment of Buildings" issued by the Institution of Electrical Engineers of Great Britain, "The Electricity Rules" and other instructions or notices which may be issued from time to time by the Sarawak Government, and the Regulations of the Sarawak Electricity Supply Corporation (SESCO).

Materials and workmanship.

E108. All materials, fittings and equipment shall be new, the best of their respective kinds and shall conform to current British Standard Specifications and Codes of Practice. Any materials not fully specified herein and for which there is no British Standard shall be specifically approved by the Engineer.

If required, samples of any or each of the above shall be submitted for approval before use.

Only first class licensed tradesmen are to be employed on the works in their respective trades, and the whole of the works shall be faithfully executed in a substantial and tradesmanlike manner to the entire satisfaction of the Engineer.

Uniformity.

E109. The Nominated Sub-Contractor shall preserve uniformity of materials, fittings and workmanship as far as possible throughout the whole works.

Method of describing items.

E110. Where an item is described in the Specification as being "Similar to" that listed in a particular firm's catalogue or as being "Similar to" that produced by a particular firm it is to be clearly understood that this has been done only to set an acceptable standard and that no preference will be given to equipment made or supplied by the named firm.

Nominated Sub-Contractor to keep Engineer informed.

E111. The Nominated Sub-Contractor shall keep the Engineer fully informed in writing of any variation from the Contract Drawings and Specification necessary for the compliance with the requirements of the Standard Regulations, Rules, and instructions etc. and shall apply for such variation before the work is commenced.

Foreman.

E112. The Nominated Sub-Contractor shall provide and keep constantly on the works a competent and authorised English-speaking foreman approved in writing by the Engineer.

Cooperation with Prime Contractor and other contractors.

E113. The Nominated Sub-Contractor shall cooperate fully with the Prime Contractor and any other contractors involved in the main or other works to ensure that all the works in the Project may be executed efficiently and in an orderly manner to the full satisfaction of the Engineer.

Supply of plant materials and labour.

E114. Except where otherwise specified the Nominated Sub-Contractor shall at his own expense supply and provide all materials both for temporary and for permanent Works labour plant transport and other things of every kind required for the completion and maintenance of his work.

Liability for damage and injury.

E115. The Nominated Sub-Contractor shall be held liable for any damage caused by him or his employees in carrying out the Sub-Contract.

The Nominated Sub-Contractor shall also be liable during the installation and maintenance period for any damage directly attributable to faulty design, construction, workmanship or materials of any part of the equipment provided by him.

The Nominated Sub-Contractor shall execute the Works in such a manner that it will not cause damage to or interference with existing power cables, telephone cables, pipe lines or other services located in the proximity to the Site. He shall take full responsibility for and repair, at his own cost, any damages or interference which may be caused to these services due to execution of the Works, to the satisfaction of the Engineer. In case such repair work is done by the authority responsible for the service, the cost of such work as assessed by the said authority shall be paid by the Nominated Sub-Contractor.

Hours of works.

E116. Unless otherwise directed, the Nominated Sub-Contractor shall proceed with the work continuously during ordinary working hours from the date of commencement of the Works, until the completion of the Sub-Contract.

The performance of works outside the ordinary working hours and during any time on Sundays or Public Holidays will be allowed only with the approval in writing of the Engineer which may be granted on submission of written application through the Prime Contractor.

The Nominated Sub-Contractor's attention is drawn to Clause 34 of the Conditions of Contract for the main Works relating to rate of wages etc.

Facilities.

E117. The Nominated Sub-Contractor shall be allowed to use temporary facilities including the loading and unloading facilities, scaffoldings, workyard, stores, canteen, office building and sanitary facilities which have been provided by the Prime Contractor on site, without any charges. Provided, however, that the Nominated Sub-Contractor shall not be entitled to request the Prime Contractor to erect or provide any special facilities for his own work in excess of those provided, which if required shall be the sole

responsibility of the Nominated Sub-Contractor.

The Prime Contractor shall supply free of charge to the Nominated Sub-Contractor all water required. The Nominated Sub-Contractor shall, however, provide at his own cost whatever, piping, hose, fittings, etc. which he may require, to carry water from the outlet provided by the Prime Contractor.

The Prime Contractor shall provide at least one 230 volt 15 ampere power outlet at each building and shall pay the costs of all electricity used through such outlet by the Nominated Sub-Contractor for purpose of the Sub-Contract. The Nominated Sub-Contractor shall, however, provide at his own expense whatever conduit, wiring, leads, lamps and similar items required for his work.

Variations.

E118. The Nominated Sub-Contractor's attention is drawn to Clause 51 of the Conditions of Contract for the main Works relating to variations, except that the word "Works" shall be deemed to be the electrical works and the word "Contractor" to be the Nominated Sub-Contractor. All orders in connection with any variation of the works shall be made in writing by the Engineer through the Prime Contractor.

Guarantees.

E119. The Nominated Sub-Contractor shall obtain from such Suppliers or other sub-contractors as directed by the Engineer, guarantees covering the workmanship and materials or equipment for the periods agreed and stated in the letter of acceptance given by the Engineer. The original guarantee must be submitted to the Engineer through the Prime Contractor before the commencement of its work.

Cleaning up.

E120. The Nominated Sub-Contractor shall keep clean and tidy his work site throughout the period of the Works, and remove all rubbish at regular intervals.

On the completion of the Works, the Nominated Sub-Contractor shall clear away and remove from the site all Temporary Works, plant and rubbish and leave the site clean to the satisfaction of the Engineer.

Completion documents.

E121. After completion of the Works, the Nominated Sub-Contractor shall, through the Prime Contractor, forward to the Engineer three sets of linen prints showing the layout of all equipment, pipework and controls and as actually installed.

The Nominated Sub-Contractor shall provide two sets of instruction sheets printed in English as follows:

1. Schematic diagram showing circuits clearly labelled, and

2. A block diagram showing points requiring lubrication or other routine service, detailing the frequency of service required and the grade of lubricant to be used.

The Nominated Sub-Contractor shall mount one complete set of all the above in a glazed frame, firmly secured to switchboards or equipment or in such locations as are directed by the Engineer. The other set shall be supplied unmounted to the Engineer.

In addition, the Nominated Sub-Contractor shall supply to the Engineer two copies of any operating or maintenance manuals or data sheets published by the plan manufacturer or supplier.

Maintenance.

E122. The Period of Maintenance shall be twelve (12) calendar months calculated from the date of completion of the Works certified by the Engineer.

The Nominated Sub-Contractor's attention is drawn to Clause 49 of the Conditions of Contract for the main Works relating to maintenance and defects.

CHAPTER 2. SCOPE OF THE WORKS

Scope of
the Works.

E201. The Works consist of the followings:-

1. Installation of Main and Submain Cabling.
 - a. Piping of conduits from a point shown on the Drawing No. E-1 to the sub-station for the installation of high tension cable. The cable shall be laid by the SESCO.
 - b. Wiring of main cable from the sub-station to the switchboard room in the vehicle shed.
 - c. Installation of switchboard and wiring inside the switchboard room, and
 - d. Wiring from the switchboard room to sub-switchboards and power control switchboards in each building.
2. Lighting Equipment Works.
 - a. Wiring of branch circuits in each building.
 - b. Installation of lighting fixtures, switches and sub-switchboards, and
 - c. Erection of poles, wiring to external lighting and installation of lighting fixtures.
3. Power Equipment Works.
 - a. Wiring in buildings, and installation of cycle fans and socket outlets.
 - b. Installation of power control switchboards, wiring to sewage pumps, and installation and wiring of water-level switches, and
 - c. Wiring from sub-switchboard to socket outlets on the wharf.
4. Installation of Lightning Conductor System.

For the transit shed, vehicle shed, labourers' canteen and the fire hose tower.
5. Installation of Telephone Conduit for the Wharf-to-Shore Telephone.

Power supply.

The power will be supplied from the sub-station to be installed on the Site by the Sarawak Electricity Supply Corporation, in three phase four wire 230/400 volt 50 cycles.

Metering.

The power supply will be metered on the main switchboard. The SESCO will supply the watt-hour meter and current transformer for metering purpose for installation in the main switchboard by the Electrical Nominated Sub-Contractor.

CHAPTER 3. INSTALLATION OF MAIN & SUBMAIN CABLING

Laying cables.

E301. The cable shall be 660 volts, paper insulated lead sheathed cable (copper conductor) and conform to B.S. 480 (1966). The cable shall be laid underground.

Where cable after cutting cannot be immediately sealed, sufficient length of cable shall be allowed to enable any insulation that has breached to be cut back until a satisfactory test is obtained.

In connecting cables, soldering socket or compression joint socket shall be used and the connection shall be thoroughly insulated by approved tape to prevent moisture from infiltrating in it.

Where passing under pavement, the cable shall be installed in a galvanized conduit pipe, and Clause E401 of Chapter 4 hereof shall be referred to for specification.

Where being laid in unpaved area, the cable shall be buried direct in concrete trough. Concrete trough shall be placed with its open side upward in the bed of trench, leaving no gap between them, and the cable shall be installed therein, with the trough filled with sand, covered with concrete lid without any gap. The trench shall then be filled back with selected materials, and the lids shall not be in contact with anything else but earth or sand. The minimum clearance between the cables shall be two inches. High tension conduit pipe and concrete trough shall be buried to a depth of more than 3 feet and 6 inches, and low tension conduit pipe to a depth of more than 2 feet and 6 inches.

Concrete markers showing the locations of underground cable and cable connections shall be installed at key points as directed by the Engineer.

On completion of the work, an infinity test shall be applied with a 500 volt megger in the presence of the Engineer. Any cable not passing this test shall be rejected.

Installation of switchboard.

E302. The Nominated Sub-Contractor shall supply and install a main switchboard, which shall be complete with the following:

- 1 No. 3P 300A circuit breaker.
- 1 No. 3P 250A circuit breaker.
- 1 No. 3P 100A circuit breaker.
- 3 No. 3P 60A circuit breaker.
- 2 No. 3P 30A circuit breaker.
- 1 No. 3P 20A circuit breaker.
- 7 No. 3P 10A circuit breaker.
- 4 No. 1P 50A circuit breaker.
- 2 No. 1P 40A circuit breaker.

- 2 No. 1P 20A circuit breaker.
- 2 No. 1P 5A circuit breaker.
- 2 No. Watt-hour meter, for Labourers' canteen.
- 1 No. Watt-hour meter (Supply from SESCO).
- 2 No. 300/5A current transformer (Supply from SESCO).
- 2 No. 100/5A current transformer, for ammeters.
- 2 No. 400/5A current transformer, for ammeters.
- 1 No. Voltmeter, 500 volt.
- 1 No. Ammeter, 400A.
- 1 No. Ammeter, 100A.

In addition, the following shall be provided in the switchboard.

1. Transfer Switch: In the case of the voltmeter, the transfer switch shall have an off position and shall measure the voltage of each phase above neutral. The ammeter transfer switch shall short-circuit the burden when not connected to the ammeter.

2. Earth Leakage Circuit Breaker: The operating current of a current operating earth-leakage circuit-breaker should not exceed 2% of the normal rated current of the circuit, and the product of its operating current in amperes and the earth-loop impedance in ohms does not exceed 40. The earth terminal shall be connected to a suitable earth electrode. And,

3. Time Switch: This shall have 24 hour dial graduations and two set points, on and off, and automatically turn on or off external lighting, coupled with a manual/automatic changeover switch and electromagnetic switch.

Construction of switchboard.

(b) The switchboard shall be constructed with welded angle iron frame sheeted with heavy gauge sheet steel stiffened where necessary. All metal shall be straight, flat and free from rust and scale. All joints shall be neatly welded and finished flush with the adjacent surfaces by grinding or machining. All bare edges shall be lipped and free from burrs.

Requirements in designing switchboard.

(c) In designing the switchboard, the following requirements are mandatory:

- 1. Future connections to the board shall be in perfect safety to any installed switch without interruption to service on any other outlet.
- 2. The circuit breakers shall be withdrawable for maintenance purposes, and

3. No unit shall be located in a position less accessible than that shown on the Drawings.

The board shall be dust and moisture-proof and shall be vermin and termite proofed for use in the tropics.

Bus-bars shall be solid drawn high conductivity copper base rigidly supported to withstand short circuit stress.

All connections shall be securely clamped to bus-bars to prevent overheating.

Labelling.

E303. All equipment and circuits shall be clearly labelled in English. The labels shall be white lettering on a dark background, letters not less than 1/4" high.

Earthing.

E304. All switchboards, switchgears and associated equipment shall have earthing conductors, electrodes, links, and other accessories as required by I.E.E. Regulations and by the SESCO's, and shall be earthed strictly in accordance with such Regulations and to the approval of the Engineer.

Painting.

E305. All metalwork shall be cleaned down free of rust and scale and then given a rust-proofing coat of primer and one undercoat and two finishing coats of gloss paint. The board shall be finished with two coats of high gloss stove enamel inside and out.

CHAPTER 4. INSTALLATION OF LIGHTING EQUIPMENT

SECTION 1. INTERNAL LIGHTING FIXTURES

Wiring works.

E401. (a) Conduit: The conduit shall be used for all the wiring works and shall be galvanized heavy gauge steel pipe complying with B.S. 31 (1940), minimum 3/4" in diameter.

All conduit runs shall be properly bonded together with approved bonding clamps and effectively earthed. Bonding lead shall be bare copper cable and the size shall conform to the Regulations (I.E.E., 1970).

The conduits shall be buried in the concrete floor slab, and exposed on the wall and ceiling surfaces.

(b) Light outlets: Light outlets shall wherever possible be utilised as draw-in boxes, and no draw-in box shall be inserted in a switch run without the approval of the Engineer.

(c) Sealing conduit: The conduits shall be laid between the top and bottom reinforcing bars approximately in the centre of the slab. All protruding conduits shall be effectively sealed before placing in position.

Special provision shall be made to protect the threads and all protruding conduits against corrosion.

(d) Watertight jointing: All dips in the conduit shall be made without joints but where these joints are unavoidable, the joint shall be made watertight with graphite jointing compound. All conduits shall be swabbed through before drawing in of cable. Cast iron boxes shall be employed and all conduits screwed thereto.

(e) Explosion-proof cabling: The cables to be used in the oil storage of the vehicle shed shall be lead-insulated steel armoured cable and shall be connected with explosion-proof sealing box and explosion-proof fixture conforming to B.S. 229 (1957).

(f) Fittings: All fittings and draw-in boxes, and the saddles, clamps or clips employed to support the conduit shall be galvanized and the screws, nuts, bolts, washers, etc. shall be rust-resisting.

The conduit shall be held clear of all surfaces by the use of galvanized spacer bars. All inspection covers shall be watertight.

(g) Electric cable: The electric cable shall be 660 volts, PVC insulated, non-armoured single core copper conductor, complying with B.S. 2004 (1961), and when wiring each phase shall be colour coded.

(h) Connection to equipment: The cable shall be securely connected by means of compression joint, and the joint shall be wound with tape so as to retain the same or higher effect than that of the original insulation.

The cable shall be run through the switch mounted on or adjacent to the equipment to the terminal block of the equipment and connected thereto.

(i) Earthing: An approved earth cable shall be run to all fluorescent light fixtures, metalwork of filament lamp fixtures, power outlets and exposed metalwork of all other equipment whether called for by the Regulations or not.

Joints of pipes or of pipe and box, etc. shall be connected with bonding lead, and the paragraph (a) of this Clause shall be referred to for specification.

(j) Plugs: All plugs in walls etc. shall be of the expansion type. Wooden plugs will not be permitted.

(k) Position of outlets: The electrical Nominated Sub-Contractor shall receive instructions from the Engineer as to the positions of outlets before commencing work. Any variation of position of up to six feet may be effected without additions or deductions.

Local switch.

E402. (a) Internal switches shall have brass plates, 5 amp 250V AC rating of Crabtree or other approved manufacture, with cast iron flush boxes with screwed conduit entries and suitable mounting grids.

(b) External switches shall be cast iron weatherproof, hot dip galvanized, 5 amp 250V AC rating of Crabtree or other approved manufacture.

Sub-switchboard.

E403. (a) All sub-switchboards shall be of the dead-front type, and wall mounted in the position shown on the Drawing.

Boards shall be constructed with a sheet steel case with a hinged front panel upon which the equipment shall be mounted.

The sheet steel case and hinged panel shall be stiffened where necessary with a welded angle iron frame.

The front panel shall be of 3/4" "Zemlamite" or other approved material, with edges bevelled. The front of the board shall be polished and the rear surface finished with two coats of white lacquer. The panel shall be held in the position by means of captive thumb screws.

The case shall have suitable conduit knockouts, top and bottom to facilitate connection of conduits. Suitable numbered terminal strip shall be provided inside the case for the termination of the circuits.

Neutral and earth terminals shall be provided.

All wiring and bus-bars shall be colour coded.

Wiring shall be neatly run and held in neat harness by means of suitable ties.

Circuit breakers shall be fitted with both magnetic and thermal trips of "Mitsubishi" or other approved manufacture. The single and triple pole breakers shall be similar in appearance.

Spare space shall be available on each sub-switchboard.

(b) Labelling: All circuits, equipment, zones etc. shall be clearly labelled in English. The labels shall be white lettering on a dark background, letters not less than 1/4" high.

(c) Earthing: All exposed metalwork on the sub-switchboards shall be effectively earthed. Each sub-switchboard shall be fitted with an earth terminal.

(d) Painting: All steel work shall be cleaned down free from rust and scale, and given one coat of rust inhibiting priming paint, followed by one coat of grey undercoat. The undercoat shall be rubbed down and the board finished externally with two coats of high grade gloss enamel and internally with two coats of flat enamel. Finish colour shall be "Dove Grey".

(e) Schedule: A suitable schedule shall be provided and mounted in a glazed timber frame behind the door of each sub-switchboard. Schedule shall be in English. Timber frame shall be varnished to approval.

(f) Sub-circuit: The sub-circuit wiring shall be PVC insulated, non-armoured single core cable run in screwed conduit, protected by a minimum 5 amp. air circuit breaker.

Lighting
fixtures.

E404. A sample of all fixtures shall be submitted to the Engineer for his approval before placing any order.

(a) Fluorescent lamp fixtures: The fixtures shall be fitted with power factor correction condensers to maintain a power factor of 0.85 lag minimum. Ballasts and condensers shall comply with B.S. 2818 (1962).

Type "F-1" - Single 40 watt tube, heavy gauge steel, baked white enamel finish, with reflector, mounted direct to ceiling, similar to "PHILIPS" Cat. No. 62361 AH/26.

Type "F-2" - Same type as "F-1", twin 40 watt tubes, similar to "PHILIPS" Cat. No. 62362 AH/24.

Type "F-3" - Same type as "F-1", three 40 watt tubes, similar to "PHILIPS" Cat. No. 62372 AH/24.

Type "F-4" - Twin 40 watt tubes, heavy gauge steel, baked white enamel finish, for pipe pendant, with reflector, similar to "PHILIPS" Cat. No. 62362 AH/24, and suspension fittings similar to "PHILIPS" Cat. No. 66000 JZ/53.

Type "F-5" - Same type as "F-4", single 40 watt tube, with reflector, similar to "PHILIPS" Cat. No. 62361 AH/26, and suspension fittings similar to "PHILIPS" Cat. No. 66000 JZ/53.

(b) Fluorescent tubes: The tubes shall be of the voltage and wattage specified, and shall be of a colour selected by the Engineer.

(c) Filament lamp fixtures:

Type "V-1" - 60 watt, ceiling lamp, heavy gauge steel body, vapour-proof, with milky-white glass-globe, similar to "TOSHIBA" Cat. No. IL-2203W.

Type "V-2" - 60 watt, wall bracket lamp, heavy gauge steel body, vapour-proof, with milky-white glass-globe, similar to "TOSHIBA" Cat. No. IL-2206W.

Type "I-1" - 100 watt, ceiling lamp, with porcelain enamelled dome

reflector, similar to "WAFAX"
Cat. No. R-1026.

Type "I-2" - 40 watt, ceiling lamp, heavy gauge steel body, with milky-white glass-globe, similar to "TOSHIBA" Cat. No. IL-2201.

Type "VG" - 100 watt, ceiling lamp, explosion-proof type, with clear glass globe and steel guard net, screw type base, similar to "GEC" Cat. No. 65007.

(d) Filament lamp: The lamp shall be gas filled, coiled coil type, and shall be internally frosted.

(e) Mercury-vapour lamp fixtures: The fixtures shall be fitted with power factor correction condenser to maintain a power factor of 0.9 lag minimum.

Type "M-1" - High bay fixture, spread type, mercury-vapour lamp 200W, with heavy gauge aluminium reflector, similar to "TOSHIBA" Cat. No. SN-4014A, and suspension fittings similar to "TOSHIBA" Cat. No. Z39S-P1.

Type "M-2" - High bay fixture, spread type, mercury-vapour lamp 250W, same type as "M-1", similar to "TOSHIBA" Cat. No. SN-4014P and suspension fittings similar to "TOSHIBA" Cat. No. ZT39S-P2.

Type "M-3" - High bay fixture, spread type, mercury-vapour lamp 300W, same type as "M-1", similar to "TOSHIBA" Cat. No. SN4014A, and suspension fittings similar to "TOSHIBA" Cat. No. Z39S-P2.

(f) Suspensions: The fixing of suspension for fluorescent and other heavy type fixtures shall be tested by means of a spring balance, to the satisfaction of the Engineer, to carry a weight equal to five times the weight suspended or 50 lbs. whichever is the greater.

SECTION 2. EXTERNAL LIGHTING FIXTURES

Wiring works.

E405. The underground cables shall be laid in accordance with provisions of Clause E301.

Overhead lines shall be PVC covered hard-drawn copper conductor, size 3/.147, conforming to B.S. 3485 (1962) or equivalent approved, and the connection shall be made by splicing sleeve where tension is applied or by means of connector without tension. In either case, no connection shall be made in the middle of the span. Dimensions of lighting pole shall be as indicated in the Drawing.

Lighting pole. E406. The lighting pole shall be steel pipe, galvanized and painted with one coat of rust-inhibiting primer, two coats undercoat and two coats finishing coat of oil paint as directed.

Roadway lighting. E407. The roadway lighting shall be by mercury vapour or sodium lamp fixtures fitted on the lighting poles as shown on the Drawings. The type to be used shall be:

1. Mercury vapour lamp, 250W, with moulded prismatic glass reflector, similar to "PHILIPS" Cat. No. 68752 ZA/00.
2. Mercury vapour lamp, 250W x 2, with moulded prismatic glass reflector, similar to "PHILIPS" Cat. No. 68752 ZA/00.
3. Sodium lamp, 200W, with moulded prismatic glass reflector, similar to "PHILIPS" Cat. No. 65842 AZ/23.

Lighting for open storage area. E408. The open storage area shall be illuminated by a combination of the following floodlight fixtures mounted on lighting poles:

1. Filament lamp, 500W, similar to "TOSHIBA" Cat. No. IH-10021, and
2. Mercury vapour lamp, 400W, similar to "TOSHIBA" Cat. No. IH-10021.

Wharf lighting. E409. The floodlights to be used shall be:

1. Mercury vapour lamp, 700W, with fixture similar to "TOSHIBA" Cat. No. HT-10023.
2. Filament lamp, 300W, with fixture similar to "TOSHIBA" Cat. No. HT-4011N.
3. Mercury vapour lamp, 700W, with fixture similar to "TOSHIBA" Cat. No. IH-10021.
4. Filament lamp, 1000W, with fixture similar to "TOSHIBA" Cat. No. IH-10021.

On the roof of the transit shed, items 1 and 2 shall be alternately arranged and on the lighting poles, items 3 and 4 shall be fitted on, all as shown on the Drawings.

Extremity lights on the wharf. E410. The lamp to be used shall be filament lamp, 100W, weatherproof heavy cast metal angle body, with metal guard and red glass screw type globe, similar to "NATIONAL" Cat. No. LT-18024. One each pole equipped with a lamp shall be erected at both ends of the wharf.

Perimeter lights. E411. The lamp to be used shall be filament lamp, 60W, bracket type, complete with weatherproof heavy cast metal angle body, cast metal guard and milky white glass globe, similar to "NATIONAL" Cat. No. LT-18024. It shall be installed on each lighting pole as shown on Drawing No. E-5.

CHAPTER 5. POWER EQUIPMENT WORKS

Socket outlets. E501. Internal outlets shall be switched, 13 amp 250V AC rating 3 pin, with safety shutter, with steel plate and steel box coated with Quaker grey enamel, of Crabtree or other approved manufacture.

External outlets shall be switched, 15 amp 250V AC rating 3 pin, with safety shutter, mounted in a galvanized cast iron enclosure.

Cycle fans. E502. A suitable steel junction box shall be fixed on the ceiling. The connection of the circuit wiring and the fan shall be made within the junction box using approved connectors.

The fan shall have four blades of 20 inches in diameter and be equipped with four stage control switch, similar to "TOSHIBA" Cat. No. ECT-50M.

Wiring to sewage pumps. E503. The wiring to sewage pumps and water-level switch shall be by underground 660V paper insulated lead sheathed cable, which shall be connected with lead cable of sewage pumps in galvanized steel box on the wall of septic tank.

Control switchboard. E504. The control switchboard for the sewage pump shall be complete with the followings:

- 1 No. Circuit breaker, 3P, 10 amp.
- 2 No. Circuit breaker, for motor.
- 2 No. Magnetic contactor.
- 1 No. Starter relay unit.
- 1 No. Water-level relay.
- 2 No. Changeover switch.
- 1 No. Transformer for control circuit, and
- 1 No. Ammeter, 10 amp.

The control switchboard shall be manufactured and installed in the same manner as the sub-switch board under paragraph (a) of Clause E403 hereof.

Power circuits. E505. The earth connection of all three-pin socket outlets and switched sockets shall be made by tinned earthing conductor of size not less than 7/.029. The conductor shall be installed in a galvanized conduit pipe, and Clause E401 hereof shall be referred to for specification.

CHAPTER 6. LIGHTNING CONDUCTOR SYSTEM

Lightning
conductor
system.

E601. Air rods shall be affixed on the roofs of the following buildings and on top of the tower, and earthing shall be made by connecting copper strip down conductor and earthing terminals buried in the ground. The resistance to earth shall be one ohm or less, and when the resistance is exceeding one ohm, an auxiliary terminal shall be additionally buried.

<u>Building, etc.</u>	<u>Air Rod</u>	<u>Down Conductor</u>
Transit shed	5	16
Vehicle shed	2	6
Labourers canteen	2	4
Fire hose tower	1	1

The size and method of installing air rod shall be as shown on the Drawings, and the down conductor shall be copper strip 1" x 1/8" and placed in PVC conduit pipe.

In installing the down conductor, care shall be taken so that the radius of winding portion shall be eight inches or less, with angle of 90 degree or more.

The down conductor shall be attached with one inch clamp for testing purpose.

The earthing terminal shall be connected with the down conductor placed inside the manhole as shown on the Drawing.

CHAPTER 7. INSTALLATION OF TELEPHONE CONDUIT

Extent of works. E701. The works shall consist of the installation of telephone outlet boxes and the piping from lead-in manhole to the outlet boxes, for vessels moored at the wharf.

This work shall be carried out in strict accordance with the requirements of the Telecommunication Department, Kuching.

The telephone cables and receptacles will be provided and installed by the Telecommunication Department, Kuching.

Outlet box. E702. The outlet box to be installed on the wharf shall be of waterproof type with waterproof hinged cover.

Conduits. E703. The conduits shall be of galvanized heavy gauge steel pipe, complying with B.S. 31 (1940) and of minimum size of two inches. A draw-in wire shall be left in each conduit after it has been cleaned out.

There shall not be more than two bends between the outlet boxes. Elbows will not be permitted.

KUCHING PORT AUTHORITY
KUCHING PORT EXPANSION PROJECT

BILLS OF QUANTITIES

FOR

ELECTRICAL WORKS

PREAMBLE

General.

P1. This Preamble has been prepared in order to assist the Nominated Sub-Contractor in pricing the Bills of Quantities and to serve as a guide to the measurement of quantities in the Bills. The quantities given in these Bills of Quantities are intended to provide a common basis of the tendering although the quantities are to be regarded as approximately only.

The Nominated Sub-Contractor's attention is drawn to the Specification and Drawings, which are to be read in conjunction with the Bills of Quantities.

The Bills of Quantities, when priced by the Nominated Sub-Contractor, have been established for the calculation of the Contract Price for the Electrical Works and shall serve as the basis of the determination of the Monthly Statements of Account and of the Final Account.

Application to additional work.

P2. The clauses of this Preamble will apply to any additional or varied work which the Nominated Sub-Contractor may be required to execute under the Sub-Contract except where specifically amended or supplemented.

Entry of amount.

P3. The unit of currency used in this Bills of Quantities is the Malaysian Dollar, abbreviated to M\$. The extension of each item to the "Amount" column of the quantity multiplied by the rate shall be made by omitting any fractions below one Dollar.

Rates and sums to be for work complete.

P4. The Nominated Sub-Contractor shall be deemed to have taken full account of all requirements and obligations, whether expressed or implied, covered by all parts of these documents and to have priced the items herein accordingly. The rates and sums must therefore include for all costs of materials, labour, plants and Temporary Works, expenses, contributions, risks of every kind and profit necessary to construct, complete and maintain the whole of the Works in accordance with the Sub-Contract. The only

exception shall be such things which are expressly stated to be at the Employer's or Prime Contractor's expense.

The quantities of works and materials stated in the Bills of Quantities are not to be considered as limiting or extending the total amount of works to be done or materials to be supplied by the Nominated Sub-Contractor.

Rate to be individually entered.

P5. The rate shall be individually entered against all items in the Bills of Quantities. The rate and price shall include whatever allowance considered necessary by the Nominated Sub-Contractor for waste, cutting, laps, etc. The rates thus entered by the Nominated Sub-Contractor shall not be subject to revision, excepting the cases particularly approved by the Engineer.

Items against which no rate or sum is entered by the Nominated Sub-Contractor, whether quantities are stated or not, will not be paid for when executed but will be regarded as covered by other rates in the Bills of Quantities.

Method of measurement.

P6. The quantities have been measured generally in accordance with the principles, but not in every detail, of the "Standard Method of Measurement of Building Works (Fifth edition, 1963)" published jointly by the Royal Institution of Chartered Surveyors and the National Federation of Building Trades Employers, London, respectively.

Measurement to be taken on net finished work.

P7. The Works as executed will be measured for payment in accordance with the method adopted in the Bills of Quantities and under the items as therein set forth. The net measurement of the finished work in place will always be taken.

Material rates.

P8. The rates are to include for:-

- (a) cost of purchase;
- (b) cost of packing;
- (c) cost of handling;
- (d) freight rates;
- (e) insurance premium;
- (f) customs duties, port charges, surtax, and any other levy;
- (g) fees and storage charges;
- (h) cost of transport to the Nominated Sub-Contractor's storage yards;

- (i) cost of creation and maintenance of the Nominated Sub-Contractor's storage yards;
- (j) cost of unpacking;
- (k) cost of cleaning and storing;
- (l) cost of providing samples; and
- (m) cost of testing.

- Manholes. P9. The rates are to include for all materials, fabricating and erecting or placing in position of formworks and steel reinforcement, materials, mixing, transporting and depositing of concrete, and manhole covers, curing of concrete and surface finishing.
- Concrete trough. P10. The rates are to include for all costs of excavation, manufacture and laying of concrete trough, sand to be filled inside, and all other expenses required for transporting and storing the above.
- Lighting poles. P11. The rates are to include for all costs of materials of the poles, transporting, fixing, wiring for lighting fixtures, stabilisers, protective switches, foundation and all other expenses required for erecting poles.
- Mounting base. P12. The rates of mounting bases used for installing floodlights and lightning rods on the roofs of buildings are to include for all costs of component parts, fabrication, assembling and installation.
- Appliances. P13. The rates are to include for all costs of necessary materials, transporting and installation.
- Wiring pit in switchboard room. P14. The rates are to include for all costs of excavation; materials, fabricating and erecting or placing in position of formworks and steel reinforcement; materials, mixing, transporting and depositing of concrete; and steel plate covers and surface finishing.
- Conduit pipe. P15. The rates are to include for all costs of materials, bending, fixing, connecting and painting required.
- Electric wire and cable. P16. The rates are to include for all cost of wiring, connection and materials used in connection.
- Excavation. P17. The rates for excavation are to include for centering, sheathing, pumping and draining of ground water and rainwater, returning to voids after structures have been erected, compacting, trimming of slopes and for transport and disposal of surplus excavated materials as directed.

BILL NO. 1 - GENERAL

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	<u>BILL NO. 1</u>				
	<u>GENERAL</u>				
1	Provide for Performance Bond.	sum	-	-	
2	Provide for all insurances.	sum	-	-	
3	Provide necessary assistance for the Resident Engineer for testing, inspection and measurement.	sum	-	-	
4	Provide, maintain and remove on completion necessary temporary works for the Electrical Works, including water and electricity services and scaffolding.	sum	-	-	
5	Provide for progress photographs in each set of negative and eight prints (Postcard size).	set	50		
6	Contribution for the works to be executed by Sarawak Electricity Supply Corporation.	P.S.			30 000
	TOTAL OF BILL NO.1.				
	Carried to Summary.				

BILL NO. 2 - EXTERNAL

(a) Main and Submain Cabling

(1) Piping for High Tension Cable

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
<u>BILL NO. 2</u> <u>EXTERNAL</u> (a) <u>Main and Submain Cabling</u> (1) <u>Piping for High Tension Cable</u>					
1	Supply, joint and lay conduit pipes.	4 in. lin.ft.	3 1/4		
2	Do. normal bends.	4 in. each	3		
3	Supply and connect bonding lead.	19/.083 lin.ft.	850		
4	Supply and install concrete manholes.				
	3 ft. x 3 ft. x 4 ft.	each	10		
5	Excavate for manholes in Item No. 4.				
	5 ft. x 5 ft. x 6 ft. deep	sum	-	-	
6	Do. for pipes in Item No. 1.				
	2' wide x 4' deep x 1 000' long	sum	-	-	
7	Paint exposed pipes.	sum	-	-	
Carried forward					

BILL NO. 2 - EXTERNAL

(a) Main and Submain Cabling

(2) Main Cabling

Item	Description	Unit	Quantity	Rate		Amount	
				M\$		M\$	
	Brought forward						
	(2) <u>Main Cabling</u>						
8	Supply, joint and lay conduit pipes.						
	3 in.	lin.ft.	320				
9	Do. normal bends.						
	3 in.	each	4				
10	Supply and connect bonding lead.						
	19/.083	lin.ft.	87				
11	Supply, distribute and connect paper insulated lead sheathed cable.						
	4-core 0.3 sq.in.	lin.ft.	190				
12	Supply and install concrete manholes.						
	2 ft. x 2 ft. x 3 ft.	each	3				
13	Excavate for manholes in Item No. 12.						
	4 ft. x 4 ft. x 5 ft. deep	sum	-	-			
14	Do. for pipes in Item No. 8.						
	2' wide x 3' deep x 100' long	sum	-	-			
15	Paint exposed pipes.						
		sum	-	-			
	Carried forward						

BILL NO. 2 - EXTERNAL

(a) Main and Submain Cabling
(3) Switchboard Room

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(3) <u>Switchboard Room</u>				
16	Supply and install main switchboard and connect main and submain cables.	each	1		
17	Supply wiring pit with steel plate cover 1/6 in. thick.				
	2' wide x 1'6" deep x 10' long	sum	-	-	
18	Supply, joint and lay conduit pipes.				
	1 1/4 in.	lin.ft.	5		
19	Do. normal bend.	1 1/4 in. each	1		
20	Supply, distribute and connect PVC non-armoured cable.				
	1-core 0.1 sq.in.	lin.ft.	20		
21	Supply and bury galvanized steel pipe for earthing terminal.				
	2 1/2 in. dia. x 8 ft. long	each	1		
22	Excavate for pipe in Item No. 21.	sum	-	-	
23	Paint exposed pipes.	sum	-	-	
	Carried forward				

(a) Main and Submain Cabling
(4) Submain Cabling

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(4) <u>Submain Cabling</u>				
	(i) <u>From Switchboard Room to Sub-switchboard "L1"</u>				
24	Supply, joint and lay conduit pipes. 2 in.	lin.ft.	690		
25	Do. normal bends. 2 in.	each	2		
26	Supply and connect bonding lead. 7/.064	lin.ft.	188		
27	Supply, distribute and connect paper insulated lead sheathed cable. 4 - core 19/.064	lin.ft.	730		
	(ii) <u>From Switchboard Room to Sub-switchboard "L2"</u>				
28	Supply, joint and lay conduit pipes. 2 in.	lin.ft.	690		
29	Do. normal bends. 2 in.	each	2		
30	Supply and fix steel junction box. 12 in. x 12 in. x 6 in.	each	1		
31	Supply and connect bonding lead. 7/.064	lin.ft.	188		
32	Supply, distribute and connect paper insulated lead sheathed cable. 4 - core 19/.064	lin.ft.	730		
	Carried forward				

BILL NO. 2 - EXTERNAL

(a) Main and Submain Cabling
(4) Submain Cabling

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(iii) <u>From Switchboard Room to Sub-switchboard "L3"</u>				
33	Supply, joint and lay conduit pipes. 2 in.	lin.ft.	850		
34	Do. normal bends. 2 in.	each	2		
35	Supply and connect bonding lead. 19/.064	lin.ft.	230		
36	Supply, distribute and connect paper insulated lead sheathed cable. 4-core 0.1 sq.in.	lin.ft.	870		
37	Supply and install concrete manholes. 2 ft. x 2 ft. x 3 ft.	each	6		
38	-Ditto- 3 ft. x 3 ft. x 3 ft.	each	2		
39	Excavate for manholes in Item No. 37. 4 ft. x 4 ft. x 5 ft. deep	sum	-	-	
40	Do. for manholes in Item No. 38. 5 ft. x 5 ft. x 5 ft. deep	sum	-	-	
41	Do. for pipes in Item No. 33. 2' wide x 3' deep x 830' long	sum	-	-	
	(iv) <u>From Switchboard Room to Sub-switchboard "L4"</u>				
42	Supply, joint and lay conduit pipes. 1 1/4 in.	lin.ft.	1 300		
43	Do. normal bends. 1 1/4 in.	each	2		
	Carried forward				

BILL NO. 2 - EXTERNAL

(a) Main and Submain Cabling
(4) Submain Cabling

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
44	Supply and connect bonding lead.				
	7/.029	lin.ft.	355		
45	Supply, distribute and connect paper insulated lead sheathed cable.				
	4-core 7/.044	lin.ft.	1 500		
46	Supply and install concrete manholes.				
	1 ft. 6 in. x 1 ft. 6 in. x 3 ft.	each	3		
47	Excavate for manholes in Item No. 46.				
	3 ft. x 3 ft. x 5 ft. deep	sum	-	-	
48	Do. for pipes in Item No. 42.				
	2' wide x 3' deep x 850' long	sum	-	-	
	<u>(v) From Switchboard Room to Sub-switchboard "L5"</u>				
49	Supply, joint and lay conduit pipes.				
	1 in.	lin.ft.	280		
50	Do. normal bends.	1 in.	each	2	
51	Supply and connect bonding lead.				
	7/.029	lin.ft.	12		
52	Supply, distribute and connect paper insulated lead sheathhead cable.				
	4-core 7/.029	lin.ft.	260		
53	Supply and install concrete manhole.				
	1 ft. 6 in. x 1 ft. 6 in. x 3 ft.	each	1		
54	-Ditto-	2 ft. x 2 ft. x 3 ft.	each	1	
	Carried forward				

BILL NO. 2 - EXTERNAL

(a) Main and Submain Cabling
(4) Submain Cabling

Item	Description	Unit	Quantity	Rate		Amount	
				M\$		M\$	
	Brought forward						
55	Excavate for manhole in Item No. 53. 3 ft. x 3 ft. x 5 ft. deep	sum	-	-			
56	Do. for manhole in Item No. 54. 5 ft. x 5 ft. x 5 ft. deep	sum	-	-			
57	Do. for pipes in Item No. 49. 2' wide x 3' deep x 200' long	sum	-	-			
	(vi) <u>From Switchboard Room to</u> <u>Sub-switchboard "L6"</u>						
58	Supply, joint and lay conduit pipes. 1½ in.	lin.ft.	400				
59	Do. normal bends. 1½ in.	each	2				
60	Supply and connect bonding lead. 7/.029	lin.ft.	110				
61	Supply, distribute and connect paper insulated lead sheathed cable. 4-core 7/.044	lin.ft.	440				
62	Supply and install concrete manholes. 2 ft. x 2 ft. x 3 ft.	each	2				
63	Excavate for manhole in Item No. 62. 5 ft. x 5 ft. x 5 ft. deep	sum	-	-			
64	Do. for pipes in Item No. 58. 3' wide x 3' deep x 630' long	sum	-	-			
	Carried forward						

BILL NO. 2 - EXTERNAL

(a) Main and Submain Cabling

(4) Submain Cabling

Item	Description	Unit	Quantity	Rate		Amount
				M\$		M\$
	Brought forward					
	(vii) <u>From Switchboard Room to Sub-switchboard "L7"</u>					
65	Supply, joint and lay conduit pipes.					
	1 1/4 in.	lin.ft.	500			
66	Do. normal bends.	1 1/4 in.	lin.ft.	2		
67	Supply and connect bonding lead.					
	7/.029	lin.ft.	137			
68	Supply, distribute and connect paper insulated lead sheathed cable.					
	4-core 7/.044	lin.ft.	560			
69	Supply and install concrete manholes.					
	1 ft. 6 in. x 1 ft. 6 in. x 3 ft.	each	2			
70	Excavate for manholes in Item No. 69.					
	3 ft. x 3 ft. x 5 ft. deep	sum	-	-		
71	Do. for pipes in Item No. 65.					
	2' wide x 3' deep x 120' long	sum	-	-		
	(viii) <u>From Switchboard Room to Sub-switchboard "L8"</u>					
72	Supply, joint and lay conduit pipes.					
	1 1/4 in.	lin.ft.	980			
73	Do. normal bends.	1 1/4 in.	each	2		
74	Supply and connect bonding lead.					
	7/.029	lin.ft.	268			
	Carried forward					

BILL NO. 2 - EXTERNAL

(a) Main and Submain Cabling
(4) Submain Cabling

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
75	Supply, distribute and connect paper insulated lead sheathed cable.				
	4-core 7/.052 lin.ft.	lin.ft.	1 080		
76	Supply and install concrete manholes.				
	2 ft. x 2 ft. x 3 ft.	each	6		
77	Excavate for manholes in Item No. 76.				
	4 ft. x 4 ft. x 4 ft. deep	sum	-	-	
78	Do. pipes in Item No. 72.				
	2' wide x 3' deep x 450' long	sum	-	-	
	(ix) <u>From switchboard Room to Sub-switchboard "L9"</u>				
79	Supply, joint and lay conduit pipes.				
	1½ in.	lin.ft.	1 140		
80	Do. normal bends.	1½ in. each	2		
81	Supply and connect bonding lead.				
	7/.029	lin.ft.	310		
82	Supply, distribute and connect paper insulated lead sheathed cable.				
	4-core 7/.052	lin.ft.	1 250		
83	Supply and install concrete manholes.				
	2 ft. x 2 ft. x 3 ft.	each	2		
84	Excavate for manholes in Item No. 83.				
	3 ft. x 3 ft. x 4 ft. deep	sum	-	-	
	Carried forward				

BILL NO. 2 - EXTERNAL

(a) Main and Submain Cabling
(4) Submain Cabling

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
85	Do. for pipes in Item No. 79. 2' wide x 3' deep x 140' long	sum	-	-	
	(x) <u>From Switchboard Room to Sub-switchboard "L10"</u>				
86	Supply, joint and lay conduit pipes. 1 in.	lin.ft.	1 220		
87	Do. normal bends. 1 in.	each	2		
88	Supply and connect bonding lead. 7/.029	lin.ft.	335		
89	Supply, distribute and connect paper insulated lead sheathed cable. 4-core 7/.029	lin.ft.	1 330		
90	Supply and install concrete manhole. 1 ft. 6 in. x 1 ft. 6 in. x 3 ft.	each	1		
91	Excavate for manhole in Item No. 90. 3 ft. x 3 ft. x 5 ft. deep	sum	-	-	
92	Do. for pipes in Item No. 86. 2' wide x 3' deep x 80' long	sum	-	-	
	(xi) <u>Spare Conduit Line</u>				
93	Supply, joint and lay conduit pipes. 1½ in.	lin.ft.	670		
94	Do. normal bend. 1½ in.	each	1		
95	Supply and connect bonding lead. 7/.044	lin.ft.	180		
	Carried forward				

(b) Lighting Equipment Works
(1) Perimeter Lighting

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(b) <u>Lighting Equipment Works</u>				
	(1) <u>Perimeter Lighting</u>				
96	Supply, joint and lay conduit pipes.				
	1½ in.	lin.ft.	200		
97	Do. do.				
	1¾ in.	lin.ft.	150		
98	Do. normal bends.				
	1½ in.	each	2		
99	-Ditto-				
	1¾ in.	each	2		
100	Supply and connect bonding lead.				
	7/.044	lin.ft.	95		
101	Supply, distribute and connect paper insulated lead sheathed cable.				
	4-core 7/.064	lin.ft.	250		
102	Do. do.				
	2-core 7/.064	lin.ft.	180		
103	Do. 660V PVC insulated non-armoured cable (copper conductor) as overhead lines.				
	1-core 3/.147	lin.ft.	5 000		
104	Supply and erect lighting poles with secondary rack (2-spools) and 2P, 30A fuse switch.				
		each	27		
105	Excavate for lighting poles in Item No. 104.				
	2 ft. x 2 ft. x 5 ft. deep	sum	-	-	
106	Do. for pipes in Item Nos. 96 and 97.				
	2' wide x 3' deep x 150' long	sum	-	-	
107	Supply and install perimeter lights, filament lamp.				
	60W.	each	27		
	Carried forward				

BILL NO. 2 - EXTERNAL

(b) Lighting Equipment Works
(2) Roadway Lighting

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(2) <u>Roadway Lighting</u>				
108	Supply, joint and lay conduit pipes.				
	1½ in. lin.ft.		7 000		
109	Do. do.				
	2 in. lin.ft.		30		
110	Do. normal bends.				
	1½ in. each		87		
111	-Ditto-				
	2 in. each		2		
112	Supply and connect bonding lead.				
	7/.064 lin.ft.		1 920		
113	Supply and lay concrete trough.				
	3 in. x 3 in. x 39 in. each		648		
114	Supply, distribute and connect paper insulated lead sheathed cable.				
	2-core 19/.064 lin.ft.		10 600		
115	Supply and install concrete manholes.				
	1 ft. 6 in. x 1 ft. 6 in. x 3 ft. each		2		
116	Supply and erect lighting poles, 7½ in. x 3¾ in. x 35 ft. 6 in., with lamp fixture "Type-1".				
	each		40		
117	Do. do. with lamp fixture "Type-2".				
	each		2		
118	Do. do. with lamp fixture "Type-3".				
	each		11		
119	Excavate for manhole in Item No. 115.				
	3 ft. x 3 ft. x 5 ft. deep sum		-	-	
120	Do. for pipes in Item Nos. 108 and 109 and trough in Item No. 113.				
	2' wide x 3' deep x 2 500' long sum		-	-	
	Carried forward				

BILL NO. 2 - EXTERNAL

(b) Lighting Equipment Works

(2) Roadway Lighting

(3) Lighting for Open Storage Area

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
121	Do. for poles in Item No. 116. 2 ft. x 2 ft. x 6 ft. deep	sum	-	-	
	<u>(3) Lighting for Open Storage Area</u>				
122	Supply, joint and lay conduit pipes. 1½ in.	lin.ft.	4 570		
123	Do. do. 2 in.	lin.ft.	30		
124	Do. normal bends. 2 in.	each	2		
125	-Ditto- 1½ in.	each	54		
126	Supply and connect bonding lead. 7/.064	lin.ft.	1 250		
127	Supply, distribute and connect paper insulated lead sheathed cable. 2-core 19/.064	lin.ft.	4 700		
128	Supply and erect lighting poles with crossarm. 30 ft.	each	14		
129	Excavate for poles in Item No. 128. 4 ft. x 4 ft. x 6 ft. deep	sum	-	-	
130	Supply and mount floodlights, fila- ment lamp. 500 w.	each	14		
131	Do. do., mercury vapour lamp, and ballasts. 400 w.	each	14		
	Carried forward				

BILL NO. 2 - EXTERNAL

(b) Lighting Equipment Works
(4) Extremity Lights on Wharf

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(4) <u>Extremity Lights on Wharf</u>				
132	Supply, joint and lay conduit pipes, 3/4 in.	lin.ft.	1 100		
133	Do. normal bends. 3/4 in.	each	4		
134	Do. elbows. 3/4 in.	each	4		
135	Supply, distribute and connect PVC non-armoured cable. 1-core 3/.029	lin.ft.	1 500		
136	Do. paper insulated lead sheathed cable. 2-core 3/.029	lin.ft.	660		
137	Supply and connect bonding lead. 3/.029	lin.ft.	300		
138	Supply and fix steel junction box. 5 in. x 5 in. x 3 in.	each	1		
139	Supply and lay concrete trough. 3 in. x 3 in. x 3 ft. 3 in.	each	30		
140	Supply and erect lighting poles with fuse switch. 35 ft. 6 in.	each	2		
141	Supply and mount filament lamps on poles in Item No. 140. 100 w.	each	2		
142	Excavate for pipes in Item No. 132. 3' wide x 3' deep x 110' long	sum	-		
	Carried forward				

BILL NO. 2 - EXTERNAL.

(4) Extremity Lights on Wharf
 (5) Wharf Lighting

Item	Description	Unit	Quantity	Rate		Amount	
				M\$		M\$	
	Brought forward						
143	Do. for poles in Item No. 140. 2 ft. x 2 ft. x 6 ft. deep	sum	-	-			
	(5) <u>Wharf Lighting</u>						
144	Supply and fix sub-switchboard "L3".	each	1				
145	Supply, joint and lay conduit pipes. 1½ in.	lin.ft.	2 870				
146	Do. do. 2 in.	lin.ft.	830				
147	Do. normal bends. 2 in.	each	4				
148	Do. elbows. 1½ in.	each	3				
149	-Ditto- 2 in.	each	3				
150	Supply and connect bonding lead. 19/.064	lin.ft.	1 000				
151	Supply, distribute and connect paper insulated lead sheathed cable. 2-core 7/.064	lin.ft.	590				
152	Do. do. 3-core 7/.064	lin.ft.	1 700				
153	Do. do. 2-core 19/.064	lin.ft.	560				
154	Do. do. 4-core 19/.064	lin.ft.	560				
155	Do. PVC non-armoured 1-core cable. 19/.064	lin.ft.	2 500				
156	-Ditto- 19/.044	lin.ft.	2 500				
157	Supply and fix galvanized steel junction box. 2 ft. x 2 ft. x 1 ft.	each	1				
	Carried forward						

BILL NO. 2 - EXTERNAL

(b) Lighting Equipment Works
(5) Wharf Lighting

Item	Description	Unit	Quantity	Rate		Amount
				M\$		M\$
	Brought forward					
158	Do. galvanized steel boxes. 6 in. x 6 in. x 4 in.	each	48			
159	-Ditto- 2 ft. x 2 ft. x 1 ft. 6 in.	each	1			
160	Supply and erect steel poles with crossarm. 30 ft.	each	2			
161	Excavate for poles in Item No. 160. 4 ft. x 4 ft. x 6 ft. deep	sum	-			
162	Supply and fix mounting bases on roof of transit shed.	each	44			
163	Supply and mount floodlights, mercury vapour lamp, 700W, with fixture similar to "TOSHIBA" Cat. No. HT-10023, on bases in Item No. 162.	each	24			
164	Do. do., filament lamp, 300W, with fixture similar to "TOSHIBA" Cat. No. HT-4011N, on do.	each	20			
165	Do. do., mercury vapour lamp, 700W with fixture similar to "TOSHIBA" Cat. IH-10021, on poles in Item No. 160.	each	4			
166	Do. do., filament lamp, 1000W, with fixture similar to "TOSHIBA" Cat. No. IH-10021, on do.	each	4			
167	Supply and install concrete manholes. 2 ft. x 2 ft. x 3 ft.	each	2			
168	Excavate for manholes in Item No. 167. 4 ft. x 4 ft. x 5 ft. deep	sum	-			
	Carried forward					

BILL NO. 2 - EXTERNAL

(b) Lighting Equipment Works
(5) Wharf Lighting

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
169	Supply and lay concrete trough. 3 in. x 3 in. x 3 ft. 3 in.	each	12		
170-	-Ditto- 5 in. x 3 in. x 1 ft. 7½ in.	each	110		
171	-Ditto- 6 in. x 3½ in. x 1 ft. 7½ in.	each	50		
172	Excavate for pipes in Item Nos. 145 and 146 and trough in Item Nos. 169 to 171 inclusive. 2' wide x 3' deep x 360' long	sum	-	-	
	Carried forward				

BILL NO. 2 - EXTERNAL

(c) Power Equipment Works
(1) Power Supply for Sewage Pump

Item	Description	Unit	Quantity	Rate		Amount
				M\$		M\$
	Brought forward					
	(c) <u>Power Equipment Works</u>					
	(1) <u>Power Supply for Sewage Pump</u>					
	(1) <u>Toilet & Washroom</u>					
173	Supply and fix water-level switch.	each	1			
174	Supply, joint and lay conduit pipes.					
	3/4 in.	lin.ft.	30			
175	Do. do.	1 in.	lin.ft.	60		
176	Do. PVC conduit pipes.	2 1/2 in.	lin.ft.	10		
177	Supply and connect bonding lead.					
	7/.044	lin.ft.	25			
178	Supply, distribute and connect paper insulated lead sheathed cable.					
	3-core 3/.036	lin.ft.	340			
179	-Ditto-	2-core 3/.029	lin.ft.	170		
180	-Ditto-	1-core 7/.044	lin.ft.	170		
181	Supply and lay concrete trough.					
	5 in. x 3 in. x 1 ft. 7 1/2 in.	each	25			
182	Supply and fix weather-proof junction boxes.					
	6 in. x 6 in. x 6 in.	each	3			
183	Excavate for pipes in Item Nos. 174 to 176 inclusive and trough in Item No. 181.					
	2' wide x 3' deep x 70' long	sum	-			
	Carried forward					

BILL NO. 2 - EXTERNAL

(c) Power Equipment Works

(1) Power Supply for Sewage Pump

Item	Description	Unit	Quantity	Rate		Amount
				M\$		M\$
	Brought forward					
	(ii) <u>Toilet</u>					
184	Supply and fix water-level switch.	each	1			
185	Supply, joint and lay conduit pipes.					
	3/4 in.	lin.ft.	50			
186	-Ditto-	1 in.	100			
187	Supply and connect bonding lead.					
	7/.044	lin.ft.	40			
188	Excavate for pipes in Item Nos. 185 and 186.					
	2' wide x 3' deep x 50' long	sum	-			
189	Supply, distribute and connect paper insulated lead sheathed cable.					
	3-core 3/.036	lin.ft.	130			
190	-Ditto-	2-core 3/.029	65			
191	-Ditto-	1-core 7/.044	65			
192	Supply and fix weather-proof steel junction boxes.					
	6 in. x 6 in. x 6 in.	each	3			
	(iii) <u>First Aid & Fire Station</u>					
193	Supply and fix water-level switch.	each	1			
194	Supply, joint and lay conduit pipes.					
	3/4 in.	lin.ft.	26			
195	-Ditto-	1 in.	52			
196	Supply and connect bonding lead.					
	7/.044	lin.ft.	20			
	Carried forward					

BILL NO. 2 - EXTERNAL

(c) Power Equipment Works

(1) Power Supply for Sewage Pump

Item	Description	Unit	Quantity	Rate		Amount	
				M\$		M\$	
	Brought forward						
197	Supply, distribute and connect paper insulated lead sheathed cable.						
	3-core 3/.036	lin.ft.	70				
198	-Ditto-						
	2-core 3/.029	lin.ft.	35				
199	-Ditto-						
	1-core 7/.044	lin.ft.	35				
200	Supply and fix weather-proof steel junction boxes.						
	6 in. x 6 in. x 6 in.	each	3				
201	Excavate for pipes in Item Nos. 218 and 219.						
	2' wide x 3' deep x 20' long	sum	-				
	(iv) <u>Labourers Canteen</u>						
202	Supply and fix water-level switch.	each	1				
203	Supply, joint and lay conduit pipes.						
	3/4 in.	lin.ft.	90				
204	-Ditto-						
	1 in.	lin.ft.	180				
205	Supply and connect bonding lead.						
	7/.044	lin.ft.	12				
206	Supply, distribute and connect paper insulated lead sheathed cable.						
	3-core 3/.036	lin.ft.	200				
207	-Ditto-						
	2-core 3/.029	lin.ft.	100				
208	-Ditto-						
	1-core 7/.044	lin.ft.	100				
209	Supply and fix weather-proof steel junction boxes.						
	6 in. x 6 in. x 6 in.	each	3				
	Carried forward						

BILL NO. 2 - EXTERNAL

(c) Power Equipment Works

(1) Power Supply for Sewage Pump

(2) Power Supply for Vessels

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
210	Excavate for pipes in Item Nos. 203 and 204.				
	2' wide x 3' deep x 90' long	sum	-	-	
211	Supply and install concrete manholes.				
	1 ft. 6 in. x 1 ft. 6 in. x 3 ft.	each	1		
212	Excavate for manholes in Item No. 235.				
	3 ft. x 3 ft. x 5 ft. deep	sum	-	-	
	<u>(2) Power Supply for Vessels</u>				
213	Supply and fix socket outlets.				
	3 pin, 250V, 15 amp.	each	4		
214	Do. weather-proof boxes.				
	10 in. x 6 in. x 6 in.	each	4		
215	Supply, joint and lay conduit pipes.				
	1 1/4 in.	lin.ft.	1 018		
216	Supply and fix steel junction boxes.				
	12 in. x 8 in. x 6 in.	each	4		
217	Supply and connect bonding lead.				
	19/.064	lin.ft.	50		
218	Supply, distribute and connect paper insulated lead sheathed cable.				
	3-core 19/.064	lin.ft.	1 070		
219	Supply and install concrete manhole.				
	1 ft. 6 in. x 1 ft. 6 in. x 3 ft.	each	1		
	Carried forward				

BILL NO. 2 - EXTERNAL

- (c) Power Equipment Works
- (2) Power Supply for Vessels
- (d) Lightning Conductor System
- (1) Transit Shed

Item	Description	Unit	Quantity	Rate		Amount	
				M\$		M\$	
	Brought forward						
220	Excavate for manhole in Item No. 219. 3 ft. x 3 ft. x 5 ft. deep	sum	-	-			
221	Do. for pipes in Item No. 215. 2' wide x 3' deep x 260' long	sum	-	-			
	<u>(d) Lightning Conductor System</u>						
	<u>(1) Transit Shed</u>						
222	Supply and fix air rods.	each	5				
223	Do. mounting bases.	each	5				
224	Supply, joint and fix copper strips. 1/8 in. x 1 in.	lin.ft.	2 580				
225	Do. PVC conduit pipes. 1 1/2 in.	lin.ft.	2 420				
226	Supply and fix steel plates for pipes in Item No. 249 on roof. 1 ft. 4 in. x 4 in. x 3/4 in.	each	80				
227	Do. copper clamps. 1 in.	each	16				
228	Do. steel boxes for clamps in Item No. 227. 6 in. x 4 in. x 2 in.	each	16				
229	Supply and bury galvanized steel pipes for earthing terminal. 2 1/2 in. dia. x 8 ft. long	each	16				
230	Supply and install concrete manholes. 1 ft. 6 in. x 1 ft. 6 in. x 3 ft.	each	16				
231	Excavate for pipes in Item No. 229 and manholes in Item No. 230.	sum	-	-			
	Carried forward						

BILL NO. 2 - EXTERNAL

(d) Lightning Conductor System

(2) Vehicle Shed

(3) Labourers Canteen

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(2) <u>Vehicle Shed</u>				
232	Supply and fix air rods.	each	2		
233	Do. mounting bases.	each	2		
234	Supply, joint and fix copper strips.				
	1/8 in. x 1 in.	lin.ft.	480		
235	Do. PVC conduit pipes.	1 1/2 in. lin.ft.	450		
236	Supply and fix steel plates for pipes in Item No. 236 on roof.				
	1 ft. 4 in. x 4 in. x 1/4 in.	each	52		
237	Do. copper clamps.	1 in. each	6		
238	Do. steel boxes for clamps in Item No. 237.				
	6 in. x 4 in. x 2 in.	each	6		
239	Supply and bury galvanized steel pipes for earthing terminal.				
	2 1/2 in. dia. x 8 ft. long	each	6		
240	Supply and install concrete manholes.				
	1 ft. 6 in. x 1 ft. 6 in. x 3 ft.	each	6		
241	Excavate for pipes in Item No. 239 and manholes in Item No. 240.	sum	-		
	(3) <u>Labourers Canteen</u>				
242	Supply and fix air rods.	each	2		
243	Do. mounting bases.	each	2		
244	Supply, joint and fix copper strips.				
	1/8 in. x 1 in.	lin.ft.	380		
	Carried forward				

BILL NO. 2 - EXTERNAL

(d) Lightning Conductor System

(3) Labourers Canteen

(4) Fire Hose Tower

Item	Description	Unit	Quantity	Rate		Amount	
				M\$		M\$	
	Brought forward						
245	Do. PVC conduit pipes. 1½ in.	lin.ft.	370				
246	Supply and fix steel plates for pipes in Item No. 245 on roof.						
	1 ft. 4 in. x 4 in. x ¼ in.	each	36				
247	Do. copper clamps. 1 in.	each	4				
248	Do. steel boxes for clamps in Item No. 247.						
	6 in. x 4 in. x 2 in.	each	4				
249	Supply and bury galvanized steel pipes for earthing terminal.						
	2½ in. dia. x 8 ft. long	each	4				
250	Supply and install concrete manholes.						
	1 ft. 6 in. x 1 ft. 6 in. x 3 ft.	each	4				
251	Excavate for pipes in Item No. 249 and manholes in Item No. 250.	sum	-				
	<u>(4) Fire Hose Tower</u>						
252	Supply and fix air rod.	each	1				
253	Do. copper pipe.						
	1½ in. dia. x 5 ft. long	each	1				
254	Supply, joint and fix copper strips.						
	1/8 in. x 1 in.	lin.ft.	80				
255	Do. PVC conduit pipes. 1½ in.	lin.ft.	66				
256	Supply and fix copper clamp. 1 in.	each	1				
257	Do. steel box for clamp in Item No. 256.						
	6 in. x 4 in. x 2 in.	each	1				
	Carried forward						

BILL NO. 2 - EXTERNAL

(d) Lightning Conductor System

(4) Fire Hose Tower

(e) Telephone Conduit

Item	Description	Unit	Quantity	Rate		Amount	
				M\$		M\$	
	Brought forward						
258	Supply and bury galvanized steel pipe for earthing terminal. 2½ in. dia. x 8 ft. long	each	1				
259	Supply and install concrete manhole.	each	1				
260	Excavate for pipe in Item No. 282 and manhole in Item No. 283.	sum	-	-			
	<u>(e) Telephone Conduit</u>						
261	Supply and fix telephone outlet boxes.	each	4				
262	Supply, joint and lay conduit pipes. 2 in.	lin.ft.	1 800				
263	Supply and fix steel junction boxes. 10 in. x 8 in. x 6 in.	each	4				
264	Supply and distribute galvanized iron wire. 0.064 in. dia.	lin.ft.	1 900				
265	Supply and install concrete manholes. 1 ft. 6 in. x 1 ft. 6 in. x 3 ft.	each	8				
266	Excavate for manholes in Item No. 265. 3 ft. x 3 ft. x 5 ft. deep	sum	-	-			
267	Do. for pipes in Item No. 262. 1' wide x 3' deep x 1 000' long	sum	-	-			
	TOTAL OF BILL NO. 2.						
	Carried to Summary.						

BILL NO. 3 - INTERNAL

(a) Transit Shed

(1) Lighting Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
<u>BILL NO. 3</u> <u>INTERNAL</u> (a) <u>Transit Shed</u> (1) <u>Lighting Equipment Works</u>					
1	Supply and fix sub-switchboard "L1".	each	1		
2	Do. mercury vapour lamp fixtures.				
	Type "M-1"	each	14		
3	-Ditto-	Type "M-3"	each	70	
4	Supply, joint and lay conduit pipes.				
	3/4 in.	lin.ft.	2 300		
5	Do. do.	1 in.	lin.ft.	920	
6	Do. do.	1 1/4 in.	lin.ft.	2 000	
7	Do. elbows.	3/4 in.	each	5	
8	-Ditto-	1 1/4 in.	each	12	
9	Supply and fix exposed round boxes.				
	3/4 in., one-way	each	8		
10	-Ditto-	3/4 in., two-way	each	24	
11	-Ditto-	1 in., two-way	each	17	
12	-Ditto-	1 1/4 in., two-way	each	35	
13	Supply and connect bonding lead.				
	7/.064	lin.ft.	1 420		
14	Supply, distribute and connect PVC non-armoured 1-core cable.				
	7/.036	lin.ft.	3 360		
Carried forward					

BILL NO. 3 - INTERNAL

(a) Transit Shed
 (1) Lighting Equipment Works
 (2) Power Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
15	-Ditto- 7/.052	lin.ft.	13 630		
16	-Ditto- 7/.064	lin.ft.	20		
17	Supply and bury galvanized steel pipe for earthing terminal. 2½ in. dia. x 8 ft. long	each	1		
18	Excavate for pipe in Item No. 17.	sum	-	-	
19	Paint exposed pipes.	sum	-	-	
	<u>(2) Power Equipment Works</u>				
20	Supply and fix socket outlets. 3 pin, 250V, 13 amp.	each	8		
21	Do. steel boxes for outlets in Item No. 20.	each	8		
22	Supply, joint and lay conduit pipes. 1 in.	lin.ft.	1 270		
23	Supply and connect bonding lead. 7/.064	lin.ft.	345		
24	Supply, distribute and connect PVC non-armoured 1-core cable. 7/.029	lin.ft.	2 670		
25	-Ditto- 7/.064	lin.ft.	1 340		
25a	Paint exposed pipes.	sum	-	-	
	Carried forward				

BILL NO. 3 - INTERNAL

(b) Transit Shed: Offices & Lockup Stores
 (1) Submain Cabling
 (2) Lighting Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(b) <u>Transit Shed: Offices & Lockup Stores</u>				
	(1) <u>Submain Cabling</u>				
26	Supply, joint and lay conduit pipes.				
	2 in. 1/2 in. ft.	lin. ft.	500		
27	Do. elbows.	2 in. each	3		
28	Supply and connect bonding lead.				
	7/.064	lin. ft.	136		
29	Supply, distribute and connect PVC non-armoured 1-core cable.				
	19/.064	lin. ft.	2 110		
30	Paint exposed pipes.	sum	-	-	
	(2) <u>Lighting Equipment Works</u>				
31	Supply and fix sub-switchboard "L2".	each	1		
32	Do. fluorescent lamp fixtures.				
	Type "F-1"	each	17		
33	Do. do.	Type "F-2"	each	34	
34	Do. do.	Type "F-3"	each	2	
35	Do. filament lamp fixtures.				
	Type "I-2"	each	2		
36	Do. do.	Type "V-2"	each	3	
37	Do. exposed switches.				
	One-way, 250 volt, 5 amp, 1-gang	each	17		
	Carried forward				

BILL NO. 3 - INTERNAL

(b) Transit Shed: Offices & Lockup Stores
(2) Lighting Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
38	Do. do.				
	Two-way, 250 volt, 5 amp, 1-gang	each	2		
39	Do. steel plates for switches in Item Nos. 37 and 38.				
	For 1-gang	each	19		
40	Do. steel boxes for do.	each	19		
41	Supply, joint and lay conduit pipes.				
	3/4 in.	lin.ft.	1 300		
42	Do. do.	1 in.	lin.ft.	70	
43	Do. elbows.	3/4 in.	each	51	
44	Do. do.	1 in.	each	4	
45	Supply and fix exposed round boxes.				
	One-way, 3/4 in.	each	12		
46	Do. do.	Two-way, 3/4 in.	each	29	
47	Do. do.	Three-way, 3/4 in.	each	10	
48	Do. do.	Four-way, 3/4 in.	each	7	
49	Do. steel junction box.				
	1 ft. x 1 ft. x 1 ft.	each	1		
50	Supply and connect bonding lead.				
	7/.064	lin.ft.	375		
51	Supply, distribute and connect PVC non-armoured 1-core cable.				
	3/.036	lin.ft.	3 030		
52	Paint exposed pipes.	sum	-	-	
	Carried forward				

BILL NO. 3 - INTERNAL

(b) Transit Shed: Offices & Lockup Stores
(3) Power Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(3) <u>Power Equipment Works</u>				
53	Supply and fix control switchboard for sewage pump.	each	1		
54	Do. water-level switch.	each	1		
55	Do. socket outlets.				
	3 pin, 250 volt, 13 amp.	each	19		
56	Do. steel boxes for outlets.	each	19		
57	Do. cycle fans.	each	16		
58	Do. fan regulators.	each	16		
59	Supply, joint and lay conduit pipes.				
	3/4 in.	lin.ft.	850		
60	Do, do.	1 in.	lin.ft.	630	
61	Do. elbows.	3/4 in.	each	40	
62	-Ditto-	1 in.	each	3	
63	Supply and fix exposed round boxes.				
	One-way, 3/4 in.	each	9		
64	-Ditto-	Two-way, 3/4 in.	each	7	
65	Supply and connect bonding lead.				
	7/.064	lin.ft.	73		
66	Supply, distribute and connect PVC non-armoured 1-core cable.				
	3/.036	lin.ft.	3 504		
67	-Ditto-	7/.064	lin.ft.	700	
68	Do. paper insulated lead sheathed cable.				
	3-core 3/.036	lin.ft.	18		
	Carried forward				

BILL NO. 3 - INTERNAL

(b) Transit Shed: Offices & Lockup Stores
 (3) Power Equipment Works

Item	Description	Unit	Quantity	Rate		Amount	
				M\$		M\$	
	Brought forward						
69	-Ditto- 2-core 3/.029	lin.ft.	9				
70	-Ditto- 1-core 7/.064	lin.ft.	9				
71	Supply and fix waterproof steel junction boxes. 6 in. x 6 in. x 6 in.	each	3				
72	-Ditto- 1 ft. x 1 ft. x 1 ft.	each	1				
73	Supply and bury galvanized steel pipe for earthing terminal. 2½ in. dia. x 8 ft. long	each	1				
74	Excavate for pipe in Item No. 73.	sum	-	-			
75	Paint exposed pipes.	sum	-	-			
	Carried forward						

BILL NO. 3 - INTERNAL

(c) Vehicle Shed
 (1) Submain Cabling
 (2) Lighting Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(c) <u>Vehicle Shed</u>				
	(1) <u>Submain Cabling</u>				
76	Supply, joint and lay conduit pipes.				
	1½ in.	lin.ft.	68		
77	Do. normal bends.	1½ in. each	2		
78	Supply and connect bonding lead.				
	7/.064	lin.ft.	20		
79	Supply, distribute and connect PVC non-armoured 1-core cable.				
	19/.052	lin.ft.	296		
80	Paint exposed pipes.	sum	-	-	
	(2) <u>Lighting Equipment Works</u>				
81	Supply and fix sub-switchboard "L11".	each	1		
82	Do. lighting fixtures, mercury vapor lamp.				
	Type "M-2"	each	49		
83	Do. do., filament lamp. Type "VG"	each	2		
84	Do. do., do. Type "I-1"	each	2		
85	Do. do., fluorescent lamp.				
	Type "F-4"	each	16		
86	Do. do., do. Type "F-5"	each	3		
87	Do. exposed switches.				
	One-way, 250V, 5 amp., 1-gang	each	4		
	Carried forward				

BILL NO. 3 - INTERNAL

(c) Vehicle Shed

(2) Lighting Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
88	Do. do. One-way, 250V, 20 amp., 1-gang	each	10		
89	Do. do. Two-way, 250V, 5 amp., 1-gang	each	2		
90	Do. exposed waterproof switch. One-way, 250V, 5 amp., 1-gang	each	1		
91	Do. steel plates for switches in Item Nos. 87 to 89 inclusive.	each	16		
92	Do. steel boxes for do.	each	16		
93	Supply, joint and lay conduit pipes. 3/4 in.	lin. ft.	1 500		
94	Do. do. 1 in.	lin. ft.	25		
95	Do. elbows. 3/4 in.	each	20		
96	Supply, fix and seal explosion- proof sealing box.	each	2		
97	Supply and fix exposed round boxes. One-way, 3/4 in.	each	30		
98	Do. do. Two-way, 3/4 in.	each	8		
99	Do. do. Three-way, 3/4 in.	each	24		
100	Do. do. Four-way, 3/4 in.	each	8		
101	Do. do. One-way, 1 in.	each	1		
102	Do. do. Three-way, 1 in.	each	1		
103	Supply and connect bonding lead. 7/16 in.	lin. ft.	410		
	Carried forward				

BILL NO. 3 - INTERNAL

- (c) Vehicle Shed
- (2) Lighting System
- (3) Power Supply System

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
104	Supply, distribute and connect PVC non-armoured 1-core cable.				
	3/.036	lin.ft.	700		
105	Do. do.				
	7/.029	lin.ft.	3 200		
106	Do. do.				
	7/.064	lin.ft.	45		
107	Do. lead insulated steel armoured cable.				
	2-core 7/.029	lin.ft.	30		
108	Supply and bury galvanized steel pipe for earthing terminal.				
	2½ in. dia. x 8 ft. long	each	1		
109	Excavate for pipe in Item No. 108.	sum	-	--	
110	Paint exposed pipes.	sum	-	-	
	<u>(3) Power Equipment Works</u>				
111	Supply and fix socket outlets.				
	3 pin, 250 volt, 13 amp.	each	9		
112	Do. steel boxes for outlets in Item No. 111.	each	9		
113	Do. cycle fans.	each	2		
114	Do. fan regulators.	each	2		
115	Supply, joint and lay conduit pipes.				
	¾ in.	lin.ft.	200		
116	Do. elbows.	¾ in. each	5		
117	Supply and fix exposed round box.				
	One-way, ¾ in.	each	1		
	Carried forward				

BILL NO. 3 - INTERNAL

(c) Vehicle Shed

(3) Power Equipment Works

Item	Description	Unit	Quantity	Rate		Amount
				M\$		M\$
	Brought forward					
118	-Ditto- Two-way, 3/4 in.	each	1			
119	Supply and connect bonding lead.					
	7/.064	lin.ft.	10			
120	Supply, distribute and connect PVC non-armoured 1-core cable.					
	3/.036	lin.ft.	495			
121	-Ditto- 7/.064	lin.ft.	142			
122	Paint exposed pipes.	sum	-			
	Carried forward					

BILL NO. 3 - INTERNAL

(d) Labourers Canteen
(1) Lighting Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(d) <u>Labourers Canteen</u>				
	(1) <u>Lighting Equipment Works</u>				
123	Supply and fix sub-switchboard "L8".	each	1		
124	Do. sub-switchboard "L9".	each	1		
125	Do. sub-switchboard "10".	each	1		
126	Do. lighting fixtures, filament lamp.				
	Type "I-1"	each	9		
127	Do. do., do. Type "V-1"	each	6		
128	Do. do., fluorescent lamp.				
	Type "F-1"	each	2		
129	Do. do., do. Type "F-2"	each	38		
130	Do. do., do. Type "F-4"	each	28		
131	Do. exposed switches.				
	One-way, 250V, 5 amp., 1-gang	each	18		
132	Do. do.				
	One-way, 250V, 5 amp., 2-gang	each	2		
133	Do. do.				
	Two-way, 250V, 5 amp., 1-gang	each	4		
134	Do. steel plates for switches in Item Nos. 131 and 133.				
	1-gang	each	22		
135	Do. do. for switches in Item No. 132.				
	2-gang	each	2		
	Carried forward				

(d) Labourers Canteen
 (3) Lighting Equipment Works
 (2) Power Equipment Works

Item	Description	Unit	Quantity	Rate		Amount	
				M\$		M\$	
	Brought forward						
136	Do. steel boxes for switches in Item Nos. 131 to 133.	each	24				
137	Supply, joint and lay conduit pipes.						
	3/4 in.	lin.ft.	1 420				
138	Do. elbows.	each	65				
139	Supply and fix exposed round boxes.						
	One-way, 3/4 in.	each	30				
140	-Ditto-	each	27				
141	-Ditto-	each	20				
142	-Ditto-	each	9				
143	Supply and connect bonding lead.						
	7/.044	lin.ft.	388				
144	Supply, distribute and connect PVC non-armoured 1-core cable.						
	3/.036	lin.ft.	3 172				
145	-Ditto-	lin.ft.	70				
146	Supply and bury galvanized steel pipes for earthing terminal.						
	2 1/2 in. dia. x 8 ft. long	each	3				
147	Excavate for pipes in Item No. 146.	sum	-				
148	Paint exposed pipes.	sum	-				
	<u>(2) Power Equipment Works</u>						
149	Supply and fix control switchboard for sewage pump.	each	1				
150	Do. socket outlets.						
	3 pin, 250V, 13 amp.	each	10				
	Carried forward						

BILL NO. 3 - INTERNAL

(d) Labourers Canteen

(2) Power Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
151	Do. steel boxes for outlets in Item No. 150.	each	10		
152	Supply, joint and lay conduit pipes.				
	3/4 in.	lin.ft.	320		
153	Do. do.	1 in.	lin.ft.	30	
154	Do. elbows.	3/4 in.	each	3	
155	-Ditto-	1 in.	each	3	
156	Supply and connect bonding lead.				
	7/.044	lin.ft.	95		
157	Supply, distribute and connect PVC non-armoured 1-core cable.				
	3/.036	lin.ft.	700		
158	-Ditto-	7/.029	lin.ft.	100	
159	-Ditto-	7/.044	lin.ft.	380	
160	Paint exposed pipes.	sum	-	-	
	Carried forward				

BILL NO. 3 - INTERNAL

(e) Security & Timekeepers Office

(1) Lighting Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(e) <u>Security & Timekeepers Office</u>				
	(1) <u>Lighting Equipment Works</u>				
161	Supply and fix sub-switchboard "L7"	each	1		
162	Do. lighting fixture, fluorescent lamp.				
	Type "F-1"	each	1		
163	-Ditto-	Type "F-2"	each	8	
164	-Ditto-	Type "F-4"	each	14	
165	Supply and fix exposed switch.				
	One-way, 250 volt, 5 amp., 1-gang	each	1		
166	Do. do.				
	One-way, 250 volt, 5 amp., 2-gang	each	1		
167	Do. do.				
	Two-way, 250 volt, 5 amp., 1-gang	each	2		
168	Do. steel plates for switches in Item Nos. 165 and 167.				
	For 1-gang	each	3		
169	Do. do. for switch in Item No. 166.	each	1		
170	Do. steel boxes for switches in Item Nos. 165 to 167 inclusive.	each	4		
171	Supply, joint and lay conduit pipes.				
	3/4 in.	lin.ft.	370		
172	Do. elbows.	3/4 in.	each	19	
	Carried forward				

BILL NO. 3 - INTERNAL

(e) Security & Timekeepers Office
 (1) Lighting Equipment Works
 (2) Power Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
173	Supply and fix exposed round boxes.				
	One-way, 3/4 in.	each	6		
174	-Ditto- Two-way, 3/4 in.	each	14		
175	-Ditto- Three-way, 3/4 in.	each	4		
176	-Ditto- Four-way, 3/4 in.	each	2		
177	Supply and connect bonding lead.				
	7/.029	lin.ft.	100		
178	Supply, distribute and connect PVC non-armoured 1-core cable.				
	3/.036	lin.ft.	930		
179	-Ditto- 7/.044	lin.ft.	19		
180	Supply and bury galvanized steel pipe for earthing terminal.				
	2 1/2 in. dia. x 8 ft. long	each	1		
181	Excavate for pipe in Item No. 180.	sum	-	-	
182	Paint exposed pipes.	sum	-	-	
	<u>(2) Power Equipment Works</u>				
183	Supply and fix socket outlets.				
	3-pin, 250 volt, 13 amp.	each	8		
184	Do. steel boxes for outlets in Item No. 183.	each	8		
185	Do. cycle fans.	each	5		
186	Do. fan regulators.	each	5		
187	Supply, joint and lay conduit pipes.				
	3/4 in.	lin.ft.	330		
	Carried forward				

BILL NO. 3 - INTERNAL

(e) Security & Timekeepers Office
 (2) Power Equipment Works

Item	Description	Unit	Quantity	Rate		Amount	
				M\$		M\$	
	Brought forward						
188	-Ditto- 3/4 in.	each	17				
189	Supply and connect bonding lead.						
	7/.029	lin.ft.	90				
190	Supply, distribute and connect PVC non-armoured 1-core cable.						
	3/.036	lin.ft.	761				
191	-Ditto- 7/.044	lin.ft.	170				
192	Supply and fix exposed round boxes.						
	One-way, 3/4 in.	each	4				
193	-Ditto- Two-way, 1 in.	each	1				
194	Paint exposed pipes.	sum	-				
	Carried forward						

BILL NO. 3 - INTERNAL

(f) First Aid & Fire Station
(1) Lighting Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(f) <u>First Aid & Fire Station</u>				
	(1) <u>Lighting Equipment Works</u>				
195	Supply and fix sub-switchboard "L6".	each	1		
196	Do. lighting fixtures, fluorescent lamp.				
	Type "F-1"	each	3		
197	Do. do., do. Type "F-2"	each	16		
198	Do. do., filament lamp. Type "I-2"	each	1		
199	Do. exposed switches.				
	One-way, 250 volt, 5 amp., 1-gang	each	6		
200	Do. steel plates for switches in Item No. 199.	each	6		
201	Do. steel boxes for do.	each	6		
202	Supply, joint and lay conduit pipes.				
	3/4 in.	lin.ft.	321		
203	Do. elbows. 3/4 in.	each	20		
204	Supply and fix exposed round boxes.				
	One-way, 3/4 in.	each	6		
205	-Ditto- Two-way, 3/4 in.	each	6		
206	-Ditto- Three-way, 3/4 in.	each	7		
207	-Ditto- Four-way, 3/4 in.	each	1		
208	Supply and connect bonding lead.				
	7/.029	lin.ft.	88		
	Carried forward				

BILL NO. 3 - INTERNAL

(f) First Aid & Fire Station
 (1) Lighting Equipment Works
 (2) Power Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
209	Supply, distribute and connect PVC non-armoured 1-core cable.				
	3/.036	lin.ft.	730		
210	-Ditto-				
	7/.044	lin.ft.	20		
211	Supply and bury galvanized steel pipe for earthing terminal.				
	2½ in. dia. x 8 ft. long	each	1		
212	Excavate for pipe in Item No. 211.	sum	-	-	
213	Paint exposed pipes.	sum	-	-	
	<u>(2) Power Equipment Works</u>				
214	Supply and fix control switchboard for sewage pump.	each	1		
215	Do. socket outlets.				
	3 pin, 250 volt, 13 amp.	each	8		
216	Do. steel boxes for outlets in Item No. 215.	each	8		
217	Do. cycle fans.	each	6		
218	Do. fan regulators. 4-stage	each	6		
219	Supply, joint and lay conduit pipes.				
	¾ in.	lin.ft.	420		
220	Do. do.	1 in. lin.ft.	60		
221	Do. elbows.	¾ in. each	13		
222	-Ditto-	1 in. each	3		
223	Supply and connect bonding lead.				
	7/.029	lin.ft.	130		
	Carried forward				

BILL NO. 3 - INTERNAL

(1) First Aid & Fire Station
 (2) Power Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
224	Supply, distribute and connect PVC non-armoured 1-core cable.				
	3/.036	lin.ft.	950		
225	-Ditto-				
	7/.029	lin.ft.	200		
226	-Ditto-				
	7/.044	lin.ft.	530		
227	Supply and fix exposed round boxes.				
	One-way, 3/4 in.	each	4		
228	-Ditto-				
	Two-way, 1 in.	each	2		
229	Paint exposed pipes.	sum	-	-	
	Carried forward				

BILL NO. 3 - INTERNAL

(g) Toilet
(1) Lighting Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(g) Toilet				
	(1) <u>Lighting Equipment Works</u>				
230	Supply and fix switchboard "L5".	each	1		
231	Do. lighting fixtures, filament lamp.				
	Type "I-1"	each	2		
232	Do. exposed switch.				
	One-way, 250V, 5 amp.	each	1		
233	Do. steel plate for switch in Item No. 232.	each	1		
234	Do. steel box for do.	each	1		
235	Supply, joint and lay conduit pipes.				
	3/4 in.	lin.ft.	40		
236	Do. elbows.	3/4 in. each	3		
237	Supply and fix exposed round box.				
	One-way, 3/4 in.	each	1		
238	-Ditto- Three-way, 3/4 in.	each	1		
239	Supply and connect bonding lead.				
	7/.029	lin.ft.	11		
240	Supply, distribute and connect PVC non-armoured 1-core cable.				
	3/.036	lin.ft.	84		
241	-Ditto- 7/.044	lin.ft.	12		
242	Supply and bury galvanized steel pipe for earthing terminal.				
	2 1/2 in. dia. x 8 ft. long	each	1		
	Carried forward				

BILL NO. 3 - INTERNAL

(g) Toilet

(1) Lighting Equipment Works

(2) Power Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
243	Excavate for pipe in Item No. 242.	sum	-	-	
244	Paint exposed pipes.	sum	-	-	
	<u>(2) Power Equipment Works</u>				
245	Supply and fix control switchboard for sewage pump.	each	1		
246	Supply, joint and lay conduit pipes.				
	1 in.	lin.ft.	1		
247	Supply and connect bonding lead.				
	7/.029	lin.ft.	1		
248	Supply, distribute and connect PVC non-armoured 1-core cable.				
	7/.036	lin.ft.	8		
249	-Ditto-				
	7/.044	lin.ft.	3		
250	Paint exposed pipes.	sum	-	-	
	Carried forward				

BILL NO. 3 - INTERNAL

(h) Toilet & Washroom

(1) Lighting Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
	(h) <u>Toilet & Washroom</u>				
	(1) <u>Lighting Equipment Works</u>				
251	Supply and fix sub-switchboard "L4"	each	1		
252	Do. lighting fixtures, filament lamp.				
	Type "I-1"	each	4		
253	-Ditto- Type "V-1"	each	8		
254	Do. exposed switches.				
	One-way, 250V, 5 amp., 1-gang	each	3		
255	Do. steel plates for switches in Item No. 254.	each	3		
256	Do. steel boxes for do.	each	3		
257	Supply, joint and lay conduit pipes.				
	3/4 in.	lin.ft.	160		
258	Do. elbows.	each	11		
259	Supply and fix exposed round boxes.				
	One-way, 3/4 in.	each	5		
260	-Ditto- Two-way, 3/4 in.	each	2		
261	-Ditto- Three-way, 3/4 in.	each	4		
262	-Ditto- Four-way, 3/4 in.	each	1		
263	Supply and connect bonding lead.				
	7/.029	lin.ft.	43		
264	Supply, distribute and connect PVC non-armoured 1-core cable.				
	3/.036	lin.ft.	393		
	Carried forward				

BILL NO. 3 - INTERNAL

(h) Toilet & Washroom
 (1) Lighting Equipment Works
 (2) Power Equipment Works

Item	Description	Unit	Quantity	Rate	Amount
				M\$	M\$
	Brought forward				
265	-Ditto- 7/.044	lin.ft.	19		
266	Supply and bury galvanized steel pipe for earthing terminal. 2½ in. dia. x 8 ft. long	lin.ft.	1		
267	Excavate for pipe in Item No. 266.	sum	-	-	
268	Paint exposed pipes.	sum	-	-	
	<u>(2) Power Equipment Work</u>				
269	Supply and fix control switchboard for sewage pump.	each	1		
270	Supply, joint and lay conduit pipes. 1 in.	lin.ft.	170		
271	Do. elbows. 1 in.	each	4		
272	Supply and connect bonding lead. 7/.029	lin.ft.	19		
273	Supply, distribute and connect PVC non-armoured 1-core cable. 7/.029	lin.ft.	195		
274	-Ditto- 7/.044	lin.ft.	65		
275	Supply and fix exposed round box. Two-way, 1 in.	each	1		
276	Paint exposed pipes.	sum	-	-	
	TOTAL OF BILL NO. 3.				
	Carried to Summary.				

KUCHING PORT AUTHORITY
KUCHING PORT EXPANSION PROJECT

SUMMARY
FOR
ELECTRICAL WORKS

BILL NO.	DESCRIPTION	AMOUNT M\$
1.	General	
2	External	
3	Internal	
	TOTAL AMOUNT :-	

SARAWAK, MALAYSIA
KUCHING PORT AUTHORITY
KUCHING PORT EXPANSION PROJECT

List of Abbreviation used in this Document

A	-	Ampere
AC	-	Alternating Current
amp.	-	ampere
B.S.	-	British Standard
Cat.	-	Catalogue
dia.	-	diameter
ditto.	-	same as before
Do. or do.	-	ditto
etc.	-	et cetera
ft.	-	foot(feet)
in(s).	-	inch(es)
lb(s)	-	pound(s)
lin.ft.	-	linear foot(feet)
M\$.	-	Malaysian Dollar
No(s).	-	Number(s)
P.S.	-	Provisional Sum
PVC	-	Polyvinylchloride
sq.in.	-	square inch(es)
V	-	Volt
W	-	Watt

