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SARAWAK, MALAYSIA

KUCHING PORT AUTHORITY

KUCHING PORT EXPANSION PROJECT

SUMMARY REPORT

June 1970

Prepared for

OVERSEAS TECHNICAL COOPERATION AGENCY

GOVERNMENT OF JAPAN

By

JAPAN PORT CONSULTANTS, LTD.
Consulting Engineers and Architects

Tokyo

SARAWAK, MALAYSIA

KUCHING PORT AUTHORITY

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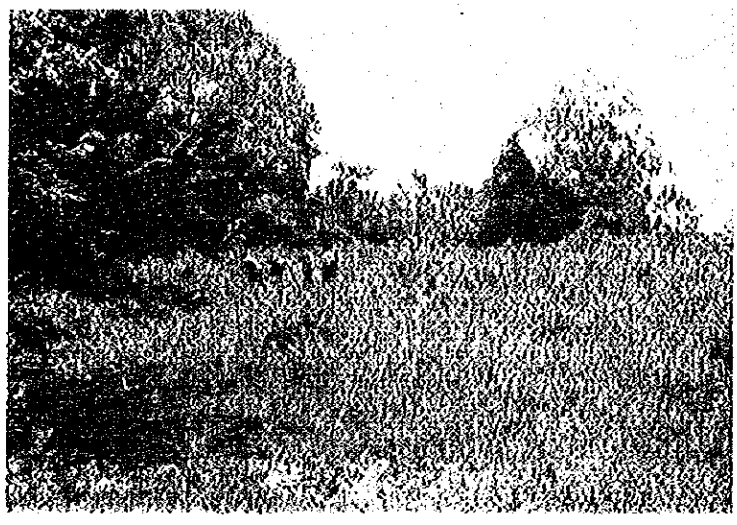


PLANE-TABLE SURVEY

CHAPTER 1 INTRODUCTION

1-1 Detailed Design.

The Port of Kuching, located in the capital of the State of Sarawak in Malaysia, occupies the most important position in the development of the State of Sarawak.

Present Kuching Port, however, does not have adequate facilities to handle increasing volume of cargoes, causing hindrance to accomplish the function of developing the State of Sarawak. Therefore, measures to expand the facilities have strongly been demanded.

Complying with the request of the Government of Malaysia to carry out survey on the Kuching Port Expansion Project, the Japanese Government entrusted the Overseas Technical Cooperation Agency with the task of the survey. The Agency organised and dispatched a survey team for the study of economic and technical feasibility of the project, and the results were presented to the Government of Malaysia in September, 1967, in the form of the "Feasibility Report on Kuching Port Construction Project". (Hereinafter referred to as Feasibility Report).

The Government of Malaysia once again asked the Japanese Government to draw up the detailed design for the expansion of Kuching Port based upon the Feasibility Report, and in Kuala Lumpur in March, 1969, agreement has been reached between the Governments of Malaysia and Japan on the details of works to be done by the Japanese Survey Team. The agreement is called the "Agreement on Plan of Operation for the Detailed Investigation and Design of the Kuching Port Project between the Government of Malaysia and the Government of Japan". (Hereinafter referred to as Plan of Operation. See Appendix A).

Based upon the Plan of Operation, field survey for the detailed design was carried out by the Japanese Survey Team organised by Overseas Technical Cooperation Agency, with the majority of members from Japan Port Consultants, Ltd., during the period between mid-March and mid-June, 1969. The purpose of the survey was to complement in detail the investigations during the Feasibility Survey, to draw up the detailed design in deference to the intention of the State Government of Sarawak towards the project and to fully meet the situation on the field.

Items agreed upon through consultations between Sarawak authorities concerned and the Japanese Survey Team were compiled as the "Memorandum for the Preliminary Design of the Kuching Port Project", and exchanged between the Kuching Port Authority and the Japanese Survey Team. (Hereinafter referred to as Memorandum. See Appendix B).

Upon the bases of investigation results and the Memorandum, a preliminary design has been drawn up and presented to Sarawak authorities concerned in the form of the "Initial Interim Report" in

July, 1969, with due explanation. The purpose of the report was to make the intention of the Sarawak Government fully incorporated in the project and the design.

After thorough study of the "Initial Interim Report", the Sarawak Government sent its comments on the report to the Japanese side in August, 1969. (Hereinafter referred to as First Comments. See Appendix C).

The Japanese Survey Team studied the questions and matters requiring consultation in the First Comments, and replied to the Sarawak Government in August, 1969. (Hereinafter referred to as First Replies. See Appendix D).

The comments of the Sarawak Government on the First Replies reached the Team in October, 1969, and clarified ambiguous points in connection with designing. (Hereinafter referred to as Second Comments. See Appendix E).

A 4-man Sarawak delegation visited Japan on 11th October, 1969, and discussed and examined the details of the design for one week, and the final agreement has been reached with the Team.

Based upon the series of discussions and agreement as aforesaid, the draft tender documents have been prepared and submitted to the Sarawak Government in January, 1970.

The Team received the comments of Sarawak Government on the said documents in March, 1970. (Hereinafter referred to as Third Comments. See Appendix F). As shown on the Revised General Layout attached to the Third Comments, it is suggested that the main entrance to the Port, together with buildings adjacent to it, should be moved northward in connection with the proposed trunk road from Kuching Town. Accordingly, necessary amendments were made to the draft tender documents with a view to incorporate the Revised General Layout.

In response to the Third Comments, the Team sent its replies to the Sarawak Government. (Hereinafter referred to as Second Replies. See Appendix G).

Through courses described above, the final tender documents of the Project have been completed.

1-2 Aim of Detailed Design.

The aim of the detailed design is to attain the early realisation of the expansion of the Kuching Port which is indispensable for the promotion of development of the State of Sarawak, Malaysia, and the design will be carried out in the framework of the Japanese Government's technical assistance programme extended at the request of the Government of Malaysia.

In proceeding with the detailed design work, special attention was given to the following points:-

(1) to fully incorporate in the detailed design the "Plan of Operation", "Memorandum" and other matters consulted and agreed upon between the Sarawak authorities and the Japanese Survey Team;

(2) to apply proceeds of loan from Asian Development Bank to the Works, and to place the Works for the international tender;

(3) to insure that the Works may be completed at low costs, in a short period of time and in safety, and that after its completion, the new port may be efficiently operated;

(4) to take into consideration of the future expansion of the port; and

(5) to take into the design as much locally-produced materials as possible.

1-3 Extent of Detailed Design.

The following are the structures and ancillary facilities included in the detailed design of the Kuching Port Expansion Project:-

(1) Civil Engineering Works:-

(a) Marginal River Wharf.

Depth alongside: -28.0 ft. Overall length: 800.0 ft. The works include a breasting dolphin, a mooring dolphin, a mooring bitt and catwalks.

(b) Revetment.

Depth alongside: -14.0 ft. Overall length: 200.0 ft.

(c) Anti-erosion Works.

On the Sungai Sarawak side: 1,000 ft.

On the Sungai Kuap side: 548 ft.

(d) Dredging.

Area to be dredged: Anchorage and swinging area.
Depth of dredging: To -28.0 ft.
Total dredging area: About 12,000 sq.yd.

(e) Additional Filling.

Finished level of reclaimed land: +23.0 ft.
Total filling area: About 110,000 sq.yd.
The works include ground improvement by sand drain method.

(f) Roadways.

(g) Open Storage Area.

(h) Open Parking Lot.

(i) Drainage.

(2) Building Works:-

(a) A Transit Shed.

Span 150.0 ft., length 533.0 ft. The works include lock-up stores and offices.

(b) A Vehicle Shed.

Span 80. ft., length 150.0 ft. The works include an office, gear store, store, switch rooms and oil storage.

(c) A Labourers Canteen.

Span 50.0 ft., length 150.0 ft. The works include kitchens, store rooms, bunk rooms, wash and shower rooms, counters and toilets.

(d) A Security and Timekeepers Office.

Span 12.0 ft., length 53.0 ft. The works include two sets of weighbridges and a toilet.

(e) A First Aid and Fire Station Building.

Span 40.0 ft., length 50.0 ft. The works include a waiting room equipped with a toilet, a consultation room, a garage, a store and a pass office.

(f) A Sheltered Carpark.

Span 15.0 ft., length 216.0 ft.

(g) A Sheltered Exit.

Span 63.0 ft., length 63.0 ft.

(h) A Toilet.

Span 15.0 ft., length 20.0 ft.

(i) A Toilet and Washroom Block.

Span 20.0 ft., length 51.0 ft.

(j) An Incinerator.

Internal diameter: 5.0 ft.

(k) Fence and Gates.

Chain link wire fencing with an approximate total length of 2,700 ft., including gates. A front gate and a side gate.

(l) A Passengers Reception Building. (Future Plan)

Span 40.0 ft., length 150.0 ft. The works include two sets of toilet.

(m) Work Shop. (Future Plan)

Span 25.0 ft., length 80.0 ft.
This will be provided in a part of vehicle shed.

(3) Water Supply, Drainage and Sanitary Works:-

(a) Water Supply.

Water shall be drawn from the municipal main and distributed to the vessels moored and buildings. The works include branches for future extension.

(b) Drainage.

Rain water and foul water from buildings shall be discharged into the drains on the premises, while soil, after being disposed in septic tanks, shall be mixed with foul water and discharged into the river.

(c) Fire Main.

The fire mains shall be branched from the water mains on the premises and connected to five outdoor hydrants.

(d) Other Sanitary Facilities.

Fixing of sanitary equipment necessary for each room, toilet, shower room, etc. Toilets shall be provided with septic tanks.

(4) Electrical Works.

(a) Main Cabling.

(b) Lighting.

The works include installation of lighting fixtures in each building and on outdoor facilities.

(c) Power Equipment.

Installation of receptacles, ceiling fans, etc. in each building.

(d) Telephone Equipment.

The receptacle for ship-to-shore telephone shall be installed at four places on the wharf together with necessary piping works for their connection.

(e) Lightning Conductor.

The lightning conductor shall be provided with each building of transit shed, vehicle shed and labourers canteen.

(5) Cargo Handling Equipment.

(a) Forklift Trucks.

1) Capacity: 6,000 lbs. at 24" load centre.
Engine: Diesel, water-cooled.
Tyres: Pneumatic.
Torque converter and power steering.
Unit required: 14.

2) Capacity: 6 tons at 24" load centre.
Engine: Diesel, water-cooled.
Tyres: Pneumatic.
Torque converter and power steering.
Unit required: 2

(b) Towing Tractors.

1) Capacity: 3,750 lbs. drawbar pull.
Engine: Diesel.
Tyres: Pneumatic.
Unit required: 8.

2) Capacity: 2,700 lbs. drawbar pull.
Engine: Diesel.
Tyres: Pneumatic.
Unit required: 4.

(c) Trailers.

Unit required: 1) 36 of 3 tons capacity.

2) 6 of 6 tons capacity with brackets for long lengths (40')

3) 4 of 6 tons capacity.

4) 2 of 15 tons capacity.

5) 1 of 30 tons capacity.

(d) Heavy Crane.

Capacity: 30 tons maximum capacity at 10 ft. radius.
Unit required: 1.

(6) Tugboat. (This is not included in Plan of Operation)

Capacity: 1,000 HP.
Unit required: 2.

1-4 Work Schedule of Detailed Design.

(1) Survey for Detailed Design.

A 12-man team left Tokyo on 18th March, 1969, and arrived in Kuching on 19th March to conduct various surveys sepcified in Chapter 2. Field Survey. Nine members of the team left for home on 17th April and the remaining 3 stayed in Kuching until 18th June for topographical and geological survey.

(2) Comparative Design.

A comparative design has been made on the bases of the above survey and the Memorandum. A 7-man team left Tokyo on 6th July, 1969 and arrived in Kuching on 7th July. The team submitted the "Initial Interim Report" to the Malaysian Government and discussed thereon before returning to Japan on the 20th July.

(3) Detailed Design.

Based upon the First Comments and Second Comments of the Sarawak Government, the team has, in group, completed detailed design of the Works, each group placed in charge of civil engineering works, building works, sanitary works, electrical works and cargo handling equipment as classified under 1-3 "Extent of Detailed Design". The results of their effort are as shown in 1-5. A 9-man team left Tokyo on 10th January, 1970, and presented the "Second Interim Report" to the Sarawak authorities concerned with full explanation and came home on 1st February after a series of discussions thereon. The team received the Third Comments of Sarawak Government on 10th March, 1970. The Final Report was drawn up, with necessary amendments made to incorporate the revised general layout.

Shown on Fig. 1 is the work schedule of the detailed design.

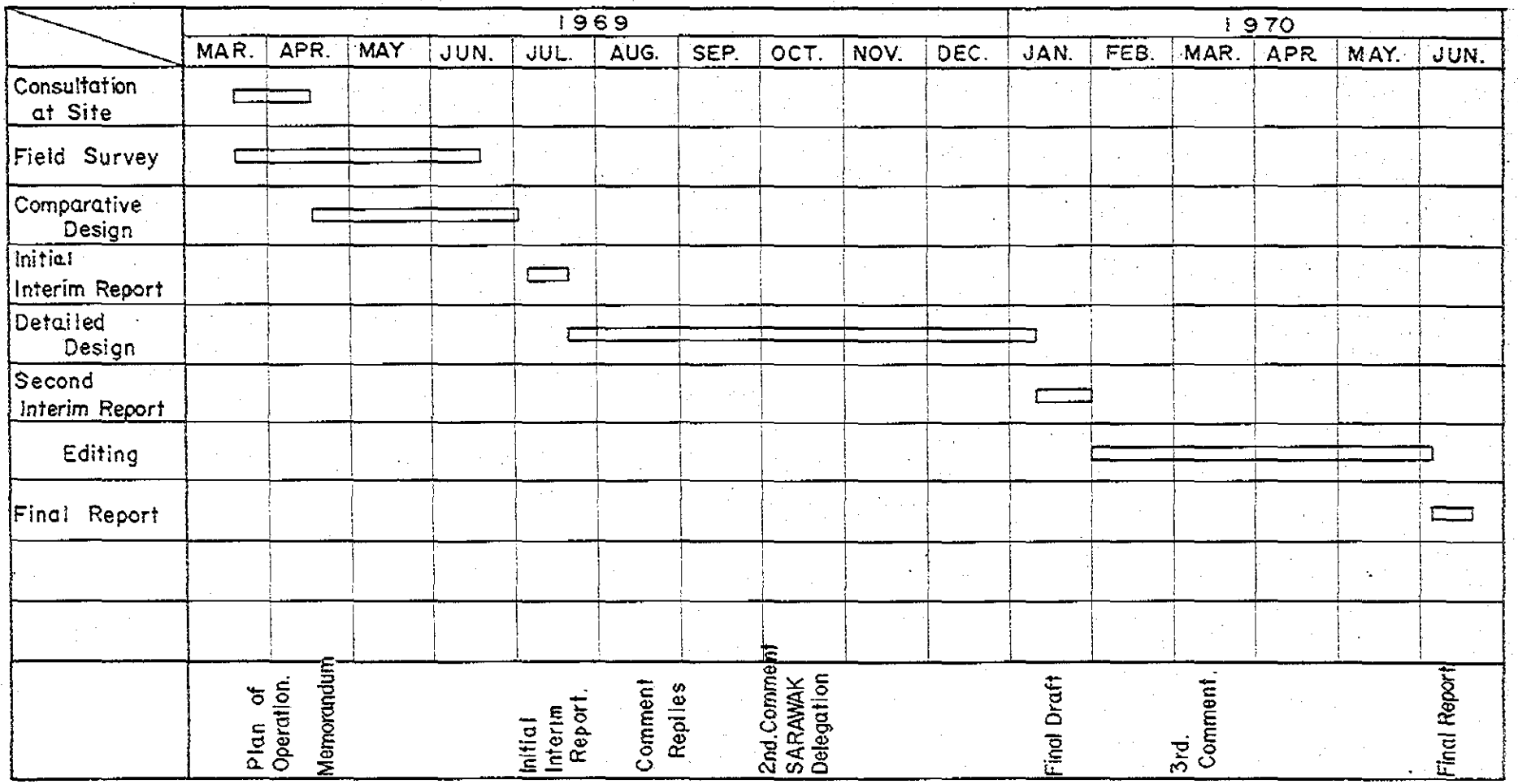
(4) Members of the Japanese Survey Team.

The following are the members of the Japanese Survey Team who have participated in the additional field investigation, and the preparation and submission of the Initial Interim Report, and Second Interim Report and the Final Report.

	Name and title	Field survey	Initial interim report	Second initial report	Final report
Team leader	Tadao Haruta, Director/ JPC, Civil Engineer.	x	x	x	x
Member	Kiyoshi Komatsu, Civil Engineer, Port & Harbour Bureau, Ministry of Transport.	x			
"	Kesao Koike, Mechanical Engineer, Port & Harbour Bureau, Ministry of Transport.			x	
"	Takuya Shimura, Civil Engineer, OTCA.	x	x	x	x
"	Teruo Sakai, Civil Engineer, JPC.	x	x		
"	Junji Ebihara, Civil Engineer, JPC.	x	x		
"	Toyoaki Akiba, Architect, JPC.	x	x	x	x
"	Yoshikane Nagao, Economist, JPC.	x	x	x	x
"	Yoichi Mizumoto, Economist, JPC.				x
"	Masayoshi Otsubo, Architect, JPC.			x	
"	Ikunosuke Tsurushima, Civil Engineer, JPC.		x	x	x
"	Tadashi Kawarazaki, Electrical Engineer, JPC.	x		x	
"	Kenji Yamada, Sanitary Engineer, JPC.	x		x	
"	Yoji Mizutani, Soil Mechanical Engineer, JPC.	x			
"	Hisashi Iwase, Soil Mechanical Engineer, JPC.	x			
"	Tadatoshi Kawai, Soil Mechanical Engineer, JPC.	x			

Fig. - 1

WORK SCHEDULE OF DETAILED DESIGN



1-5 Results of Detailed Design.

The following are the results of detailed design of the Kuching Port Expansion Project:-

Volume 1:
1. Instruction to Tenderers.
2. Form of Tender and Tender Appendix.
3. Form of Agreement.
4. Form of Tender Guarantee.
5. Form of Performance Bond.
6. Conditions of Contract.
   Part 1 - General Conditions .
   Part 2 - Conditions of Particular Application.
   Part 3 - Conditions of Particular Application to Dredging and Reclamation Works.
7. Specification for Civil Engineering, Building and Sanitary Works.

Volume 2:
1. Bills of Quantities for Civil Engineering, Building and Sanitary Works.
2. Schedule of Basic Rates and Prices.

Volume 3: Electrical Works (Comprising Specification and Bills of Quantities).

Volume 4: Cargo Handling Equipment.
1. Conditions of Tendering.
2. Form of Tender and Tender Appendix.
3. Form of Agreement.
4. Form of Tender Guarantee.
5. Form of Performance Bond.
6. Conditions of Contract.
7. Specification.

Volume 5: Tugboats.
1. Conditions of Tendering.
2. Form of Tender and Tender Appendix.
3. Form of Tender Guarantee.
4. Form of Performance Bond.
5. Agreement.
6. Specification.
7. Drawing.

Volume 6: Passengers Reception Building and Workshop.
1. Particular Specification.
2. Bills of Quantities.

Set 1: Drawings for Civil Engineering Works

Set 2: Drawings for Building and Sanitary Works.

Set 3: Drawings for Electrical Works.

Set 4: Drawings for Passengers Reception Building and Workshop.

Summary Report.

1-6 Present Situation of Kuching Port.

Kuching Port is situated on the Sungai Sarawak, some 16-20 miles upstream from the estuary, Muara Tebas. On the right bank of the Sungai Sarawak on which Kuching City lies, there are many berthing facilities for small coastal vessels to handle domestic trade goods such as daily necessities and building materials. But, in this part of the Sungai Sarawak, the river is narrow in width and shallow at some places. It is impossible, therefore, for large vessels to enter the area even if timed with high water.

At Tanah Puteh about 5 miles above Pending Point there are some port facilities for the exclusive use for foreign trade. These constitute the main facilities of Kuching Port and are operated very efficiently under the management of the Kuching Port Authority. However, as the facilities are situated about 16 miles upstream of the mouth of the Sungai Sarawak, entering vessels are limited by the water depth and the width of the river to those of 430 ft. in length and of 17 ft. in draught at the largest.

At Biawak about 700 yards up Pending Point there is a berth for the exclusive use for oil tankers. Most of oil consumed in the 1st and 2nd Divisions of the State of Sarawak is handled at this wharf, and the facilities there are managed by the Marine Department. It is planned to expand the facilities in the near future so that 18,000 dwt tankers can be moored.

Pending Point is situated at the confluence of the Sungai Sarawak and Sungai Kuap, and its neighbouring water area is at present used as an anchorage for vessels waiting for berths at Tanah Puteh Wharf. A jetty there under the management of the Marine Department is available for use by ship passengers from or to Singapore, Sibu and other places. A little upstream of the jetty is Stone Wharf under the P.W.D. management. It is used for unloading construction materials for works under the direct supervision of the State Government.

For further information on the present situation of Kuching Port, refer to the Feasibility Report.

1-7 Kuching Port Expansion Project.

(1) Necessity for New Port Facilities.

Tanah Puteh Wharf now used for foreign trade is efficiently operated under the management of the Kuching Port Authority. But judging from the recent berth utilisation rate, the number of vessels waiting for berth and the waiting time, the volume of cargoes handled at the wharf is beyond the capacity of the facilities. On the other hand, the foreign trade cargoes are expected to increase year after year with the increase of population, development of industries and improvement of the living standard in the hinterland of Kuching Port. In addition, it is impossible to accommodate large vessels

to Tanah Puteh Wharf because the depth alongside the wharf is 17 feet. It is well anticipated that with the expansion of trade the demand for frequent entry of larger vessels will have to be met.

Early construction of new wharf is necessary in order to cope with such tendencies of increasing cargoes and of larger vessels calling at the port, to further promote trade and industries and to improve the living standard of the people.

(2) Projection of Volume of Cargo to be Handled.

An estimation on future foreign trade cargo is given in the Feasibility Report, which set the volume for 1977 at 560,000 tons and for 1980 at 650,000 tons.

(3) Scale of Project.

Adequate yearly cargo handling capacity of Tanah Puteh Wharf with overall quay length of 800 ft. will be 300,000 tons at maximum, when estimated upon the assumption that present practice of cargo handling will remain practically unchanged. As compared with Tanah Puteh Wharf, the new wharf will have greater efficiency in cargo handling, with improvement made in arrangement of apron, transit shed, open storage, etc. and with the introduction of new cargo handling equipment. Therefore, if the new wharf of 800 ft. in length with the cargo handling capacity of 350,000 tons is expanded, its capacity along with that of Tanah Puteh Wharf reaching 300,000 tons will be able to handle 650,000 tons of total cargoes estimated for 1980. Therefore, the extension of the new wharf has been decided to be 800 ft. in length.

The depth alongside the wharf will be 28 feet below the lowest low water level, with the maximum draught of vessels using the wharf set at 25 ft. and the extra depth of water at 3 ft.

(4) Selection of Site.

The reasons for selecting Pending Point on the left bank of the Sungai Kuap as the site for new port facilities are given in the Feasibility Report, but are outlined hereunder:-

(a) Depth and Width of the Sungai Sarawak.

The Sungai Sarawak is deep and less meandering in the part from Muara Tebas to Pending, but in the part above Pending it is shallow and meandering with its width becoming narrow. Therefore, the construction site for a wharf to accommodate large vessels of 25 ft. draught should be selected in the vicinity of Pending and below.

At Pending which is situated at the confluence of the Sungai Sarawak and Sungai Kuap, the river is wide enough for

manoeuvring large vessels. However, dredging is required at places where the depth of water is less than 28 ft.

(b) Relations with Kuching Town and Tanah Puteh Wharf.

Pending is at a distance of about 4 miles from the centre of Kuching Town and about 1.2 miles from Tanah Puteh Wharf, and is comparatively near from both. Besides, a paved road has already been extended to Pending. If the new wharf is to be constructed below Pending, it will be necessary to build a new road to connect with Kuching Town and a bridge to cross the Sungai Sarawak or Sungai Kuap, requiring a large amount of money.

The present Pending Road is a paved two-lane carriageway but not adequate as a road to connect with the new port. Therefore, a great expectation is placed for early implementation of the construction plan of a new highway leading to Pending by the State Government of Sarawak.

(c) Construction Site.

The triangular site surrounded by the Sungai Sarawak, Sungai Kuap and Biawak Road is a swampy lowland thickly covered with nipa palms. But it has a sufficient area for the construction of port facilities. Moreover, the land being owned by the State, the acquisition is not a problem.

(d) Future Expansion.

Generally, it is desirable to concentrate wharves at one place as far as possible from the viewpoints of utilisation, operation and management of the facilities. When a wharf is constructed at a new location, it is desirable to secure adequate space for future expansion. It is possible at the proposed site to construct a wharf with the total expansion of 1,200 ft. from Pending Point up the river on the right bank of the Sungai Kuap.

CHAPTER 2 FIELD SURVEY

2-1 Extent of Survey.

With a view to obtain more detailed data and information to complement the results of the Feasibility Survey conducted in spring, 1967, the following survey and investigation were carried out during the three month period from March through June, 1969:-

(1) Soil Investigation.

(a) Core boring at 8 selected points in shore facilities construction site.
(b) Jet boring at 14 selected points in the Sungai Kuap.
(c) Test piling at 2 selected points on the bank of the Sungai Kuap.
(d) CBR test at 4 selected points at site. Samples were obtained from two other places and sent back to Japan for laboratry tests.

(2) Topographical Survey.

(a) Theodolite and plane-table survey.
(b) Profile levelling.
(c) Sounding.

(3) Hydrological Survey.

(a) Observation of water-level.
(b) Investigation of water quality.
(c) Investigation of current direction and velocity.

2-2 Soil Investigation.

(1) Core Boring.

In the core borings conducted in the Feasibility Survey, emphasis was placed on those for the marginal river wharf. This time core boring was conducted at 8 selected points in the shore facilities construction site to find out the properties of the foundation ground.

The following are the main equipment used for the core boring:-

(a) Boring machine, rotary type, Model ES/BG-3, Toho Chika Koki.
(b) Engine, Model F-6, Yanmar Diesel.
(c) Boring tools and accessories, Toho Chika Koki.

The following is the outline of the core boring:-

Bore hole No.	Boring depth. ft.	Undisturbed samples collected. Nr.	Standard penetration test. Times.	Ground elevation, ft. above Works' Datum.	Elevation of shale, feet above Works Datum.
1	67.09	9	6	+19.42	-22.22
2	67.09	4	6	+20.58	-21.05
3	55.97	6	4	+16.06	-18.03
4	49.57	4	4	+16.20	-17.58
5	49.97	4	5	+17.12	-23.54
6	66.77	11	4	+20.16	-24.10
7	43.27	4	3	+17.04	-13.60
8	57.09	7	4	+18.61	-29.73
Total	456.82	49	36		

The laboratory tests and analyses have been conducted on samples as to the unconfined compressive strength, bulk density, natural water content, liquid limit, plastic limit, mechanical properties and consolidation.

(a) Stratification of Foundation Ground of Port Construction Site.

Within the range of boring depth, the stratification of the foundation ground of the port construction site is considered to be as follows:-

It consists of a 20-30 ft. thick soft clay layer to the depth of -5.5-12 ft. below the ground surface (on an average, 18.0 ft. above the Datum for the Works), sand layer underlying in depth of -18.5 to -22 ft. and shale further below.

1) Clay Layer.

Clay from the area covered with nipa palms (BH.Nr. 4,5 and 7) is dark brownish grey, while clay from other areas (BH. Nr. 1,2,3,6 and 8) is dark grey. In spite of such difference in their colours, no significant difference is recognised in their physical properties according to the results of soil tests. An extremely large quantity of vegetable fibre, whether weathered or unweathered, is found mixed in all layers.

2) Sand Layer.

It is composed of comparatively uniform fine sand with particle size ranging from 0.2mm to 0.5mm, and coloured dark grey. The N-value in the standard penetration test was approximately 20, indicating a medium

relative density. But, around BH. Nr. 2 and 3, the clay or silt content in the samples is slightly larger than other points of investigation.

3) Shale.

At BH. Nr. 1, 2 and 6 the samples are clayey mixed with shales broken into square-edged pebbles. But shale in other places are hard with the N-value registering 50/25 cm. to 50/1 cm. The boundary between the shale and sand is located at about 18.5 ft. below the Datum at BH. Nr. 3, 4 and 5 (near the open storage area), declining from BH. Nr. 3 towards upstream of the Sungai Kuap and from BH. Nr. 5 downstream.

(b) Results of Soil Test.

Location of boreholes, boring logs and the results of laboratory soil tests conducted on undisturbed samples collected from clayey layer are as shown on Fig - 2 to 13.

GENERAL LAYOUT

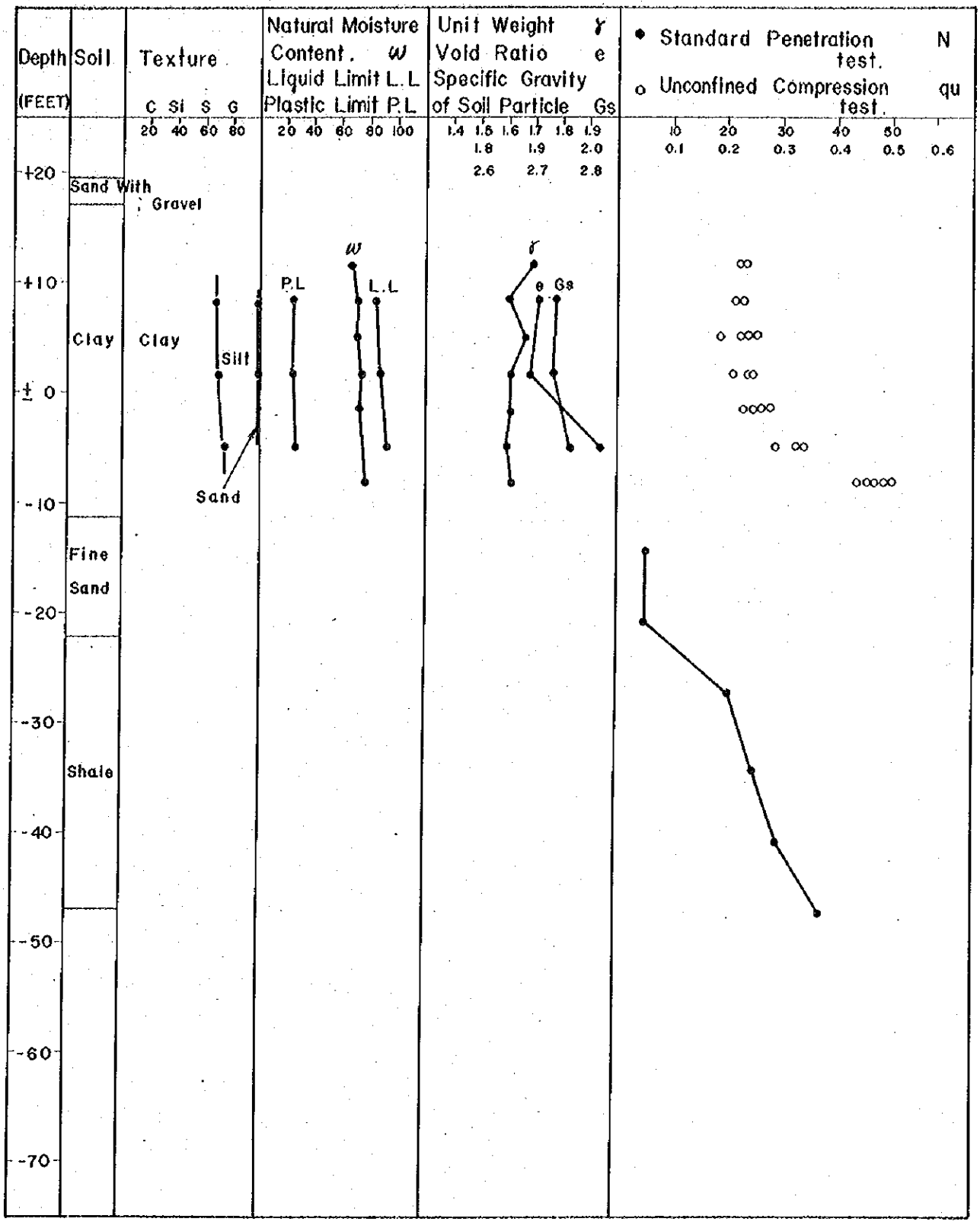
KUCHING PORT EXPANSION PROJECT

Customs
Oil Tanks
Bn No.2 Fl.R 3 sec B.W
Biawak
SUNGAI SARAWAK
Vehicle shed
Work shop
Electric sub station
Incinerator
Sheltered car park
Open parking lot
Passengers reception building
NO.1
NO.2
Turf
NO.3
NO.4 Open storage 500'x200'
NO.5
200'
100'
NO.6
NO.7
110'
Labourers canteen
Pending Customs
Anti erosion works
Mooring Dolphin
Transit shed 533'x 150'
150'
60'
NO.8
Pending point
Revetment
Breasting Dolphin
300'
Future extention 400
Quaywall 800'
JS-NO.5
S.B.
Cy
J-NO.1
J-NO.3
J-NO.2
J-NO.4
JS-NO.4
Anchorage -28 ft
JS-NO.1
JS-NO.2
JS-NO.3
Swinging area -28 ft
M.S
Pending Rocks
J-NO.5
J-NO.6
J-NO.7
JS-NO.6
J-NO.8
C.S
R
SUNGAI KUAP
S = 1:2,000
10 0 20 40 60 80 100 200 (m)
100 50 0 100 200 300 400 500 (ft)
Bn
RW
QA Fl.R
Bn No.1
B.W

NOTE.
INDICATE BORE HOLES.

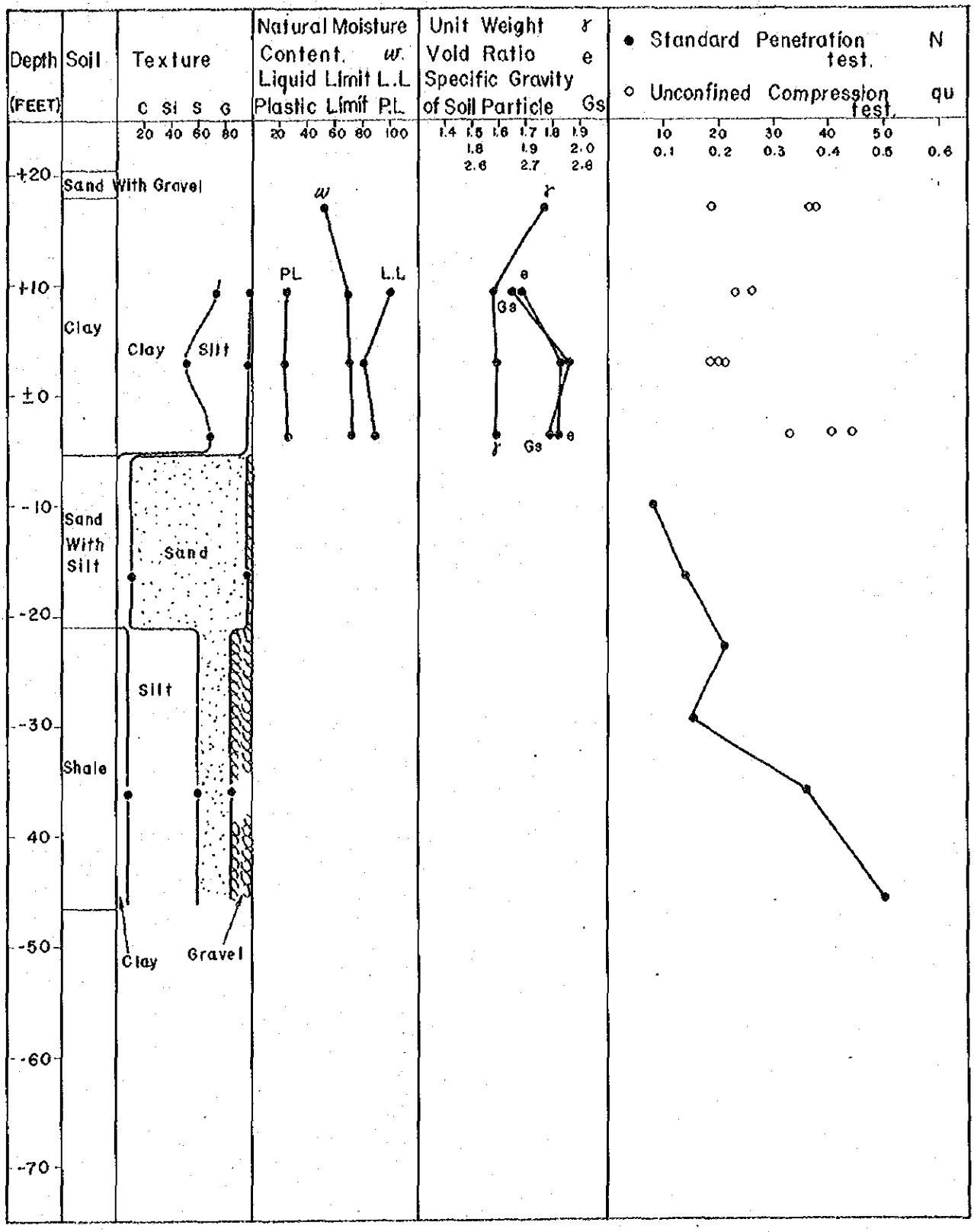
No. 1 Core Boring.

Fig.- 3



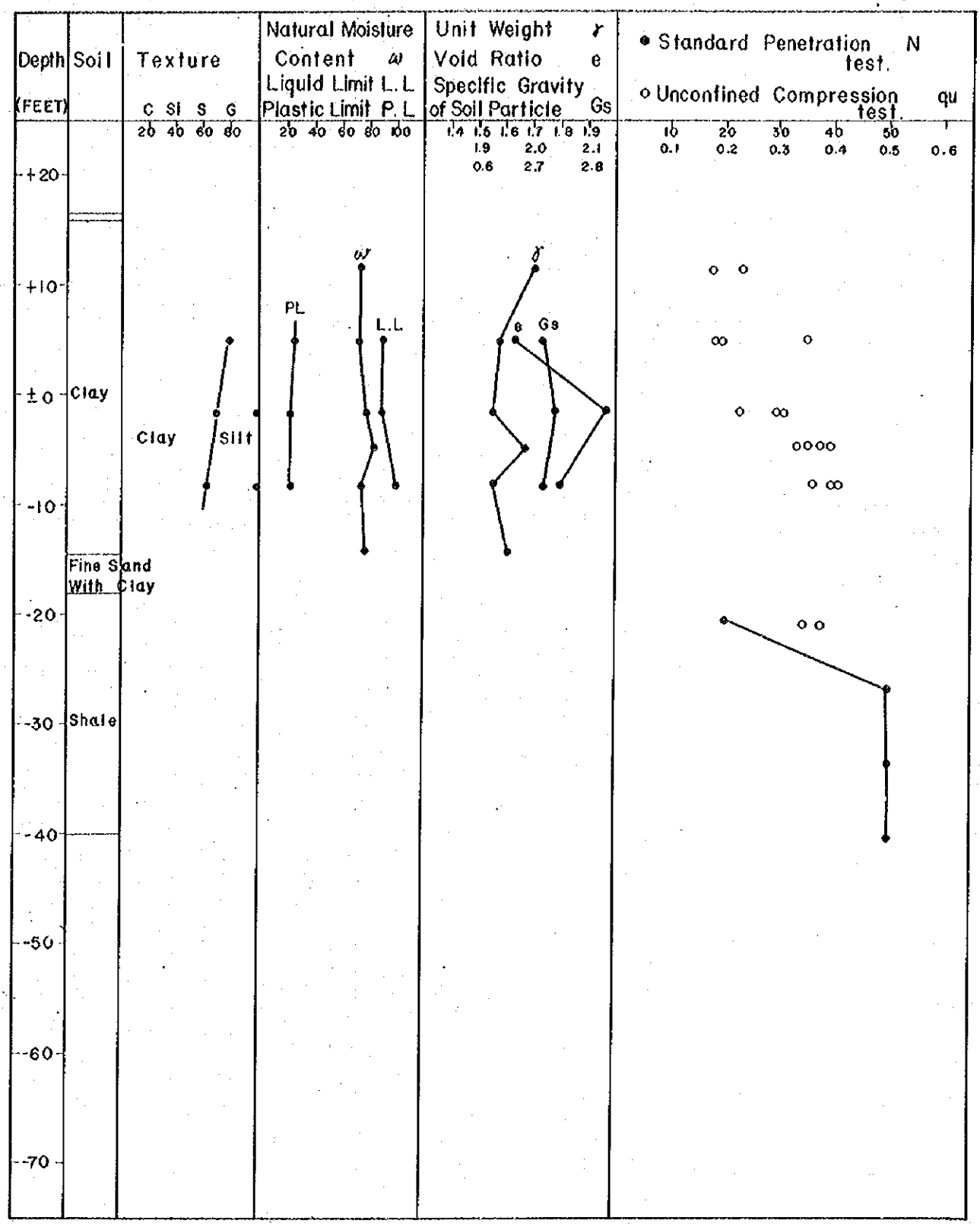
No.2 Core Boring

Fig.- 4



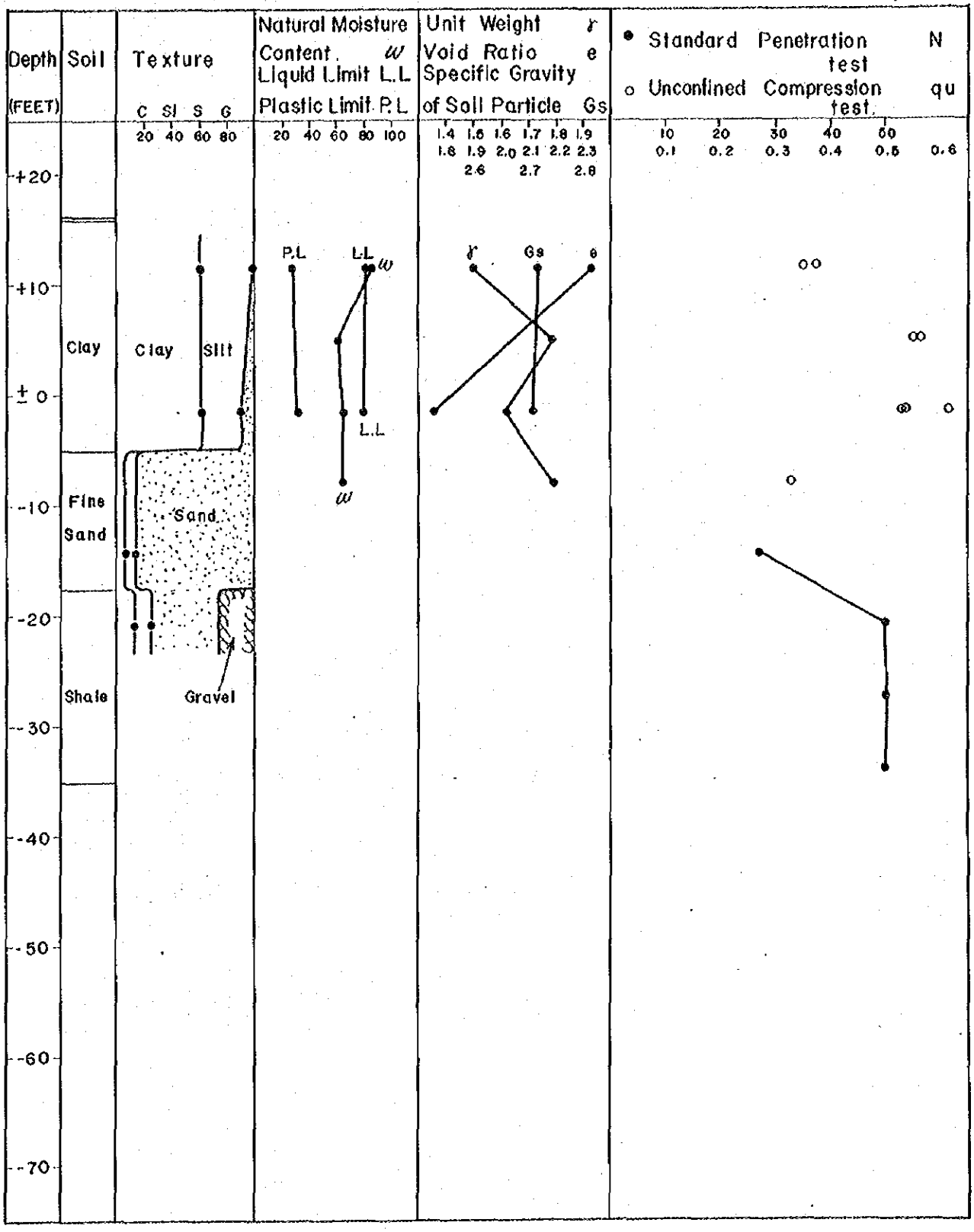
No. 3 Core Boring.

Fig.- 5



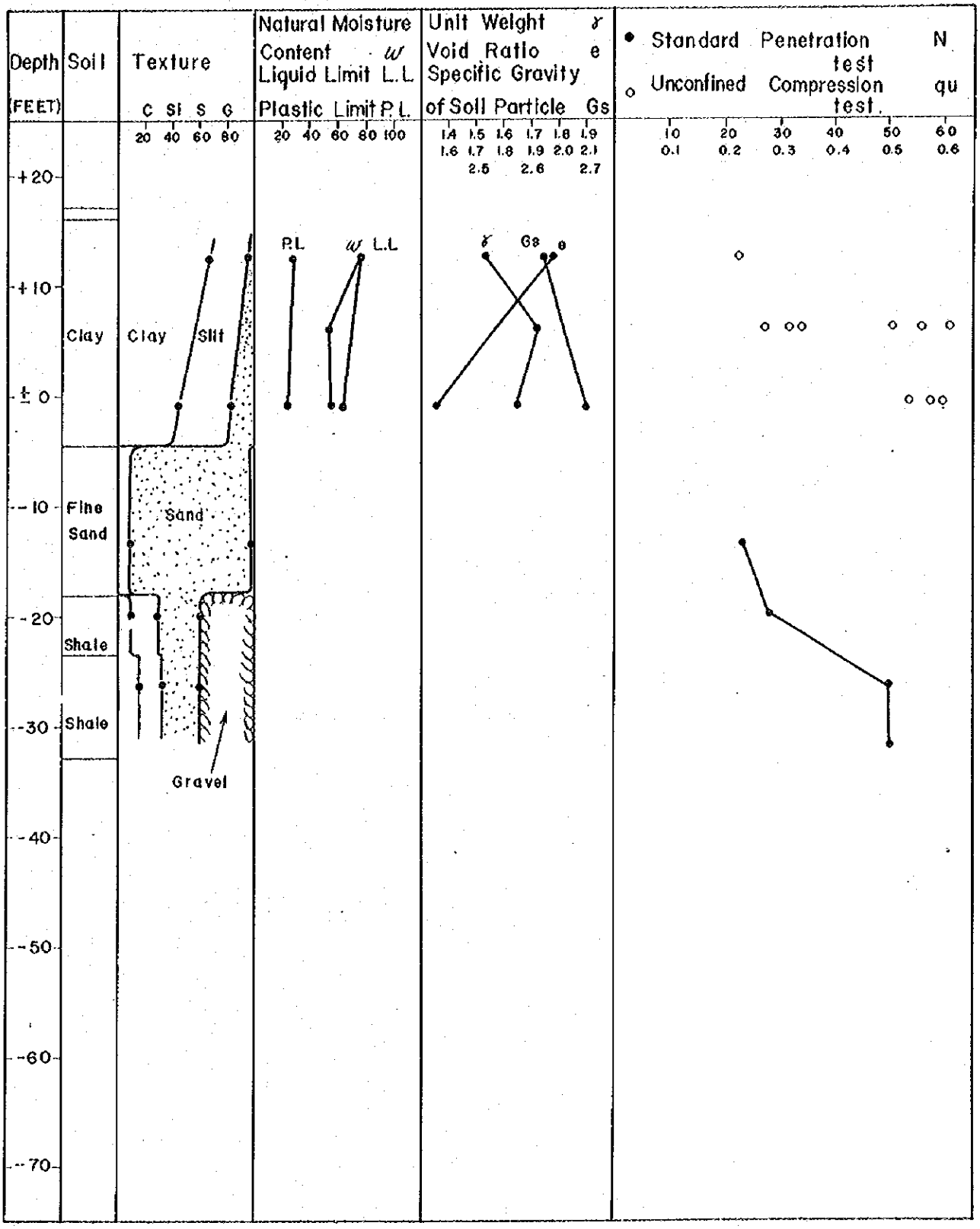
No. 4 Core Boring.

Fig.-6



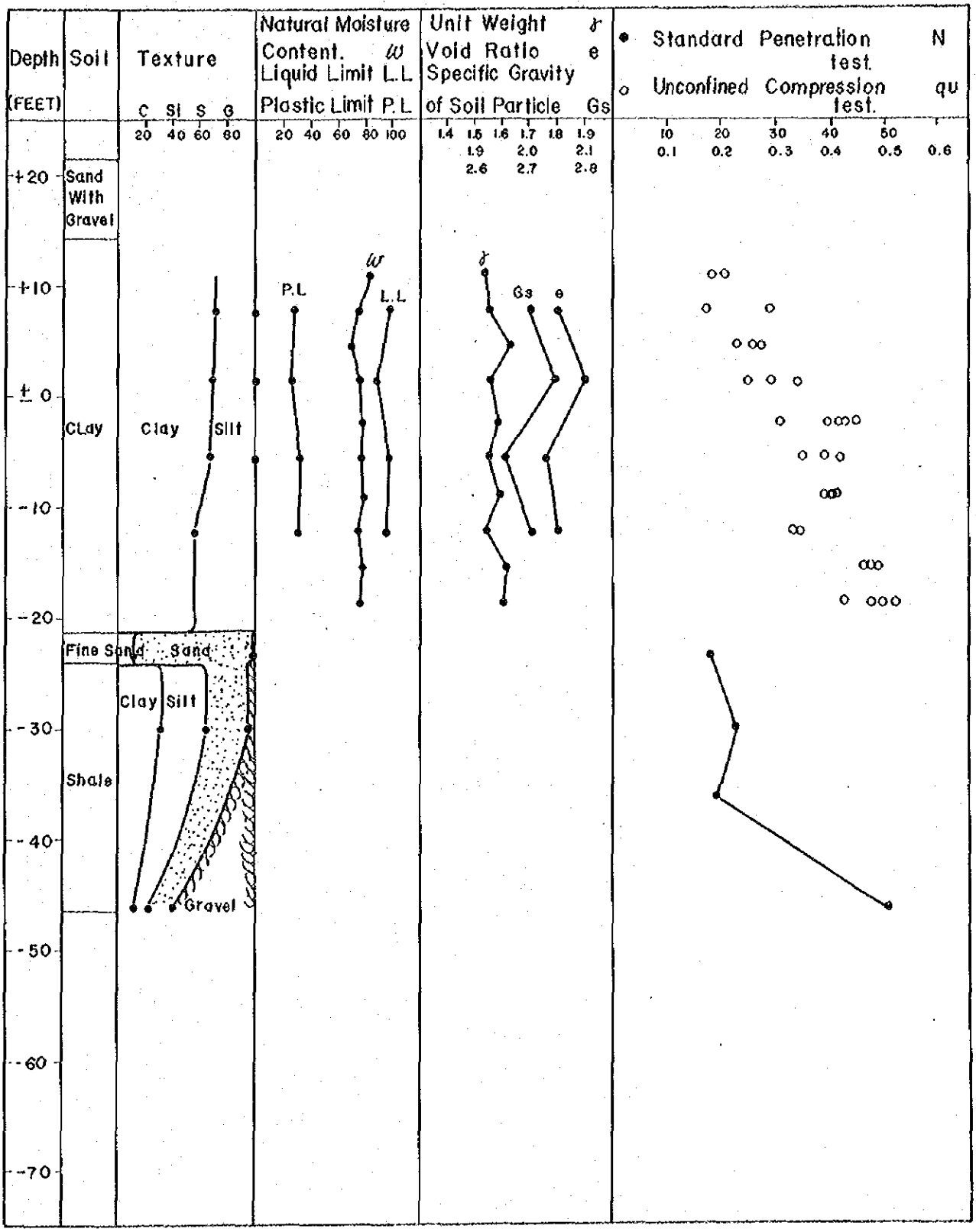
No. 5 Core Boring.

Fig. - 7



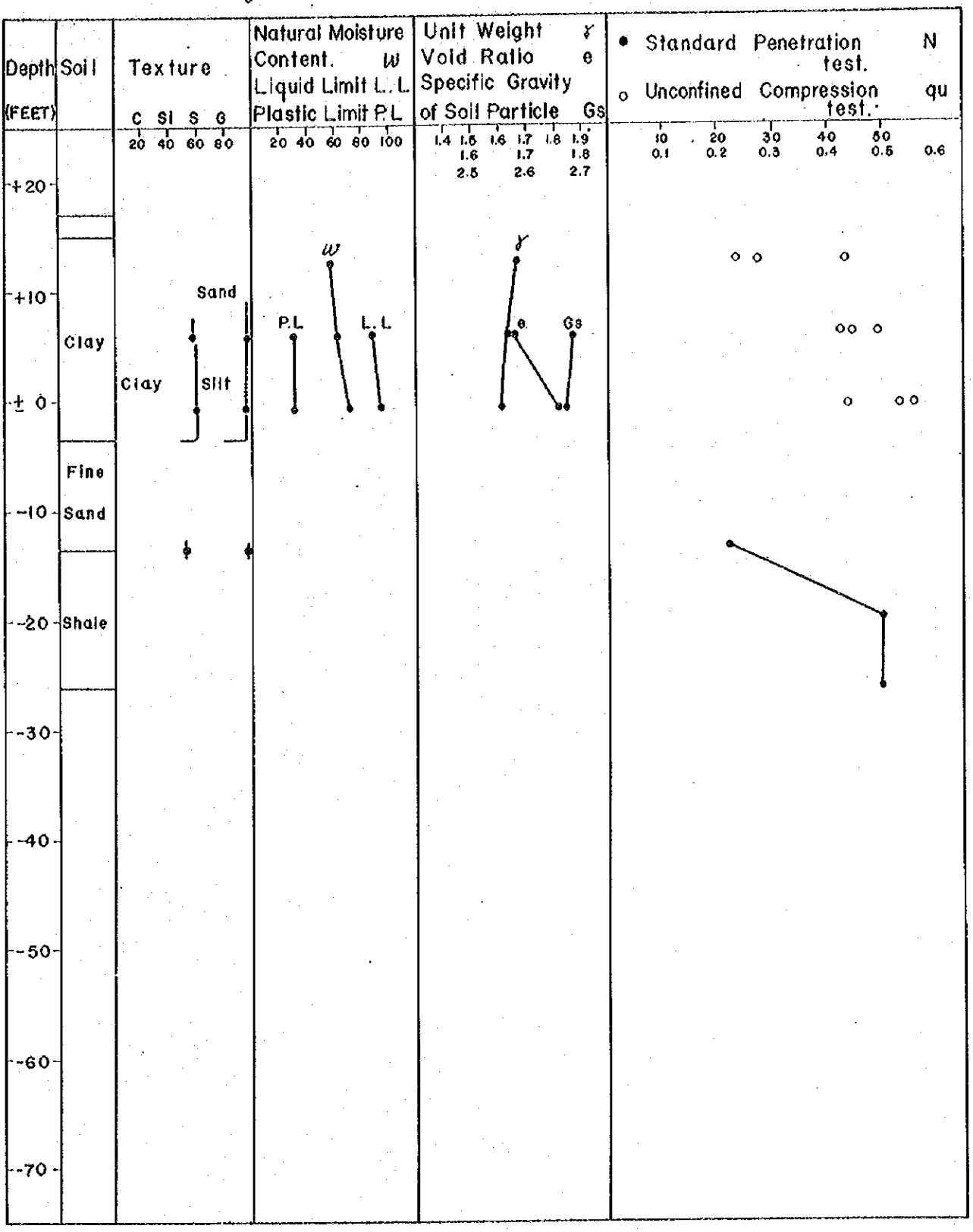
No. 6 Core Boring.

Fig. - 8



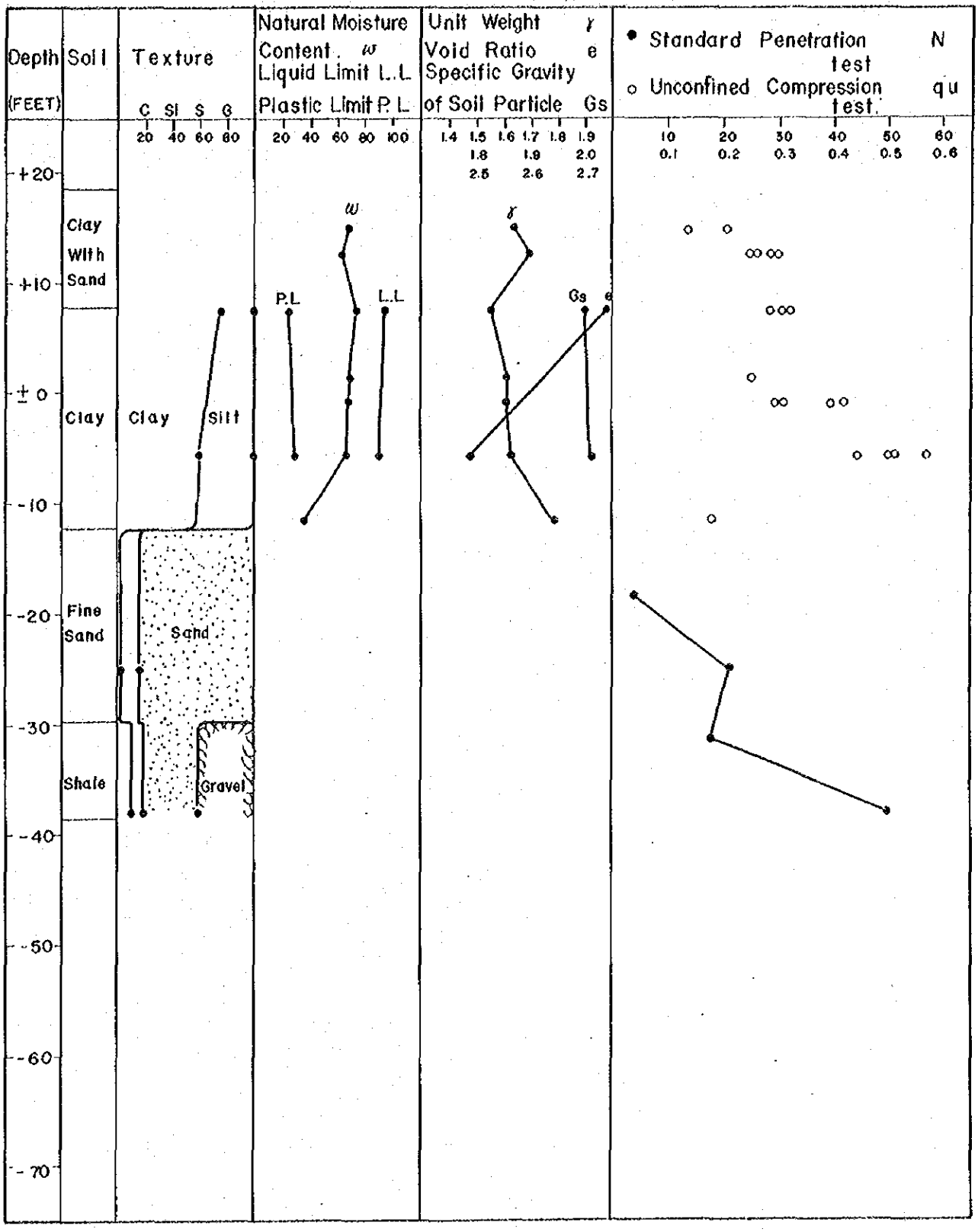
No. 7 Core Boring.

Fig. - 9



No. 8 Core Boring.

Fig. – 10



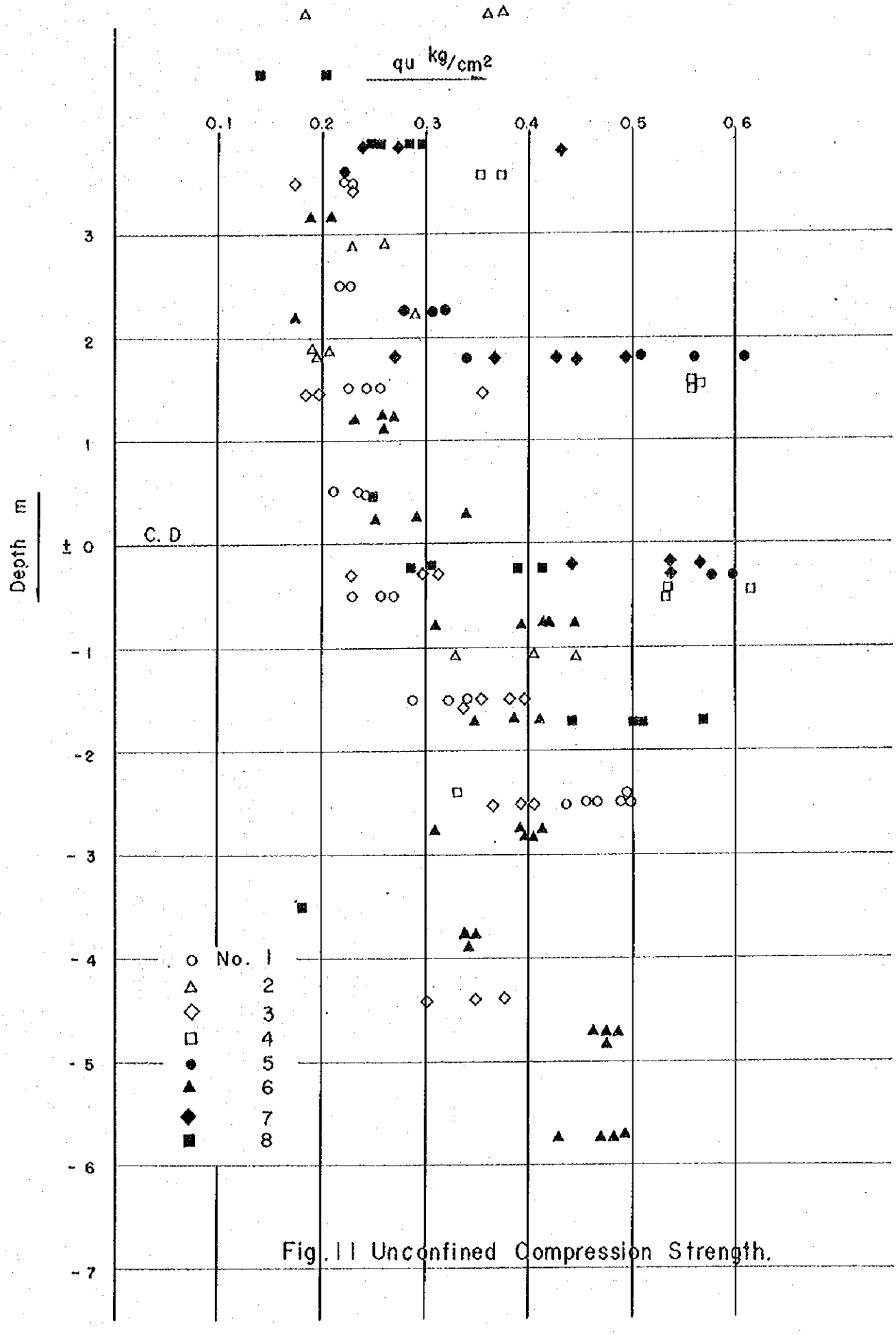


Fig. 11 Unconfined Compression Strength.

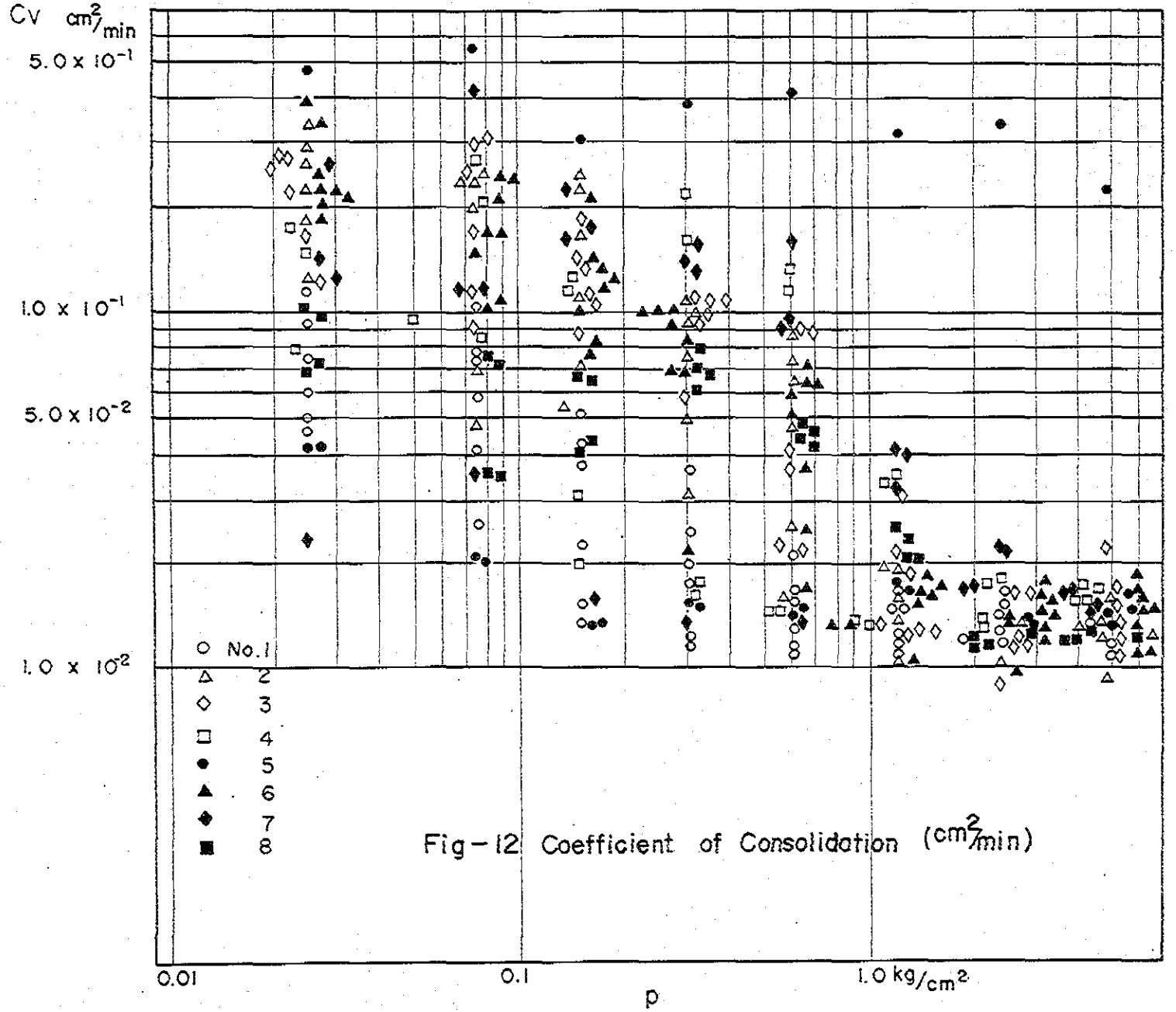


Fig-12 Coefficient of Consolidation (cm^2/min)

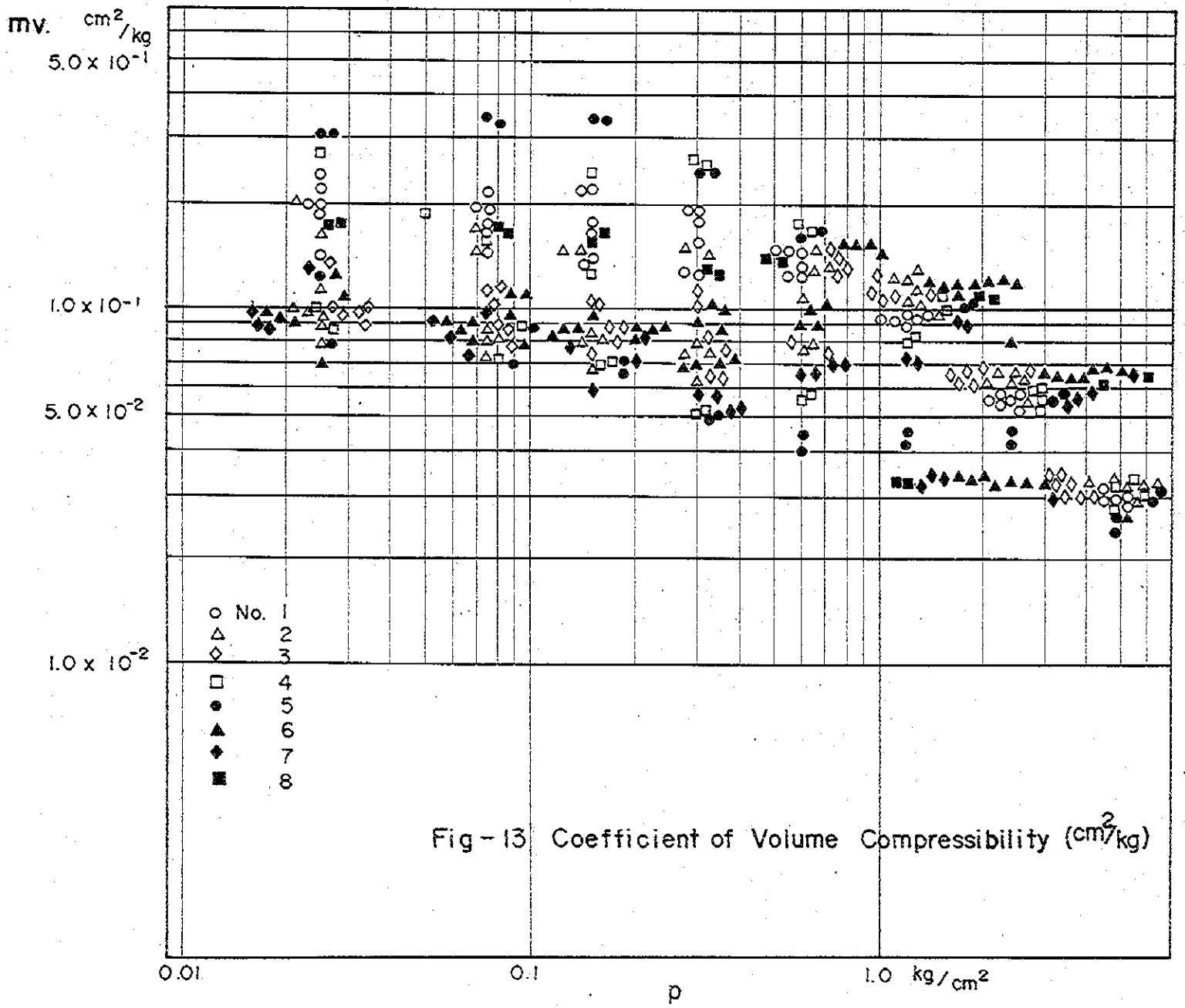


Fig - 13 Coefficient of Volume Compressibility (cm^2/kg)

(2) Jet Boring.

Jet boring was conducted at points selected to fill the blanks in the boring investigation carried out at the time of the Feasibility Survey in the dredging area. There were 14 points in total; 11 in the anchorage in front of the wharf and 3 in the swinging area.

The purpose of jet boring is to obtain data necessary to judge relative difficulty of dredging.

The following are the main equipment used for the jet boring:-

(a) Jet pump, Model MP-10, Toho Chika Koki.
(b) Engine for jet pump, Model F-10, Yanmar Diesel.

The results of the jet boring are as listed below:-

Bore hole No.	Boring depth ft.	River bed level from Works Datum ft.	Elevation of shale from Works Datum ft.
1	3.28	-23.60	-24.60
2	4.92	-19.50	-19.50
3	9.84	-25.58	-34.80
4	3.28	-22.00	-24.10
5	5.58	-23.92	-28.20
6	14.76	-25.58	-40.34
7	9.84	-22.63	-32.47
8	9.84	-20.68	-28.88
S1	2.95	-24.60	-26.52
S2	1.31	-18.70	-18.70
S3	3.28	-22.30	-23.92
S4	1.97	-25.58	-26.41
S5	6.56	-22.00	-27.20
S6	7.87	-19.68	-25.88
Total	85.28		

Location of jet boring conducted is as shown on Fig-2.

(3) Test Piling.

The test was carried out to obtain data necessary for the judgement of whether the foundation piles for the wharf structures

can be driven into shale distributed in the new port facilities construction site. The test should have been performed with the same foundation piles as adopted in the design and with a pile-driver specified for use. But the test was actually conducted with piles and a pile-driver made available at the site. The following are the piles and pile-driver used for the test:-

(a) Piles.

Rendex foundation column No. 3, 60 ft. long, manufactured by South Durham Steel & Iron Co., Ltd.

(b) Pile Driver.

Diesel engine, 24 HP, with a drop hammer weighing 2.2 tons, tower height 45 ft.

In the clayey soil, the number of blows required to penetrate one meter was 7-8, dropping the hammer from the height of 2 ft. In shale, the number of blows required for penetration of 5cm. was 7, dropping the hammer from the height of 3 ft. Therefore, the penetration at the refusal was 0.7 cm. per a blow. This was the final record taken when the toe of Rendex foundation column No. 3 has been driven about 7 feet into shale. From the records of the test piling, the bearing capacity of piles is obtained as follows:-

(a) According to Hiley's formula the capacity is 37.7 tons per pile.

(b) According to the strength of materials, 34.9 tons per pile.

(4) Investigation on Subgrade.

To obtain data for the design of pavement of roadways and open storage area, CBR test was conducted at 4 points; one point on natural ground by the Pending carpark and three on natural ground of the proposed source of fill.
Soil samples from the proposed filling source was taken back to Japan for two series of tamping test. The following are the equipment used for CBR test at the site:-

CBR tester, Model TS-426, drop hammer type, manufactured by Tanifuji Mfg. Co.

The results of this investigation will be omitted from the present report. Reclamation fill has, at the beginning, been proposed to be obtained from a hill situated on the Pending Road about 500 yard from its junction with the Kwong Lee Bank Road. Due to a change in the situations, however, the sandy materials from the Sungai Sarawak are now recommended for the fill.

2-3 Topographical Survey.

(1) Theodolite and Plane-Table Survey.

The survey was carried out to obtain data necessary for drawing up the basic layout plan of the new port facilities.

Setting up the base line along the Sungai Kuap, survey was made on the positions of the shoreline, small rivers, forest border line, buildings, electric poles, etc. It has been considered that the riverbanks in the vicinity of the construction site, where no bank protective measures had been taken, is exposed to constant erosion by stream. The results of the survey when compared with the same at the time of Feasibility Survey two years ago have clearly indicated that the erosion has been steadily in progress.

Most of the trees growing in the jungle of the port construction site are nipa palms, and lauan trees of 0.5 to 2 ft. in diameter are seen at places. Over the entire land, there are many crab-hills of 3 to 5 ft. in diameter and about 3 ft. in height.

Instruments used for the survey consisted of theodolite, level, plane table, tape, etc.

(2) Profile Levelling.

The standard for elevation must be clearly established before carrying out the profile levelling, cross sections, sounding and water-level observation. Therefore, the first work taken up was to examine the bench marks TBM301, TBM302 and TBM303 provided by the Land and Survey Department.

The examination by sighting TBM302 on the box culvert on Pending Road and TBM301 on the concrete foundation of the Old Customs at Pending Point has revealed that TBM302 has sunken by 0.55 inch from the level informed by the Land and Survey Department. Further examination by sighting TBM302 and TBM303 disclosed that TBM302 has sunken by 0.63 inch. From the above facts, it was decided to refer all the levelling to TBM301 on the Old Customs at Pending Point.

The cross sections survey of the construction site was carried out at the intervals of 150 ft. at right angle to the base line set out for the theodolite and plane table survey.

(3) Sounding.

Sounding has been done on the same area as in the Feasibility Survey in 1967. As a rule, it was done along the same lines as used in the previous survey, but there had to be slight deviations because some parts of the riverbank were affected by erosion or now turned into overgrown jungle.

For sounding a pair of poles were set up on the riverbank along the survey line, and a boat equipped with an echo sounder, Model RS-61, manufactured by Rasa Kogyo, ran with these poles as the guide and was led by the transit on the land and a set of transceiver. Since the sounding was done across the Sungai Kuap, it was necessary to avoid the time of quick current and select the time of neap tide.

A comparison of the results of the sounding and the same at the time of the Feasibility Survey has revealed that the Sungai Kuap became deeper at many points on the side near Pending and shallower on the opposite side.

2-4 Hydrological Survey.

(1) Observation of Water-Level.

(a) Continuous Observation by Self-Recording Water Gauge.

No continuous water-level observation has been executed before at Pending area. The observation was started by installing a self-recording water gauge, Model Suiken 61, weekly winding type at Pending Jetty. Drainage and Irrigation Department was asked to replace the recording paper and to assume the management and control of the water gauge. The recording of water-level will be conducted by D.I.D. until the start of the Works, and by the Contractor thereafter.

As stated in Chapter V. Water-Level, the First Replies (See Appendix D), the continuous observation of water-level resulted in an important decision of changing the lowest low water level to +0.00 ft., proving the observation a significant one.

(b) Simultaneous Observation of Water-Level.

The Admiralty Chart Datum at Biawak, in which a level 11.20 ft. below the Land and Survey Datum is taken as ±0.00 ft., is adopted as the datum for the Works. This is because there will be practically no difference in the datum levels between Biawak and Pending, with the distance being no more than 800 yards, although they face different rivers; the Sungai Sarawak and Sungai Kuap, with Pending Point in between. In order to prove this, simultaneous observation was carried out at two points; one at Customs Jetty on the Sungai Kuap and the other at Biawak Oil Wharf on the Sungai Sarawak.

The first observation was carried out from 9.30 a.m. to 8.30 p.m., on 8 May 1969 at the intervals of one hour and the second observation from 7.00 a.m. to 8.30 p.m. on 10 June of the same year at the same intervals. As shown on Fig-14 and 15, the observations revealed that there were little difference in water level at high tide while water-level of the Sungai Kuap was slightly lower than that of the Sungai Sarawak. Although it may be dengerous to draw a conclusion from the results of such limited number of observations, there will be no practical harm in taking the Admiralty Chart Datum as the datum for the Works.

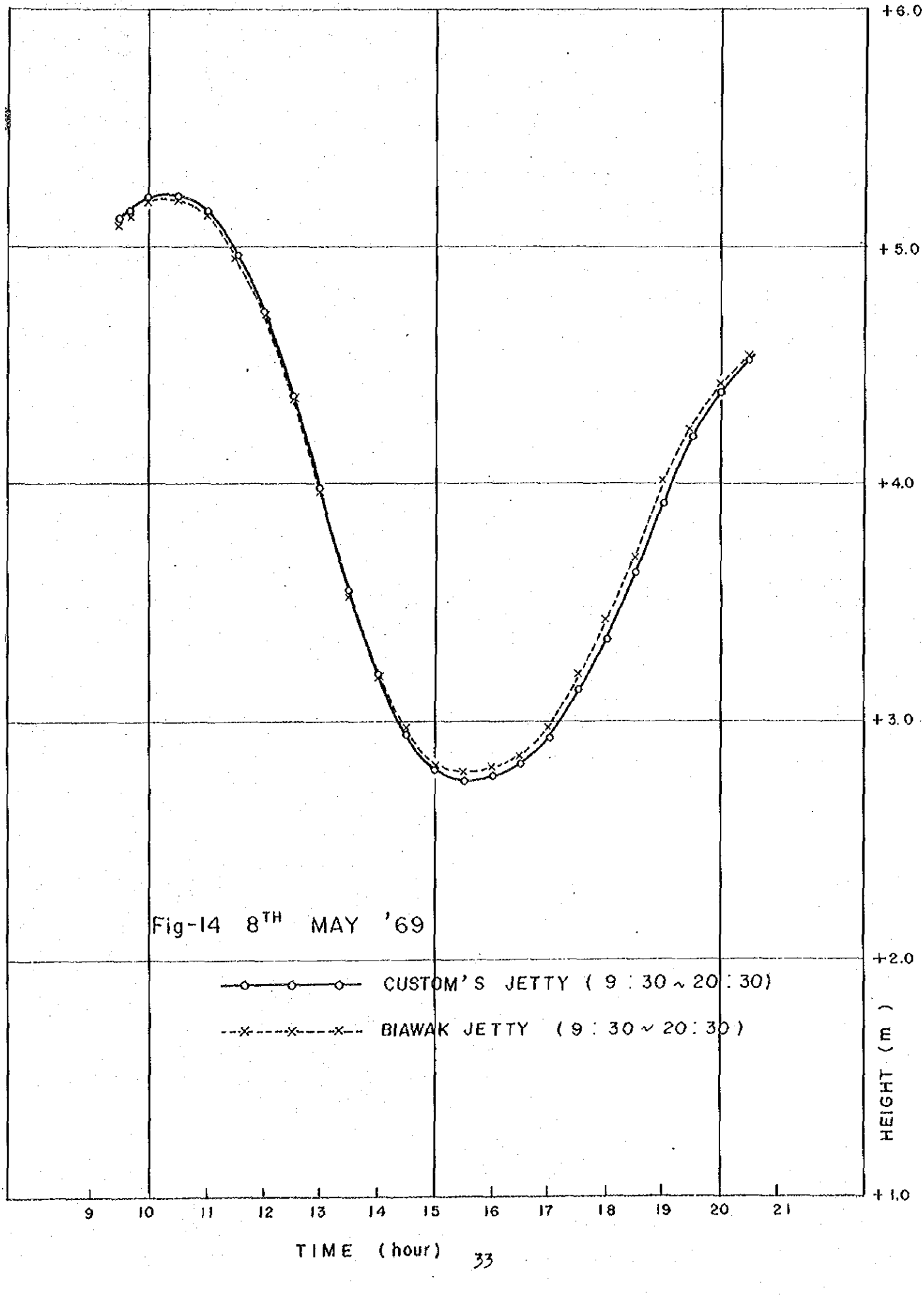


Fig-14 8TH MAY '69

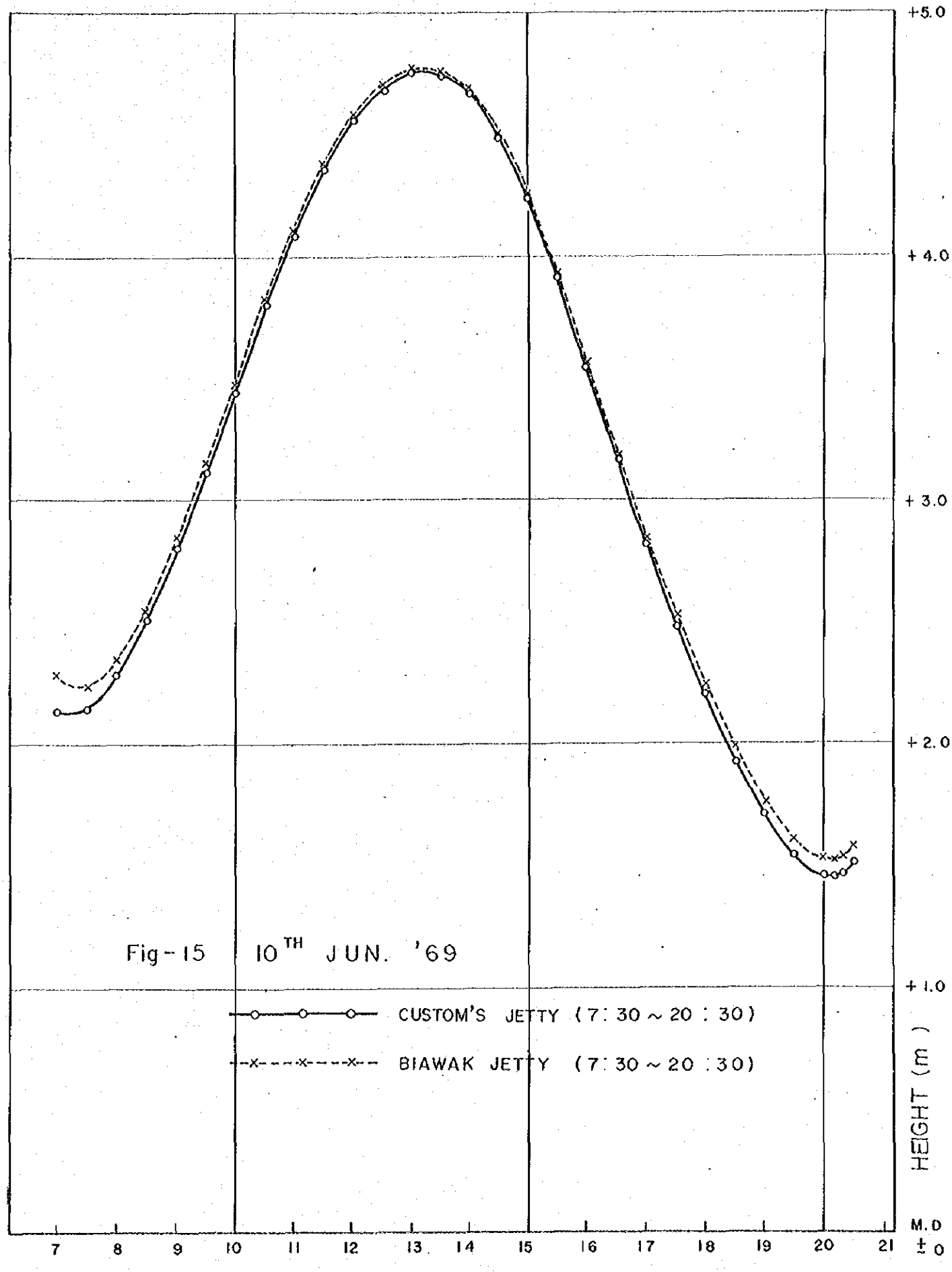


Fig-15 10TH JUN. '69

(2) Investigation of Water Quality.

The new port facilities construction site does not face the sea, but is situated about 11 miles upstream of the mouth of the Sungai Sarawak. Moreover, as the Sungai Sarawak is a tidal river, the corrosion of steel port structures can not be considered in a similar way as that in the sea. Therefore, investigation was made on the following items:-

(a) Measurement of Specific Resistance of River Water at Site.

(b) Corrosion Test at Site.

Methods and results of these investigations are given in detail in the First Replies, III-1, b). (Refer to Appendix D).

(3) Investigation of Current Direction and Velocity.

The investigation was carried out in the Sungai Kuap in front of the wharf construction site to obtain data necessary for the detailed design.

Both the Sungai Sarawak and Sungai Kuap are tidal rivers; their current are governed by the tides and the direction of flow is reversed when the tide rises. During the ebb tide, the highest velocity is registered in the surface current, reaching about 1.5 m/sec (about 3 knots), and the deeper in water, the smaller the momentary current velocity. On the other hand, the velocity is no more than 0.2 m/sec (about 0.4 knot) at flood tide, but the greatest velocity is generated at about 10 ft. below the surface, reaching 0.4 m/sec (about 0.8 knot). The current meter used in the investigation was the direct-reading type, Model AN-2, manufactured by Nakaasa Sokki Co., Ltd.

For the observation of the current direction, an wooden float, 40 x 40 cm., on which a 15 cm. high pole attached with a red triangular flag was erected, was floated down the Sungai Kuap. The position of the float was chased with two transits set on both banks of the river, the contact being taken through the transceivers, and the current direction was observed at the intervals of one minute.

The current at the time of ebb runs close by the Pending side while the current at the flood tide is diffused to the full width of the river. Judging from this fact, it is imperative to execute the anti-erosion works on the Sungai Kuap side. The Sungai Sarawak side, which has the similar topography as that of the Sungai Kuap side, should also be provided with anti-erosion works.

CHAPTER 3 PORT FACILITIES PLAN

3-1 Wharf.

The overall length of the wharf shall be 800 ft. The normal line of the quay wall shall be in the river about 100 ft. off the riverbank nearly in parallel with it. The downstream end of the wharf shall be set at about 300 ft. upstream of Pending Point in order to secure land behind the wharf.

The depth alongside shall be 28 ft. below the lowest low water level, with the maximum draught of vessels using the wharf being set at 25 ft. and allowing extra depth of 3 ft.

The apron width of the wharf shall be 60 ft. The mast crane of vessels and forklift trucks or truck crane shall be used for handling cargoes. The apron will be sufficiently wide, even if the wharf is to handle containerised cargoes in the future.

For the maximum utilization of the 800 ft. long wharf, one breasting dolphin designed for cargo freighters up to 15,000 dwt shall be installed at a point 90 ft. off the downstream end of the wharf. A bitt capable of taking the mooring rope of vessels with breaking strength of 100 tons shall be installed upon the breasting dolphin. In order to secure speedy approach to the bitt when connecting the mooring rope, a catwalk shall be provided between the revetment and the dolphin.

At a point 180 ft. off the upstream end of the wharf, one mooring dolphin complete with a catwalk, with capacity of 100 tons, and at a point 300 ft. from the downstream end of the wharf, one mooring bitt of 100 ton capacity shall be provided to receive the mooring ropes of large vessels.

3-2 Transit Shed.

One transit shed, 150 ft. x 533 ft., shall be constructed behind the wharf for both imports and exports. The centre portion facing the wharf, 30 ft. x 100 ft., shall be two storeys high to provide three lock-up stores and offices for shed and Customs staff on the ground floor, and offices for shed, Customs and operation staff on the first floor. The shed shall have a total of 14 doorways, six each on the front and rear and one each on both sides. The doorways shall be 20 ft. wide, and 18 ft. high on the front and rear and 25 ft. high on the gables.

3-3 Open Storage Area.

An open storage area, 500 ft. x 200 ft., shall be provided behind the transit shed. To the west end of the storage area, a lorry park of 33 ft. x 200 ft. shall be provided.

3-4 Revetment.

A revetment of 200 ft. in length shall be provided between the wharf and Pending Point. It shall be used ordinarily for

mooring tugboats, but consideration shall be given in designing to ensure that it may be used for berthing vessels of 600 to 1,000 dwt in case of an emergency.

The crown height of the revetment shall be +21.5 ft., the same as that of the wharf. The depth alongside shall be set at -14 ft. Although a fully laden vessel of 1,000 dwt class draws water of 14 feet, the probability of the fully laden vessel being berthed at the lowest low water level will be very small.

The present site of revetment was originally that of ramp in the Plan of Operation. But as the necessity for the ramp has ceased to exist subsequently, it has been replaced by the revetment as desired by the Sarawak State Government.

3-5 Anti-Erosion Works.

As stated in Section 2-4, Hydrological Survey, erosion has been progressing intensively on the right bank of the Sungai Sarawak and also on the left bank of the Sungai Kuap. Anti-erosion works shall be executed for 1,000 feet along the right bank of the Sungai Sarawak from Pending Point and for 548 feet from the upstream end of the wharf along the left bank of the Sungai Kuap to a point the future extension of the wharf is intended. As stated in the Feasibility Report, the wharf on the Sungai Kuap is expected to be extended for 400 feet after about 1980 while the construction of a shipment terminal on the Sungai Sarawak side will become inevitable with the development of underground resources such as anthracite and kaolin.

3-6 Additional Filling.

The area immediately behind the wharf and the revetment shall be reclaimed to the height of +21.5 ft. and the apron to the slope of 1:60 and the rest of the site to +23.0 ft.

As shown on Fig. 2, the additional filling area extends to the east of Biawak Road in the width of 776 ft. from the normal line of the quay wall.

A subsidence of ground up to 3 to 4 feet is expected due to loads of 850 lbs. per sq. ft. in transit shed, 750 lbs. per sq. ft. in the open storage area and the weight of filling material. In order to facilitate otherwise gradual subsidence of ground in a short period of time and to prevent possible damage caused by ground subsidence in the future, ground improvement by the sand drain method shall be executed in the area above mentioned.

3-7 Dredging.

Dredging shall be carried out to -28.0 ft., similar to the depth alongside the wharf.

The extent of dredging of the anchorage shall be to 240 ft., a half of the length of a 10,000 dwt cargo freighter, from the upstream end of the wharf, which is required for safe manoeuvring of entering vessels with its bow pointing upstream sailing against the

current, and 900 ft. in width, the maximum limit the right bank of the Sungai Kuap is unaffected by the dredging.

The extent of dredging of the swinging area shall be a square enclosing an area sufficient for safe turning with assistance of a tugboat, or a circle with a diameter of twice as long as the length of 15,000 dwt cargo freighters.

3-8 Roadways.

Cargoes using the new port facilities shall be transported to and from Kuching Town via the existing Pending Road or the new highway now under plan, which will be connected with the roadways in the new port area.

The main roadway with width of 110 ft. will extend straight from the front gate, and from it roads will branch out to connect with the wharf, open storage area and other facilities.

3-9 Vehicle Shed and Workshop.

In the northwestern portion, close to the centre, of the construction site a vehicle shed for cargo handling equipment shall be constructed, containing an office, gear store, store, switch room and oil storage, consideration being given to future construction of the workshop.

3-10 Labourers Canteen.

A canteen for labourers engaged in handling of cargoes in the port area shall be constructed on the Sungai Kuap side in the southwestern portion of the construction site. Two each of kitchen, store room, bunk room, wash and shower room and service counter, one for Moslems and the other for Non-Moslems, shall be provided, with toilets separately for men and women.

3-11 Security and Timekeepers Office.

It will be constructed in the centre of the front gate, with two weighbridges provided one each on its both sides.

3-12 First Aid/Fire Station and Pass Office Block.

This will be constructed by the front gate.

3-13 Sheltered Carpark.

A carpark for staff of the port facilities will be constructed to the north of the front gate.

3-14 Sheltered Exit.

Only the exit of the front gate shall be covered.

3-15 Toilet.

A toilet for labourers will be constructed in a corner of turfed ground in the centre of the construction site.

3-16 Toilet and Washroom.

This will be constructed for labourers to the east of the transit shed.

3-17 Incinerator.

It will be installed at a place free from danger and nuisance by smoke.

3-18 Fence and Gate.

The port facilities shall be enclosed with a fence for security purpose.

3-19 Passengers Reception Building.

The building for passengers passing through the facilities will be constructed inside the fence to the south of the front gate. But, considering the present volume of passenger traffic, the actual construction of such building shall be postponed until after 1977.

3-20 Open Parking Lot.

As a parking lot for visitors, this will be provided along Biawak Road outside the fence.

3-21 Other Facilities and Equipment.

Sanitary facilities as well as lighting and other electrical equipment necessary for maintenance and management of the port facilities will be provided.

For the layout of above facilities, refer to Fig-2.

CHAPTER 4 DESIGN

4-1 Design Conditions.

(1) Water-Level.

Before working out the layout plan of facilities and to start designing of port structures, it is necessary to decide the datum for the Works, L.L.W.L., L.W.L., H.W.L. and H.H.W.L. as well as their relation with the Land and Survey Datum.

(a) Zero level of the datum for the Works is 11.20 ft. below the Land and Survey Datum.

(b) L.L.W.L.: ±0.0 ft. This was decided from the low water-level recorded on 2nd June 1969 by the self-recording water gauge installed by the Japanese Survey Team at Pending Jetty.

(c) L.W.L.: +5.6 ft. This is the same level as the low water-level at Pulau Lakei of +5.6 ft. mentioned in the Feasibility Report, 4-5-3 Tides, considering the difference in low water-levels between the predicted and the observed at Thompson Road as seen from Fig. 6 and 7, Feasibility Report.

(d) H.W.L.: +16.0 ft. This was determined to be +16.0 ft. adding 1.2 ft. to high water-level of 14.8 ft. at Pulau Lakei, as it was suspected that high water-level at site would be higher by 1.2 ft. than that at Pulau Lakei judging from the fact that the difference in high water-levels between the predicted and the observed at Thompson Road was found to be concentrated in the two ranges of 0 to 1 ft. and 1 to 2 ft.

(e) H.H.W.L.: +21.0 ft. It was determined to be +21.0 ft. taking into consideration the observed water-level of +20.8 ft. of the Sungai Sarawak at Thompson Road and also the extent of inundation of Pending area during the spate condition on 29th January 1963.

In order to determine the Admiralty Chart Datum at the Site, harmonic analysis has been made of the record, of the period from 1 to 30 June 1969, of water-level observation taken by the self-recording water gauge installed at Pending Jetty. But, as the results were based on observation record of one month only, it is necessary to carry out the observation for a longer period and to determine the correct chart datum based upon such observation data.

(2) Wharf.

(a) Sizes and Principal Dimensions of Berthing Vessels.

15,000 dwt class cargo freighter:
L=525.0 ft., B=65.5 ft., d=25.0 ft.

10,000 dwt class cargo freighter:
L=465.0 ft., B=59.3 ft., d=25.0 ft.

3,000 dwt class cargo freighter:
L=290,0 ft., B=40.7 ft., d=18.4 ft.

(b) Load Factors.

Surcharge on the apron: 700 lbs. per sq. ft.

Concentrated load on the apron:

Motor vehicle:	T-20.
Crane:	Truck crane w/lifting cap. 30 tons.
Container:	8 x 8 x 20 ft., 20 tons.
Trailer:	65 tons.

(c) Earthquake.

Kh = Kv = 0.

(d) Waves. Not to be taken into consideration.

(e) Apron. Width: 60 ft., Slope: 1:60.

(f) Velocity of Vessels Berthing to the Quay Wall and Breasting Dolphin.

15,000 dwt and 10,000 dwt classes:	6 inches/sec.
3,000 dwt class:	8 inches/sec.

(g) Crown Height of Wharf.

It was set at +21.5 ft., a height high enough to protect the wharf from being flooded, since the highest high water-level of the Sungai Kuap is +21.0 ft.

(3) Revetment.

(a) Sizes and Principal Dimensions of Berthing Vessels.

1,000 dwt class cargo freighters:
L=187.0 ft., B=28.5 ft., d=13.8 ft.
1,000 HP tugboat, about 140 G/T:
L=87.7 ft., B=24.6 ft., d=8.0 ft.

(b) Load Factors.

Surcharge on the apron: 400 lbs. per sq. ft.
Concentrated load on the apron: T-20.

(c) Earthquake. Kh = Kv = 0.

(d) Waves. Not to be taken into consideration.

(e) Apron. Width: 30 ft., Slope: 1:30.

(f) Crown Height.

+21.5 ft., the same as the wharf's crown height.

(4) Anti-Erosion Works.

(a) The crown height of the works shall be +21.0 ft, the same level as H.H.W.L., and the turf shall be planted at even fall over the slope between +21.0 ft. and +23.0 ft.

(b) The bottom height of the works shall be +2.0 ft. This level must be below the average normal low water-level. In consideration of the lowest water level of each month during a period from January 1963 to June 1967, in which levels above 2.3 feet accounted for 80% of the total, the bottom height was set at +2.0 ft.

(c) As the works are to be demolished at the expansion of the port facilities, no permanent method shall be adopted.

(d) The method shall be such that it may be adopted, without executing coffering, during the time of low tide period, and using as many local materials and contractors as possible, and the completed works must be easy to maintain and easy to demolish in the future.

(e) The slope shall be 1:2.

(f) On the side of the Sungai Kuap, the riverbed in front of a part of the works shall be dredged to the depth of -28.0 ft.

(5) Dredging.

The dredging depth shall be to -28.0 ft. from the datum for the Works. The depth comprises the maximum draught limit of 25.0 ft. of the largest vessels berthing the wharf plus extra depth of 3.0 ft.

(6) Additional Filling.

The height of additional filling is set at +23.0 ft. above the datum for the Works.

(7) Roadways and Open Storage Area.

They shall be designed to withstand the traffic of various vehicles used on the wharf for handling cargoes. Refer to (2) (b) Load Factors.

(8) Drainage.

The intensity of precipitation used in deciding the sections of drains shall be 5 in. per hr., and the discharge coefficient 1.0.

(9) Load Factors, Materials, Structures of Buildings.

(a) Load.

The fixed load was calculated in accordance with B.S. 648 (1964): "Schedule of weights of building materials". The live load was calculated in accordance with B.S.C.P. 3 (1967): Chapter V: Part I, "Loading", and the wind load B.S.C.P. 3 (1952): Chapter V: "Wind Load" (Exposure C). But no seismic load was taken into consideration.

(b) Materials.

Principal materials are steel and reinforced concrete. Brick, timber and other materials are used according to the need. Steel materials and concrete used for general structures were those complying with B.S. 4360 (1968), 43A and 28-day strength of 3,000 lbs. per sq. in., respectively. Deformed bars were used for the steel reinforcement. Timber was used for furnishing, piles, etc.

(c) Structural Design.

Structural design was made, in principle, according to the British Standards; for steel structures, B.S.449 (1959), "The use of structural steel in buildings", and for reinforced concrete structures, B.S.C.P. 114 (1957), "Reinforced concrete in buildings".

4-2 Comparative Design.

The details concerning the comparative design of port structures are given in the Initial Interim Report of July 1969, and the First Replies in August of the same year. Their summary will be as follows:-

(1) Wharf.

In selecting a structural type for the wharf, it is necessary to fully examine execution conditions influenced by natural conditions at the site. The following are the natural conditions affecting the execution of the construction works:

(a) The river water of the Sungai Sarawak and Sungai Kuap is always muddy, while their tidal range is great and the current velocity is fairly high. These conditions tend to make underwater work by divers uncertain and time consuming. It is necessary, therefore, to select a type requiring as little diver's work as possible.

(b) The port construction site and its vicinity is a swampy lowland thickly covered with nipa palms and mangloves. Therefore, if construction of a precast concrete block yard is planned, it will require an enormous amount of expenditures amounting to some M$3,000,000. It is necessary, therefore, to select a type dispensing with such block yard.

(c) There is seasonal heavy rains, to which full consideration should be given in preparing the schedule of construction.

(d) Large equipment specially designed for portworks are not available at the site and such equipment must be brought into the State of Sarawak. It is necessary, therefore, to select a type not requiring specially built large construction equipment.

With the above unfavourable conditions in mind, the following three types were selected from among all types of wharves for the purpose of comparative examination:-

Steel sheet pile type.
Gravity type (Prepacked concrete type), and
Shore bridge type.

The examination resulted in the decision that the sheet pile type is the most suitable because of the relative easiness of construction, lower cost and shorter period of construction.

(2) Anti-Erosion Works.

The following three methods were selected for comparison taking into account the maximum use of local materials, easiness of construction at site, etc.

(a) Gabion Method (Cylindrical and Rectangular Gabions). The gabions are very effective in retarding the

progress of riverbank erosion now underway, but it can not be a permanent method because of the corrosion of wire used for the gabions.

(b) Precast Link Concrete Block Method.
As compared with the gabion method, the effect is more long lasting. But it can not be said as a perfect method permanently effective against the erosion.

(c) Precast Concrete Block Method.
This can be considered as a permanent method although the cost is higher than the above two methods.

Sungai Sarawak

The precast link concrete block method was selected from the above three, with due regard paid to the future expansion of the port facilities.

Sungai Kuap

The gabion method, the simplest of the three methods, was selected for the Sungai Kuap side based upon the prediction that the wharf will be extended on this side at a time earlier than that on the Sungai Sarawak. As the area in front of the works is to be dredged to -28.0 ft, piles shall be used for the foundation and the fascine mattress laid in front of the works for toe protection.

(3) Roadways.

(a) Subgrade.

The CBR value to be used for the design of subgrade was set at 2.5% from the results of CBR tests conducted at Pending.

(b) Load Factors.

The roadways are to be designed to withstand the total loads of 65 tons carried on an eight-wheeled low-deck trailer, and also to the international standards. It is assumed that the low-deck trailer carrying heavy loads of 65 tons will use the roadway once a day and that the annual total volume of cargoes to be handled will be transported by 20-ton lorrys. From this assumption, the design wheel load of 5.5 tons is obtained.

(c) Thickness of Pavement.

The total thickness of bitumen pavement: H = 26 in.

The total thickness of concrete pavement: H = 22 in.

(d) Estimated Cost.

Bitumen pavement: M$1,181,000.

Concrete pavement: M$1,910,000.

(e) Conclusion.

The thickness of pavement of all the roadways in the port area shall be same throughout as the intention of the Authority is to establish one-way system to avoid the confusion of traffic.

The bitumen pavement is more desirable than the concrete pavement from the viewpoint of making good the settlement by consolidation.

The bitumen pavement is easier in execution and less expensive than the concrete pavement.

For the stated reasons, the bitumen pavement shall be adopted.

(4) Transit Shed.

The dimensions of the transit shed is 150.0 ft. in span and 533 ft. in length. For selection of its structural type, the following three types were compared and examined:-

Diagonal truss type;

Universal beam type; and

Standard truss type.

As the result of comparative study, the diagonal truss type was selected as the most suitable; for it requires the least amount of steel, and no scaffolding in the site erection, thus the period of construction is the shortest. In addition, this type is preferable from the aesthetic point of view.

4-3 Detailed Design.

Upon the bases of layout plan of port facilities and design conditions agreed upon after consultation between the Sarawak authorities and the Japanese Survey Team, comparative design was made and structural type was decided upon. Detailed design was made on the structural types thus fixed.

4-3-1 Wharf.

(a) Structural Type.

As the result of comparative design, the steel sheet pile type has been adopted for the quay wall. This is the type in which steel sheet piles are driven in

the foundation ground in the form of a wall and the stability of the entire quay wall is to be secured by means of tie rods and anchor wall.

The elevation at which tie rods are to be fitted to the quay wall is set at +12.5 ft., so that efficiency in the fitting work of the tie rods may not be hampered by the water-level of the Sungai Kuap.

(b) Length of Embedment and Section of Steel Sheet Pile.

The required length of embedment of steel sheet piles was obtained from the balance of moment at the tie rod fitting point due to active earth pressure and residual water pressure working on the sheet piles from behind and passive earth pressure working on the embedded portion of sheet piles. Further, calculation was made to obtain the section modulus of sheet piles with sufficient resistance to bending moment calculated as a simple beam supported at the tie rod fitting point and the riverbed and worked on due to the active earth pressure and residual water pressure as loads, in order to select the steel sheet pile to be used. Required section modulus is found to be 123 cu.in. per ft. Steel works producing a sheet pile with such a large section modulus are at present limited to only two; Hüttenwerke Ilsede Peine Aktingesellshaft of West Germany and Nippon Steel Corporation of Japan.

(c) Prevention of Corrosion of Steel Sheet Pile.

The surface of steel sheet piles forming the body of quay wall, being in contact with river water containing abundant quantity of dissolved oxygen, is exposed to the danger of corrosion by the oxygen concentration cell. In order to cope with such corrosion, steel sheet piles must either have a large section to allow for corrosion or be treated for corrosion prevention. If the corrosion is to be covered by increased thickness of piles, the amount of corrosion will be as great as calculated below based on the amount of corrosion of 0.18 mm. per year as stated in the Replies (Refer to Appendix D, III-1, b), (4), (iii)), with the durable year set at 50:

$$t = 0.18 \text{ mm./yr.} \times 50$$

$$= 9.0 \text{ mm.}$$

With this added to the thickness of sheet pile with section modulus of 123 cu.in. per ft., the total thickness will become over 22.5 mm. Such a thick box-type sheet pile is not produced anywhere at the present.

The basic idea of the cathodic protection is to offset the electrochemical corrosion of steel structures in wet land or under water by means of reciprocal electrolytic process. In its practical application, the steel sheet pile is made the cathode and a special metal as the anode, while water or wet land around the pile constitutes a conductor. By passing electric current, the anode is affected by electric corrosion gradually and sediment with protective effect deposits on the cathode, sheet pile. Corrosion protective effect by this method is great as expected, and its cost is relatively low. In particular, in the case of box type piles with continuous smooth surface, the method is very advantageous as compared with U- or Z-type piles because of its lesser surface area requiring cathodic protection.

(d) Tie rod.

The tie rods are designed to withstand the reaction at the tie rod fitting point caused by the bending moment of steel sheet piles as well as the lugging force of a vessel. A comparison has been made for economy between the fitting of a tie rod at every 3 and 4 sheets of piles. As a result, the fitting of a tie rod at every 4 sheets has been adopted because it costs 20 per cent less than the otherwise. The corrosion of tie rods which are buried in the ground is not so great as to require consideration for cathodic protection, and therefore, it is designed to make allowance for corrosion.

(e) Waling.

For waling, a section of a quasi-continuous beam with tie rod fitting interval as its span has been obtained. No consideration is needed for the corrosion of the wale, because it is embedded in the concrete cap wall.

(f) Anchor Wall.

Anchor wall is calculated and designed as vertical steel sheet pile. It is also designed to make allowance for corrosion.

(g) Concrete Cap Wall.

The section of the concrete cap wall placed on the steel sheet piles has been decided taking into consideration the impact and pulling force of berthing and unberthing vessels and earth pressure from behind. On its top a concrete bumper is provided to the height of 6 inches.

(h) Fender.

Vessels without much intervals come alongside the quay

wall for loading and unloading cargoes, and it is necessary to provide a fender between the quay wall and the vessels to protect both of them. In order to cover the range of the quay face coming in contact with vessels, of which contact height varies according to the rise and fall of river water-level and the draught of vessels, the rubber fender is fixed vertically on the face of quay wall.

(i) Apron.

The apron is paved with concrete considering crane and other equipment engaged in the handling of heavy cargoes, etc., and designed to have cross fall of 1:60 for adequate surface drain. There will be no fear of settlement due to consolidation in the open storage area, etc. as the whole area behind the quay wall is to be reclaimed with materials of good quality. A service duct for pipings to supply water and oil to moored vessels is provided in the apron of the quay wall.

(j) Breasting Dolphin.

The dolphin is designed to absorb the kinetic energy of berthing freighter of 15,000 dwt, drawing water of 25 feet, at the speed of 6 inches per second, by means of rubber fender and the deflection of steel pipe piles.

(k) Mooring Dolphin and Bitt.

They are designed to withstand the line pull of 100 tons by vessels.

4-3-2 Revetment.

The revetment will be constructed abutting on the quay wall on its downstream. As the result of design calculation, the same box type sheet piles as used for the quay wall are used for the revetment. The revetment will normally be used for mooring tugboats, but a 600 - 1,000 dwt class freighter may be berthed in case of emergency. Although it is of the same construction as the quay wall, it is not intended to berth large vessels at all times. Therefore, Belian piles, 1 ft. x 1 ft., are driven vertically as the fender to insure that tugboats may be moored free from the rise and fall of the water-level.

4-3-3 Anti-Erosion Works.

As a result of the comparative study, the anti-erosion works were determined as follows:-

(a) Sungai Sarawak.

The precast link concrete block method was selected for this side. The works shall be executed for a section of 1,000 feet upstream from Pending Point. The normal line of the

works is determined to insure that it runs smoothly along the river course and further that the cutting and filling of the existing riverbank may be minimised. In the section at right angles to the normal line, the slope shall be 1:2 between +21.0 ft. and +8.0 ft., and 1:40 below +8.0 ft. The slope between +21.0 ft. and +7.5 ft., that is 52 ft. 4 in. by 1,000 feet, shall be covered with the precast link concrete block shall be placed to retain and suspend the steel bars jointing the concrete blocks. Both ends of the works, upstream and downstream, shall be protected from erosion by driving down piles along the slope.

(b) Sungai Kuap.

A combination of the rectangular gabions and fascine mattress was adopted for this side. The overall length is 548 feet along the present riverbank from the upstream end of the wharf. The heads of foundation piles shall be formed to the slope of 1:2. The slope between +8.0 ft. to +21.0 ft., or 28 feet in length, shall be covered with rectangular gabions. Fascine mattress shall be laid in front of the foundation piles for toe protection. The 264 feet section from the upstream end of the wharf shall be dredged to -28.0 ft. So, 40 feet wide mattresses shall be laid in front of the said section and 20 feet wide mattresses along the remaining 284 feet section.

4-3-4 Dredging.

As the existence of shale layer has been confirmed by jet boring, the quantity of materials to be dredged has been calculated separately for materials easily dredged and for shale.

4-3-5 Additional Filling.

Surveys have revealed that the area secured for the new port construction site has an elevation of about 18 ft. above the Datum for the Works. But the elevation will be slightly reduced when trees covering the jungle area are cut down together with their roots grubbed up and the crab-hills are removed before additional filling. The allowance for it has been set at one foot in designing.

Soil conditions in this area have been revealed by the borings. According to BH Nr. 4,5 and 7 around the open storage area, the fine sand layer is located about 5.0 ft. below the datum level, and according to BH Nr. 8 around the transit shed and BH Nr. 18 and 19 at the time of the feasibility survey. The fine sand layer is about 15.0 ft. below the datum level. These show that the nearer to the Sungai Kuap, the thicker the soft layer causing the subsidence. (Refer to Fig-2.)

The amount of settlement due to consolidation of soft ground changes in proportion to superimposed load and thickness of the soft layer. Given load factors are 850 lbs. per sq. ft. for the transit shed and 750 lbs. per sq. ft. for the open storage area, which are considerably large. Meanwhile, the time required for the consolidation to settle from its start become longer in proportion to the square of the thickness of soft layer. In other words, if the site for the transit shed and open storage area is reclaimed without applying any ground improvement method and subjected to active cargo handling operation, the land will gradually sink to a total of 3 to 4 feet over the period of 20 years, and present a serious difficulty for the operation of the port. It was considered appropriate to remove the possible settlement of the site for the transit shed and open storage area beforehand by applying the sand drain method and to insure a smooth operation of the port. However, it will cost a great amount of money to cover the whole area mentioned. Taking into account of the economic impact of such large investment, the application of the method shall be limited only to the site for the transit shed which will be most greatly affected by the subsidence of ground.

Site clearance and reclamation to a level of 20 ft. above the Datum will be executed by the Kuching Port Authority before the commencement of the main works.

4-3-6 Pavement.

Thickness of all the roadways, open storage area and open parking lot is designed same to insure that various cargo handling equipment and other vehicles used in the port area may be fully utilised.

The port area is to be reclaimed to about 3 - 5 feet over the original ground level. As the reclamation is to be done with quality material of CBR value of 5% or higher, a sufficiently trustworthy subgrade will be prepared for the pavement.

Assuming that the volume of cargoes handled by 800 ft. long wharf and 1,200 ft. long wharf after the extension is in the ratio of 1:1.5 and further that the total cargoes handled by the 800 ft. wharf amounting 350,000 tons are transported by 10-ton lorries, the total number of lorries required will be 35,000 per year, or 100 a day on an average, which is not a large traffic. In the design, however, the lorry traffic was taken as 100/day x 1.5 = 150/day and the design wheel load of P = 5 t/wheel. From this, the total required thickness of pavement of 16¼ inches is obtained.

4-3-7 Drainage.

Consideration has been given to divide the drainage system in and around the new port area into three in order to discharge separately to the Sungai Sarawak and the Sungai Kuap; drainage from the section around the passenger reception building and the labourers canteen will be channelled to the Sungai Kuap, that from the area around the transit shed to the Sungai Kuap,

and that from the remaining area to the Sungai Sarawak.

At the strategic point of the open drains, gratings designed to withstand the wheel load of heavy vehicles are fixed for efficient operation of cargo handling. In addition, open drains around the transit shed will be covered with gratings of light duty, sufficiently strong to take the load of cargo working gear.

4-3-8 Transit Shed.

This is the largest of all buildings in the present project, with span of 150 ft., length of 533 ft. and floor area of 80,000 sq.ft. It is desirable to build it in a structural type requiring no internal pillars, to insure free use of floor area and avoid the lessening of available space. On account of its gigantic span, it has been decided to use special diagonal truss aiming at the reduction of frame weight. This structure, by forming truss roof composed of obliquely assembled members with small sections, enables the construction of light yet solid structures, like a bird cage.

The eaves height of the shed is set at 24 ft. This is a reasonable value for the loading height of cargoes, also it is the necessary minimum height required to provide a two storey block of lock-up stores and offices in the centre of the shed on the side facing the quay.

Inside the shed, no partition walls are provided; it being meant to be for shed of both export and import cargoes. According to necessity, the floor space may be freely utilised for their respective purpose.

The given load factor for the floor of the shed is 850 lbs. per sq.ft. Since the ground under the whole transit shed is to be improved by sand drain method, no harmful subsidence will take place. Consequently, the floor space is made of concrete slabs without any supporting piles.

As for the wall, up to 10 feet thereof, it is made of reinforced concrete in consideration of the leaning of cargoes as well as the impact caused in their handling. The height thereabove is to be walled with corrugated slates.

The roof is made in simple crown type to efficiently drain the abundant rainwater at a time.

The exit and entrance are provided at symmetrical positions of the fore and back side, which facilitate the conveyance of cargo to the open storage directly behind the shed through the shed from the wharf. Six each entrance and exit are provided in all.

At the gable, the clearance for exit and entrance is made to be 25 ft. high to enable the housing temporarily in the shed of the damaged container.

For the air ventilation in the shed, the wire mesh window is provided in the upper portion of shed wall, and also the monitor roof is provided upon the ridge.

As mentioned before, in the wharf side centre of the shed, three lock-up stores for damaged and valuable cargoes, and offices for shed staff, wharf personnel as well as Customs Officers are provided. From the offices fronting to exterior, the whole view of the wharf may be commanded. Toilets for these staff are provided on the ground floor. The soil therefrom is drained by pump as far as to septic tank.

FRP is used partially in the roof of the shed for the natural lighting.

4-3-9 Vehicle Shed and Workshop.

The span is 80 ft., length 150 ft.; the shed for housing cargo handling equipment and office necessary for its control, gear store, store, oil storage were additionally provided. The switch room for power supply covering the entire port area is also established.

As the principal structure, portal frame comprising universal beam and universal column is adopted. This is because the span is not large, and dispensing with special structure.

The construction of roof is the same as that of transit shed. The wall of office, gear store, store, oil storage and switch room is of reinforced concrete construction and the oil storage is located facing the roadway in the front and away from office, switch room and general stores. The future construction of workshop adjoining the gear store is taken into account.

4-3-10 Labourers Canteen.

The span is 50 ft., length 150 ft., and the structure is the same as that of vehicle shed, Two identical facilities, one for Moslem and other for Non-Moslem, are provided. Each consists of kitchen, store room, shower room, bunk room and counter.

In the shower room, two sets of showers and basins are provided. Kitchen utensils and furniture are to be provided by lessees of the refectory; pipings necessary for water supply and drainage for this purpose are laid in.

Toilets for men and women are separately provided for the canteen.

4-3-11 First Aid and Fire Station Building.

This is to be of reinforced concrete ramen structure, with brick wall. The first aid station consists of a waiting

room with latrine attached and a consulting room, while the fire station consists of a garage and store (concurrently served as resting room). Besides, one pass office is annexed.

The building is located by the front gate for convenience of activities and liaison in case of emergency.

On the turfed ground in front of the fire station building, an iron tower of 60 ft. high was erected for drying fire hoses.

4-3-12 Security and Timekeepers Office.

This is to be built in the centre of the front gate. It is to be of reinforced concrete wall building. A toilet and weighbridges are to be annexed. The weighbridges are to be the same Avery make 20 ton type as those used at Tanah Puteh Wharf for the sake of easy maintenance and control.

4-3-13 Sheltered Exit.

This covers the exit portion of the front gate, the security office and timekeepers office. It enables the inspection and gauging of loaded lorries in rainy weather as well.

The clearance under the girdor was set at 13 ft. 6 in.

The structure is a rigid steel frame using universal beam and column, flat roofed and covered with roofing felt.

4-3-14 Sheltered Carpark.

This is sited at northwest corner of the premises and is used by the port staff. In all, 20 vehicles may be parked. It is of simple structure of angle and channel steel.

4-3-15 Toilet.

This is a toilet for labourers and is located at the northeastern corner of the turfed ground. It is roughly at the centre of the premises. It is of reinforced concrete, with brick wall.

4-3-16 Toilet and Washroom.

This is located at east end of the Site, and toilet and shower room for labourers are provided. Fourteen showers are provided, with entrance at two points. The structure is the same as the toilet above.

4-3-17 Passengers Reception Building.

This is planned to be built along the fence near western side of the premise. Two sets of toilets for different sexes as well as office are symmetrically provided at both ends

of the building. The centre has been reserved as a large floor to be available for use suitably partitioned according to the volume of passenger traffic making access thereto for customs clearance. A number of entrance and exit are provided along the beam, and any such entrance or exit may be used according to need.

The structure is of portal frame using universal beam and column, with flat roof and with span of 40 ft., length 150 ft. This building is scheduled to be built several years after the completion of the wharf.

4-3-18 Incinerator.

This is to be erected by the fence side at north centre portion of the Site. The structure is of brick and cylindrical in shape, which is the local standard type.

4-3-19 Fence and Gates.

Encircling the outer circumference of the Site and around the substation and labourers canteen, fence of chain link wire mesh is to be erected. The height is about 10 ft. including the barbed wire, and the total length is approximately 2,700 ft.

The front gate is of wheeled sliding type. The gate for labourers canteen is made of hinged swinging gate.

4-3-20 Others.

(a) Water supply: The city main running under the Pending Road shall be branched out at two places. Two separate lines of asbestos cement pipes, 6 inches and 4 inches in diameter respectively, shall be laid and jointed at the ends so as to form loops in the Site. A service pipe with meter shall then be installed for each building.

Water shall be supplied to vessels moored alongside the wharf through four standpipes rising from the service duct of the wharf.

(b) Outdoor Fire Hydrants: The number of hydrants has been determined to be 5 in all, according to a standard that every building will be covered within 300 ft. radius from a hydrant. A ground type 2½ in. dia. supply faucet was adopted, and nearby thereto, an upright hose cabinet made of steel plate containing a nozzle and one hose of 100 ft. length was installed.

(c) Drainage: Rainwater and waste water from the buildings will be drained to open channel located around buildings and roadway side, and soil will be discharged into the river by pumping up into open channel after being treated in the septic tank.

(d) Septic Tank: Septic tanks provided with filter bed will be located at five points, and after the decomposition treatment, the treated soil will be pumped up to open channel and discharged.

(e) Electrical equipment:

1. Transit shed: The shed shall be illumined by mercury vapour lamps, the luminosity being 4 feet candle. Offices shall be provided with fluorescent lamps with luminosity of 30 to 40 feet candle, as well as cycle fans. A total of 5 air rods shall be provided upon the roof.

2. Vehicle shed and Workshop: The shed shall be illumined by mercury vapour lamps, luminosity being 30 feet candle. The office and gear store shall be provided with fluorescent lamps with luminosity of 20 to 30 feet candle. The office shall be equipped with a cycle fan. A total of 2 air rods shall be installed upon the roof.

3. Labourers canteen: It shall be illumined by fluorescent lamps with luminosity of 20 to 30 feet candle. A total of 2 air rods shall be installed upon the roof.

4. Security and timekeepers office: To be illumined by fluorescent lamps with luminosity of 30 to 40 feet candle. Cycle fans to be attached.

5. First aid, fire station and pass office block: To be lighted by fluorescent lamps with luminosity of 20 to 40 feet candle. Cycle fans to be provided with the office.

6. Toilet: To be illumined by filament lamps, luminosity 5 feet candle.

7. Toilet and washroom: To be lighted by filament lamps with luminosity of 5 feet candle.

8. Passengers reception building: To be lighted by fluorescent lamps with luminosity of 20 to 25 feet candle. Cycle fans to be provided. A total of 2 air rods shall be mounted upon the roof.

9. One main cable is to be received from external substation into switchboard room, and submain cables to be wired to each building through the switchboard. Submain cables shall be entirely underground cable and to be laid inside conduit pipes or concrete trough.

10. External lighting equipment works: Filament lamps will be fixed to steel poles erected along the perimeter fence, and connected by overhead wiring. The lighting on and off will be made by means of time switch installed in the switchboard room.

Roadway lighting: Mercury vapour or sodium lamps will be fixed on steel poles of 30 feet high, which are erected along the roadways. The switching

is to be made by means of time switch in the switchboard room, the system being two (lights at every other ones to form a system). The luminosity to be 0.6 to 0.9 feet candle.

Floodlights, open storage area: Mercury vapour lamps and filament lamps are to be fixed on steel poles of 30 feet high, which are erected along the external circumference of the open storage area. The 4 systems of lights (2 systems for mercury vapour lamps, 2 systems for filament lamps) will be controlled by the switchboard room. The luminosity to be 0.2 to 0.3 feet candle.

Floodlights, wharf: Floodlights of mercury vapour lamps and of filament lamps will be installed upon the roof of the transit shed and steel poles of 30 feet high. The switching is to be made by the sub-switchboard provided in the transit shed. The luminosity is to be 5 to 6 feet candle.

Extremity lights: At both ends of the wharf, steel poles of 30 feet high will be erected, to which red lamps for indication will be fixed. The switching will be done in the sub-switchboard inside the transit shed.

11. Service outlets for moored vessels: Four outlets to serve as power source for charging batteries of vessels will be provided on the wharf, and preparatory piping to be made for wiring afterwards.

12. Wiring to sewage pumps: A control switchboard will be installed, and wiring shall be done to pumps of the septic tanks and water-level switch provided in the tanks. Wiring cable will be connected with cable attached to pumps in the tanks. There are five septic tanks altogether.

13. Telephone conduit: Four telephone outlets for communication with moored vessels will be provided on the wharf, and preparatory piping to be made for wirings afterwards.

14. Lightning conductor system: Air rods will be installed upon the roofs of the transit shed, vehicle shed, labourers canteen, passengers reception building and on the fire hose tower. One air rod for the hose tower, and as for other buildings, refer to (e)1, (e)2, (e)3 and (e)8 above.

4-4 Cargo Handling Equipment.

The types of equipment listed in (5) of 1-3, Extent of Detailed Design, are carefully selected to satisfy the requirements of the Kuching Port Authority, and the specifications for them are prepared without any prejudice and not to hint for the products of any specific manufacturer.

(1) Forklift Truck: Listed therein are two different types, one type (14 Nos. required) is 6,000 lbs. at 24 ins. load centre and the other (2 Nos. required) is 6.0 tons at 23 ins. load centre. A standard lift height is 118 inches, however, the height was requested to be 168 inches.

Headlamps, taillamps, brake lights and rearview mirror are not required on the ground that the trucks will be operated only on the sufficiently illuminated premises of the port instead of the highway.

(2) Towing Tractor: There are two different towing tractors, the one (8 Nos. required) is 3,750 lbs. and the other 7,700 lbs. (4 Nos. required). For the same reason as stated in the previous item, the headlamps, taillamps, brake lights and rearview mirror are not required.

(3) Trailers: There five different types for which separate specification is prepared.

(4) Heavy Crane: The maximum lifting capacity is 30 tons, and is to have a good manoeuvrability, including remote control of its hydraulically operated outriggers.

All these equipment mentioned above will be used jointly with other equipment currently in use at the Tanah Puteh Wharf.

4-5 Tugboats.

Vessels of up to 15,000 dwt with a maximum draught of 25 feet are to be accommodated at the new wharf. Because vessels' clearance-of-depth will be only 3.0 feet and current velocity is rapid at the ebb tide, it will be almost impossible for a vessel of 15,000 dwt to swing round by itself on a narrow area. Accordingly, two tugboats will be necessary to berth or unberth or swing round such vessels. The Japanese Survey Team initially proposed variable pitch propellers for these tugboats, however, fixed pitch propellers were requested for lack of maintenance capabilities, which was incorporated in the plan.

CHAPTER 5 WORK EXECUTION PLAN

Stated hereunder is a rough work execution plan of the project. The actual execution of the Works shall be done in accordance with the detailed work plan submitted by the successful tenderer and approved by the Engineer.

5-1 Basic Conditions for Execution.

The following are some of the basic matters to be taken into consideration in working out the plan:-

(1) Of the natural conditions prevailing at the site, the following will be noteworthy:-

a. Precipitation: The annual total rainfall amount to about 157 inches, or 4,000 mm. About 40% of the total rainfall concentrate in the three month period from December to February, and so does the flooding if any.

b. Sungai Sarawak and Sungai Kuap: The river water is so muddy throughout the year that it can not be seen through. The tidal range is more than 10 ft. and the current velocity at ebb tide reaches to about 3 to 5 knots while that at flood tide about one knot. Besides, there are many driftwoods comprising roots of nipa palms, etc.

c. Shore facilities construction site: Most of the site is a swampy lowland thickly covered with nipa palms and mangroves. Reclamation to a level of 20 ft. above the Datum will be executed by the Kuching Port Authority before the commencement of the main works.

(2) On the availability of materials, constructional plant and equipment, and skilled labourers in Sarawak:-

a. Materials: Some of the major materials available in Sarawak are coarse aggregate (crushed stone) and sand for concrete, cement from West Malaysia, steel reinforcement manufactured by Malayawata, timbers such as Belian and Bakau, fuel and oil for construction equipment, brick, etc.

b. Constructional plant and equipment: For earth moving equipment available in Sarawak, there are tractors such as BDT8, D4, D6, D8, BDT20, etc., road rollers with capacities of 2 to 3 tons and 7 to 10 tons, tipping-lorries of 5 tons. Pile drivers with plain drop hammer are available, but not the diesel pile driver.

None of the local contractors possess boring machines and steel formwork for concrete, and floating equipment for marine works are not available. Small fishing boats may be hired for constructional purposes.

c. Skilled labourers: Vehicle operators may be hired, but the employment of labourers experienced in portworks appears near impossible.

With the above local conditions in mind, a work plan which will insure the smooth execution as well as the maximum economy of the Works shall be made up.

5-2 Preparations by Contractor.

Prior to the commencement of the Works at the site, the Contractor will be required to do the followings:-

(1) Investigation of road leading to the Site and of surrounding area.

The road connecting downtown Kuching and the Site at Pending is a paved two-lane carriageway. Most of the constructional plant and materials required for the port will be carried on this road. But, the existing road may not be able to withstand frequent traffic of heavy vehicles. It will be necessary before the transportation of constructional plants and materials to investigate the road and work out plan for its reinforcement or weight limitation to insure that no claim or damage will result from the transportation.

The Site and its vicinity shall be surveyed, and proper sites shall be selected and reclaimed for the construction of work yard, office, stores, etc.

(2) Arrangements for services: Arrangements for all services necessary for the Works, including electricity with SESCO, water supply with K.W.B., telephone with Telecommunication Department, medical and first aid facilities, etc. shall be made beforehand to secure these services in time. No city gas is available.

(3) Giving notices to government and public offices: The Contractor shall take all the necessary procedures and make applications for the establishment of off-limit area for navigation (Marine Department), the establishment of work site (Land & Survey Dept., Drainage and Irrigation Dept., Public Works Dept.), importation of constructional plants and materials (Customs), their unloading and storage (K.P.A.), and conveyance (P.W.D., Police, K.M.C.), importation of skilled labourers from aboard (Immigration Dept., Labour Dept.) and handling of dangerous goods (Police).

(4) Survey and soil investigation at the Site:
The detailed design of this project is based upon data obtained in surveys carried out in March to June, 1967 and in March to June, 1969. In order to insure accuracy of the Works, the Contractor shall prior to the commencement of the Works carry out independently a new series of topographical survey, profile levelling and sounding of the Site, and compare the results with the data of the previous surveys used for the designing. The depth of shale at the construction sites of the revetment and breasting and mooring dolphins are to be re-confirmed by carrying out test borings. The zero point of the Datum used for the Works shall be a level of 11.20 ft. below the Land & Survey Datum.

(5) The office and laboratory for the Resident Engineers, Conttactor's field office, stores, etc. shall be built near the site.

(6) Arrangements for constructional plants and materials:
Arrangements shall be made for the towage of the dredger, floating pile driver (also used as floating crane), barges, pontoons and other constructional plants and equipment which are not available at the Site. Arrangements shall also be made for the procurement of steel sheet piles, steel pipe piles, tie rods, other construction materials including steel, crushed stone, sand and timber. As a considerably large quantity of filling is required, the Contractor shall confirm the sources of its supply, the maximum available quantity per source, and the total supplying capacity per day.

(7) Arrangements for labourers: As the successful tenderer will have to import skilled labourers, he will be required to make arrangements for their quarters. Arrangements shall also be made for the engagement of common labourers.

(8) Construction of Temporary Works: It will be necessary to construct at the Site a temporary jetty for unloading of constructional plants and materials. The construction of such jetty will be unnecessary if a grant is obtained on the use of the Stone Wharf under the management of P.W.D. The reply from P.W.D. on this matter was favourable at the time of surveys in March, 1969. A suitable mooring space will have to be secured for the floating equipment.

5-3 The Works.

The Works consist of many kinds of works such as construction of quay wall and revetment, anti-erosion works, dredging, additional filling with ground improvement works, paving of roadways and open storage area, drainage, building works, sanitary works and

electrical works. It is necessary, therefore, to carefully arrange these works and work out a plan to complete them in a short period of time.

(1) Additional filling: Materials to be used for additional filling shall have CBR value of 5 per cent or more. The sand drain method shall be executed after the completion of reclamation by K.P.A. scheduled for the initial stage. Because it was considered appropriate to remove the possible settlement of the site for the transit shed beforehand by applying the sand drain method and to insure a smooth operation of the port. In order to shorten the construction period, the method shall first be applied to the area close to the proposed quay wall, then proceeded in the direction of the inland. After attaining the purpose of the sand drain method, materials used for the superimposed load shall be cut flush at the specified ground level.

The equipment required for the additional filling include shovel, bulldozer, tipping-lorries, and pile driver and sand collector for the sand drain method.

For fill material, river sand will be obtained from the Sungai Sarawak.

(2) Wharf and revetment: Survey stands will be erected off both ends of the wharf on the normal line to establish an accurate normal line, and steel sheet piles will be driven in correctly along the line. As the heads of piles driven to refusal point will be positioned lower than the high water level, care shall be taken to insure that such pile heads may not be disturbed by floating equipment, etc. Both pitching and driving of steel sheet piles shall be done by a floating pile driver.

Sheet piles for the anchor wall will be driven in by a pile driver set upon temporary scaffold or on the earth fed out from the shore, along the correct normal line. The work will then be proceeded in the order of fixing wales and tie rods, filling and consolidating the back of sheet piles, placing the concrete cap wall and the paving of the apron. Accessories such as bollards and rubber fenders shall be fixed at the specified positions. The breasting dolphin, mooring dolphin, mooring bitt and catwalks shall also be provided at the specified positions.

(3) Anti-erosion works: The existing riverbank shall be cut or filled to form the specified slope before the slope covering works are started. Required concrete blocks, etc. shall be cast at the work yard or available vacant lots near the work site.

(4) Dredging: Dredging shall be done by use of a suction dredger or a Pristman dredger. Hard shale will have to be

crushed before dredging. The spoil shall be tipped to the spoil tip north of the construction site in an area reserved for the second stage expansion of the port. The spoil tip will be cleaned of all the vegetation as it is also situated in the jungle.

Materials to be dredged consist of silt, sand and shale. The Contractor is required to carefully study the type and capacity of dredgers he would propose to use for the dredging of shale.

(5) Paving: All the roadways, open storage area and open parking lot in the Site shall be paved with asphalt supplied from the Sarawak Public Works Department after drains and sub-grade are completed to the required level and profile.

(6) Buildings: The "Diagonal truss" used for the transit shed shall be manufactured in Japan, transported to the Site and erected under the direct supervision of engineers experienced in the fabrication of this type of truss.

All other buildings shall be of similar structure as those prevailing in Kuching Town.

(7) Water supply:

a. Though the laying works of 6 in. dia. pipe from municipal water main as far as water meter in the Site is to be carried out by the Kuching Water Board, arrangements therefor should be made possibly earlier in consideration of the location where pipes are to be buried, the point where water meter is to be installed, as well as the time from when the temporary water supply will be needed.

b. The works must be carried out according to the Specification and in such a manner to insure that no damage will be caused to the water supply and drainage pipes buried around the exit and entrance of the front gate by vehicle traffic passing over the area.

(8) Electrical works:

a. Thorough previous arrangements shall be made with SESCO on the route of pipings and location of sub-station in the Site, etc., in connection with the pipings for power line to sub-station in the Site.

b. Thorough discussion and arrangements shall be made previously with the Telecommunication Department as to piping route, etc., in regard to the pipings for the wharf-to-shore telephone.

c. Underground cable wiring works to external main and external lights shall be executed taking the progress of civil engineering and building works into considera-

tion; care should be taken to insure that no damage, cutting, faulty insulation, etc. will be caused to such cables as the result of excavation, etc. after the wiring works.

d. In the case of internal electrical works, due care shall be taken so that no breakage is caused to the finished portion of buildings, nor cutting out of concrete is necessitated paying consideration to the progress of the building works.

e. A sufficient care shall be taken for the protection of fixed appliances from the breakage, soiling, etc.

f. Before the commencement of wiring works, the inside of conduit pipe and box shall be thoroughly cleaned without fail. In case of external pipings, care shall be taken to prevent the inundation inside the conduit pipe and manhole; should such takes place, draining thereof shall be speedily carried out.

5-4 Constructional Plant and Equipment.

The following are the major plant and equipment required for the execution of the Works:-

(a) Quay Wall.

Floating pile driver (used also for floating crane and rock cutter)	1 No.
Hammer, D40 class	1 No.
Hammer, D22 class	1 No.
Tugboat, 300 HP class (used also for dredging and collection of sand)	1 No.
Pontoon, 42½ ft. x 20 ft. x 5 ft. class (ditto)	3 No.
Welding machine, 300 amp.	2 No.
Small boat for anchoring (used also for dredging)	1 No.

(b) Dredging.

Suction dredger, over 2,000 HP.	1 No.
Grab dredger	1 No.
Floater, 6 m. long	60 No.
Discharge pipe, for land, 6 m. long	130 No.

Discharge pipe, for water, 6 m. long	60 No.
Barge, capacity 60 cu.m.	1 No.
Tugboat, 300 HP class (used also for quay wall works and collection of sand)	1 No.
Pontoon (ditto)	1 No.
Small boat for anchoring (ditto)	1 No.
Rock cutter (used for floating pile driver)	1 No.

(c) Land Works.

Crawler crane, P&H 320, w/back hoe	1 No.
Crawler crane, P&H 320, w/cram shell	2 No.
Crawler crane, P&H 320	2 No.
Truck crane, lifting capacity 15 tons	1 No.
Swamp dozer, D6 class	1 No.
Bulldozer, D4 class	1 No.
Tipping-lorry, 7 ton	3 No.
Concrete mixer, 22 cu.ft., w/batcher plant	1 No.
Truck mixer, 3 cu.m.	2 No.
Hammer, 2 ton	4 No.
Belt conveyor, 7 m. long	10 No.
Dozer shovel, 1.5 cu.m.	1 No.
Air compressor, 3 cu.m. per min.	4 No.

(d) Equipment Required for Sand Collection.

Submerged sand pump	1 No.
Pontoon, 42½ ft. x 20 ft. x 5 ft.	1 No.
Tugboat, 300 HP class	1 No.
Barge, capacity 150 cu.m.	2 No.
Crawler crane, P&H 320	1 No.
Power generator, 60 KVA	1 No.
Winch, 15 HP	1 No.

CHAPTER 6 WORK SCHEDULE

As shown on the attached work schedule, the Works will require a total of 25 months from its commencement to the completion.

As site clearance is to be executed by the Kuching Port Authority before the commencement of the main works, it will provide some time allowance for the work schedule, and ensure the completion of the Works within the period.

CHAPTER 7 MAINTENANCE

Various facilities of this project will, upon their completion, be placed under the operation and management of the Kuching Port Authority. In order to maintain these facilities and enable them to display the maximum cargo handling capacity at all times, the following will have to be strictly carried out after the completion of the Works:-

(1) For structures in, under water or on the shoreline:

(a) Both anchorage and swinging area shall be sounded periodically and dredged if necessary, in order to assure that the vessels of 25.0 ft. draught may always be berthed alongside the wharf.

(b) Attention shall be paid to the possible scouring at the foot of the quay wall, revetment and anti-erosion works, and if any scouring or undermining are found the the same shall be repaired without fail. Extra attention shall be required after the spate condition.

(c) The function of the cathodic protection system fixed to steel sheet piles and dolphins shall be periodically checked.

(d) Any damage on facilities shall be repaired before it gets worse, because greater repair cost will have to be incurred if left until the damage has developed.

(e) The depth alongside the revetment is -14.0 ft., which is equal to the draught of a fully laden 1,000 dwt class freighter. A 1,000 dwt class freighter normally require a depth of -17.0 ft. in berthing the wharf. Therefore, the berthing of a fully laden 1,000 dwt freighter to the present revetment will be limited to a time range when the water-level is +3.0 ft. or higher, if the extra depth of 3 feet is to be taken.

(f) When the need arises to move the berthed vessels along the wharf, the vessels must be unberthed a little off the quay wall face in order to protect the rubber fender.

(2) For structures on land:

(a) In the transit shed or on the open storage area or wharf apron or on the roadways, cargoes whose weight exceed the design load shall not be left unattended for a long period of time. If not complied, this will cause an irregular subsidence of ground.

(b) The drains shall always be kept clean, removing the deposits of dust and rubbish, so that water may be speedily drained at a time of torrential rain.

(c) Any leak in the roof shall immediately be repaired, and the surface of steel structures shall be coated with anti-rust paint periodically.

(d) The survey pegs and Bench Marks, which are the standards of the positions and elevations of structures, shall be protected to ensure that no deviation will occur to them by the vibration of vehicles, etc. Should any deviation be caused, it shall forthwith be corrected adjusting in relation with survey pegs and Bench Marks outside the Site. The deviation is likely to result from the settlement of ground other than the vibration by vehicles. It is desirable, therefore, to perform the periodical check-ups.

(e) Anti-corrosion and other paints shall periodically be applied to water supply pipes to moored vessels as well as feed pipes exposed for their protection.

(f) In compliance with the frequency of use of grease trap located on outside of the labourers canteen, the grease floating in the trap shall be removed speedily before it becomes decomposed.

(g) The septic tanks shall be cleaned at least once a year to avoid the possible degeneration of its soil water treating capacity; in the case of tanks equipped with sludge and humus draw-off valve, etc., the valves shall at times be drawn off.

(3) On electrical equipment.

(a) Periodical inspection and repair shall be made to find and correct deterioration of paint coats applied on exposed pipings and other metal parts.

(b) The insulation of wire, cable and switchboard shall be periodically measured so as to prevent possible failure or accident caused by faulty insulation.

(c) All the connection of wire and cables in the switchboard, cabinet panel, etc. shall be inspected.

(d) Measure the earthing resistance of lightning conductors, cabinet panel and switchboard, and check if they are kept under the prescribed value.

(e) Carry out periodically the inspection and cleaning of lighting fixtures so as to prevent the inferior luminosity due to dust, damage and deterioration of electric bulbs and tubes.

(f) Inspect the control switchboard for sewage pumps, and make sure that no damage is caused to the motor due to faulty function of electromagnetic switch, relay, etc. caused by imperfect insulation or accumulation of dust, etc.

(g) Periodical inspection should also be carried out as to the damage of fixtures such as switch, outlets, and manholes and electric poles, etc. Besides, it is necessary to check for inundation in the manhole after a torrential rain.

(h) Each meter shall be checked periodically, and repaired and adjusted to insure the smooth functioning. This applies also to the working of time switch.

(i) In regard to the equipment installed in the substation on the Site, contact shall always be maintained with SESCO, under whose direction the maintenance and control shall be carried out.

CHAPTER 8 TENDER DOCUMENTS

8-1 Outline.

The tender documents consist of the following:-

(1) Instructions to Tenderers.

(2) Tender.

(3) Agreement.

(4) Conditions of Contract.

Part 1 - General Conditions.

Part 2 - Conditions of Particular Application.

Part 3 - Conditions of Particular Application to Dredging and Reclamation Work.

(5) Specification.

(6) Bills of Quantities.

(7) Schedule of Basic Rates and Prices.

(8) Drawings.

The above documents are prepared with the object of inviting an international tender for the works.

8-2 Instructions to Tenderers.

Stated therein are the instructions and hints to be observed to go through the tender formalities, which are chiefly as follows:-

(1) Instructions on preparing the tender documents.

(2) Presentation of the programme for execution of the works.

(3) Prepentation of the guarantee for Tender.

(4) Presentation of foreign currency requirement.

(5) Hints on proposals for alternative designs.

(6) Observation of secrecy of the Documents.

(7) The mention that the Employer will not be responsible for any expenses which may be incurred by any Tenderer in the preparation of his Tender.

(8) Procedure for delivery of Tender.

(9) Withdrawal of Tender.

(10) Returning of documents.

8-3 Conditions of Contract.

With a view to invite international competitive tender for the works in this project, conditions of contract exemplified in I.C.E., F.I.D.I.C., A.S.C.E. - A.G.C., R.I.B.A., A.I.A. and others came under the careful review, and the following was selected as the most suitable conditions for the works:-

"Conditions of Contract (International) for Works of Civil Engineering Construction", 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.) (now known as Fédération Internationale des Entrepreneurs Européens de Bâtiment et des Travaux Publics - F.I.E.E.B.T.P.), 2nd Edition, July 1969.

General Conditions forming Part I are quoted from the aforementioned F.I.D.I.C. Conditions of Particular Application, Part II, are supplements, additions, deletions and alterations to Part I. Conditions of Particular Application to Dredging and Reclamation Work of Part III are also quoted from the said F.I.D.I.C. version with some modification. Consideration is given to minimize increase in the cost of the works due to addition, or alterations after the conclusion of the contract.

8-4 Specification.

It includes detailed specifications for materials, workmanship and temporary works as well as description of works and list of drawings.

Considering that the works are to be placed for international tender, the British Standards are adopted in most cases in the specifications and bills of quantities.

The units of weights and measures are based on the foot-pound system currently in use in Malaysia.

8-5 Bills of Quantities.

Prices in Bills of Quantities are to be entered in Malaysian Dollars.

The method for measuring quantities for Bills of Quantities is, in principle, based on the "Standard Method of Measurement of Civil Engineering Quantities", published by the Institution of Civil Engineers in London and the "Standard Method of Measurement of Building Works", jointly published by the Royal Institution of

Chartered Surveyors and the National Federation of Building Trades Employers.

Quantities summed up in Bills of Quantities are approximate. On completion of each work, the finished amount of work is measured by the method set forth in the Bills of Quantities to ascertain the quantities for payment.

The unit price entered by the Contractor in the Bills of Quantities is multiplied by the fixed quantity to determine the amount to be paid.

CHAPTER 9 TENDER SCHEDULE

9-1 Outline.

The Works are to be offered for international competitive tenders by selected, designated contractors, and the following services are required before a contractor to execute the Works is finally decided on, and a contract is concluded between the Employer and the Contractor.

(1) Advertisement.

(2) Prequalification of Tenderers.

(3) Selection of Tenderers.

(4) Tender.

(5) Examination of Tender Documents.

(6) Award of a successful Tenderer.

(7) Conclusion of Contract.

9-2 Advertisement.

In order to disseminate among contractors that tenders will be invited for the Works, advertisement will be made in the newspapers or magazines having a large circulation.

The advertisement will contain the names of the Employer and the Consultant, the type, contents and site of the Works, documents to be submitted and the date of closing of the proposals.

The applicant will be requested to submit with the Documents the name, location and capital of the company, name of the bank with which the company has an account, list of projects recently accomplished, and the number of regular employees, etc.

It will be proper to fix the closing date somewhere between 60 and 90 days after the advertisement is made.

9-3 Prequalification of Tenderers.

Documents submitted by applicants for Tender will be examined. The Employer will cooperate with the Consultant in this work to select some candidates for a Contractor best suited for carrying out the Works.

The examination and selection will require 30 to 40 days after the close of the applications.

9-4 Selection of Tenderers.

The Central Tender Board will examine the candidates and select 8 to 10 tenderers from among the candidates.

About 30 days are deemed necessary for this work.

9-5 Tender.

The Tender Documents will be issued to the 8 to 10 Tenderers. It is appropriate to close the Tenders somewhere between 60 and 80 days after the Documents are issued.

9-6 Examination of Tender Documents.

Tender Documents submitted by Tenderers will be examined by the consultant, and the result will be reported to the Employer. During the examination, importance will be attached to completeness of the Tender Documents, the price tendered, execution method, execution period, execution ability and guarantee.

The examination of Documents will require about 30 days.

9-7 Selection of Successful Tenderer.

The Employer will report with his opinions to the Central Tender Board the result of the examination of the Tender Documents. The Central Tender Board will call in 2 or 3 Tenderers from the top for negotiations and finally decide on a successful Tenderer and contract price.

This work will require about 30 days.

9-8 Conclusion of Contract.

After the selection of successful Tenderer, a written agreement will be signed by the Employer and the Contractor.

CHAPTER 10 ESTIMATION OF COST

10-1 Conditions of Cost Estimation.

The cost of the Works was estimated on the following conditions:-

(1) International tenders will be invited for the Works.

(2) Principal materials such as steel sheet pile, tie rod, steel pipe pile, bollard, bitt, rubber fender, anode for cathodic protection, diagonal truss, etc. will be imported from Japan.

(3) A majority of construction equipment and floating equipment will be brought from Japan.

(4) Surtax on those imports is calculated at 2% of the price of C.I.F. Kuching as of December, 1969. Also, the fixed amount of tax is calculated for the items (steel pipe pile, tie rod, etc.) subject to the import tax.

(5) The construction equipment will be brought into Sarawak free of duty. The floating equipment will be given the same consideration, and they will be also exempted from Port Charge.

(6) The cost of all the cargo handling equipment was estimated on the condition that they will be imported from Japan free of duty.

(7) The tugboats will be built in Japan and will be brought to Kuching.

10-2 Cost.

The total cost of the Kuching Port Expansion Project is estimated at M$23,000,000.

Since March 1969, meetings have been held several times on the plan and design of the project between the Sarawak Government and the Japanese Survey Team. During the progress, alterations have been made to the plan frequently. The following are the principal items of the alterations:-

(1) A breasting dolphin to be built for the wharf and a catwalk to be provided between the dolphin and quay wall.

(2) The depth alongside the wharf to be increased from -27 to -28 ft.

(3) The capacity of bollards to be increased from 25

to 35 tons.

(4) The construction of the ramp to be done away with and the revetment be built instead. The depth alongside to be increased from -10 to -14 ft.

(5) Dredging depth to be increased from -27 to -28 ft. Due to a change in datum level of late, the quantity of dredged materials will increase.

(6) Site clearance and preliminary reclamation to a level of +20 ft. to be carried out by the Sarawak Government.

(7) Due to the latest revision of layout, total paving area as well as quantities of electrical works will increase.

(8) Gratings to be provided for open drains around the transit shed.

(9) Monitor roof to be provided for the transit shed. Interior finish to be partially modified in compliance with the comments.

(10) Number of weighbridges to be increased from one to two units.

(11) Type of tugboats to be changed from variable pitch propeller to fixed pitch propeller. Fire monitors to be additionally equipped on the boats for extinguishing fire on land or on other ships.

Majority of above-mentioned alterations have been unavoidable as they were made from the operational need and for convenience and safety of users of port facilities; by such alterations, however, the construction costs have inevitably increased.

SARAWAK, MALAYSIA

KUCHING PORT AUTHORITY

KUCHING PORT EXPANSION PROJECT

List of Abbreviations used in Summary Report

A.C.D.	-	Admiralty Chart Datum
A.G.C.	-	The Associated General Contractors of America
A.I.A.	-	The American Institute of Architects
a.m.	-	before noon
amp.	-	ampere
B	-	Breadth
BH.Nr.	-	Bore hole number
B.M.	-	Bench Mark
B.S.C.P.	-	British Standard Code of Practice
B.S.S.	-	British Standard Size
cap.	-	capacity
C.B.R.	-	California Bearing Ratio
C.D.L.	-	Chart Datum Level
C.I.F.	-	Cost, Insurance and Freight
C.D.	-	Chart Datum
cm.	-	centimeter
cts.	-	cents
cu.m.	-	cubic meter
cwt.	-	hundredweight
d.	-	draught
dia.	-	diameter
e.g.	-	for example
F.I.D.I.C.	-	Federation International des Ingenieurs-Conseils
Fig.	-	Figure
F.R.P.	-	Fibre Reinforced Plastic
F.O.B.	-	Free on Board
ft.	-	feet
g.	-	gramme

CONSTRUCTION SCHEDULE

DIVISON OF WORKS		QUANTITY	MONTH 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	REMARKS
	TOWAGE ARRANGEMENTS FOR MATERIALS SHIPMENT			
	TEMPORARY WORKS			
CIVIL WORKS	RECLAMATION: SITE PREPARATION AND DEMOLITION			
	RECLAMATION			
	PLACING SAND MAT			
	DRIVING OF SAND PILES			
	SURCHAGE LOAD OVER SAND PILES			
	REMOVAL OF SURCHAGE LOAR			
	TURFING			
	QUAYWALL: PRELIMINARIES			
	DRIVING SHEET PILES			
	WALING			
	ANCHORING			
	FIXING TIE RODS			
	BACKFILLING			
	UPPER CONCRETE WORK			
	SERVICE DUCT & APRON PAVEMENT			
	FOOT PROTECTION WORK			
	CATHODIC PROTECTION WORK			
	ANCILLARY WORKS			
	REVETMENT: PRELIMINARIES			
	DRIVING SHEET PILES			
	WALING			
	ANCHORING			
	REPLACING WITH SAND			
	FIXING TIE RODS			
	UPPER CONCRETE WORK			
	APRON PAVEMENT			
	FIXING FENDERING SYSTEM			
	FOOT PROTECTION WORK			
	JUNCTION WITH ANTI-EROSION WORK			
	CATHODIC PROTECTION WORK			
	ANCILLARY WORKS			
	BREASTING DOLPHIN: PRELIMINARIES			
	DRIVING PIPE PILES			
	ENCASING PILES			
	UPPER CONCRETE WORK			
	FIXING CATWALK			
	CATHODIC PROTEETION WORK			
	ANCILLARY WORKS			
	MOORING DOLPHIN: PRELIMINARIES			
	DRIVING PIPE PILES			
	ENCASING PILES			
	UPPER CONCRETE WORK			
	FIXING CATWALK			
	ANCILLARY WORKS			
	MOORING BITT: PRELIMINARIES			
	DRIVING PIPE PILES			
	PLACING FOUNDATION CONCRETE			
	FIXING BITT			
	DREDGING		CLEARING OF SPOIL TIP	
	DRAINAGE: LAYING OPEN DRAINS			
	LAYING CULVERTS			
	FIXING MANHOLES			
	MAIN DRAIN WORK			
	OUTFALL (S. SARAWAK)			
	OUTFALL (S. KUAP)			
	GRATING WORK			
	ROADWAYS: SUBGRADE WORK			
	SUB-BASE WORK			
	ROAD BASE WORK			
	BASE COURSE WORK			
	WEARING COURSE WORK			
	OPEN STORAGE AREA: SUBGRADE WORK			
	SUB-BASE WORK			
	BASE WORK			
	BASE COURSE WORK			
	WEARING COURSE WORK			
	OPEN PARKING LOT: SUBGRADE WORK			
	SUB-BASE WORK			
	BASE WORK			
	BASE COURSE WORK			
	WEARING COURSE WORK			
	SUNGAI SARAWAK			

CIVIL WORKS	EROSION WORK	
	CATHODIC PROTECTION WORK	
	ANCILLARY WORKS	
BREASTING DOLPHIN	PRELIMINARIES	
	DRIVING PIPE PILES	
	ENCASING PILES	
	UPPER CONCRETE WORK	
	FIXING CATWALK	
	CATHODIC PROTEETION WORK	
	ANCILLARY WORKS	
MOORING DOLPHIN	PRELIMINARIES	
	DRIVING PIPE PILES	
	ENCASING PILES	
	UPPER CONCRETE WORK	
	FIXING CATWALK	
	ANCILLARY WORKS	
MOORING BITT	PRELIMINARIES	
	DRIVING PIPE PILES	
	PLACING FOUNDATION CONCRETE	
	FIXING BITT	
DREDGING	CLEARING OF SPOIL TIP	
DRAINAGE	LAYING OPEN DRAINS	
	LAYING CULVERTS	
	FIXING MANHOLES	
	MAIN DRAIN WORK	
	OUTFALL (S. SARAWAK)	
	OUTFALL (S. KUAP)	
	GRATING WORK	
ROADWAYS	SUBGRADE WORK	
	SUB-BASE WORK	
	ROAD BASE WORK	
	BASE COURSE WORK	
	WEARING COURSE WORK	
OPEN STORAGE AREA	SUBGRADE WORK	
	SUB-BASE WORK	
	BASE WORK	
	BASE COURSE WORK	
	WEARING COURSE WORK	
OPEN PARKING LOT	SUBGRADE WORK	
	SUB-BASE WORK	
	BASE WORK	
	BASE COURSE WORK	
	WEARING COURSE WORK	
ANTI-EROSION WORK	SUNGAI SARAWAK	
	CASTING BLOCKS	
	COFFERING CREEK	
	PLACING BLOCKS	
	DRIVING PILES AT BOTH ENDS	
	SUNGAI KUAP	
	FOUNDATION WORK	
	PLACING GABIONS	
	FASCINE MATTRESS WORK	
BUILDING WORKS — TRANSIT SHED	TEMPORARY WORKS	
	EXCAVATION & EARTHWORK	
	DRIVING PILES	
	CONCRETOR	
	BRICKLAYER	
	ROOFER	
	CARPENTER AND JOINER	
	STEEL AND IRON WORKER	MANUFACTURE & DELIVERY TO SITE; ERECTION AT SITE
	SHEET METAL WORKER	
	PLUMBER SANITARY ENGINEER	
	PAVIOR AND PLASTERER	
	GLAZIER	
	PAINTER	
	ELECTRICAL WORKS	
BUILDING WORKS	VEHICLE SHED	M.F.G AT FACTORY
	SHELTERD CARPARK	M.F.G AT FACTORY
	FIRST AIDE & FIRE STATIONS	
	SHELTERED EXIT	M.F.G AT FACTORY
	SECURITY OFFICE TIME KEEPERS & WEIGHBRIDGE	
	TOILET	
	TOILET . WASH ROOM	
	LABOURERS' CANTEEN	M.F.G AT FACTORY
	INCINERATOR	
	FENCE & GATES	
EXTERNAL PLUMBER		
EXTERNAL ELECTRICAL WORKS		
CLEARING UPON COMPLETION		

PLAN OF OPERATION

FOR

THE DETAILED INVESTIGATION AND DESIGN OF THE

KUCHING PORT PROJECT

CONTENTS

I. Introduction

1. The Government of Malaysia desires to construct a new wharf for general cargo and passenger services at Pending Point in the Sungei Kuap, Kuching, Sarawak.

2. With regard to the above project, the Government of Japan, at the request of the Government of Malaysia, had prepared a feasibility report based upon the outcome of the on-the-spot survey conducted from March 15 to June 22, 1967 at Kuching and already presented the report to the Government of Malaysia.

3. The Government of Japan, in response to the subsequent request from the Government of Malaysia for technical cooperation in this project, has decided to make necessary financial arrangements to carry out the detailed investigation and design work of the Kuching Port Project and entrusted the implementation of the work to the Overseas Technical Cooperation Agency (OTCA) of Japan, which is an agency of the Government of Japan for executing technical cooperation.

4. The present document sets forth a plan of operation in regard to the detailed investigation and design work.

II. Works to be undertaken by the Japanese Survey Team

5. The Japanese Survey Team will undertake the following investigations for a period of about three months in Malaysia.

(1) Site Investigation.

A. Soil Investigation.

a) The core boring shall be conducted at selected points, in the onshore facilities construction site of the proposed general cargo wharf. Both mechanical and physical testings shall be performed on the undisturbed samples thus obtained.

b) The riverbed strata of the Sungei Kuap shall be investigated by carrying out jet borings at selected points in the proposed dredging area.

c) The CBR test shall be performed at selected points along the road alignment within the proposed wharf area.

d) Test piles shall be driven down in the river of the Sungei Kuap along the proposed wharf site.

B. Topographical Survey.

The profile levelling and theodolite survey shall be conducted in the proposed wharf construction site to obtain the data necessary for the engineering designs.

a) Profile Levelling

i) Construction site of marginal river wharf and onshore facilities; 1,500 feet long section between the Pending Point and Customs Checking Station and 1,000 feet long section from the Pending Point towards the Biawak Wharf.

Total area to be cleared: 34,200 sq. ft. (for width of 3-5 ft.)

Total area to be surveyed: 990,000 sq. ft.

(1,500'x600' on the side of the Sungei Kuap)

(1,000'x90' on the side of the Sungei Sarawak)

b) Theodolite Survey.

The theodolite survey shall be carried out on the same area as covered by the profile levelling. Total area: 990,000 sq. ft.

C. Hydrological Survey.

a) Water-level.

The water-level shall be continuously observed by the team during its stay in Kuching by installing a self-recording water gauge on the existing jetty at Pending.

b) Current Velocity and Direction.

The velocity and direction of the current shall be measured by a current meter at the time of spring tide and if possible, during spate conditions.

c) Water Quality.

Tests and measurements shall be conducted on the change of salinity in the lapse of time, change of water temperature, pH values and conductivity.

(2) Collection of Data and Information.

A. Wind observation data.

B. Data on the design of existing structures.

C. Conditions of local contractors.

D. Wages, quality and number of labourers locally available.

E. Kinds of construction equipment locally available and their rental charges.

F. Testing facilities locally available and their charges for resident engineer.

G. Construction materials locally available.

H. Available capacity of electric power, gas and water.

I. Bye-laws and Code of Practice relating to the proposed design and the execution of the project.

J. Other related data and information.

6. The Japanese Survey Team will undertake the detailed design work of the following items:

(1) Civil Engineering.

A. A marginal river wharf for general cargo and passenger services of 800 ft in length, 60 ft in width and 27 ft in depth alongside, with two mooring dolphins off each end of the wharf, and one breasting dolphin, including other ancillary works such as mooring bollards onshore, pipings for the servicing of water and oil for the moored ships, telephone outlet and receptacles. The rubber fender and mooring posts shall be designed for the vessels of 15,000 tons dw at the lighter draft of 25 ft.

length

B. Anti-erosion work along the whole ~~bank~~ of the wharf, and riverbank protection work on the right bank of the Sungei Sarawak.

C. Dredging of anchorage and swinging area to the depth of 27 ft below Admiralty Chart Datum.

D. Reclamation of the wharf area.

E. A ramp for accommodation of landing crafts and similar vessels.

F. ~~The~~ Berthing dolphins and mooring bollards for ramp to take vessels up to 200 ft in length.

G. Paved open storage area of 100,000 sq. ft. with load factor of 750 lbs. per sq. ft.

H. Open parking lot.

I. Bitumen surfaced roadways connecting with the public highway with adequate surface drainage for torrential rain.

J. A means of preventing the entrapment of driftwood in the wharf sub-structure.

(2) Architectural Engineering.

A. A transit shed or sheds immediately adjacent to the wharf, of total capacity of 60,000 sq. ft. and a floor load factor of 850 lbs. per sq. foot, together with the necessary offices for shed and Customs staff and lock-up stores for broken, highly-dutiable and valuable cargoes. The shed to be fitted with Customs cargo inspection bays and the centre portion to be two storeys high to provide Wharf Superintendents and tally clerks office and a passenger reception area complete with toilet facilities for staff and passengers. Adequate toilets for labourers to be provided and to be separated from the transit shed.

B. An export shed of 20,000 sq. ft. to the rear of the transit shed, floor load 500 lbs. per sq. foot with offices for shed staff and Customs with toilet facilities.

C. A workshop and vehicle shed.

D. Security fence and security office.

E. A labourers canteen.

F. Sheltered check points with weighbridge, pass office, timekeepers office and provision for customs supervision.

G. Sheltered carpark.

H. Fire main and "first aid" fire station.

(3) Electrical and Mechanical Engineering.

A. Lighting system.

B. Cargo handling equipment such as mobile crane, truck crane, forklift truck and trailer.

C. An isolated incinerator of adequate capacity located as required to avoid nuisance from prevailing winds.

In carrying out the above-mentioned functions, the Japanese Survey Team shall utilise the most economical concepts and designs consistent with the needs for the efficient operations of the New Port complex.

The Japanese Survey Team will, upon the completion of the preliminary designs, submit to the Sarawak Government an iterim report containing comparative designs with rough cost estimates in accordance with the requirements set out in Paragraph 6 for the views and comments of the Sarawak Government on matters relevant to the subsequent design work. The comments and views of the Sarawak Government will be provided within a period of time to be mutually agreed. On receipt of these comments and views, the Japanese Survey Team will then prepare and submit draft engineering documents to the Sarawak Government for further comments prior to the preparation of the final engineering documents for submission to the Sarawak Government.

7. The following documents will be prepared based on the results of the survey and the detailed designing, and will be presented to the Government of Malaysia:

(1) Summary report containing data regarding establishment of design criteria and dimensions.

(2) Draft form of tender.

(3) Written contract in draft form.

(4) Specification.

(5) Detailed working drawings.

(6) Time schedule

(7) Bills of quantities.

(8) Cost estimates including detailed breakdown between local and foreign expenditures.

III. Arrangements to be Made by the Government of Malaysia

8. The following will be arranged for the Japanese Survey Team by the Government of Malaysia:

(1) Provision for the fullest cooperation for the collection of available data necessary for the detailed designing, and permission for the despatch of the collected data to Japan.

(2) Assurance of speedy customs clearance for all equipment and materials necessary for the Survey.

(3) Appointment of liaison officers.

(4) Provision of a furnished office at no cost to the team for the entire period of the investigation.

(5) Provision of one car with driver at no cost to the team.

(6) Arrangements to secure required number of labourers. Expenses in relation with the engagement shall be borne by the team.

(7) Arrangements to secure land transportation for survey equipment to the said office. The transportation cost shall be borne by the team.

(8) Maintenance of the self-recording water gauge after the departure of the team, and also the continuation of observation until the commencement of the construction stage.

(9) Permission to enter the Pending Area and Tanah Puteh Wharf.

(10) Permission for photographing existing port facilities and permission to take the photos Japan.

(11) Permission for installation of the self-recording water gauge on the existing jetty at Pending.

(12) Permission for clearing the Works Site for the purpose of profile levelling.

IV. Privileges and Exemption to be Granted to the Japanese Survey Team

9. (1) Exemption from income tax.

(2) Exemption from customs duties and other local levies to the survey equipment and materials.

(3) Exemption from the costs of handling and storage of the survey equipment and materials.

(4) Provision of medical services at Government hospitals.

V. Presentation of Documents

10. All the documents mentioned in Item 7 above will be prepared in English.

11. Forty (40) copies of each of them will be presented to the Government of Malaysia within nine months after the completion of the survey in Malaysia.

VI. Signature

The undersigned agreed on the foregoing on behalf of the parties concerned on this date of _____ March, 1969.

For the Government of Malaysia

For the Government of Japan

MEMORANDUM APPENDIX B

FOR

THE PRELIMINARY DESIGN OF THE KUCHING PORT PROJECT

The Japanese Survey Team and the Kuching Port Authority, the operator of the new wharf to be constructed at Pending area in Kuching, have, as the result of a series of discussions held during March 19th through April 10th, 1969, agreed as follows for the preparation of preliminary designs. This memorandum shall be read in conjunction with the Plan of Operation.

1. Civil Engineering.

A. A Marginal River Wharf.

a. The wharf shall be sited at the position shown in the attached drawings. The wharf shall be designed in compliance with the requirements set out in the Plan of Operation.

b. Basic berthing plan of vessels.

(1) Large ocean-going vessels shall be berthed close to the Pending Point.

(2) Vessels requiring passenger services shall be berthed close to the Customs Jetty.

(3) Vessels berthing simultaneously to the wharf shall be normally in the combination of one each of 15,000 and 3,000 dw class, or two of 10,000 dw.

c. Load factors to be considered in the design. *

The wharf shall be designed as follows:

(1) The 500 ft section starting from the Customs Jetty end designed for general cargoes and passengers to a general specification of 600-700 lbs. per sq. ft.

(2) For the handling of heavy loads, especially strengthened 300 ft section at the Pending Point end capable of carrying heavy loads on eight-wheeled low-deck trailers. The total loads on wheels not to exceed 65 tons.

d. For the large ocean-going vessels berthing close to the Pending Point, one each of the breasting dolphin and mooring dolphin shall be provided at positions most suitable for the purpose. Another mooring dolphin shall be provided off the upstream end close to the Customs Jetty.

e. The piping for the supply of water to vessels moored at the wharf shall be complete with meters. Separate provisions will be made for the installation of piping for the supply of oil to ships at the wharf.

B. Anti-erosion Work.

The work shall be designed both for the right bank of the Sungei Sarawak and the left bank of the Sungei Kuap above the wharf for the necessary length as determined from the investigation.

C. Dredging of Anchorage and Swinging Area.

The riverbed and the swinging area shall be dredged to the depth of 27 ft below Admiralty Chart Datum.

D. Reclamation.

The new wharf area shall be reclaimed with suitable dredged materials and fill from nearby sources.

E. Ramp.

a. The ramp shall be designed for the landing crafts having the following specifications; total length=200ft, beam=39ft, maximum draught-7ft and 935 G.R.T.

b. The slope shall be 1:8.

c. The design load shall be a line load of 100 tons for the width of 25ft.

d. The ramp shall be sited between the Pending Point and the downstream edge of the new wharf.

F. Berthing Dolphins and Mooing Bollards for Ramp.

They shall be designed after their positions and numbers were determined with consideration given to the mutual relationship between the wharf and the ramp.

G. Open Storage Area.

The dimensions shall be 500ft x 200ft. In designing the area, a thorough study shall be made on the construction of the floor so that it can withstand the loads of 750 lbs. per sq. ft.

H. Open Parking Lot.

A parking lot for visitors shall be designed outside the security fence.

I. Roadways.

The roadways shall be designed to withstand the loads of loaded vehicles to be designed for, with proper attention being paid for the surface drain.

J. Prevention of Driftwood Entrapment.

A comparative study shall be made on the preventive methods of the driftwood entrapment.

2. Architectural Engineering.

A. The export and import sheds shall be combined into one block, 150ft x 533ft, of total capacity of 80,000 sq. ft. The centre portion facing to the wharf, 30ft x 100ft, shall be two storeys high to provide three look-up stores and offices for shed and Customs staff on the ground floor, and offices for shed, Customs and operation staff on the first floor. The access to the operation staff office shall be provided from outside the shed while the same to the remaining offices shall be from inside. Toilet facilities for staff shall be provided at a suitable location. The shed shall have a total of 14 doorways, six each on the front and rear and one each on both sides. All the doorways shall be same in dimensions, 20ft wide and 16ft high. The eaves on the front shall be six feet long and the same on the rear 18ft along the whole length of the shed. The roof shall be fitted with skylights.

B. The passengers reception building shall be 40ft wide and 150ft long. The building shall be designed in such a way that embarking and disembarking passengers may be separated and the centre portion used for the collection and delivery of luggages. The building shall be provided with two sets of toilet facilities for both sexes.

C. The vehicle shed and workshop shall be combined into one block, 80ft x 150ft. The block shall be provided with an office, gear store and underground oil storage tank.

D. The security fence shall be put up as shown in the drawings. The security office complete with toilet facilities shall be provided at the centre of the check point.

E. A labourers canteen complete with toilet facilities shall be provided outside the security fence. The canteen shall be divided by a partition into two sections for Muslim and non-muslim labourers.

F. The pass office shall be provided at the check point. The timekeepers office shall be provided behind the security office. Only the exit section of the check point shall be covered. The weighbridge same as the one presently used in the Tanah Puteh Wharf, of capacity of 18 tons shall be provided. Arrangements shall be made so that the weighbridge may be operated and controlled from the timekeepers office.

G. The sheltered carpark shall be provided within the security fence.

H. The first aid station complete with toilet facilities shall be provided behind the pass office. The fire station shall be provided adjacent to the pass office and the first aid station. The floor space shall be large enough to house an ordinary four-wheeled fire engine. The fire engine and its accessories shall not be included in the designing work. The water supply source to fire hydrants shall be limited to the city water. The main for fire fighting shall have the diameter of six inches.

I. Toilets separated from buildings shall be provided within the security fence at locations shown in the attached drawings. The one located close to the Pending Point shall be equipped with showers.

J. Air conditioners shall not be installed in any buildings. Instead, ceiling fans shall be used for the ventilation of offices. As for the ship-to-shore telecommunication, only the necessary piping shall be incorporated in the wharf structure.

3. Electrical and Mechanical Engineering.

A. The intensity of the lighting system both in and outside the buildings shall be determined in accordance with the international standards.

B. In principle, electrically operated equipment shall not be used for cargo handling purposes.

C. An incinerator shall be provided at the position shown in the attached drawings.

The undersigned agreed on the foregoing on behalf of the parties concerned on this date of 15th April, 1969.

For the Kuching Port Authority

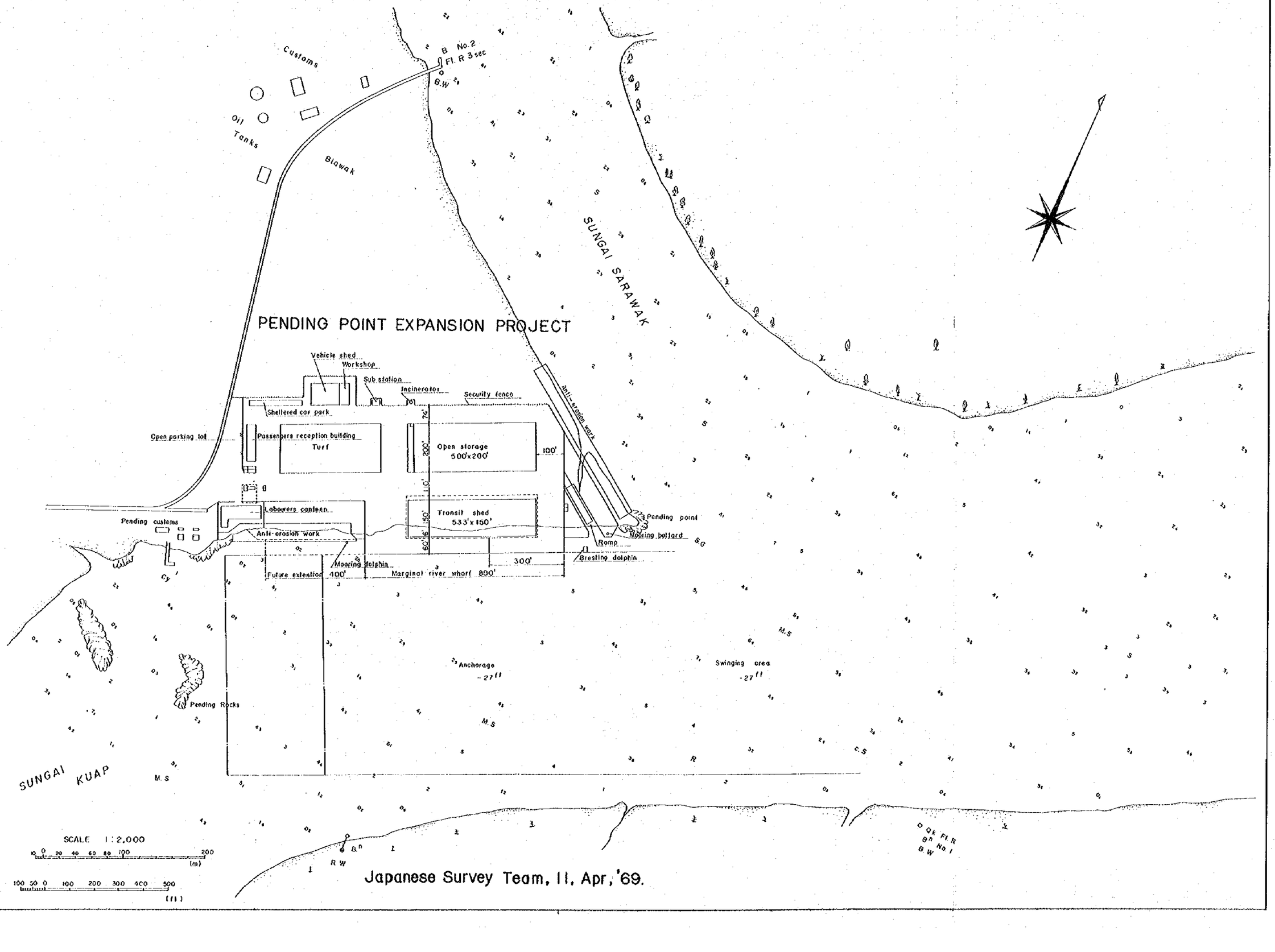
Ag General Manager
KUCHING PORT AUTHORITY

T. Hasuta

For the Japanese Survey Team

* Please see item 1 'Load Factor of the Wharf' of the Notes of Discussion held in the Ministry of Communications and Works on the 12th April, 1969, a copy of which is attached.

PENDING POINT EXPANSION PROJECT



Japanese Survey Team, 11, Apr, '69.

VIEWS AND COMMENTS OF SAWAWAK GOVERNMENT ON INITIAL IMTERIM REPORT ON THE DETAILED INVESTIGATION AND DESIGN OF THE KUCHING PORT PROJECT

The Japanese Survey Team has submitted an Initial Interim Report dated July, 1969 in accordance with the requirements set out in paragraph 6 of the agreement on Plan of Operation for the views and comments of the Sarawak Government.

Appended below are the views and comments of the State Government:-

I. Chapter 1. Introduction.

It is confirmed that the General Layout has been in accordance with the "Memorandum for the Preliminary Design" agreed to by the Kuching Port Authority.

II. Chapter 2. Scale of Facilities and Layout Plan.

a) Para. 2-5 (pages 8-9) - Ramp and Accessories

Having considered various relevant factors, namely the cost, the existence of ramp at Tanah Puteh, the siting problems, the limitation of the usefulness, etc., the State Government has decided that to avoid unnecessary duplication, the Ramp and its Accessories should not form part of the Project.

Instead, it is suggested that in place of the proposed Ramp, a steel/R.C. sheet pile wall should be constructed to close the gap to prevent under scouring and with necessary anti-erosion works/ gabions and suitable landing facilities to be incorporated, for the use of tug boats and other small crafts.

b) Para. 2-5 (page 10) - Disposal of Sewage

It is not clear what methods will be adopted for the disposal of sewage from the canteen and the toilets. From the discussions with the Consultants it is understood that the standards of treatment of the sewage will not be lower to that required by the Municipal Health Authority.

c) Para. 2-8 (page 10) - Transit Shed

It is considered essential that roof ventilators should be provided in the design for the Transit Shed.

d) Pra. 2-9 (page 11) - Passenger Reception Building

The present passenger traffic does not warrant construction of this building until 5 years after the completion of the Project. The passenger traffic could be handled in the transit shed which would not be utilized in full during the initial period. It is therefore suggested that the design for the building be produced, and

the estimated cost of it should not be included in the total estimated cost of the Project.

e) Para. 2-10 (page 11) - Workshop and Vehicle Shed

While it is essential to have a vehicle shed, gear store and oil store immediately on the commencement of the operation of the port facilities, there will be no immediate need for a workshop after the completion of the Pending Project because the existing workshop at Tanah Puteh can serve both Tanah Puteh and Pending Operations. The Consultants are, therefore, requested to draw the building plans in such a way that the construction of the vehicle shed and the workshop can be conveniently carried out at two different stages.

f) Para. 2-12 (page 11) - Other Ancillary Buildings

It is confirmed that the siting of the ancillary buildings are acceptable except that from the operation point of view there should be two weighbridges instead of one.

III. Chapter 3. Basic Design.

1) Para. 3-1 (pages 13-19) - Marginal River Wharf

The Consultants set out in this paragraph various reasons why steel sheet pile type of wharf is preferred and recommended and also quote the cost per foot for three types of wharf. It is noted that the difference of the total costs between the steel sheet pile type and the gravity type is only $256,000; and the difference between the steel sheet pile type and the shore bridge type is $440,000. These differences are not considered great in view of the magnitude of the Project. Unfortunately it appears that the cost of maintenance, which is an important factor, for each type of wharf does not seem to have been taken into due consideration by the Consultants in arriving at their recommendation. It is also necessary to take into account the local facilities for repairing or maintaining the wharf. The Consultants should carry out comparative cost studies of the materials to be used i.e. between cement and steel structures and such studies should take into consideration such factors as the use of as much locally-produced materials as possible e.g. cement. The State Government should have various options clearly worked out by the Consultants before commiting on any choice of design. Furthermore the Report indicates on page 79 that the corrosive effect of the water in the Pending Area is generally 20% higher than that experienced in Japan but the method for cathodic protection and its effectiveness have not been fully explained. It would seem also that tests on the test pieces submerged at Pending for two months incomplete.

2) Para. 3-1(7) (page 20) - Bitts and Bollards

It is noted that all the bitts on the wharf will be designed to take the line pull of 25 tons whereas the two mooring dolphins are of 100-ton line pull capacity. From the operation point of view, it is considered necessary to raise the capacities of all bitts on the wharf to 35-ton line pull.

3) Para. 3-2 (pages 20-23) - Anti-Erosion Works

The methods for the anti-erosion works as recommended by the Consultants are acceptable.

4) Para. 3-3 (pages 26 and 27) - Dredging

Although there is a possibility that a cutter suction dredger will be made available in early 1971 as a gift by Australian Government under its Colombo Plan Aid Programme to Malaysia, this dredger may not be the type envisaged by the Consultants as suitable for the dredging works in the Pending area. However, the Australian Government will send an expert to Sarawak to assess the type of dredger required and suitable for operation like the dredging of the Pending area.

If the dredger to be given by the Australian Government is found suitable by the Consultants for the dredging works at Pending, the cost of dredging will be much cheaper than that estimated by the Consultants ($1,962,000). The PWD will operate the dredger who will charge the KPA for works carried out at Pending.

However, for the purpose of the draft Final Report to be submitted by the Consultants in December, 1969, the estimated cost of dredging at $1,926,000 should be retained as it is not known whether the Australian dredger will be of the type required for the Pending dredging works.

The high estimated cost of disposal of dredged material at sea makes necessary the selection of a site in the immediate vicinity. It is confirmed that a suitable site on the adjoining State land set aside for Phase II of the Port Development can be made available for the dumping of suitable material dredged.

It is understood that recent investigations by the Team have disclosed the necessity of removing house refuse that had been tipped on the site in the past. A suitable site for disposal would be the proposed recreational ground approximately 1.5 miles distant from Pending Point by road.

5) Para. 3-1 (page 27) - Reclamation

The method of sand drain as recommended is acceptable. However as this is a highly specialised work, the success of the method will depend on the experience of the contractor and on close supervision by an engineer with suitable experience in this field. It is estimated that about 27,000 cubic yards of sand will be required. The sand deposits at Bintawa on the downriver side of Tanah Puteh Port could be worked by mechanical method.

6) Para. 3-6 and 3-7 (pages 29-32) Roadways and Open Storage Area

It is noted that the pavement thickness is based on C.B.R. value of 2.5% of the existing soil. However, in view of the sand drain method and the selected fill, the C.B.R. value may be increased to something of the order of 8-10%. In this connection, the thickness of the pavement can be reduced accordingly and so can the estimated cost for this item. It is, therefore, suggested that the Consultants review the requirements of their designed pavement thickness in the light of the foregoing technical views expressed by the Director of Public Works Department

The existing road approach has little or no foundation, and it is doubtful that it will be adequate to carry the necessary traffic for the Port Construction, approximately 1 mile of new road or road reconstruction will probably be necessary. It is suggested that the Consultants should give their views on this matter and advise on the liability for cost of construction or reconstruction if found necessary.

7) Para. 3-9 (page 33) - Basic Design of Transit Shed

The diagonal truss appears to be the cheapest and acceptable for a large span of 150 feet. However the Director of Public Works is of the view that the wind-load to B.S.C.P.3, exposure ' C' is suitable for local condition at site.

IV. Chapter 5. Rough Cost Estimate.

Para. 5-1 (pages 38-40)

a) Cost Estimates

In the absence of a detailed breakdown of the costs and the detailed design of the Project, it is not possible to check whether the estimates prepared by the Consultants are realistic. However, it is fully realised that it is equally difficult for the Consultants to submit the detailed breakdown of the estimated costs until all the detailed working drawings have been finalised and approved.

b) Apportionment of Foreign and Domestic Component of Estimated Cost

It will be seen from page 38 of the Report that the estimated costs do not appear to be specific as to what items of materials constitute foreign and local elements respectively, e.g. steel bars and cement are obtainable from West Malaysia, which may have been inadvertently included under the foreign component of costs whereas petrol, oil and grease on the other hand are not locally available as our requirements are met substantially from Singapore, which, for practical purposes, is a foreign country. It is suggested that along with the Draft Engineering Documents, a full list of materials to be used together with the respective sources of supply be submitted by the Consultants. This would be useful to the Government to determine what percentage of the total cost of the Project would be eligible for loan financing by the Asian Development Bank whose officials are presently carrying out a viability study on the Project.

c) Para. 5-1 (5)(i) (page 38)

It is not clear what the word "Employer" refers to.

d) Para. 5-1 (6) (page 39)

What is the meaning of "work boats". Do they include all floating equipment?

e) Para. 5-2 (page 40) - Estimated Cost

1) Building Works - Item 4 (Plumbing and Sanitary Engineering)

It is pointed out that the estimate for plumbing and sanitary engineering does not include $100,000 contribution to Kuching Water

Board for extension of a 9" distribution main from Pending Height reservoir to the port. It is, therefore, suggested that this item be increased to $203,000.

2) Building Works - Item 5 (Electrical Engineering)

It is understood that the estimate for electrical engineering includes $30,000 contribution to Sarawak Electricity Supply Corporation towards the cost of the extension of their cable to the proposed port area and that the Consultants have confirmed with the Department of Telecommunications that no contribution will be required in respect of telephone services to the area.

3) Other Costs - Item 2 (Tugboat)

It is not clear whether the cost given by the Consultants is CIF Kuching or FOB Japan. It will be appreciated, if general specification of the tug boats can be supplied.

4) Other Costs - Item 3 (Acquisition of Land)

The acquisition of land costs will require further investigations, now that the estimated costs of reclamation are available and a more accurate assessment of the site area can be made.

5) Other Cost - Item 5 (Engineering Fee)

According to the Consultants the estimated engineering fee of $665,000 is based on cost plus basis of 26 months. It is the considered opinion of the State Government that the engineering fees should be assessed on a lumpsum basis. However it should be pointed out that Japan Port Consultants quoted a lump sum fee of $920,000 in their bid for the consulting work and the breakdwon of the figure is as follows:-

1. Investigations	-	$ 68,000
2. Designing	-	$337,500
3. Supervision	-	$514,500
		$920,000

The amount of consulting fees formed one of the main criteria for selecting one of the three firms of Consultants, namely Japan Port Consultants, Pacific Consultants and Kampsax who had submitted proposals to undertake the detailed investigation, design and supervision of the Project. There is no indication in the Report why a different figure has now been submitted for the supervision (engineering) fee.

V. Chapter 6. Soil Investigation and Surveys.

Water Lever at the Wharf

On page 14 of the Initial Interim Report, the L.L.W.L. is taken as + 1.5 feet above Admirality Chart Datum. Records from actual

measurement taken from the Water Level Recorder at Pending show that the lowest water level on 2nd June 1969 as 1.3 meter (4.27 feet). The zero point of the recorder is set at 4.83 feet below the A.C.D. i.e. this point is - 4.83 A.C.D. The lowest recorded level is therefore 4.27 feet above the zero point i.e. - 4.83 + 4.27 = 0.56 A.C.D. (Please see Appendix attached).

From the above the L.L.W.L. measured (so far) is + 1.50 - (- 0.56) = 2.06 feet below that of the design assumption.

Further clarification from the Consultants will be appreciated.

VI. General Comments.

i) It would be useful to the Government if the Consultants could submit a table of comparison along with their Draft Engineering Documents which would be submitted in October this year between their recommendations on the major items in the Feasibility Report of 1967 and those in their present study. The Consultants should also provide comments on the comparison between their recommendations in the two Reports and give reasons why their recommendations in the Feasibility Report would no longer now be practicable.

ii) The general survey plan for layout is to be fully dimensioned and related to the Land and Survey cadastral survey pegs. The dimensioned layout must include the marine structure.

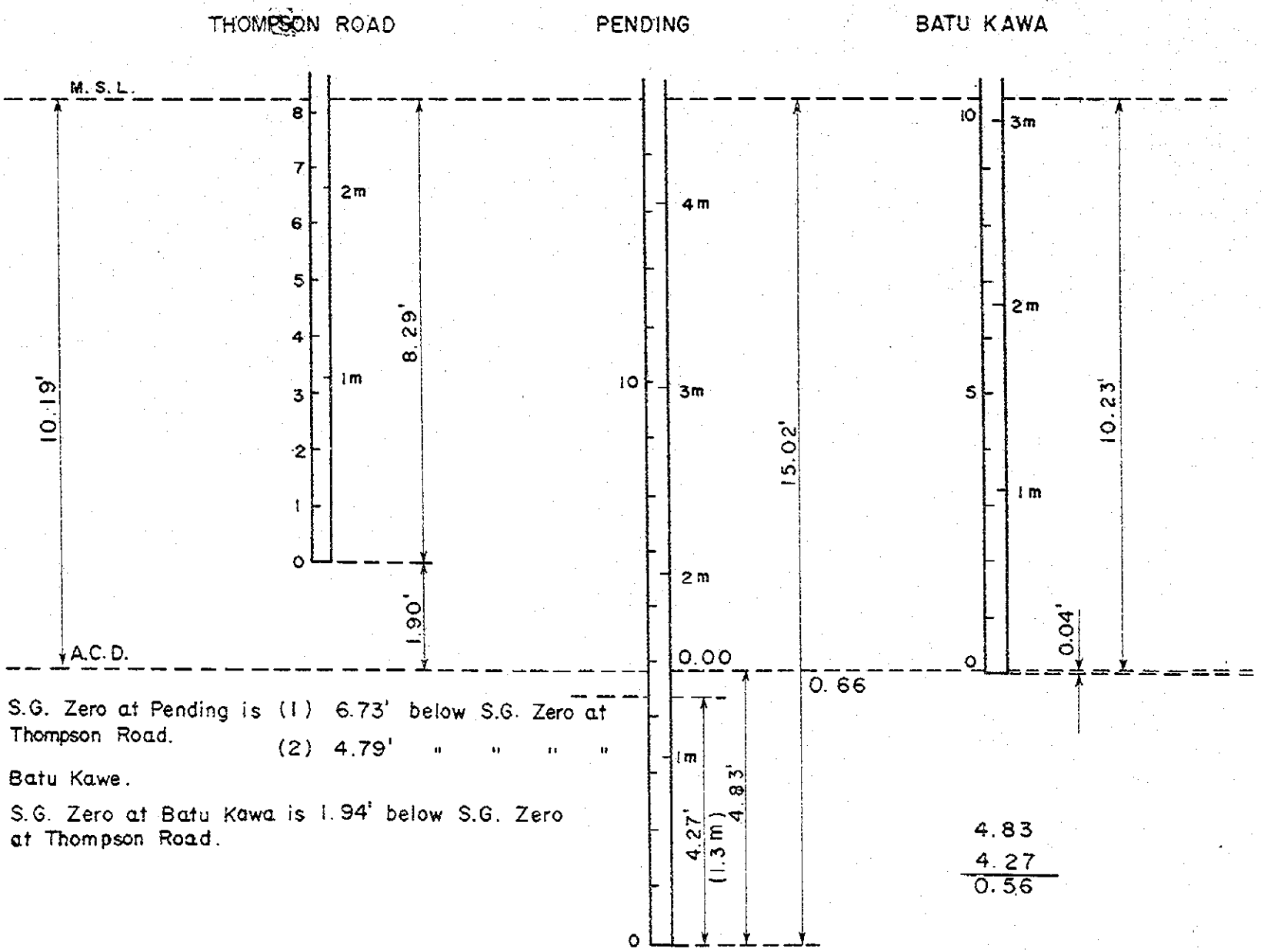
iii) The proposed level of the site 23 feet above chart datum, will be approximately 3 feet above the existing adjoining road level, and certain road and drainage works will be necessary, it is understood that item 6 in the estimated cost on page 40 of the Report includes provision for this item.

iv) It appears that the open parking lot is small. The Consultants are requested to consider and advise whether extension of this area is essential.

v) In the description of works no reference is made to the necessity of providing land for the Contractor's yard etc., it is therefore presumed that the Team consider that the Port area is adequate for all aspects of the construction.

vi) The Consultants should stipulate the method of filling and consolidation of the fill behind the wharf and under the apron, so that sufficient time is available for consolidation before the apron is constructed, in view of the limited time allowed for in the Construction Schedule of page 37 of the Report for these items.

Ministry of Communications and Works,
Kuching, Sarawak.
29th July, 1069.



S.G. Zero at Pending is (1) 6.73' below S.G. Zero at Thompson Road.
(2) 4.79' " " " "
Batu Kawe.

S.G. Zero at Batu Kawa is 1.94' below S.G. Zero at Thompson Road.

STICK GAUGES RELATIONSHIP ON SUNGEI SARAWAK

REPLIES OF JAPANESE SURVEY TEAM
TO
VIEWS AND COMMENTS OF SARAWAK GOVERNMENT
ON
INITIAL INTERIM REPORT

The Japanese Survey Team has received the official comments of the Sarawak Government on August 12th, 1969. Appended below are the replies of the Japanese Servey Team to the official comments:-

II. Scale of Facilities and Layout Plan.

a) Ramp and Accessories.

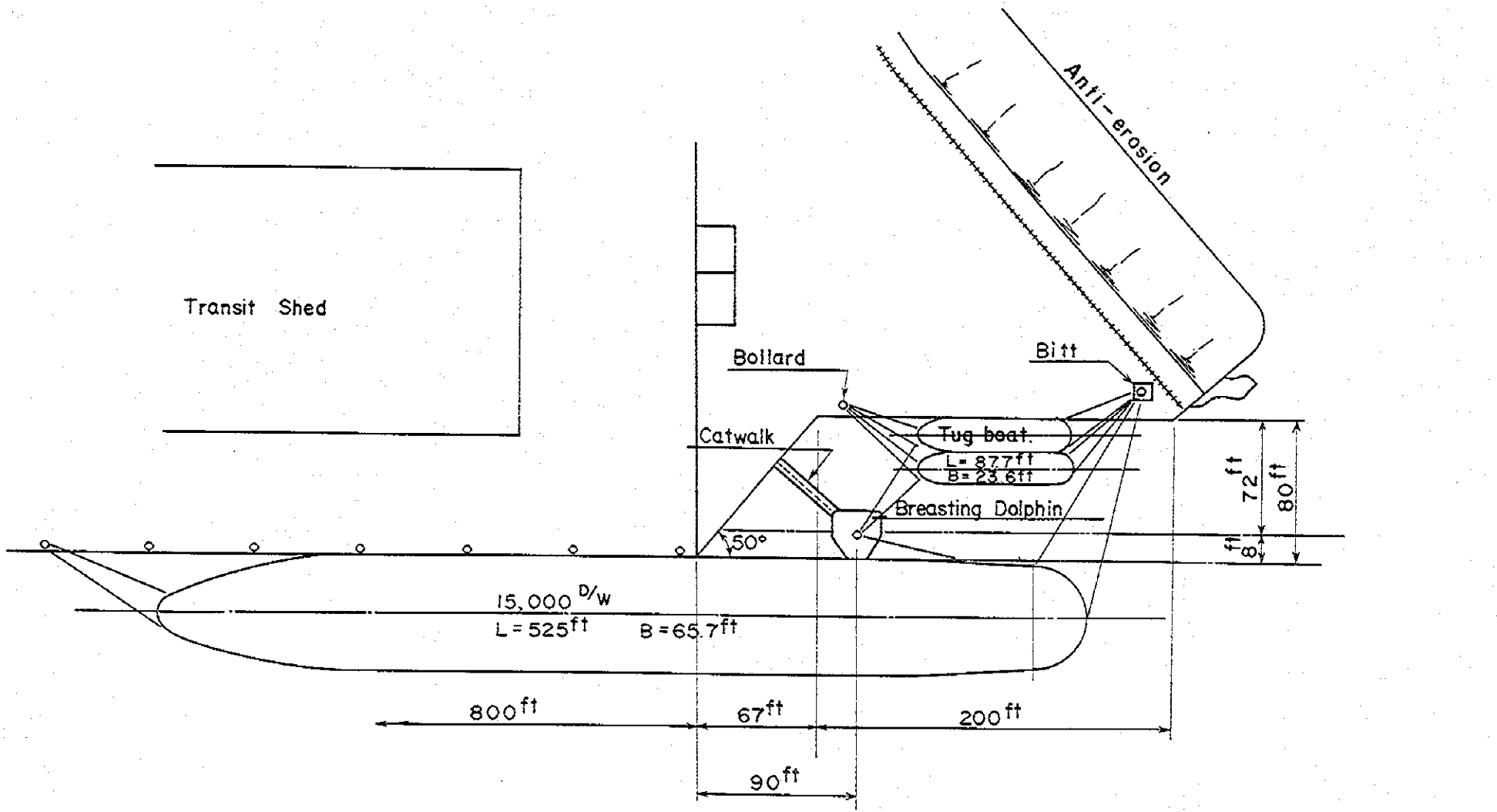
In compliance with the decision of the Sarawak Government, the Japanese Survey Team will see that the ramp and its accessories shall not form part of the Project and that a revetment usable for mooring tugboats shall be constructed in place of the proposed ramp.

If the tugboats are of a 1,000 HP capacity, the approximate specifications shall be as follows;

Gross tonnage	120 tons
Length	87.7 ft
Breadth	23.6 ft
Draught	8.1 ft

As shown on Fig. 1, a breasting dolphin and catwalk are provided in the water area in front of the revetment for the berthing of a large vessel. So, the area is too small, when tugboats are moored, to leave space for other small crafts to moor and handle cargoes.

The length of the revetment is determind to be 200 ft. However, an extension of the revetment to secure berths for small crafts will affect the layout of port facilities as a whole, partcularly the siting of buildings around the main gate. A more significant change resulting from the extension is the necessity of sliding the marginal river wharf upstream of the Sungai Kuap, thus affecting greatly to the future expansion. works; The removal of the Pending Rocks will substantially increase the construction cost. Therefore, the revetment taking the place of the ramp shall be designed only for the tugboats, and be 200 ft long.



Note: When a large vessel takes up berth using the dolphin as shown in the Figure, the tugboat will have to find some other place to moor

Fig.—1 Plan of Revetment

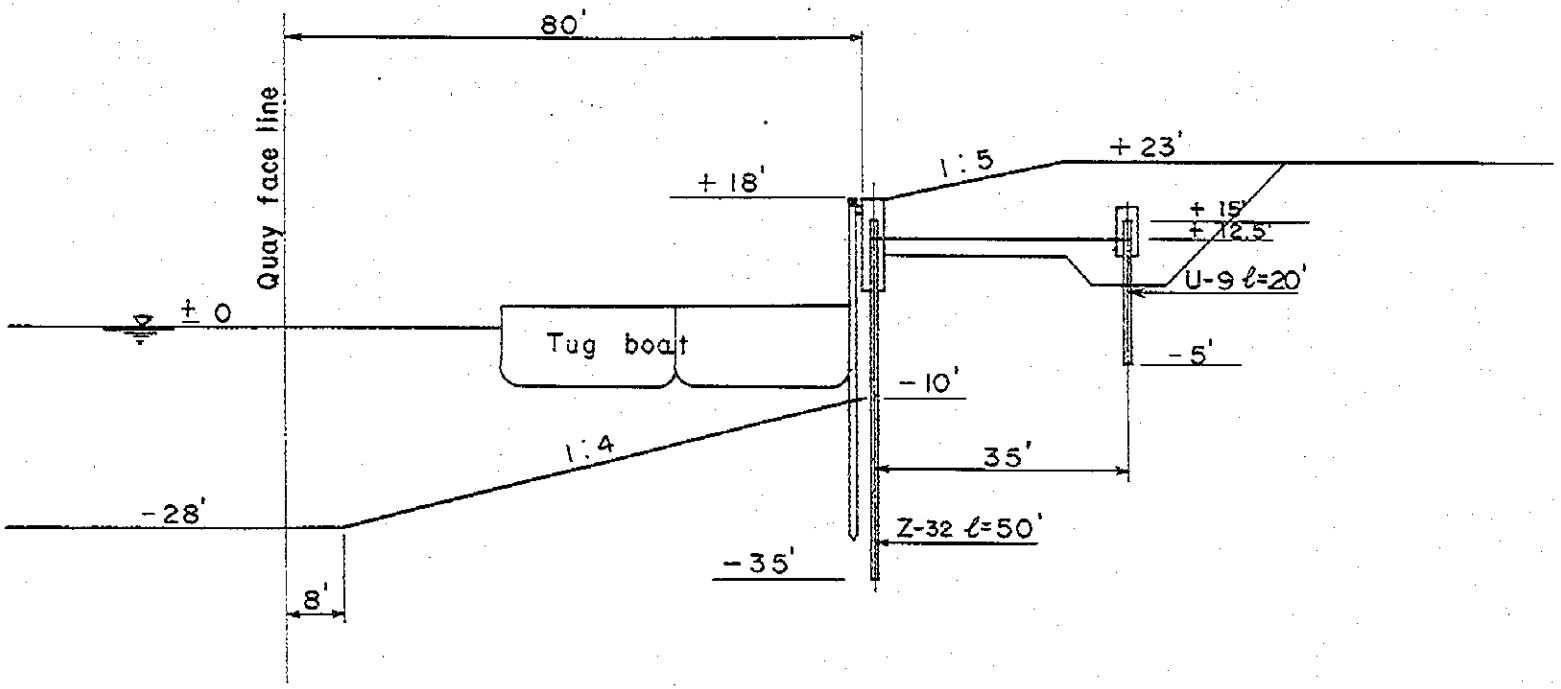


Fig. - 2 Typical Crosssection of Revetment.

In its use, the revetment has one shortcoming; That is, when a freighter of 10,000 to 15,000 dwt has taken up a berth as shown in Fig. 1 availing itself of the breasting dolphin and tying the rope to the bitt, the mooring rope will prevent tugboats from approaching and leaving the revetment. In such cases, the tugboats will have to be moored at some other places after they were used for assisting the freighter to take up the berth.

The Fig. 2 shows the typical cross section of the revetment.

b) Disposal of Sewage.

It is planned to dispose sewage from all the toilets in septic tanks, then lead it to the drainage system.

c) Transit Shed.

For natural ventilation, a monitor roof shall be provided for the whole length of the roof. The monitor roof was planned in the Feasibility Report, but it was dropped in the Initial Interim Report for the reason that the rain might blow in, and in place of it the wire mesh was to be provided under the eaves. In view of the Comment, however, both monitor roof and wire mesh shall be provided. Considering the difficulty in the upkeep of electric ventilation fans, it is planned to rely upon the natural ventilation.

d) Passenger Reception Building.

We understand and agree to your suggestion.

e) Workshop and Vehicle Shed.

The plan for the workshop and vehicle shed shall be altered as shown in Fig. 3 so that the workshop may be constructed at a different stage in the future.

f) Other Ancillary Buildings.

We understand and agree to the requested increase of weighbridges.

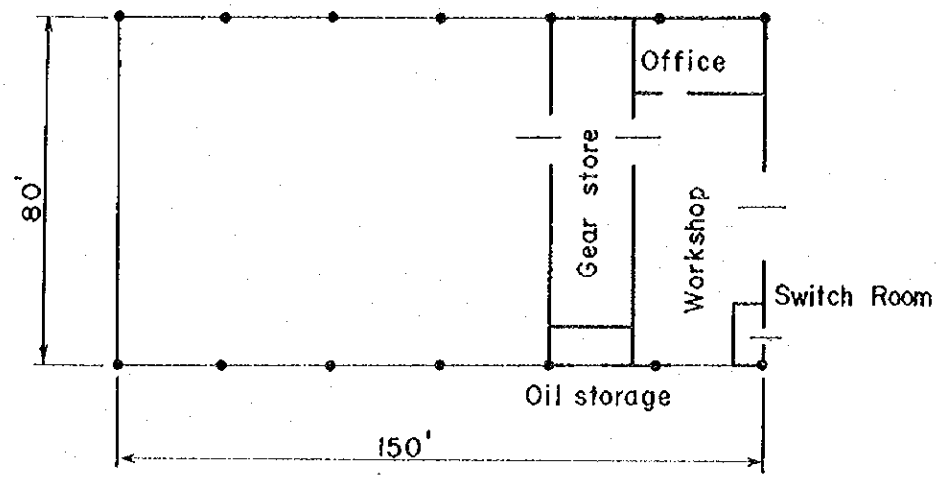
III. Basic Design.

III-1. Marginal River Wharf.

a) Reason for the Selection of Steel Sheet Pile Type Wharf.

(1) The wharf seen above the water surface represents a small portion of the entire structure. The most important part is hidden under the water, built deep down in the riverbed. Therefore, the natural conditions on the site have a great influence on the relative

Initial Interim Report



Proposed Modification

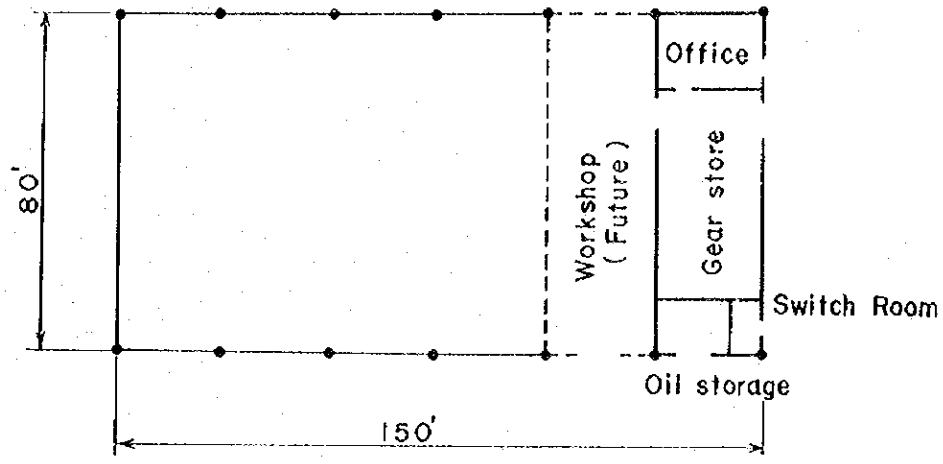


Fig. 3 Proposed Modification of Workshop and Vehicle shed

difficulty of the construction works. And, the relative difficulty of the construction works forms an important factor in the selection of the structural type of the wharf. The natural conditions prevailing on the site and their relations to construction works may be summarised as follows;

(i) As the river water is always muddy, it is impossible to see through it. Consequently, the works under water, for which divers must be relied upon, tend to become less accurate and less certain. In addition, the high velocity of the current will shorten the working hours of divers, and prolong the period of construction.

(ii) The vicinity of the proposed construction site of the wharf is a swampy lowland thickly covered with nipa palms and mangroves. So. the estimated construction cost of a yard used for making concrete caissons and blocks will amount to about M$3,000,000.

(iii) The large tidal range, high current velocity of the Sungai Kuap and the seasonal torrential rainfall constitute unfavourable conditions for the construction works. Heavy rain seriously interferes with the placing of concrete.

Judging from these unfavourable conditions, the application of the precast concrete method on a large scale is almost impossible. In other words, no wharf requiring for its construction concrete cassons, concrete blocks or L-type blocks can possibly be adopted.

Nor can the adoption of prepacked concrete method be decided upon for reasons that the muddy water and high current velocity will tend to make the diver's works uncertain to level the foundation, to build the formworks, thus to lead to the leakage of poured mortar. Besides the unsound work as stated above, the method takes too much time for completion. The above stated reasons make us hesitant to adopt this method.

(2) According to the test piling carried out between March and June 1969, the ground of the site is judged to permit the driving of steel piles. The section modulus of the steel sheet piles used for the steel sheet pile type wharf, whose adoption has been recommended by the Japanese Survey Team, is 123 cu.in. per ft., and the required embedment is 23 ft.

If concrete sheet piles having section modulus equivalent to that of steel sheet piles are to be used in place of steel sheet piles,

the cross section would become extremely large that no pile driver matching to the section could possibly be found, and the driving of piles 15 - 20 ft into the weathered shale is impossible. Therefore, no wharf of the concrete sheet pile type can be adopted.

(3) The shore bridge type wharf must have its slope below the deck slab securely covered. The natural slope of the riverbank is approximately 1:5, but, taking into consideration that the width of the apron is 60 ft, the slope in question will have to be cut to 1:1.5 in order to reduce the cost of construction. The covering work of the slope is executed by divers, but the time required for the work will be extended for a period otherwise unncessary because of the muddy and quick current of the river. Should the slope works be performed unsoundly, the collapse of the structure may have to be feared as the result of scouring by the current and sucking out of materials from under the covering works.

It was considered in the stage of the Feasibility Survey that

(i) though the river water might be muddy during the rainy season, it might not be so bad during the dry season.

(ii) the stones necessary for covering slope would be easily obtainable, and

(iii) it might be difficult to drive sheet piles into weathered shale.

However, it was found out during the subsequent investigations that

(i) the river water is muddy all round the year.

(ii) it is not as easy as anticipated to obtain stones at low cost.

(iii) the test piling proved that steel sheet piles can be driven into weathered shale.

(iv) it is necessary in the case of the shore bridge type wharf to remove many driftwoods entrapped with the piers or to contrive some means to insure the piers be free from the driftwoods.

Therefore, neither can the shore bridge type wharf be adopted.

If a method dispensing with the slope works should be chosen, a solution would be to build the wharf in the river, like the present wharf at Tanah Puteh, and connect it with the shore by access bridges.

With this type of wharf, however, the efficiency of cargo handling and modernisation of the new wharf can hardly be achieved. Moreover, as the new wharf is to be designed for vessels larger than those now calling the Tanah Puteh Wharf, the adoption of the type mentioned above will narrow the water area in front of the wharf, thus disturb the manoeuverability of vessels.

As stated above, none of the wharves discussed above, namely, wharves based on precast concrete method using caissons, blocks and L-type blocks, those on prepacked concrete method, on concrete sheet piles and shore bridge type can be adopted for the difficulty of the construction works.

b) Results of Corrosion Test at Pending.

(1) Introduction.

As the construction site of the new wharf is not on the sea, but on a tidal river, the following investigations have been carried out;

(i) Measurement of the specific resistance of the river water.

(ii) Field corrosion test by submerging test pieces into the river.

As has been reported in the Initial Interim Report, the results of (i) above have been that the specific resistance of the water is in the range of 50 - 100 Ω-cm, and the salt concentration at 25°C is 6-10g/liter, or 6,000 - 10,000 ppm. The field corrosion test by use of test pieces (ii) has been conducted to obtain a more detailed data on the corrosion of steel than what can be extracted from (i) above. The results are as given below:

(2) Outline of Test.

(i) Installation of test pieces.

Two sets on the Customs Jetty at Pending.

(ii) Test pieces used.

Quality . . . . . SS 41.

Dimensions . . . . . 20 ø x 50mm long.

Total number . . . . . 16(Two sets).

(iii) Test period.

Date of installation: 1600hrs, April 9, 1969.

Date of removal: 1700hrs, June 7, 1969.

Total test hours: 1,417hours or 59 days and one hour.

(iv) Test method.

As shown on Fig. 4, four each of test pieces A and B, which had previously been measured, were submerged at two places. Of the test pieces, the type A were electrically connected each other through the electric cable used for the installation of these pieces to measure corrosion including that caused by the oxygen concentration cell in the direction of the depth of the water. By measuring the corrosion of the type A, the rate of corrosion of steel materials such as steel sheet pipe piles can be obtained, which are submerged into water in the vertical direction. The type B, on the other hand, will reveal the rate of corrosion of steel materials installed horizontally at depths indicated by these test pieces.

(3) Test results.

(i) Type A (Consecutive type).

Depth	Corrosion	Depth	Corrosion
70-4	0.1386mm/yr	71-4	0.2149mm/yr
70-3	0.1047 "	71-3	0.1481 "
70-2	0.6822 "	71-2	0.4362 "
70-1	0.5075 "	71-1	0.5672 "
Averege	0.3583	Average	0.3416

General Average: 0.3499mm/yr.

(ii) Type B (Non-consecutive type).

Depth	Corrosion	Depth	Corrosion
70-4	0.8454mm/yr	71-4	0.9114mm/yr
70-3	0.5855 "	71-3	0.7986 "
70-2	0.3396 "	71-2	0.3280 "
70-1	0.3211 "	71-1	0.2810 "
Average	0.5222	Average	0.5793

General Average: 0.5508/yr.

The Fig. 5 shows the corrosion in the direction of the depth

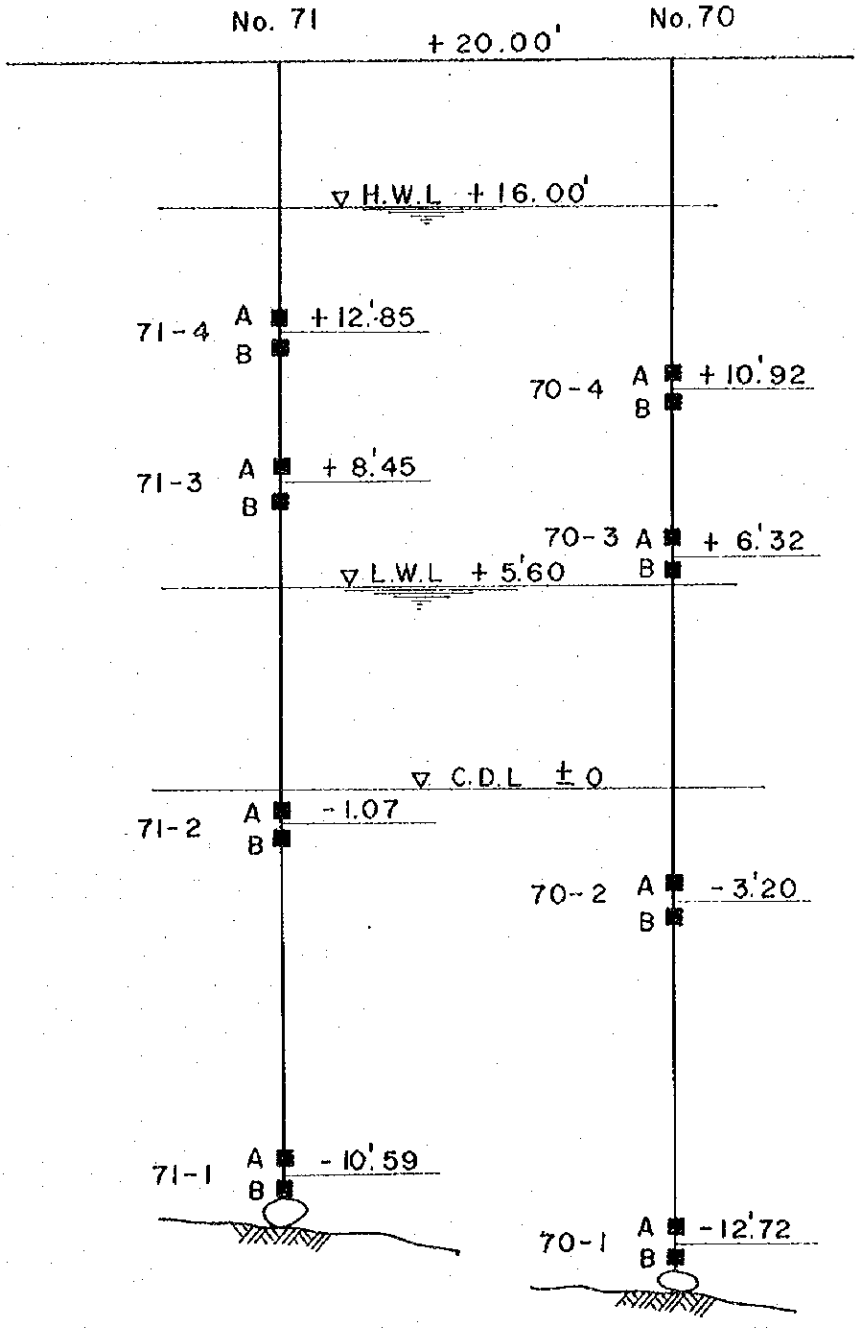
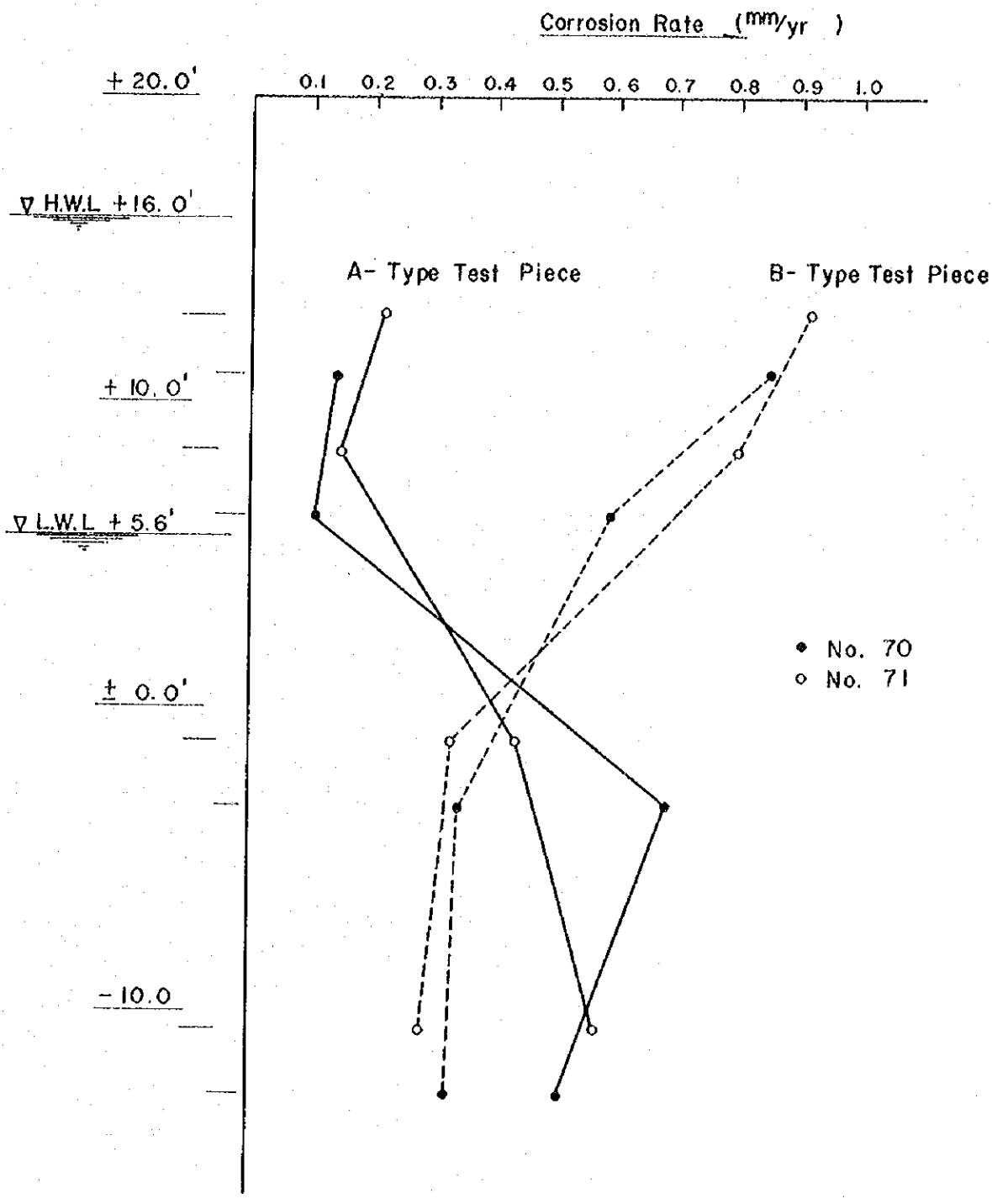


Fig – 4. Test Pieces Used in Corrosion Test

Fig-5 Result of Corrosion Teat



of the water.

(4) Observations.

(i) Type A.

It has been found out that the rate of corrosion in the direction of the depth of the water is small above the low water level, and is the largest at about -3.0 ft, then gradually decreases as the depth increases. As is clearly indicated in the measured values of the specific resistance of the river water, this is due to the dense mixing, near the surface, of the river water, whose gravity is smaller than sea water.

Generally, the river water contains much dissolved oxygen so that the corrosion by the oxygen concentration cell occurs between water near the surface and that in the depths. (This is the corrosion caused, in cases where there is a difference in the concentration of dissolved oxygen in the water being in contact with an object which is to be protected from corrosion, by the side with higher oxygen concentration becoming cathodic and the side with lower oxygen concentration anodic).

Such corrosion due to the oxygen concentration cell can be solved by applying cathodic protection.

(ii) Type B.

In the case of this type, unlike type A, no oxygen concentration cell is formed between water near the surface and that at lower depths so that the corrosion is greater in water near the surface which contains more dissolved oxygen.

(iii) Difference of corrosion between test pieces and YSP piles.

The quality of test pieces and YSP piles is different, test pieces being made of ordinary steel and the piles containing copper. High resistance to corrosion is a characteristic of steel containing copper.

As for the difference in corrosion between ordinary and copper containing steel, it may be concluded from the results of investigations conducted in Japan that the corrosion of YSP piles may be taken as one-half of the ordinary steel, and the rate of corrosion of YSP piles without cathodic protection, therefore, will be 0.18mm/yr.

c) Relations between Life of Wharf and Effect of Cathodic Protection.

It is commonly accepted that the life of a steel sheet pile type wharf with cathodic protection is several times longer than that without it(approximately 30 years).

In this world of an ever-advancing age, sea transportation is also making a remarkable progress, defying any prediction as to its progress in the one hundred year to come. Ships will become much more gigantic, and cargo handling highly mechanised. To cope with such a situation, new and modern port facilities will have to be designed and constructed.

The life of the steel sheet pile type wharf recommended for this project will be prolonged to endure many years of service by installing the cathodic protection of a scale now under consideration.

d) Difference of Construction Cost between Types of Wharves.

As stated in paragraph (a), Chapter III-1, the relative difficulty of construction works is the most important factor in the determination of the wharf type. For your information, the following are the total cost of wharves quoted for comparative study in the Initial Interim Report. The total sum includes not only 800ft of the wharf but also the sections connecting to the shore from its both ends.

TYPE OF WHARF	TOTAL COST, in M$	RATIO
Steel sheet pile type	4,987,000	1.00
Shore bridge type	5,592,000	1.12
Gravity type	5,339,000	1.07

e) Maintenance Cost of the Wharf.

The following are the cost items to be allowed for the maintenance of the wharf:

(i) Cost of replacement of electrodes for cathodic protection.

(ii) Cost of replacement of rubber fender and its fittings.

(iii) Cost of repair of concrete bumper.

(iv) Cost of repair of paved apron.

(v) Others.

Of the above items, the cost necessary for the anodes to be fixed to the quaywall of the steel sheet pile type wharf, as considered at the stage of comparative design, is as follows:

Size of anode	4" x 4" x 4'.
Total anodes required	244 pieces.
Unit price	M$1,170, including costs of fixing.
Life	10 years.
Total cost	M$285,480.

Consequently, the cost for item (i) above will be M$28,548 a year.

f) Construction Period.

The three types of wharves subjected to comparative design require respectively the following time for their completion:

TYPE OF WHARF	CONSTRUCTION PERIOD	RATIO
Steel sheet pile type	12 months	1.00
Shore bridge type	18 "	1.50
Gravity type	25 "	2.08

g) Advantages and Disadvantages of Steel Sheet Pile Type Wharf.

(1) Advantages.

(i) Very little of divers' under water work is required, and the muddiness of the river water does not much disturb the works.

(ii) The time required for the completion of the works is short, that is, 67 percent of the shore bridge type and 48 percent of the gravity type.

(iii) The cost of construction is less, that is, 89.3 percent of the shore bridge type and 93.5 percent of the gravity type.

(iv) The wharf can be easily modified in the future event of installation of cranes upon the quaywall.

(v) There is no need of contriving means of preventing the entrapment of driftwood.

(2) Disadvantages.

(i) The corrosion of steel sheet piles should be guarded against. However, there is no ground for anxiety on this matter as an effective means of corrosion prevention has been determined as the result of corrosion tests.

For the above reasons, the steel sheet pile type wharf is the most suitable for this project It is not only safe and secure, but also the quickest and the most inexpensive type to construct.

III-2. Bitt and Bollards.

It is agreed to raise the capacity of bollards from 25 tons to 35 tons.

III-4. Dredging.

The following are some of the major specifications of a cutter suction dredger we consider suitable for the dredging of anchorage in front of the wharf and the swinging area:

Prime mover	Diesel engine, 2,000 HP.
Auxiliary engine for cutter	400 HP.
Diameter of discharge pipe	24 in.
Maximum discharge distance	2,000 yd.
Maximum dredging depth	55 ft.

The cutter suction dredger to be donated by the Australian Government under its Colombo Plan Aid Programme to the Malaysian Government may be used for the works, if it has the capacity as mentioned above and delivered to the site in time. The Japanese Survey Team, however, will not count on this dredger in working out its plan because of uncertain factors involved. The dredging plan, however, may be altered at a time when the delivery schedule of a suitable dredger is confirmed.

The cutter suction dredger mentioned above will require the service of a tugboat of about 300 HP.

III-5. Reclamation.

Your comment is agreed to.

III-6. Roadways and Open Storage Area.

The results of CBR tests revealed that the white clay widely spreading near the Pending area is unsuitable for the bed of roadways and open storage area although it may be safely used for the lower layer of reclamation. Therefore, brown soil with a CBR value of more

than 5 percent will be specified for the bed of roadways and open storage area. The paving of roadways and open storage area shall be designed upon these premises.

As the completion date of the proposed city planning road leading to the project site is not readily known, we presume that the Contractor will use the existing Pending Road for the transportation of construction materials and fill for reclamation. Repair of any damage or injury occasioned to the road by the extraordinary traffic due to the port construction shall be ordered to the Contractor as one of his obligations under the Conditions of Contract.

IV. Rough Cost Estimate.

a) Cost Estimate.

A detailed breakdown of the cost will be included in the final draft report to be submitted by the Japanese Survey Team in December 1969.

b) Apportionment of Foreign and Domestic Component of Estimated Cost.

In the Initial Interim Report, the Japanese Survey Team has apportioned the foreign and domestic components based upon the following criteria.

Payments the successful Contractor will make in Malaysian Dollars are included in the domestic currency, while those in currencies other than the Malaysian Dollars fall under the foreign currency. Petrol and diesel oil, which the Contractor is expected to buy in Kuching, therefore, come under the local currency. Such is the distinction generally made for projects in foreign countries. As the Malaysian Government has decided to accept loans from the Asian Development Bank, the Bank's policy of distinction will be followed in the report of the Japanese Survey Team to be submitted in December 1969.

The Japanese Survey Team is not fully aware of the construction materials produced in Malaysia, and will appreciate the good office of the Malaysian Government, at its earliest convenience, to advise the Team of the percentages of the foreign exchange components in unit prices of the following materials:

Cement, steel materials as produced by Malayawata, asbestos sheet, galvanized iron sheet, paint, porcelain and ceramics, nail, steel wire, Hume pipe, bolts and nuts, wire mesh, petrol, diesel oil and lubricants.

As seen from pages 38 and 39 of the Initial Interim Report, cement is listed under the domestic currency, while most of the steel materials come under the foreign currency. But, iron bars are included in the domestic currency assuming that the local products will be used. Manufactures and places of origin of construction materials may sometimes be designated, but generally no such designation is made in the case of cement and iron bars used for reinforced concrete. Steel materials and cement produced in Malaysia are cheaper than those coming from other sources, and the Contractor will probably use them. In case their qualities and sizes do not comply with the specifications, the Consultants may refuse to use them.

c) "Employer"

The word "Employer" means the client, or the competent authority of the Sarawak State Government which is to be appointed as to take charge of this project.

d) "Work Boats"

As shown on the page 35, 4-1(b), of the Interim Report, the words "work boats" mean dredgers, floating crane, tugboats, barges, pontoons and the likes.

e) Estimated Cost.

(1) When the contribution to the Kuching Water Board in the amount of M$100,000 is added, the cost of plumbing and sanitary engineering works will amount to M$198,000.

(2) The contribution to SESCOshall be increased from M$25,000 to M$30,000, and the cost of electrical engineering works will total M$369,000.

(3) Tugboats.

The estimate given by the Team is a value calculated at CIF Kuching and based on the assumption that two tugboats will be constructed simultaneously; in this case, they become cheaper than when constructed separately. As it appears there is a strong possibility of ordering these boats one by one with a certain time lag, we are planning to change the cost to M$2,000,000.

(4) Acquisition of Land.

The land acquisition cost has been calculated by multiplying 19.6 acres by the unit price of M$50,000 an acre. If the unit price is incorrect or to be altered, the Team wishes to be informed urgently.

(5) Supervision Fee.

By the letter dated August 11th, 1969, JPC has informed the Permanent Secretary to Treasury, the Treasury, Kuala Lumpur, of the reasons for the increase of the supervision fee from M$514,500 to M$665,000, together with copies to the Sarawak Government. The major reasons are (i) payment of taxes to the Malaysian Government, (ii) rise of prices during the time of delay in the commencement of service, (iii) costs of communications with the Asian Development Bank, (iv) expenses for the car for resident engineers, and (v) extension of the construction period.

The amount of M$665,000 is not a lump sum fee, as stated in our letter of October 28th, 1968, to E.P.U. regarding the "separate estimate of the consulting fee in the case no construction of oil berth is undertaken."

The supervision fee on the lump sum basis is M$910,000 as shown in our letter dated July 21st, 1969, to the Director of the Public Works Department, Sarawak Government.

f) Rough Cost Estimate.

In order to comply with the Comments, some change, as shown below, in the contents of the works has become necessary. The change inevitably affects the cost. The revised cost given in the following table being a rough estimate, it is subject to a further change upon the completion of the detailed designs.

Changes in the Contents of Works.

(i) The ramp shall be replaced by the revetment.
(ii) The depth alongside of the wharf shall be changed to -28 ft and dredging also to -28 ft.
(iii) The design conditions of roadways and open storage area shall be changed.
(iv) Suitable materials shall be used for the reclamation.
(v) The passenger reception building and workshop shall be omitted from the Phase I of this project.
(vi) New items shall be added to the list of cargo handling equipment.
(vii) The cost of tugboats shall be increased.

Civil engineering works (Unit: M$1,000)

	Total	Foreign Currency	Local Currency
a. Wharf			
Quaywall	5,187	4,070 (82)	1,117
Breasting dolphin	194	163 (5)	31
Mooring dolphin	103	87 (3)	16
Mooring bitt	31	23 (1)	8
b. Anti-erosion works (Sungai Sarawak)	251	72 (2)	179
Anti-erosion works (Sungai Kuap)	144	42	102
c. Dredging	2,426	2,105 (30)	321
d. Reclamation	1,265	279	986
e. Roadways & open parking lot	1,081	320 (10)	761
f. Drainage	194	79 (3)	115
g. Open storage	282	85 (3)	197
h. Revetment(in lieu of ramp)	670	392 (12)	278
Sub-total	11,828	7,717	4,111
i. Contingency	1,183	772	411
Total	13,011	8,489	4,522
Building works			
j. Transit shed	1,133	651 (15)	482
k. Passenger reception bldg.	0	0	0
l. Other buildings	500	261 (7)	239
Sub-total	1,633	912	721
m. Contingency	163	91	72
Total	1,796	1,003	793
Plumbing, sanitary and electrical engineering works			
n. Plumbing and sanitary engineering works	198	38 (1)	160
o. Electrical eng. works	369	110 (6)	259
Sub-total	567	148	419
p. Contingency	57	15	42
Total	624	163	461

Others			
q. Cargo handling equipment	1,116	1,108	8
r. Tugboats	2,000	2,000	-
s. Acquisition of land	980	-	980
Sub-total	4,096	3,108	988
t. Contingency	410	311	99
Total	4,506	3,419	1,087
u. Supervision fee	665	440	225
v. Interest	809	809	-
GRAND TOTAL	21,411	14,323(180)	7,088

Note: Figures in parentheses denote the indirect foreign exchange components of materials and equipment purchased in local currency.

V. Water-level.

It is stated in the Comments that the low water level recorded on 2nd June 1969 by the water gauge installed at the Pending Jetty was 1.3m (4.27 ft) and its equivalent to the Admiralty Chart Datum is - 0.56 ft. The conversion is wrong.

The converted figure of - 0.56 ft. has been obtained on the assumption that the chart datum at Pending is the same as that at Thompson Road. As the chart datum differs by places, the above conversion cannot be correct.

According to the "Hydrological Year Book for the Water Year 1962-3" published by the Government of Sarawak, the Land and Survey Datum at Thompson Road is 10.19 ft above the chart datum, and according to the Admiralty Chart No. 1823, the Land and Survey Datum is 10.96 ft above the chart datum.

As stated in detail in the Feasibility Report of 1967, the Japanese Survey Team has been proceeding with this project on the assumption that the chart datum at Pending is the same as that of the Biawak Wharf, which is located close to the project site.

The conversion of the low water level recorded on the 2nd June 1969 should be calculated as follows;

1.3m = 4.265 ft.

The zero point of the stick gauge of the water gauge at Ponding is 4.136 ft below the chart datum.

$\therefore$ 4.625 - 4.136 = 0.129 ≒ 0.13ft.

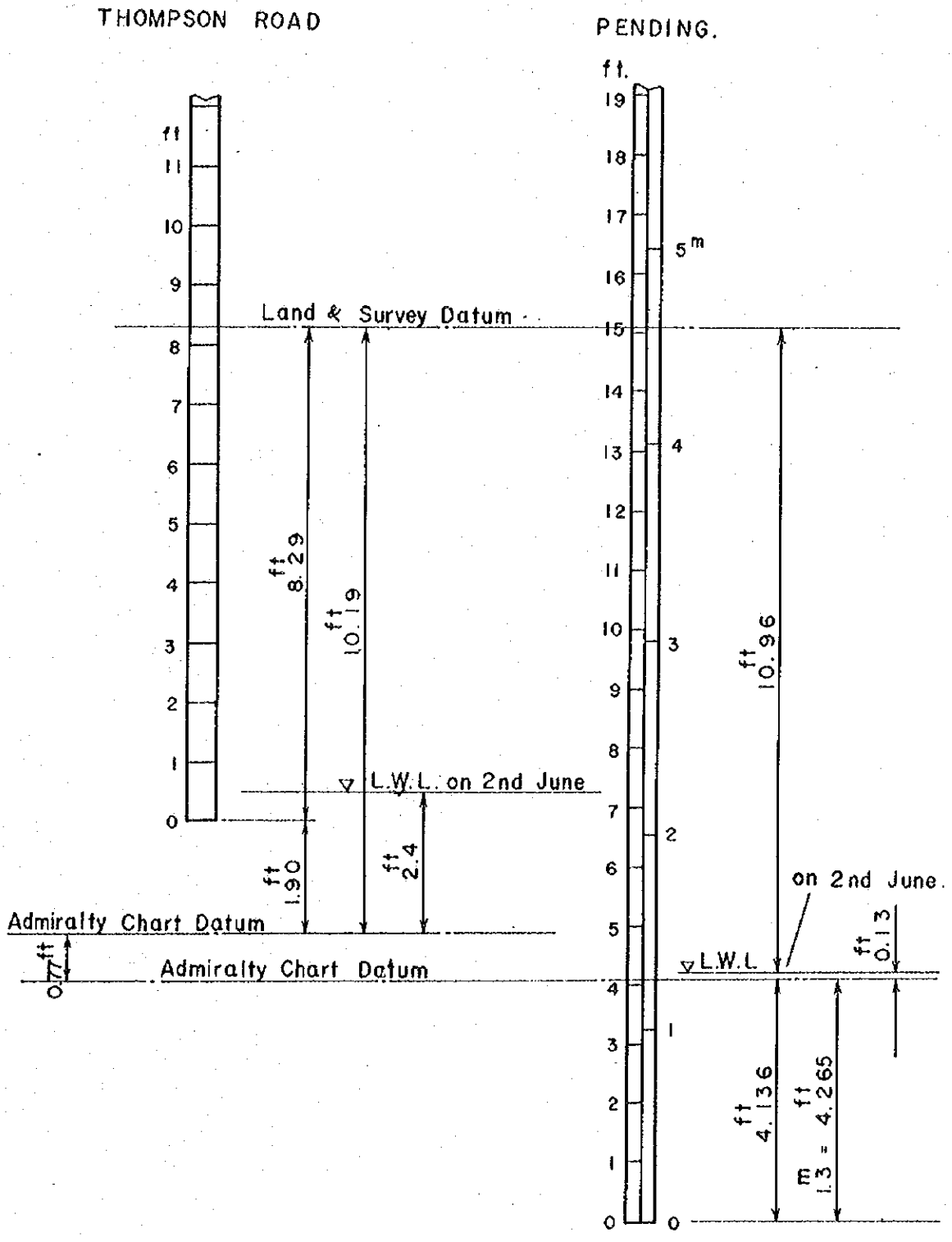


Fig.-6 Comparison of Water Level.

The low water level on the 2nd June 1969, therefore, was 0.13ft above the chart datum (See Fig.6).

On the 2nd July 1969, the reading of the water gauge at Pending was 1.26m. Similarly calculated,

$$1.26m = 4.134ft.$$

$$\therefore\ 4.136 - 4.134 = 0.002ft \fallingdotseq 0.0ft.$$

The low water level on the 2nd July 1969 was equivalent to 0.0ft of the chart datum.

As a result of the harmonic analysis of data for one month between 1st June and 30th June 1969 out of all the self-recorded data by the water gauge at Pending, the main harmonic constants were obtained as follows:

Tide	H	k
K_1	0.468m	340.8°
O_1	0.361	296.8
P_1	0.156	340.8
M_2	1.524	125.6
S_2	0.542	174.5
k_2	0.148	174.5
N_2	0.393	106.1

If the observation point of the water-level is in the open sea, the chart datum of the point may be decided by a harmonic analysis of the observation records for one month. At Pending where there is influence of the river water, however, no decision can be taken upon the data for a month. Observation for a longer period is necessary.

As stated above, the low water level of ± 0.0ft has been registered at the time of spring tide as a result of observations started in May 1969 with the installation of a self-recording water gauge at the Pending Jetty by the Japanese Survey Team.

According to "Tide Tables for Malaysia and Singapore, 1969", the tide level at Pulau Lakei was the lowest on the 1st July, and the next lowest was on the 2nd June. The lowest low water level at Pending, therefore, may be safely considered to be ± 0.0ft.

As stated in detail in the Appendix to the Feasibility Report, no observation data on water-level was available at Pending in 1967. Therefore, the lowest low water level at Pending was assumed from the observation data at Thompson Road in 1963 and 1964, as well as the tide level at Pulau Lakei. The following are the gist of the assumption;

L.L.W.L. recorded in the past by the water gauge at Thompson Road

. . . . . +1.9ft from the chart datum.

The lowest value listed in the 1967 Tide Table for Pulau Lakei

. . . . . +0.4ft from the chart datum.

From these two values, the L.L.W.L. at Pending was assumed to be +1.0ft.

Now that the records of the water gauge set at Pending Jetty this year show the lowest low water level of ±0.0ft, the assumed L.L.W.L. of +1.0 ft must be corrected to ± 0.0ft, and the dredging plan should be altered accordingly.

The plan was to dredge the depth alongside the wharf to -27ft, and the anchorage and swinging area similarly to -27ft, upon the premises that the maximum draught of incoming vessels will be 25ft. This plan shall be altered so that the depth alongside the wharf and the anchorage and swinging area shall respectively be -28ft.

VI.

ii) Cadastral Survey Pegs.

The Lands and Surveys' pegs of A-14, A-14/14 and A-15 were used when the Japanese Survey Team conducted topographical surveys and levelling between March and June 1969. Of these pegs, A-14 is located upon the foundation of the former customs building near the Pending Point. This peg will be shown on our general layout plan. Other two pegs, however, will not be shown on the plan as they are located far from the project site.

If there is any more cadastral survey pegs besides those mentioned above as stated in paragraph ii), Chapter VI, we shall be glad to be urgently informed thereof. It is difficult, however, to relate them at present to the general layout.

For your information, we would like to point out that the levelling conducted by the Japanese Survey Team had discovered that the peg number A-14/14 has sunk by 14mm. The sinking may have been caused by the motor traffic, as the peg is situated on the box culvert in the soft ground near the Pending Road. The B.M. on the Biawak Wharf has also sunk.

iii) The difference in level of the site 23 feet above chart datum and the existing adjoining road is approximately one foot. The necessary drainage of the existing road has naturally been incorporated in our plan.

iv) Concerning the open parking lot outside the fence, the officials of the Sarawak State Government in charge were of the opinion that, as a

temporary measures, the gates might be opened for lorries waiting early in the morning to park within the compounds. And also, the Team has taken into consideration only the area east of the Biawak Road, and has not conducted any topographical and geological survey on area west of the Road, which is beyond the scope of this project. It is difficult, therefore, to design a carpark at a place away from the project site.

However, a part of the Contractor's workyard as stated in the following paragraph v), may be easily converted, after the completion of the constrc-tion works, into a carpark. The Team at the moment has no intention of including such a carpark into the project.

v) It has been considered appropriate until the submission of the Initial Interim Report to provide the land marked "turf" in the general layout for the Contractor's workyard. However, as it has been found nec-essary to remove the house refuse from this area, it would seem better also for the efficiency of the works to designate an area outside the fence along the Pending Road for the Contractor's workyard. This area will have to be reclaimed to make it available for the workyard. (See Fig. 7).

The area shown in Fig. 7 is considered suitable for the workyard so that it may be designated in the specifications as the yard to be used by the Contractor. As to the selection of the yard, however, the common prac-tice is to leave the whole thing with the discretion of the Contractor. We would appreciate if you could, as a matter of urgency, to provide us with your opinions on items iv) and v).

vi) The method of filling and consolidation of the fill behind the wharf and under the apron shall be stated in the specifications of the tender documents.

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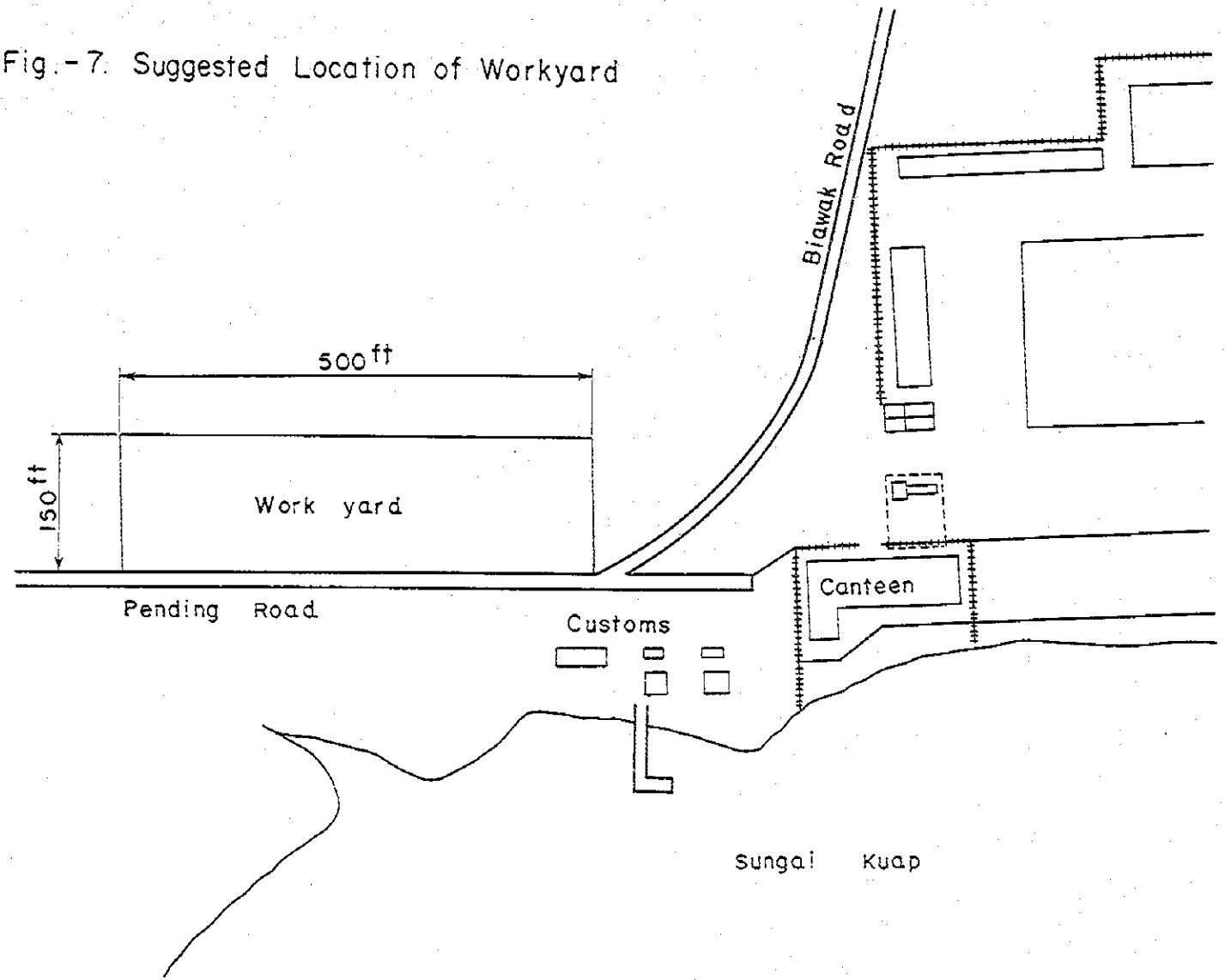
Fig.-7. Suggested Location of Workyard



Mr. T. Haruta,
Japan Port Consultants, Ltd.,
Kyosi Building No. 12-6,
Shibuya 2-Chome,
Shibuya-ku,
Tokyo, Japan.

Dear Haruta ,

Replies of Japanese Survey Team to Views and Comments of Sarawak Government on the Initial Interim Report

I refer to your letter dated 11th September, 1969, on the above-quoted subject and would now offer our comments on them as follows:-

1. Scale of Facilities and Layout Plan

(a) Ramp and Accessories

Your views on this are noted. We have no objection to acquiring two tugboats of 1,000 h.p. each. In connection with this, however, it is suggested that -

(a) the length of the revetment be increased as shown in Appendix A attached;

(b) the draft alongside the revetment be increased to -14 feet to allow for low tide as shown in Appendix B attached;

(c) the revetment be designed to the same height as that of the marginal wharf as indicated in Appendix B attached.

(b) Disposal of Sewage

It is strongly suggested that the sewage system should incorporate facilities for filtering purposes.

2. Marginal River Wharf

We are agreeable to accept the sheet pile type of wharf.

The cost of providing cathodic protection at $28,548 appears to be too high. It is not known what materials will be used for the anodes.

The cost of various materials for anodes delivered to Kuching are as follows:-

Anode Materials	Size	Cost delivered Kuching
Zinc	1¼" x 6" x 12" - $ 24.50	$ 36.00
Aluminium	2" x 3" x 24" - $ 43.25	$ 65.00
Mag. Alloy	5⅓" x 1.1" x 18" - $132.50	$200.50
Mag. Alloy	5⅓" x 10⅔" x 18" - $155.00	$230.00

The cost of welding of the anodes is approximately $20 a piece.

It is suggested that you re-assess their cost estimates in the light of the information given.

3. Dredging

The specifications for the type of dredger are noted. However, in view that two 1,000 h.p. tugboats are to be acquired there is no necessity to acquire another one of 300 h.p. to be used for dredging works only.

4. Roadways and Open Storage Area

You have advised that the soil from Wee Hood Teck Development area at Pending would be unsuitable for filling the open storage area and for road construction. In this regard the State Public Works Department would obtain soil samples from areas along the Kuching by-pass road, Kenyalang Park and including the Wee Hood Teck Development area for testing so that the required type of soil with more than 5% CBR value could be made available for the above purposes.

Your assumption in regard to the contractor having to use the existing road and to be responsible to pay for any extraordinary damage caused to the road is correct.

5. Apportionment of Foreign and Domestic Component of Estimated Cost

A list showing the percentages of the foreign exchange components in unit prices in respect of the following is attached as Appendix C. The materials concerned are:-

Cement, steel materials as produced by Malayawata, asbestos sheet, galvanized iron sheet, paint, porcelain and ceramics, nail, steel wire, Hume pipe, bolts and nuts, wire mesh, petrol, diesel oil and lubricants.

6. Estimated Cost

(a) Tugboats

In the Interim Report, the 2 tugboats were estimated to cost $1,667,000. You had now advised that if these tugboats were not acquired at the same time, they would cost about $2 million.

In view of this it is suggested that the order for the 2 tugboats be placed at the same time but the delivery of the boats be phased.

(b) Acquisition of Land

The cost of land is now value at M$28,500 per acre. The total cost for 20 acres should therefore be revised from M$980,000 to M$570,000. It is confirmed that initially a total of 20 acres would be alienated by the State to the Kuching Port Authority for port development.

(c) Supervision Fees

We have noted that you have asked for an increase in supervision fees from M$514,500 to M$665,000. We have already made our comments on it, and which have been transmitted to you by the Permanent Secretary to the Federal Treasury, Kuala Lumpur, vide his letter dated 17th September, 1969, addressed to you. We have no further comments to add.

(d) Rough Cost Estimate

It is noted that the following items of costs have been changed. The Sarawak delegation to Manila for the loan negotiation will be in Tokyo on or about 11th or 12th October, 1969. It is hoped that they could discuss with you on these and any other further changes.

	Interim Report	Replies on Comments	Increase (+) or decrease (-)
	($'000)	($'000)	($'000)
Wharf (quaywall)	4,987	5,187	(+) 200
Dredging	1,926	2,426	(+) 500
Reclamation	965	1,265	(+) 300
Roadways & Parking Lot	1,181	1,081	(-) 100
Ramp	1,699	-	(-)1,699
Revetment (in lieu of ramp)	-	670	(+) 670
Passenger building	109	-	(-) 109
Other buildings	481	500	(+) 19
Plumbing & sanitary works	98	198	(+) 100
Electrical Works	364	369	(+) 5
Cargo handling equipment	1,066	1,116	(+) 50
Tugboats	1,667	2,000	(+) 333
Interest	794	809	(+) 15
Contingency	1,786	1,813	(+) 27
			(+) $311

7. Water Level

There was some confusion about the Land and Survey Datum and Chart Datum. The Land and Survey Datum was the Mean Sea Level at the tide gauge at Pulau Lakei. All levelling by the Land and Survey Department was based on this datum.

Prior to 1960, Chart Datum at the following points was below the Land and Survey Datum by the following amounts -

Biawak	10.96 ft.
Thomson Road	9.50 ft.

In 1960, the Land and Survey Department ran a line of precise levels from Pulau Lakei to Kuching. As a result, the Chart Datum at these two points are now below the Land and Survey Datum by the following amount -

Biawak	11.20 ft.
Thomson Road	9.70 ft.

Your recommendation had been examined by the Director of Marine, State Drainage and Irrigation Engineer and the Director of Lands and Surveys. They agree with the conclusion of your Team on the necessity of increasing the depth of dredging from -27 feet to -28 feet.

8. Cadastral Survey Pegs

The survey marks Nos. A-14, A-14/14 and A-15 mentioned by you were Land and Survey Department Bench Marks. Your comments on the subsidence of BM A-14/14 and the B.M. on Biawak Wharf had been noted by the Director of Lands and Surveys who had arranged for the re-levelling of these marks and will supply their co-ordinates and heights as soon as possible. The provision of the co-ordinates of Bench Marks Nos. A-14, A-14/14 and A-15 would enable you to correlate its survey to the Sarawak cadastral survey system.

I am, Sir,
Your obedient servant,

Liang

(Liang Kim Bang)
Ag. Permanent Secretary,
Ministry of Communications
and Works,
SARAWAK.

c.c. The Chief Secretary to the Government,
(Economic Planning Unit)
Prime Minister's Department,
Kuala Lumpur.

The Permanent Secretary,
Federal Treasury,
Kuala Lumpur.

State Financial Secretary, Sarawak.

Director of Public Works, Sarawak. (a copy of this has been sent to Mr. Ng in K.L.).

Director of Lands and Surveys, Sarawak.

Government Ports Adviser, Sarawak.

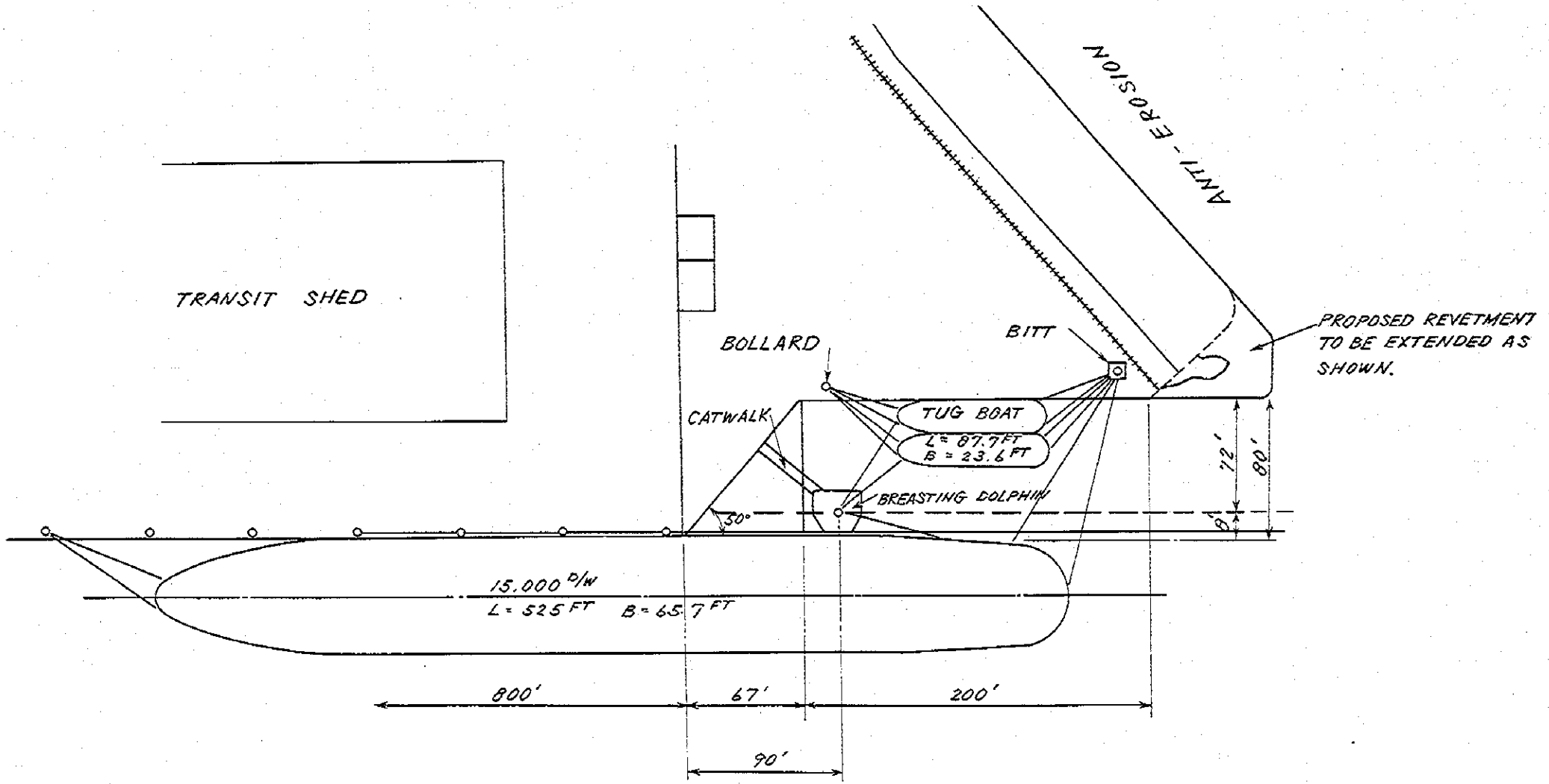
Appendix C

Approx. Current Market Prices of Construction Materials

Commodities	Unit Price	Available locally or from foreign source	Remarks
Cement	$90.00 per ton	Both	Depends on brands
M.S. Bars, various sizes	$460.00 per ton	"	"
Asbestos Sheets 4'x 8' x ⅛"	$ 1.90 per sheet	"	"
Galvd. Iron Sheets 4' x 8'			
No.12 S.W.G.	$51.00 per sht.	Both	Depends on brands
No.14 "	$38.50 "		
No.16 "	$30.00 "		
No.18 "	$24.00 "		
No.20 "	$19.00 "		
No.22 "	$15.50 "		
No.24 "	$14.00 "		
Paint, Emulsion	$17.50 p. Imp. Gall.	Local	-
Paint, Undercoat	$17.50 "	"	-
Paint, Gloss Finish	$20.00 "	"	-
Paint, Aluminium Primer	$18.00 "	"	-
Porcelain & Ceramics			
Mosaic Tiles	80 cts. to $1.60 per sq. ft. depending on grade & quality.		
Vitreous China Asian Type W.C.	$80.00 each	Foreign	Depends on brands
Vitreous China Pedestal Type W.C.	$100.00 each		
Vitreous China Wash-hand Basin	$55.00 each		
Nails 2" to 6"	$45.00 per cwt.	Both	"

Commodities	Unit Price	Available locally or from foreign source	Remarks
Steel Wire Rope BSS.621 ½" dia. to 1" dia.	$1.20 per lb.	Foreign	Depends on brands
A.C. Pipes Class 'C' by 4 metre			
Size 3"	$11.57 per length	Both	Depends on makes
4"	16.71 "		
6"	28.37 "		
8"	46.34 "		
9"	53.75 "		
10"	61.60 "		
12"	85.18 "		
15"	134.88 "		
Wire Mesh 4' x 8' x 2" mesh No. 8 S.W.G.	$12.00 per sheet	Both	"
Bolts & Nuts, various sizes	$-.70 per lb.	Foreign	"
Petrol	$1.38 per Imp. Gall.	"	Depends on brands
Diesoline	$-.81 "	"	"
Lubricants	From $3.15 to $10.25 per Imp. Gall. depending on grade and quality.	"	"
Greases	From $-.67 to $1,85 per lb. depending on grade and quality.	"	"

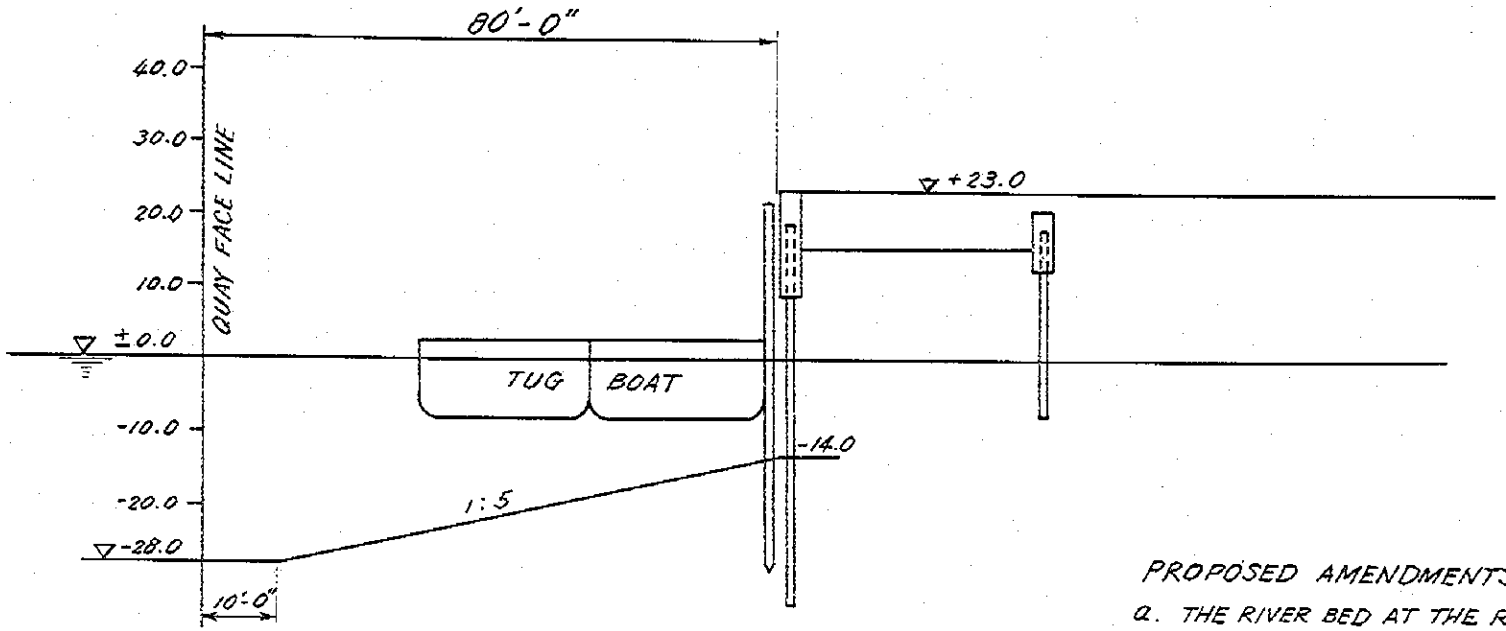
NOTE: The above prices are current contract prices. Local market prices may be 20% to 30% higher.



SUNGAI KUAP

NOTE : WHEN A LARGE VESSEL TAKES UP BERTH USING THE DOLPHIN AS SHOWN IN THE FIGURE, THE TUGBOAT WILL HAVE TO FIND SOME OTHER PLACE TO MOOR.

Fig - A PLAN OF REVETMENT



PROPOSED AMENDMENTS:

a. THE RIVER BED AT THE REVETMENT TO BE DREDGED TO -14.00' INSTEAD OF -10.00 TO ALLOW TUGS TO BERTH AT ALL TIDES. THE SLOPE WILL THEREFORE BE REDUCED FROM 1:4 TO 1:5.

b. THE TOP OF THE REVETMENT TO BE RAISED TO +23.00 IN LINE WITH THE MARGINAL WHARF FOR AESTHETICAL REASONS.

Fig-B TYPICAL CROSS-SECTION OF REVETMENT (REVISED)

APPENDIX F

Comments on the Draft Tender Documents For
Kuching Port Expansion Project at
Pending Point, Kuching

The Draft Tender Documents and Drawings submitted by the Japan Port Consultants Limited for the Kuching Port Expansion Project have been carefully scrutinised and appear generally to be acceptable, except that some amendments have to be made to suit local conditions and practice and particularly to satisfy the requirements of the Asian Development Bank. It is however strongly suggested that, although the drafts have been checked and revised during the three weeks' discussion, further checking and improvements in the phrasing of all the Specifications, Bills of Quantities and the Drawings should still be made by the Consultants themselves before submission, in order to ensure that the complete Documents and Drawings are unmistakably clear to all persons tendering.

The following are the main items of comments and amendments which have been discussed and agreed to, and should be incorporated in the final Tender Documents.

(A) Instructions to Tenderers etc.

1. Instructions to Tenderers.

a) The words "and Performance Bond" should be added to the end of paragraph 4 - Preparation of Tender.

b) The word "general" in the fourth line of paragraph 10 - No Alteration Allowed should be deleted.

2. Tender.

The word "three" in the first line of paragraph 5 should be changed to "four".

3. Form of Agreement.

Clause 2(f) in the Form of Agreement should be revised to read as follows:-

" (f) The Schedule of Basic Rates and Prices".

4. Tender Guarantee.

The following words should be added to the end of the Form:-

" or SIGNED SEALED AND DELIVERED BY THE Said .....

.....

in the presence of:- .....

/..... "

(B) Conditions of Contract

Part I - General Conditions

The General Conditions of Contract shall be "Conditions of Contract (International) for Works of Civil Engineering Construction" as have been prepared by the Federation Internationale des Ingenieurs-Conseils (F.I.D.I.C.) jointly with the Federation Internationale du Batiment et des Travaux Publics (F.I.B.T.P.) (now known as Federation Internationale des Entrepreneurs Europeans du Batiment et des Travaux Publics - F.I.E.E.B.T.P.) and are recommended by those bodies and the International Federation of Asian and Western Pacific Contractors Associations (I.F.A.W.P.C.A.) for general use; Second Edition, July 1969, as modified or added to by the Conditions of Particular Application which shall be read and construed with the General Conditions as if they were incorporated therewith. Insofar as any of the General Conditions, the Conditions

of Particular Application may conflict with any of the General Conditions of Particular Application shall always provail.

Part III - Conditions of Particular Application to Dredging and Reclamation Work.

Dredging and reclamation work are a major part of the Works in the Contract, and a chapter on the particular application of the General Conditions to these works should be prepared by the Consultants and incorporated in the final Documents.

Part II - Conditions of Particular Application

The following amendments have been made in the draft prepared by the Government/KPA officials:-

a) Clause 1 (on Page 2)

The words "Unless otherwise specified", should be inserted at the beginning of paragraph (4).

b) Clause 10 (on Page 3)

Item (ii) - A cash deposit is deleted.

c) Clause 18 (on Page 4)

This new Clause is added as follows:-

"Delete entire Clause 18 - Boreholes and Exploratory Excavation and substitute the following:-

(18) If at any time during the execution of the Works the Engineer shall require the Contractor to make boreholes or to carry out exploratory excavation other than those specified in the Specification and entered in the Bill of Quantities such requirement shall be ordered in writing and shall be deemed to be an addition ordered under the provisions of Clause 51 hereof."

d) Clause 36 (on Page 7)

The first paragraph of this Clause should read:-

" Delete all the words beginning with the workds 'and (in the cases only' to the end of subclause (3)".

e) Clause 44 (on Page 8)

In the 26th line of this Clause the words "Schedule of Rates and Prices" should be amended to read "Contract Price and/or Schedule of Basic Rates".

f) Clause 57 (on Page 12)

This Clause should be revised to read as follows:-

" Delete the word 'Net' in the first line and substitute the following:-

In accordance with the Standard Method of Measurement of Engineering Quantities (1968) issued by the Institution of Civil Engineers, London, and the Standard Method of Measurement of Building Works (1963) issued jointly by the Royal Institution of Chartered Surveyors and the National Federation of Building Trade Employers, London, except where any general or detailed description in the Bill of Quantities shows to the contrary".

g) Clause 60 (on Page 12)

i) The word "major" should be inserted before the word "plant" in the second line of paragraph (1) - Payment and Certificates.

ii) Subclause (13) - Value and Advances for Constructional Plant:-

The following words should be inserted to the end of this subclause:-

"In this subclause and in subclause (14), major plant shall mean the Constructional Plant listed under subclause 2(i), (ii), (iii) and (iv) of Clause 73".

iii) Subclause (14) - Payment of Advances on major plant etc.

The word "major" should also be inserted before the word "plant" in the first line of this subclause.

iv) Subclause (15) - Advances on materials for permanent work.

The following words should be inserted after the word "of" in the first line of paragraph (d):-

" any minor plant or equipment or ".

h) Clause 73 (on Page 19)

The words "tugboat, barges, pontoon and other" should be inserted after the word "with" in the first line of Item (i) of Subclause (2).

i) Clause 76 (on Page 20)

The whole clause should be revised to read as follows:-

"The employer shall provide, free of cost to the Contractor, all land, way-leaves and easements required for the construction of permanent works as well as for the temporary purposes, such as workshops, workyard, office, storage of materials and labour lines.

The land available for the temporary purpose is as shown in dotted lines on the Drawing No. 1 - General Layout, and the Contractor shall, at his own expense, clear and reclaim the land and construct any necessary workshop, storage or other accommodation required by him for the purpose of the Works.

The Contractor shall not use any portion of the Site or any land for any purpose not connected with the Works unless prior written permission of the Employer has been obtained".

j) Clause 82 - Daily Records (on Page 22)

This whole clause should be deleted and the following clauses are to be renumbered accordingly.

k) Clause 83 - (Number revised) (on Page 22)

i) The marginal heading for this Clause should read:

"Provisional Sums and Contingency".

ii) A total sum of the Provisional Sums and Contingency should be filled in this subclause, when calculated, and shall comprise of the following items:-

Provision for steelworks in Transit Shed = M$ .....

Provision for Electrical Engineering Works = M$ .....

Provision for the supply of Pre-mix asphalt by the Employer ... ... = M$ .....

Provision for Daywork ... = M$ .....

Provision for Contingency ..... = M$ .....

(C) Drawings for Civil Engineering Works

1. Revised General Layout

Consequent to the discussion with the Town Planner of the Lands and Surveys Department, it has now been considered necessary that the main entrance to the Port should be moved northward, i.e. nearer to the Roundabout of the proposed trunk road from the Kuching Town, and also the front fence line should be set back to clear from the Road reserve, all as shown on the revised general layout Drawing No. KPA/PP/002 attached hereto.

a) There is no change in the dimensions of any one building or structure in the revised layout, except that:-

i) the width of the tarmac roads facing the main entrance has been increased from 85 ft. to 110 ft. and

ii) the asphalt surfaced road leading to the sheltered car park has been added.

b) The fence line on the northern side should be shifted right to the boundary of the land which is now under acquisition action.

c) The main open drain leading from the road out to the Sg. Sarawak should be sited outside the revised fence line and be straight out to the River.

d) The existing concrete culvert on the Biawak Road will be demolished and a new culvert be constructed by the Public Works Department, to conduct the surface water from the other side of the Road into the open drain.

e) Since the construction of the Trunk Road will be put in hand by the Government possibly at the latter months of this year, therefore the asphalt pavement work in this Contract should stop at the front fence line, and not more.

2. Drawing No.2 - Quaywall

a) The words "Upper Concrete" in Fig.3 - Typical Section of Quaywall should be amended to read "Concrete Cap Wall".

b) The words "Concrete Pavement" in Fig.3 and 5 and elsewhere should be amended to read "Concrete Apron", to agree with the Specification.

c) The drain along the rear side of the Apron should be all covered with steel gratings, as discussed.

d) The words "Steel anchor wall" should be indicated on the Drawing showing the wall connection with the anti-erosion work at Sg. Sarawak.

e) Also, the words "Outfall Apron" should be indicated on the Drawing to make the plan sufficiently clear to all tenderers.

f) As the position where the weathered shale is underlying is not shown anywhere on the Drawing, Item (2) of the Notes may be recast to read as follows:-

"No toe protection work will be required, if and where the weathered shale is exposed after dredging to the required depth."

g) At the junction of the Roadway with the Revetment, that part of the concrete kerb (probably under the road level) may be deleted.

3. Drawings No.3 and 4

a) Steel channel 12"x 3½" should be amended to read 12"x 3½" x 28 lbs./ft."

b) Steel channel 8"x 3½" should be amended to read "8"x 3½"x 20 lbs./ft."

c) The spacing of tie rods should be indicated on the Drawing at least at one position. Any irregular spacings should be indicated fully.

4. Drawings No.9 and 10.

The words "Concrete Coping" should be amended to "Concrete Cap Wall" to agree with the Specification.

5. Drawing No.12 - Breasting Dolphin

a) The hand railing and posts for the catwalk to the Breasting Dolphin should be amended to 1¼" diam. steel rod, instead of Belian Timber.

b) The height of the hand railing may be reduced to 3 ft.

6. Drawing No.15 - Mooring Dolphin and Bitt

a) A detail showing the site welding of steel pipes and steel sheet piles, if any, should be inserted on this Drawing.

b) The length of steel pipe piles, 1-8"ø x 3/8" thick, for Mooring Bitt should be indicated.

7. Drawing No.16 - Pavement.

a) Fig.1 - The layout plan should be amended to agree with the revised general layout plan (Drawing No.KPA/PP/002).

b) The sections of open drain on which steel gratings (including new additions) are to be used should be fully indicated.

c) As discussed, 6" raised concrete kerb alongside the roadways should be adopted at sections where no steel gratings are to be used, and these positions should be also clearly indicated on the Drawing.

8. Drawing No.17 - Drainage

a) In Fig.1, Section G-G, the words "Kerb stone to be cast in-situ" should be amended to read "Stone Paved Shoulder".

b) Sections A-A, B-B and C-C of Fig.1 showing different types of open drains used should be amended to read "Type A or B etc.", to agree with the Bill of Quantities.

9. Drawing No.18 - Grating and Outfall

a) All Balau sheet piles should be changed to Belian sheet piles.

b) In Section G-G of Fig.3, the words "Kerb stone to be cast in-situ" should also be revised to read "Stone Paved Shoulder"

10. Drawing No.19 - Reclamation

a) The title of this Drawing should be amended as "Additional Filling and Sand Drain Work", to avoid confusion with the Reclamation Work to be executed by a Local Contract.

b) The area intended for sand drain method should be revised.

c) The position of Bench Marks TBM301, TBM495 and other should be indicated on the Drawing.

d) In Item (1) of the Notes, the words " designated area" should be amended to read " area designated by the Engineer".

e) Item (2) of the Notes should be recast to read as follows:-

"The whole site will have been reclaimed to a level of 20.00 ft. above Admiralty Chart Datum, before the main Contract Works are to commence. Additional filling of the site to the finished level of 23.00 ft. A.C.D. shall be completed by the Contractor".

f) Item (5) of the Notes should be deleted.

11. Drawing No.21 - Cathodic Protection

The words "sand bag" in Fig.2 and on other Drawings should be revised to read "sand-filled sack".

12. Drawing No.24 - Anti-Erosion Work, Sg. Sarawak, Details No.1

a) All round Belian piles, 3½"Ø or 4"Ø, should be changed to 4" SQ. Belian piles, as such small round Belian piles are not available locally.

b) All Bakau sheet piles should be changed to Belian sheet piles.

13. Structural Calculations.

A copy of the detailed structural calculations to support the design of the Quaywall, Revetment, and Breasting and Mooring Dolphins is required for this Office record.

(9) Specification for Civil Engineering Works

1. Under Chapter 1 - Description of Works, Clause 2 (v) - Site Reclamation should be recast to read as follows:-

"The whole Site including the area of 200 ft. from the northern boundary line had been properly cleared with all tree stumps grubbed up and all vegetations fully disposed of, and the Site within the fence line was reclaimed mainly by river sand and compacted to a level of 20.00 ft. above Admiralty Chart Datum.

The Contractor shall inspect and accept the Site as it is for the Works comprised in the Contract without any claims whatsoever in connection therewith."

Clause 3 - Datum for the Works:-

The Bench Mark No. A-14 in the 7th line of this Clause should be amended to TBM301.

2. Chapter 2 - General and Preliminary

a) The following Clause should be inserted at the beginning of this Chapter:-

S201 - Conditions of Contract, Contract Drawings, Specification and Bills of Quantities

The Conditions of Contract, Contract Drawings and the Bills of Quantities shall be read in conjunction with this Specification. Matters referred to, described in one are not necessarily repeated in the others.

Notwithstanding the sub-division of the Specification under different sections and headings, every part of it is to be deemed supplementary to every other part and is to be read with it so far it may be practicable to do so, or where the context so admits.

b) Clauses S221 and S222 relating to Acceptable Standard and alternative materials and equipment respectively should be transferred to Chapter 3 - Materials.

c) Clause S22' relating to daily returns should be deleted, as this has been covered in the General Conditions of Contract.

d) Clause S225 relating to language should be deleted, as the official language in this Contrat is to be in English only.

3. Chapter 3 - Materials

a) The following Clauses should be inserted at the beginning of this Chapter:-

S301 - Standard Specification and Code of Practice

(a) Except where otherwise specified or authorised by the Engineer in writing, all materials shall confirm to the latest edition of the relevant British Standard Specification (hereinafter abbreviated to B.S.) published by the British Standards Institution, or any other authoritative standard which ensures an equal or higher quality. Any materials not fully specified herein and for which there is no British Standard shall be the best of their kind and shall be specifically approved by the Engineer.

(b) Standards of workmanship and methods of construction shall, except where otherwise specified or authorised by the Engineer in writing, be in accordance with the relevant British Standards Code of Practice (hereinafter abbreviated to C.P.)

S302 - Alternative materials and equipment

In cases where the name of a particular type or make of materials, equipment or other thing is referred to on the Drawings or elsewhere in this Specification this is intended to indicate the standard acceptable.

The Contractor may offer alternative materials or equipment of equal or higher quality to that specified. In all cases, the Contractor shall submit, prior to such materials or equipment being used, a statement detailing such alternative including full technical descriptions, drawings and manufacturer's specification, for the approval of the Engineer. If and when required by the Engineer, the Contractor shall, at his own cost, produce specimen of such materials or conduct tests on such equipment to the satisfaction of the Engineer.

b) Where the source of supply of a material or equipment is to be stated in the Specification, it is preferable that at least the name of two firms in different countries be given, in addition to the "equivalent approved". This is essential for the convenience of the Contractors tendering and also to avoid any monopoly in the supply of materials or equipment.

c) Where possible, the relevant British Standard Specifications and for Codes of Practice shall be stated in all clauses for materials to be supplied or works to be executed. A list of British Standard Specifications and Code of Practice referred to in the Specification should then be compiled and incorporated in the end of the Specification.

d) A clause on the supply by the Sarawak Public Works Department of the concrete aggregates at M$9.60 per ton and block stones at M$6.60 per ton respectively ex, Sebuyau Quarry Wharf, Second Division, Sarawak, for all the Works in the Contract should be inserted in this Chapter. However, the Contractor may make his own arrangement to obtain supply of stones from other sources, if he chooses to do so.

e) Under Clause S329 - Rubber Fenders, the performance of the fenders required at a mixmum deflection permissible should be given. Also, the name of another manufacturer should be inserted before the words "approved equal".

4. Chapter 4 - General Civil Works

a) The heading of this Chapter should be amended to read "General Civil Works".

b) Under Section 4-2, - Earth Works, a clause indicating the Site being reclaimed to a level of 20.00 ft. above Admiralty Chart Datum should be inserted.

5. Chapter 7 - Anti-Erosion Work

The descriptions and phrasing throughout this Chapter do not appear to be sufficiently clear, and should be recast as necessary.

6. Chapter 8 - Dredging

Under Clause 8806 - Spoil Tip, the first sentence should be revised to read as follows:-

> "All the dredged materials shall, unless otherwise directed by the Engineer, be disposed of over the area beyond the boundary line of the Site on the North and within 200 ft. from that boundary. The area has been cleared by the Employer, and the Contractor shall spread all dredged materials evenly over the area to the satisfaction of the Engineer."

7. Chapter 9 - Additional Filling and Sand Drain Method

a) Since the reclamation of the Site to a level of 20.00 ft. above Admiralty Chart Datum has now been decided to commence immediately by a local contract, this Chapter is therefore required to be fully recast. Some of the clauses which are no more relevant to the main Contractor should be deleted and the phrasing of other clauses be improved and made clear to all tenderers.

b) It would appear that the words "Displacement-type" should be inserted before the words "Sand Drain Method", in order to make it clear to all tenderers.

If a closed mandrel-driven steel pipe or other type is to be used, a diagrammatic drawing showing such pipe would be also helpful to the Contractor.

c) To check or evaluate the effectiveness of the sand drain method, it is considered necessary that the Contractor should be asked to carry out thorough investigation of the precompression results, which should include the following:-

i) Borings to be made before and after the surcharge loading at positions to be specified, and undisturbed samples to be taken for laboratory tests to determine strength and consolidation characteristics, etc.

ii) Field values for the coefficient of consolidation, which may be computed from piezometer observations or other methods approved by the Engineer.

iii) Measurement of total settlement during surcharge loading.

iv) Throughout the construction period, similar investigation should further be made by the Contractor at time intervals to be specified. This is intended for the estimation of post-construction settlement against time rate, - which is very essential!

d) On completion of the whole Project, the Contractor should submit full investigation results to the Engineer, who should then study the results and prepare a conclusive report for the information of the Employer.

8. Chapter 10 - Revetment

a) Clauses S1020 and S1021 should be revised to read as follows:-

S1020 - Supply of Pre-mix Asphalt

> All the pre-mix asphalt for the surfacing of roadways, open storage yard and other work in the Contract will be supplied, under the Provisional Sums item, by the Employer ex. Pre-mix Asphalt Plant operated by the Sarawak Public Works Department at Stabar Quarry, Kuching.

S1021 - Transport of Pre-mix Asphalt, etc.

The Contractor shall make his own arrangement for the supply of labour and suitable tipping lorries to transport asphalt mixtures from the Plant at Stabar Quarry to the Site, and shall place such asphalt surfacing materials as quickly as possible and directly from the tipping lorries at all times. The lorries shall be thoroughly cleaned each time before loading, and the inside surface of the loading platforms shall be coated with oil as necessary to prevent the mixtures from sticking to the surface.

Note: The current P.W.D. price of the pre-mix asphalt is M$30/- per ton ex. Plant at Stabar Quarry, Kuching. Based on this rate, a provisional sum for the supply of all asphalt materials required in the Contract shall be calculated and entered in the Bill No.27 - Provisional Sums and Contingency.

b) Clause S1024 - Junction with Existing Road should be deleted, as the pavement connecting with Roadways in the Port will now be executed by the Public Works Department. Part C, Clause 1 (o) refers.

9. All phrasings in various Chapters should be checked again and improved.

(E) Drawings for Building Works

1. Drawing No. A-1, Site Plan.

This drawing should be revised in accordance with the Revised General Layout Plan (Drawing No. KPA/PP/002).

2. Drawing No. A-14, Lockup Stores.

a) Two more louvre windows with steel grills should be provided on the west side of the first floor.

b) The main doors to the Office on the first floor should be constructed of Belian timber.

c) Two additional doors should be provided to the partition walls in the second and third bays of the Office.

d) Steel grilles should be provided for all louvre windows in the Transit Shed.

e) Heat insulatation should be provided under the roof or over the ceiling to the full Office space on the first floor.

3. Drawing No. A-15, Lockup Stores.

The pigeon holes shown on Section a-a of this Drawing should be changed to louvre windows.

4. Drawing No. A-14, Vehicle Shed.

As discussed, the floor space for oil storage should be resited, which must be away from the Switch Room and General Store.

5. Drawing No. A-18, Vehicle Shed.

The elevation or section shown on this Drawing lacks clarity and should be improved with headings as necessary.

6. Drawing No. A-19, Labourers Canteen.

a) As discussed, the floor space for 'Ladie's' and 'Gentlemen's' lavatories should be inter-changed, and a larger space be provided for 'Men's'.

b) The door to the Bunk Rooms should be opened at the front, and not to the Shower Rooms.

7. Drawing No. A-22, Labourers Canteen.

a) All counters shall be constructed of Belian timber.

b) All partitions in the Shower Rooms should also be changed to Belian timber.

8. Drawing No. A-25, Security Office etc.

a) As discussed, a hardboard partition wall with glass panel over the upper portion should be provided in the Security Office.

b) A louvre window should be provided on the East Elevation, i.e. to the Time keeper's Office.

9. Drawing No. A-27, Weightbridge Pit.

Please check if the pit is agreeable with the Revised General Layout Plan.

10. Drawing No. A-30, First Aid & Fire Station.

Heat insulation under the flat roof should be provided for the whole building.

This applies to all other flat-roof buildings in this Project, as discussed.

11. Drawings A-35 & 36, Toilet and Washroom.

a) Belian timber should be used for all benches, etc.

b) ½' brick partition walls in the Wash Room should be used, instead of timber partitions.

c) Also, all plywood partitions should be changed to ½' brickwall.

12. Drawing No. A-40, Fire Hose Tower.

As discussed, it is considered adequate that all steel members for the Tower be painted with two coats of zinc rich paint, instead of using galvanised steel.

(F) Specification for Building and Sanitary Works

1. Chapter 12 Preliminaries

Clauses S1202 and S1203 should be deleted and substituted by the Clause S301 (as revised) - Standard Specifications and Codes of Practice.

2. Chapter 13 Excavation and Earthworks.

Under Clause S1301, the Site reclaimed to a level of 20.00 feet above Admiralty Chart Datum should be indicated.

3. Chapter 14 Piling (Timbers)

a) The following paragraphs should be inserted in Clause S1404 Pitching, Driving and Trimming:-

i) Piles which do not conform to the Clauses herein shall be condemned, extracted, and a correct pile be driven at the Contractor's sole expense. The Engineer may at his discretion allow the condemned pile to remain without being extracted.

ii) If concrete caps are provided, the piles shall be embedded for a depth sufficient to ensure transmission of load. The concrete shall be at least 6 ins. thick outside the piles and be suitably reinforced to prevent splitting.

b) The whole Clause S1406 - Trial Piles should be recast and the design load for Belian and Bakau piles respectively should be clearly specified, as discussed.

4. Chapter 18-Carpenter and Joiner.

a) Clause S1801 should be amended to include the following:-

i) For all doors and window frames on external walls, first grade Belian timber only shall be used, which shall also be indicated on the Drawings.

ii) As Belian and Selangan Batu timbers are more expensive than other types of hardwood as listed under Category (a), they would naturally not be used by the Contractor and should therefore be deleted from that category.

iii) Jongkong and Ramin timbers are not normally specified for the works under Category (c) and should therefore be deleted.

b) In Clause S1803, the words "Defect Liability Period" in the 4th and 5th lines should be changed to "Maintenance Period" to agree with the Conditions of Contract.

The same amendment should be made in the third paragraph.

c) In Clauses S1816 and S1817, it appears that nowhere are the hardboard and softboard specified for use in the Building Works, and therefore both should be deleted.

d) In Clause S1821, the following words should be inserted:-

"Only first grade Belian timber shall be used for all framed doors in kitchens, washrooms and toilets".

e) In Clause S1824, the following words should be inserted:-

"Only first grade Belian timber shall be used for all window frames on external walls".

5. Chapter 19-Structural Steelwork.

a) The heading of this Chapter should be changed to "Structural Steelwork".

b) Clause S1903

i) The first and fourth paragraphs are an repetition of a clause elsewhere and should be deleted.

ii) The second and last paragraphrelating to inspection made on the site of manufacturers overseas at the expense of the Contractor appear to be not reasonable and should be deleted.

It is to be noted that the Contractor shall see to that all steelwork and other materials or equipment manufactured overseas shall have complied strictly with the Specification. Any inspection by the Engineer will have to be made only after the delivery of the materials or equipment on site. If found not complying with the Specification or otherwise, such materials or equipment supplied will be rejected by the Engineer at the Contractor's sole cost. All these matters have been covered under the Conditions of Contract.

a) Clause S1913 appears to be similar to Clauses S437, S438 and S439, and be deleted.

d) In Clause 1918, last paragraph, the expenses incurred by the two steel erectors should be clearly stated.

As discussed, the expenses should be included by the Nominated Sub-contractor in the supply of steelwork, C.I.F., Kuching.

6. Chapter 20 - Steel and Iron Worker.

a) The last sentence of Clause S2006 should be amended to read as follows:-

"Security grille shall be provided where shown on the Drawings",

b) In Clause S2011, the gauge of galvanised iron wire for gutter outlets should be specified.

7. Chapter 21 - Plumber and Sanitary Engineer.

a) The entire supply mains reticulation should be revised in accordance with the Revised General Layout Plan shown on Drawing No. KPA/PP/002.

b) The last line of Clause S2104 should be amended to read "pipes to comply with B.S. 486, Class 'C'".

c) Clause S2110 - Joint of asbestos cement and steel pipe. This cannot be made with a cast iron joint only, but will require in addition a flange on the steel pipe and a cast iron flanged spigot.

d) In Clause S2111, cisterns for urinals should be B.S. 1876 or approved equivalent, and cisterns for W.C. should be B.S. 1125 or approved equivalent.

e) Clause S2122 should be revised to read as follows:-

"The Contractor shall allow for a sum of M$100,000.- entered in the Bill No. 27 - Provisional Sums and Contingency, as a contribution for water mains to be laid by the Kuching Water Board from the storage tank at Pending Heights to the boundary of the site, including necessary meters, stop cocks and connections."

f) Clause S2117 - Fire Hydrants.

i) See paragraph 1 (v) regarding metering etc. of the water supply.

ii) All hydrants should be 'ground hydrants' of the type proposed for wharf ship watering. These are a standard type in use in Kuching.

iii) The hydrants should be specified as "Hydrants, Screw-down type, Streamline Pattern to B.S. 750 Type II anticlockwise opening or approved equivalent. Outlet screwd 2½" Vee Thread".

iv) Those hydrants to be fixed elsewhere than on the wharf will require appropriate hydrant chambers and cast iron surface boxes which should be "heavy weight" for road traffic with lids marked F.H.

V) Hydrant indicator posts will be required for all hydrants under Item (iv) above.

g) Clause 82118 - Standpipes

Those 'metered standpipes' are to have inlets screwed 2½" Vee thread and outlets 2½" instantaneous coupling and must be as approved by the Kuching Water Board.

h) Cast iron pipes and specials and sluice valves for water supply must be to the following specifications:-

i) Straight spigot and socket pipes:

Spun Iron, B.S. 1211 Class 'B' with Stanton or similar bolted gland joints.

ii) Cast iron spigot and socket specials (Bends, Tees etc.)

Cast iron, B.S. 78 Class 'B' with Stanton or similar bolted gland joints.

iii) Cast iron flanged pipes and specials.

Cast iron, B.S. 2035 Class 'B' with flanges faced and drilled to B.S. 10, Table 'D'.

iv) Sluice valves.

To B.S. 1218 Class I or approved equivalent. They should also be described as Plain ended, for use with A.C. pipe to B.S. 486 Class 'C' or flanged, according to their positions. If flanged, flanges should be drilled to B.S. 10, Table 'D'. All sluice valve must be clockwise opening.

v) Cast iron specials for use with asbestos cement pipe.

To be suitable for use with asbestos cement pipe to B.S. 486 Class 'C'.

i) External water mains, soil pipes etc.

i) Drain from weighbridge wells to septic tank should be increased in size from 2" to 4".

ii) Waste pipe runs from wash basins etc. should be not less than 2" daimeter.

iii) Water main on wharf should be cast iron not steel and no steel pipe may be used for mains buried underground.

iv) Water mains supplying hydrants should be not less than 4" diameter and extended as required to form a ring main.

v) The method of metering the water supply.

It has been discussed and agreed by Kuching Water Board that the supply mains reticulation in the Port Compound should be laid by the Contractor according to the Revised Layout Plan. Individual 'domestic' connections to the various buildings will be metered separately by K.B.W. and ship watering should be done through metered (portable) standpipes of a type approved by K.B.W., as already discussed. There is no meter on the mains supplying to fire hydrants.

vi) Fire fighting equipment generally and in particular hydrant outlets, hose couplings and similar, must conform to the relevant requirements of the Fire Authority (i.e. K.M.C.) to ensure interchangeability in an emergency.

vii) All water supply installation including internal plumbing must be in accordance with the requirements of the Water Supply Regulations 1958 as amended by the Water Supply Amendment Regulations 1964 and comply with the requirements of the Kuching Water Board.

8. Chapter 22 - Plasterer and Pavior.

a) In Clause S2206 the words "coarse" and "spatterdish" in the third and ~~two~~ paragraphs are misspelt. (four lines)

b) In Clause S2214 the word "splay" in the last line of paragraph two, is misspelt.

c) It appears that there is no in-situ terrazzo paving to be used in the Works, therefore Clauses S2219, S2220 and S2221 should be deleted.

d) Clauses S2225, S2226 and S2227 should also be deleted, as there is no granolithic paving to be used in the Works.

9. Chapter 23 - Glazier.

a) In the first line of Clause S2301, the word "country's" should be deleted.

b) In the second line of Clause S2305, the word "round" should be substituted by the word "ground".

10. Chapter 24 - Painter

a) In the first line of Clause S2401, the word "distemper" should be deleted, as there is no distemper specified for use in the Works.

b) As no distemper is to be used in the Works, Clause S2402 should be deleted and substituted by the following:-

"For all plastered external walls, cement paint of approved quality shall be used.
For all plastered interior walls, emulsion paint of approved quality shall be used."

c) In Clause S2415, Item (a) - Distempering should be deleted.

11. Chapter 27 - Prime Costs and Provisional Sum.

a) Clause S2701 should be revised to include the following:-

i) The word "despatching" in the third line of paragraph one should be deleted, as the cost for the supply of the steelwork, C.I.F. Kuching, will have to include the cost of despatching of all items to Kuching.

ii) The word "profits" in the first line of paragraph two is misspelt.

iii) The last sentence of the second paragraph should be amended to read as follows:-

"Such profits and overhead charges will be payable to the Contractor in accordance with the percentage entered times the actual cost of the materials supplied".

iv) A sum of M$700,000.- (if correct?) should be inserted after the word "sum" in the first line of paragraph one.

b) Clause S2702 should be revised to include the following:-

i) A sum of M$450,000.- (if correct?) should be inserted after the word "sum" in the first line of paragraph one.

ii) The ultimate sentenance of this Clause should be amended to read as follows:-

"Such profits and overhead charges will be payable to the Contractor in accordance with the percentage entered times the actual cost of the Electrical Works executed by a Nominated Sub-contractor".

(G) Bill of Quantities for Civil Engineering Works

1. Preamble.

a) The cost for tests on welds of steel materials by radiographic examination should be treated as a separate item in the Bill, and a clause should be inserted as follows:-

P15. The rates for the radiographic examination and test for checking any or all welds, if ordered by the Engineer are to include for:

i) supply of a complete set of radiographic equipment;

ii) operation and maintenance of the equipment throughout the duration of the steel piling work;

iii) preparation and submission of test results; and

iv) re-export and any other charges which may be incurred thereof.

b) Clauses P6. - Method of Measurement and P10.- Daywork have been covered in the Conditions of Contract and may be deleted.

c) Under Clause P11., Material Rates, Item (i) - Cost of erection and maintenance of the Contractor's storage yards will be paid for as a lump in the Bill, and therefore should be deleted from the supply of general materials for permanent work.

d) In Clause P11.- Driving Steel Sheet Piles, the following sentence should be inserted in the beginning:-

"Payment for the driving of all steel piles shall be made on the measurement of actual penetration of each and every pile driven."

e) A new clause on the supply of crushed stones should be inserted in the Preamble as follows:-

"All the crushed stones and block stones required for the work in the Contract will be supplied by the Sarawak Public Works Department, ex Sebuyau Quarry Wharf, Second Division, Sarawak, at the following rates:-

i) Graded concrete aggregates including loading to vessels — M$9.60 per ton.

ii) Quarry-run block stones, size 4 to 6 ins., including loading to vessels — M$6.60 per ton.

The Contractor shall make his own arrangement for water transport and labours to ship the stones from the Sebuyau Quarry Wharf to the Site, and shall give adequate notice to the Director of Public Works through the Engineer for any and every shipment to be made by him.

If the Contractor chooses to obtain the supply of part or all of the stones required in the Works from other sources by his own arrangement, he may do so provided that he has given early written notice to the Engineer about the sources of supply and that the stones comply in every respect with the Specification."

f) In Clause P.41 - Dredging, the two categories of the materials to be dredged should be defined more clearly in order to enable the payment to be made with no dispute. It is suggested that the paragraphs should be re-phrased as follows:-

Category (a)

Clay, silt, sand, gravel and the like, which can be dredged reasonably efficiently by a plain-blade cutter.

Category (b)

Shale, or rock and boulders which, in the opinion of the Engineer, can be dredged efficiently only by use of a rock cutter.

g) Clause P.45 - Asphalt Pavement should be revised as follows:-

"The pre-mix asphalt materials for the surfacing of roadways, open storage yard and other work in the contract will be supplied, under the Provisional Sum item in Bill No. 27, by the Employer ex. Pre-mix Plant operated by the Sarawak Public Works Department at Stabar Quarry, Kuching.

The rates for the asphalt pavements are to include for:-

i) transporting pre-mix asphalt from the Stabar Quarry to the Site, laying and spreading and rolling to required level and profile;

ii) protection of adjoining structures from being splashed by asphalt, and all other things and precautions against damage to newly-laid asphalt by rain;

iii) all side,forms, signals, notice boards and lighting, where necessary, during the work; and

iv) control tests on subgrade, base and asphalt surface laid, if and where required."

h) The last two paragraphs in Clause P.43 - Removal of Obstacles should be deleted to avoid confusion.

i) Since the reclamation work will have to be executed by a local contract, the heading of Clause P.52 - should be changed to "Additional Filling" to agree with the relevant Specification as revised.

The whole of this Clause should be recast accordingly.

2. Bill No. 1 - General

a) Where possible, the relevant clause numbers in the Conditions of Contract and/or Preamble should be entered under the respective items of the Bill.

b) The unit of Items 5, 8, 10, 12 and 23 relating to the Resident Engineer's Office etc. should be changed to "sum" instead of "month".

c) Item 17 should be substituted by the following:-

"Allow for the supply, operation and maintenance of radiographic equipment for checking on welds (Spec. S439 and Preamble P15) .....Sum".

3. Bill No. 2 - Wharf

a) The following items should be inserted after Item 1:-

Item 2:	Supply and transport pile-driving equipment to site and erect same. The rates shall include for the driving of piles in all other civil engineering works.	Sum.
Item 3:	Remove pile-driving equipment in Item 2 on completion	Sum.

b) In Items 19 and 20, the steel channels should be written as '12" x 3½" x 28 lbs./ft.' and '8" x 3½" x 20 lbs./ft.' respectively. The same wordings should appear on the Drawings.

c) In Item 27 and elsewhere, the unit for timber piles actually driven into ground should be lin. ft.

d) On page 25, the caption "Upper Concrete" should be changed to "Concrete Cap Wall", to agree with the wordings in the Specification Drawings and the Bills of Quantities.

4. Bill No. 4- Anti-erosion Works

a) The Notes under this Bill (on Page 44) should be revised to read as follows:-

Sungei Kuap

The extent of excavation in this work is to cover the following:- (See Drawings No. 26 and 27).

i) Between Sections A and E the excavation covers the area where the Gabions are to be laid only. The areas from the foreshore end of Gabions out to the dredged lines are to be included in Bill No. 5 - Dredging Work.

ii) Between Sections E and I the excavation covers the areas where Gabions and fascine mattress are to be laid.

b) All the phrasings and terms used in this Bill should be checked and revised to agree with the Specification and the Drawings and to ensure no confusion.

5. Bill No. 5 - Dredging

a) Preamble Clauses P.41 (a) and P.41(b) should be inserted to the end of Items 2 and 3 respectively to ensure no misinterpretation of the materials dredged.

b) The wordings in Item 1 should be improved and made clear.

6. Bill No. 6 - Reclamation

This Bill should be revised completely to agree with the Specification.

7. Bill No. 7 - Roadways

a) The following notes should be inserted under the caption "Roadways" (on Page 52):-

"Pre-mix asphalt for the surfacing of roadways etc. as specified will be supplied by the Employer under the Provisional Sum item (See Preamble Clause P.45 Aspahlt Pavement."

b) All the subsequential Items should be revised to agree.

8. Bill No. 10 - Drainage

a) The titles on the types of drain used should be revised to agree with the Drawings to ensure clarity.

b) Items 60 and 61 should be deleted, as it was discussed and agreed that ordinary stone-paved shoulder along the open drain on the northern boundary line would be cheaper and adequate for the purpose.

c) As discussed, new items for the supply and placing of steel gratings on the drains along the apron etc. should be calculated and added to the end of the section on Gratings (The same amendments should be made on the Drawings.)

9. A separate bill for the Schedule of Basic Rates and Prices should be prepared and incorporated in the Bills of Quantities, as discussed.

10. The last bill should be the Bill for Provisional Sums and Contingency and should comprise of all the items in this Contract, as discussed.

11. Appendix 'A' - Resident Engineer's Office, etc.

a) As discussed, all the offices including the materials testing laboratory should be grouped in one single building having an area of approx. 2,706 sq. ft. to be sited at a location designated by the Engineer. For this reason, the whole text should be recast accordingly.

b) A list of offices equipment and furniture should be prepared as discussed.

c) A list of survey instrument and testing equipment should also be prepared as discussed.

(H) Bill of Quantities for Building Works

1. Bill No.11 - Transit Shed.

a) The Unit for the supply of Belian and Bakau piles respectively should be changed to "number".

b) Item 15 should be revised as follows:-

"Drive full length of piles to specified level and required set in Item 13, including cutting and trimming pile heads. Unit in number."

c) An item for additional driving of piles beyond the specified length including splicing should be inserted after Item 15.

Also, a note should be appended to this item such as follows:-

"This item shall be payable to the Contractor by actual measurement of work completed only. The quantity given is provisional."

d) The unit for grouting steel stanchion in Item 22 should be changed to "each" and not "sq. yd."

e) Item 54 may be deleted, and the plugging of sills in partitions to concrete bed be included in Item 53.

f) The unit in Item 55 relating to skelton core flush doors should be changed to "each".

g) The unit in Item 59 relating to door frames should be also changed to "each".

Consequently, Items 60, 61, 62 and 63 should be revised.

h) Item 67 - relating to supply of structural steelwork should be transferred to Bill No.27 - Provisional Sums and Contingency.

i) In Item 69, Clause 53(2) of the General Conditions of Contract should be inserted.

j) The unit in Item 75 relating to fixing galvanised steel sheets is preferably to be changed to "each".

k) Item 81 may be deleted and the fixing of ironmongery work be included under Item 80.

l) Item 92 may be deleted and the work in the cutting of m.s. strap be included under Item 91.

m) Item 95 relating to general attendance on the Nominated Sub-contractor Electrical Works should be recast, and a note should be inserted thus:-

"The rate for this Item shall include for all electrical works in the Contract."

n) Item 97 may be deleted and the plastering of fair edges and arrises be included under Item 96.

o) Item 99 may be deleted and the plastering of ends and angles be included under Item 98.

p) Item 102 may be deleted and the mortar work in fair edges and arrises be included under Item 101.

q) Item 104 may be deleted and the plastering of ends and angles in skirtings be included under Item 103.

r) Item 106 may be deleted and the plastering of ends and angles be included under Item 105.

s) Item 109 may be deleted and the plastering of fair edges and arrises in walls be included under Item 108.

t) In Items 114 and 116, the word "ground" should be changed to "frames".

u) The unit in Item 125 relating to painting steelwork should be changed to "cwt.".

v) The unit in Item 126 relating to painting rainwater down pipes should be changed to "lin. ft.".

w) The unit in Item 134 relating to painting steel angle frames should be changed to "each".

x) The units in Items 138, 139, 140 and 141 should all be changed to "each".

y) As discussed, the wordings in various Items should be improved and made clear and consistent with the Drawings.

2. As discussed, the following Bills should be checked and revised in line with the amendments made in Bill No.11 - Transit Shed:-

Bill No.12 - Vehicle Shed.

Bill No.13 - Labourers Canteen.

Bill No.14 - Security and Timekeeper Office.

Bill No.15 - First Aid and Fire Station

Bill No.16 - Sheltered Car Park. (?)

Bill No.17 - Sheltered Exit.

Bill No.18, 19, 20 - ???????

Bill No.21 - Fence and Gates

(Notes: The heading on Page 56 appears to be incorrect, as the work stated therein was in connection with Electrcial Sub-station Paving. Please check and revise.)

Bill No.22 - Fire Hose Tower.

Bill No.23 - External Services.

3. All Bills of Quantities for Building and Sanitary Works should be re-numbered and bound in sequence, in order to avoid any confusion.

(I) Electrical Engineering Works

The following are the comments made by the Chief Electrical Engineer, P.W.D., which should be complied with:-

1. Main switch board position should be shown on the Site Layout Drawing No.E-1.

2. Circuit diagram for main switch board as shown on Drawing No.E2 should be designed to provide Separate metering for lighting and power to each building. The reason is that different tariffs will be charged by SESCO., for lighting load and power consumption. Therefore, two separate sub-mains to each building is required and the main switch board should be modified accordingly.

3. Ceiling fans should be 56" sweep, instead of 48".

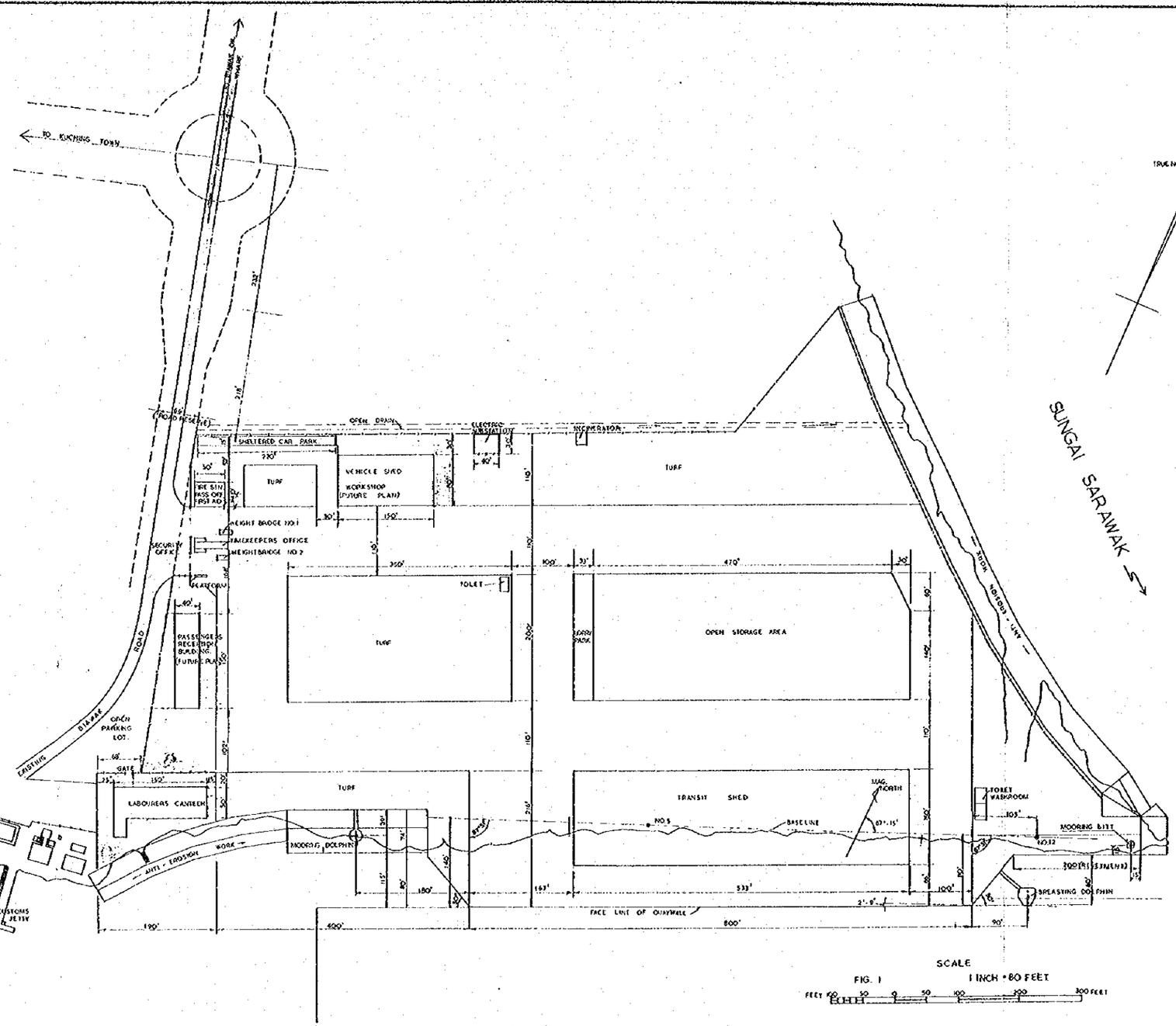
4. A few lighting subcircuits appear to have been over-loaded with more than 10 more points. This contravenes the Sarawak Electricity Regulation and should be rectified.

5. Earth electrode for lighting arrestor, ⅝"ϕ x 10 ft. long should be specified as "solid copper earth rods".

6. In general, all the electrical works must comply with the requirements laid down by the Sarawak Electricity Supply Corporation.

James P. Hwang

Date: 23rd February, 1970.



KUCHING PORT AUTHORITY	PROPOSED KUCHING PORT EXPANSION AT PENDING POINT – REVISED GENERAL LAYOUT	SCALE: AS SHOWN DRAWN DATE: 14th February 1972 CHECKED & APPROVED FIL REF. DRWG. NO. KPA/PP/002

REPLIES OF JAPANESE SURVEY TEAM TO COMMENTS OF SARAWAK GOVERNMENT ON FINAL DRAFT TENDER DOCUMENTS

The Team has received the comments of the Sarawak Government on the 10th March, 1970. Appended below are the replies of the Team to the said comments, and any comment to which no replies are given shall be taken as fully understood and is to be incorporated in the final documents:-

1. Revised General Layout (on page 4)

The revised general layout appears generally adequate. The revision of the layout, however, has never been discussed with the Team during its stay in Kuching. It has been decided by the Sarawak Government after the departure of the Team from the Town.

Based upon the discussion with the Sarawak Government, the Team has started necessary amendments to the tender documents upon its return to Japan and nearly completed the work when the comments has arrived. Further amendments of the completed documents which have now been necessitated by the revised layout would require more time and costs, thus justify the extension of time set for the submission of the final documents. For major items of amendments, see below:

Contents of Amendment Work

a. Civil Works: Amendment of Specification, Bills of Quantities, and Drawings relating to reclamation, paving and drains.

b. Building Works: Amendments of Specification, Bills of Quantities and Drawings relating to the perimeter fence and gates.

c. Sanitary Works: Amendment of Specification, Bills of Quantities and Drawings relating to plumbing works in- and outside the buildings.

d. Electrical Works: Amendment of Specification, Bills of Quantities and Drawings relating to wiring in- and outside the buildings.

It is obvious that the revision of the layout will result in an increase of the construction costs of civil and electrical works. As an attempt to check the increase of the costs, the Team would recommend a further modification of the proposed layout including the revision of fence line alignment and the reduction of the total reclamation area, all as shown on the attached drawing.

2. (C), 2, e) (on page 4)

What is the meaning of the words "Outfall apron" ? Do they mean the paved apron with slope of 1:60 ?

3. (C), 2, f) (on page 4)

The position where the shale is suspected to be underlying is shown at about the centre of the Fig.1, but Item (2) of the Notes shall be rephrased as suggested for the clarity of the intention.

4. (C), 5, a) (on page 5)

Steel pipe of the requested diameter is preferred to steel rod because the former is sufficiently strong, easy to fabricate and less expensive.

5. (C), 6, a) (on page 5)

There will be no need of inserting the requested details as a close study of recent welding practice has revealed that a sufficient strength is obtained for the spliced steel piles by following the welding method indicated on the Drawing.

6. (C), 9, b) (on page 5)

In connection with this paragraph, we have the following proposals: Fig.4 of the Drawing No. 18 shows the details of the connection of the culvert on the existing Biawak Road and the main open drain. According to paragraph (C), 1, d) of the comments, the existing concrete culvert will be demolished and a new culvert be constructed by the P.W.D. And according to Clause 2.15, Particular Specification for the Site Clearance and Reclamation Work (on page 7), "an open drain" is to be constructed on the northern boundary of the Site as shown on the Drawing KPA/PP/002.

a. On the New Culvert (See (C), 1, d))

(1) It should be constructed, if possible, in alignment with the main open drain to be constructed in the Permanent Works.

(2) It should be constructed in either R.C. box culvert or R.C. tube with its bedding set at the level of 16 ft. above the Works Datum.

b. On the New Open Drain (See Clause 2.15)

(1) It should be sited about 10 feet off northward from the alignment of the open drain to be constructed in the Permanent Works.

(2) It should be of temporary structure.

(3) If possible, the temporary drain should be connected with the new culvert. This calls for earlier completion of the new culvert.

7. (C), 10, a) (on page 6)

The words "Additional reclamation" is preferred because of the uniformity with the wording in the Conditions of Contract, Part III.

8. (C), 10, d) (on page 6)

Item (1) of the Notes will be deleted as the removal of house refuse is now to be carried out by the local contract.

9. (C), 10, f) (on page 6)

Only the words "three buildings" will be deleted from Item (5) of the Notes as the old customs is to be removed by the main contractor

10. (C), 13 (on page 6)

Regret to advise that the structural calculation cannot be submitted as it belongs to the trade secret. Even the Japanese Government do not ask for the submission.

11. (D), 3, d) (on page 8)

This clause should be inserted in the preamble of Bills of Quantities instead of the Specification.

12. (D), 6 (on page 9)

As the dredged materials are large in volume, the spoil tip should be extended beyond the area "within 200 ft. from the northern boundary" to the whole area encircled by the Site, Biawak Road and the Sungai Sarawak.

13. (D), 7, b) (on page 9)

What is meant by the words "Displacement-type" ? No such words will be necessary to refer to the sand drain method.

Various types of mandrel-driven steel pipes are available, and we would prefer to leave it to the contrivance and discretion of contractors as to the adoption of a specific type. Therefore, the insertion of the diagrammatic drawing showing such pipe will be unnecessary.

14. (D), 7, c) (on page 9)

It will be essential to carry out very specific and strict control of the work if the primary purpose of the method is to increase the strength of clayey soil. However, as the method in the present project is intended primarily to accelerate the settlement of ground in a short period of time (Compaction of soft ground is a secondary effect), the control of the work need not be as elaborate as suggested. Consequently,

a. the Contractor will be asked to carry out tests of uniaxial compressive strength on undisturbed samples obtained by borings, but none on the consolidation characteristics, and

b. the observation by means of piezometer will be unnecessary.

15. (G), 1, g) (on page 19)

The following should be inserted between i) and ii), and subsequent items be re-numbered:

ii) supplying, transporting, storing, levelling and rolling of all required materials, excluding pre-mix asphalt;

because the asphalt pavements cannot be properly formed without such a provisions covering stones used in road base.

16. (G) 9 (on page 21)

The Schedule of Basic Rates and Prices should be regarded as one of the documents forming the Contract, and should not be treated as "a separate bill" to be included in the Bills of Quantities. Please refer to (1)(f), Clause 1, Conditions of Contract, Part I, and Item 2, Form of Agreement.

17. (F), 7, f) (on page 14)

It is said under sub-paragraph ii) that all hydrants should be 'ground hydrants'. But, according to our memo for record of the discussion held on the 14th January at K.M.C., both parties agreed that hydrants should be "surface" type instead of the ground's. Please advise us whether the type has since been changed to the ground type or not.

18. (I) 2 Electrical Engineering Works (on page 23)

Provision for separate metering is requested for lighting and power to each building. But, the Team has been under the impression that both parties agreed that each building should have just one meter after consultations with SESCO and P.W.D. on the 20th January.

19. (I) 5 (on page 23)

The comment reads that the earth electrode for lightning arrestor should be specified as "solid copper earth rods". But, the Chief Electrical Engineer was of opinion that either copper rod of specified dimensions or steel pipe, 2½" x 8 ft. long will serve the purpose. The steel pipe is already taken into our drawings and specification. Please advise us whether the pipe should be changed to copper rod.

APPENDIX H

TELEGRAPHIC ADDRESS
'MINWORKS KUCHING'

MINISTRY OF COMMUNICATIONS AND WORKS
KUCHING, SARAWAK.

Ref: MCW/511/9(29)

28th March, 1970.

Mr. T. Haruta,
Japan Port Consultants, Ltd.,
Kyodi Building No. 12-6,
Shibuya 2-Chome,
Shibuya-ku,
Tokyo, Japan.

Sir,

Comments on Final Draft Documents
on Kuching Port Expansion Project

I refer to your replies dated 18th March, 1970, to our comments and to the revised General Layout Plan both on the final Draft Tender Documents for the Kuching Port Expansion Project and I now forward hereunder our further comments and observations for your attention and compliance:-

Item 1:

The revision of the general layout of the Port was considered essential and necessary in view of the fact that: (a) the existing Biawak Road will be closed to traffic as soon as the new Trunk Road to the Pending area has been completed, and (b) the new main entrance would be more centrally sited between the new Port and the Bulk Coal Wharf, which scheme may be implemented soon, perhaps within the next three years. Hence, any slight increase in the costs due to the revision would be far more than offset by the cost of reconstruction and renovation necessary in future. We are aware that there may be some work involved in the revision, but a slight delay in your submission of the final Tender Documents would not badly upset our construction programme.

Item 2:

It is correct that the words should be substituted by "Outfall 1:60" and should be inserted together with the main open drain on the Drawing No.1 and not No.2 as originally advised. The oversight is regretted.

Item 3:

Agreed.

Item 4:

Steel pipe of 1½" in diameter for the railing of the catwalk is acceptable.

Item 5:

In normal practice, it appears that the steel stay piece at not less than 3 or 4 positions are required behind the joint of the weld, so as to enable two lengths of the pipes to be assembled axially before welding. Such stay pieces are considered even more necessary, if the extension of the piles is to be welded in a vertical position, but these were not indicated on the Drawing.

Item 6:

(a) On the New Culvert

1) The new R.C. box culvert will have to be constructed by P.W.D., as the funds will come from the P.W.D. Estimates Vote and not from the Kuching Port Authority. We will see to it that every effort is made to construct the culvert at an early date or at least before the scheduled completion of the new Port.

2) Fig. 3 in the Drawing No.18 showing the connection of the open drain with the new culvert can be left as it is, for any minor change to suit the new culvert can be made at a later date by a variation order to the Contractor, if necessary.

3) The invert level of the box culvert will be set at 16.00' above the Works Datum as suggested. Please note the words "Invert level" should be used in your Drawings or Specification, where relevant.

(b) On the New Open Drain

1) It is preferable that the centerline of the open drain be shifted to 15 feet from the fence line, in order to allow sufficient verge between the fence line and the edge of the drain.

2) The open drain to be constructed by the Contractor on the reclamation work will be just a temporary earth drain excavated down roughly to 16.00' above the Works Datum and in a cross section as shown on the Drawing No. KPA/PP/001. The concrete lining etc. to the true side slope and gradient will have to be completed by the main Contractor.

3) The temporary open drain will surely follow the centerline of the proposed permanent drain, i.e. 15 feet from the fence line, in order to save the cost of excavation by the main Contractor.

Item 7:

We still think the words "additional filling" are more appropriate for the text, since the words "additional reclamation" might easily be mistaken as an additional area to be reclaimed.

The Heading for Part III of the Conditions of Contract has now been changed to "Conditions of Particular Application to Dredging Work", which appears to be adequate as there is actually no reclamation work to be involved in the main Contract. (A copy of the revised Part III will be forwarded to you, when ready.)

Please note that in your Draft prepared for the Part III, the phrase under Clause 20(1):

> "or if the level of reclaimed land has become lower than the specified level due to consolidation of fillings and/or subgrade, after the inspection of reclamation as stipulated in the Specification"

should be deleted, as we feel that a considerable sum of money has been spent on the pre-compression of the ground by the sand drain method, and if there is any crack in the Transit Shed due

/3.

to settlement, the Contractor should no doubt make good during the Maintenance Period at his own expense. In respect of the roadways and drains, the Contractor should see to that the subgrade of roads or bedding of drains are well compacted. Any sinking of the roadways or cracks on the drains should also be made good by the Contractor at his own cost.

Therefore, please go through the whole Specifications and change the word "reclamation" to "filling", where relevant.

Item 8:

Agreed.

Item 9:

Agreed.

Item 10:

It is our practice in Sarawak that all design drawings should be supported with structural calculations for record purpose. We have, for example, detailed structural calculations for (a) 10 steel-trussed bridges designed by Messrs. Britton and McMillan of Australia, and (b) the 7-storey New Secretariat Building by Messrs. Steen Schouted of Singapore and Malaysia. We honestly think that there is no trade secret at all, as any qualified engineer should be able to produce such structural calculations. We still hope you will make the calculations available for our record, even after the submission of the final Tender Documents.

Item 11:

Agreed.

Item 12:

Agreed. But in the Specification it should be stated that the Contractor has to clear the area beyond the 200 ft. from the boundary properly, if and before any dredged materials are to be spread over the area.

Item 13:

The type of sand drain method as proposed is done by first driving steel shell down to the required level and then filling in with sand, before the shell is to be withdrawn. Hence, this type is called "Displacement-type". As you are aware that there are other methods for installing sand drains, such as by boring, jetting, drilling etc. in order to minimize the effect of soil disturbance, such methods are called "Non-displacement type". The insertion of the words is simply to give the Contractor an idea of what a method is to be used. Please refer to latest literatures in English on sand drain methods, if you have any doubt on this.

If you think that the insertion of a diagrammatic drawing to show the mandrel-driven pipe is not necessary, we feel that the phrasing in the Specification should at least be improved and expanded for the guidance of the Contractor.

/4.

Item 14:

There is no doubt that a strict control over the execution of the sand drain method should be exercised by the Engineer, who must be very experience in such work. However, we feel that as a considerable sum of money had to be spent on the sand drain method in order to improve and accelerate the consolidation of the ground, it is only desirable to have the results thoroughly investigated and evaluated. We do hope that you will be obliged to undertake the work to our satisfaction.

Item 15:

Agreed.

Item 16:

Agreed.

Item 17:

The Kuching Water Board required that only "Underground hydrant" is acceptable, for the reason that there is no metering on the hydrants and such underground hydrants would discourage unauthorised people from drawing water for purposes other than fire fighting. There should be no significant increase in the cost.

Item 18:

It has now been confirmed by the Sarawak Electricity Supply Corporation that a combined meter for lighting and power can be installed in each building. Please ignore my previous comment on this point.

Item 19:

Steel pipe 2½" in diameter x 8 ft. long for lightning conductor is acceptable.

2. Your Drawing No. 1 showing the Revised General Layout has been checked in order, except that:-

(a) the permanent open drain should be shown along the northern fence line and at 15 ft. away from the line, and

(b) the Resident Engineer's Office should be moved slightly northward to allow adequate clearance for the construction of the open drain.

3. Enclosed is a copy of the revised Appendix "B" on Daywork Schedule. Your letter dated 10th March, 1970, on Amendment to Conditions of Contract refers.

I am, Sir,
Your obedient servant,

(LIANG KIM BANG)
Ag. Permanent Secretary,
Ministry of Communications and Works,
SARAWAK.

c.c. The Chief Secretary to the Govt.,
(EPU), Prime Minister's Dept., Kuala Lumpur.

The Permanent Secretary, (Attn: Encho Shanmughalingam)
The Treasury, Kuala Lumpur.

The Secretary, Ministry of Transport, Kuala Lumpur.

Mr. A. Tavoaka,
Asian Development Bank,
P.O. Box 126, Makati, Rizal D-708, Philippines.

State Attorney-General, Sarawak.
State Financial Secretary, Sarawak.
Director of Public Works, Sarawak.
General Manager, KPA, Sarawak.

[illegible]

[illegible]

[illegible]

[illegible]

Note:- (1) The Contractor will be paid for daywork carried out during the period of the Contract at the rates set down by him in the Schedule of Basic Rates and Prices. (Conditions 52 (4)).

(2) Rates quoted for daywork shall be submitted with the Tender and shall bear a reasonable relationship with rates entered elsewhere in these documents.

(3) Expenses on the following items shall not be included in the cost of labour but be included in percentage addition to the net cost of labour:

(i) Holidays with pay.

(ii) Insurance.

(iii) Necessary allowances to comply with the Labour Ordinance and orders currently in force in the State of Sarawak.

(iv) Use and maintenance of Temporary Works, scaffoldings, etc. erected for work other than daywork.

(v) Engineers, supervisory staff, storemen, timekeepers and clerks.

(vi) Use of electric lights and water, and supervision over execution of Daywork item.

(vii) Use and maintenance of all tools, appliances and plant not provided for under "Plant".

(viii) Office charges and profit.

(4) Should the Resident Engineer instruct that overtime be worked on daywork the hours will be adjusted in accordance with the Labour Ordinance and orders currently in force in Sarawak.

(5) Rates of all materials to be used on Daywork shall be as set out in the Schedule of Basic Rates and Prices. Should any materials not shown on the Schedule above be required, the rate of such materials shall include for delivery to the storage area of the Contractor including unloading.

(6) Rate for storing and other expenses not included in the rate of materials shall be included in the percentage addition to the net cost of materials.

(7) The hire rate of Plant to be used on Daywork shall be as entered in the Schedule of Basic Rates and Prices. The rate shall include for fuel, power, oils, greases; consumable stores, tools, all accessories, and costs of maintenance and repairs.

(8) All expenses relating to Plant but not included in the cost of Plant shall be included in the percentage addition to the net cost of Plant.

(9) The Contractor shall enter percentage for Item 4(b), 5(b) and 6(b) of Bill No.27, respectively.

(10) Payment for Daywork shall be made in accordance with Clause 52 (4) of Part I - General Conditions of Contract.

(11) Payment for the labour wages shall be made at the actual hours worked only.

(12) Payment for working plant shall be for the actual hours worked only, and no allowance for standing time shall be made.

FURTHER REPLIES TO YOUR COMMENTS ON
THE FINAL DRAFT DOCUMENTS DATED
28 TH MARCH, 1970

Item 6. On the New Open Drain

According to our construction schedule, the permanent drain will be built about 16 months after the commencement of the Works,or about two years after the completion of the temporary earth drain by the local contractor. During the period, the temporary drain will sustain a damage by the tidal fluctuation and the flooding at times of torrential rains. As the results, the side slope will fall down and the channel will be blocked by sedimentation or badly eroded. The section will be greatly enlarged at the outfall to the Sungai Sarawak.

If the temporary drain is to be provided as requested in your comments, i.e., following the centerline of the permanent drain, the surface of the excavation will become uneven with the channel scoured or blocked with mud deposit, or the freshly deposited concrete will be damaged, due to the flowing water therein during the construction of the permanent works.

For the above reasons, we would recommend the followings:-

1. The temporary earth drain will be provided separately from the permanent drain, and
2. The centerline of the permanent drain will be drawn 7 ft. from the fence line and that of the temporary drain 17 ft. from it.

We expect that you would give consideration on factors such as the relative difficulty of execution and the progress of the works, besides the saving in the cost of excavation.

Item 7. On the Reclamation

We have a different view on the proposed deletion of the quoted phrases from Part III of the Conditions of Contract:

There will be practically no settlement in the ground where the transit shed is sited as the ground will be improved by the execution of the sand drain method. In the rest of the area, however, the settlement will be inevitable over a long period of time. The clayey layer with varying thickness of 20 to

30 feet will settle down due to consolidation under the loads of fill, cargo and vehicles. According to our experiences, the settlement of roadways and open storage area will not cast a very serious problem for their actual use as long as it is even and covers the whole area.

As you are well aware of, the costly ground improvement method must be applied over the whole area if the settlement is to be minimized.

With the foregoing in mind, we would like to consider the responsibility of the contractor to make good the settlement:

If the phrase in question is deleted as requested and a building sagged down, the contractor will be required to raise the building back to the original level as shown on the drawing. The same applies to the roadways, drains and the level of reclaimed land. Thus, the contractor will have to shoulder a responsibility excessively heavier than normally required. In order to fulfill his responsibility and protect his own interest, the contractor will increase his tender price.

We are of the opinion that the contractor should be held responsible for making good any damages in buildings, roadways and other structures if such damages were proved to have been caused by partial uneven settlement, but he should be relieved of his responsibility of making good the settlement appearing even and affecting the whole area for the above stated reasons. Hence, we consider the phrase in question should remain as it is.

Since Part III pertains both dredging and reclamation works, the words "Additional reclamation" is preferred. There should not be any mistaking for any additional area to be reclaimed as the area to be reclaimed is clearly indicated on the drawings and also in the specification.

Item 10. <u>On the Structural Calculations</u>

It is not our normal practice to submit structural calculations. And the submission is not requested in the Plan of Operation. This matter is just as important as the drawings, specifications and other copyrighted documents to us. But, your desire to find out in details the ideas of designing incorporated in the structural calculations is well understandable. Therefore, we will be prepared to meet your requirement on this matter as much as possible in the form of verbal explanation in Kuching.

Item 12.

All the necessary instructions for the clearing of the spoil tip are already given in the Specification.

Items 13 and 14. On the Sand Drain Method

Agreed on the insertion of the words "Displacement-type".

We are pleased to advise you that we are fully prepared for adequate control over the execution of the sand drain method. However, as stated in our previous replies, the method of such control should be different according to the objectives of individual cases; a particular controlling method is required as a "must" in one case, but the same is not necessarily required in the other. The application of an unnecessary method means an extra cost. We are willing to meet your requirements as you are the Client. In our project, however, we consider neither the consolidation test nor the observation by means of piezometer is necessary. On this matter also, we would like to give proper explanation in Kuching.

APPENDIX J

TELEGRAPHIC ADDRESS
'MINWORKS KUCHING'

MINISTRY OF COMMUNICATIONS AND WORKS,
KUCHING, SARAWAK.

REF: MCM/511/10(40)

11th May, 1970.

Mr. T. Haruta,
Japan Port Consultants Ltd.,
Kyoei Building,
No.12-6, Shibuya 2-Chome,
Shibuya-ku,
Tokyo, Japan.

Sir,

Further Comments on Draft Final Documents
On Kuching Port Expansion Project

I refer to your further comments contained in the attachment to your letter dated 27th April, 1970, and would comment on them as follows:-

1. Item 6: On the New Open Drain

It is agreed that the permanent drain be provided separately in the Prime Contract and its centerline be sited at 7 feet away from the fence line.

For this reason, the centerline of the temporary earth drain will now be moved to 17 feet from the fence line.

2. Item 7: On Reclamation

i) We still consider that our draft Text for Part III - Conditions of Particular Application to Dredging Work is in order, and the words "and Reclamation" should not be included therein.

ii) Whilst we agree with you that there could be differential settlement of the ground caused by the filling over the underlying silty clay layers, we think that such settlement would be slight and gradual and spread over "a long period of time". To avoid complication during the Maintenance Period, we therefore decided that the Contractor should also be asked to make good any such minor damage due to differential settlement. It may cause a slight increase in the tender price, but we believe it cannot be substantial. We have thus full control over the costs in the Project.

iii) In your Paragraph 6, we regret that we cannot agree with your contention that a building may be "sagged down" due to the differential settlement of the ground. As you are aware yourself, all the buildings are designed to be supported on piles adequately driven into the silty clay layers. Should any "sagging" occur, it must be due to the failure of the piling and not the differential settlement of the ground, and no doubt the Contractor should be held fully responsible for such failure all at his own cost.

iv) To avoid confusion in the Works, we must say again that the words "additional filling" is preferable to "reclamation" and should be adopted, where relevant, throughout the Text. This is also in conformity with the comments made by the Asian Development Bank.

3. Item 10: On the Structural Calculations

We would point out that the structural calculations form a primary part of the design works and were requested in the spirit of the Plan of Operation. A verbal explanation of the structural calculations may not serve the purpose, as the officer(s) to whom the calculations are explained may not be available to convey the same to others in future when the need arises.

4. Items 13 and 14: On the Sand Drain Method

We are glad to note that you have accepted our suggestion to insert the words "Displacement-type" under the Sand Drain Method.

As regards the investigation and control of the pre-compression of the ground, we do not mind what methods are to be used, as long as they are carried out and presented in a scientific way. Naturally, to calculate the coefficients of consolidation before and after the filling and surcharge loading, some borings will have to be done to obtain undisturbed soil samples for tests, in addition to other field observation and measurement which are mainly the job of the Site Engineer. In the Specification, there is already a clause to cover any extra boring work required, and if the tendered price for the boring proves too high, we may ask the Sarawak Director of Public Works to assist in the investigation, but we hope that the Site Engineer is experienced enough to give us full details of the procedure to be taken. The purpose of the investigation is not only to evaluate the degree of pre-compression of the ground that may be achieved, but also to determine whether the sand drain method is economically justified for use on the reclamation of the neighbouring areas in future.

I am, Sir,
Your obedient servant,

(LIANG KIM BANG)
Ag. Permanent Secretary,
Ministry of Communications and Works,
SARAWAK.

c.c. The Chief Secretary to the Government,
EPU, Prime Minister's Dept., Kuala Lumpur.

The Permanent Secretary, (Attn: Encho Shanmughalingam)
The Treasury, Kuala Lumpur

The Secretary,
Ministry of Transport, Kuala Lumpur

Mr. A. Tsusaka,
Asian Development Bank,
P.O. BOX 126, Makati, Rizal D-708, Philippines.

State Attorney-General)
State Financial Secretary)
Director of Public Works) Sarawak.
General Manager, KPA)
Government Ports Engineer)

TELEGRAPHIC ADDRESS
'HIR/ORKS KUCHING'

MINISTRY OF COMMUNICATIONS AND WORKS,
KUCHING, SARAWAK.

REF: MCW/511/10(41)

11th May, 1970.

Mr. A. Tsusaka,
Operations Manager,
Asian Development Bank,
P.O. Box 126,
Makati,
Rizal D-708,
Philippines.

Sir,

Comments on Draft Final Documents on Kuching
Port Expansion Project by the Bank

I would refer to the letter dated 10th April, 1970, from Mr. C.S. Venkat Rao enclosing the Bank's comments on the Draft Tender Documents for Jugboats and the Draft Contract Documents for Prime Contract Works, and to your letter ref. OPS/CLF:445 dated 22nd April, 1970, on the Pre-Tender Notice both addressed to the General Manager, Kuching Port Authority which were received on 18th April and 2nd May, 1970.

2. It is unfortunate that the letters together with the Bank's comments were received at such a late stage when all our comments and further comments on all the Draft Final Documents had already been forwarded to the Japanese Survey Team. The last instalment of our comments was sent to the Team on 21st April, 1970. The Team, as it is, had already expressed their deep concern that the submission of the Final Documents would now have to be deferred to either late May or early June. Any further delay in submission due to further late comments on the Draft Final Documents would no doubt delay the implementation of the Project, besides involving extra costs on designing which the Japanese Embassy in Kuala Lumpur had already expressed their displeasure. You had been extended a copy of my letter in this series dated 21st April, 1970, to Mr. T. Haruta where at paragraphs 7 and 8 the above fears were expressed and hence the suggestion of taking up my subsequent comments as an addendum to the Contract Documents.

3. Your comments on the Pre-Tender Notice had been noted but since it had already been advertised some 2½ months ago it is really too late now to revise the text. The Pre-Tender Notice will close on 27th of this month. It is, however, still possible, and within its rights, during the examination of the tenders for the Kuching Port Authority to request prospective tenderers to submit a list of their leading personnel whom they propose to assign to work on the Project.

4. The following are the replies, made point by point, on the Bank's comments submitted by Mr. Rao:-

(A) The Draft Contract Documents for Prime Contract Works

Forward

Please note that the page entitled "Forward" shown in Volume I originally submitted by the Japan Port Consultants has been dropped out in our revised Text. This is in conformity with comparative documents in West Malaysia, and we believe you have no objection to this.

Instructions to Tenderers (As amended)

(1) In Paragraph 8, Sub-paragraph (b), we feel that the wording is sufficiently clear, as the Tenderers will naturally have to apply to the Employer for the withdrawal of their deposits, if their tenders are unsuccessful. The revision as suggested is therefore not necessary.

J3

(2) In Paragraph 13, it is suggested that the first sentence be amended to read as follows:-

"All rates and prices and monetary statements in this Contract shall be calculated in Malaysian Dollars."

(3) The insertion of the words "in English" after the word "writing" in the 4th line of Paragraph 17 is agreed.

(4) The insertain of the words "East Malaysia time" after the word "noon" in the 4th line of Paragraph 22 is agreed.

(5) The whole Paragraph 9 - Foreign Currency Requirement should be deleted and substituted by the following:-

"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."

Tender (As amended)

(1) (i) In Paragraph 3, we feel that the wordings in our revised Text should stay, as this would give the Tenderers free choice to make a guarantee. This is also in conformity with local practice and comparative documents in West Malaysia.

(ii) In Paragraph 5, it is agreed that the words "from the date fixed for receiving the same" in the second line should be deleted and substituted by the words "beginning as 12:00 noon East Malaysia time on the closing date".

(2) It is agreed that the blank at the bottom of the Appendix (Page IX) together with the Note on the second page should be deleted and substituted by a "Schedule for Foreign Currency Requirement" and a Note such as shown in the following:-

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.

Note:- 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: .....

Form of Agreement (As amended)

(1) It is agreed that the parenthetical material in Paragraph 1 of the Form of Performance Bond be deleted (not the Form of Agreement).

(2) The addition of the words "and the Employer" in Clauses 13 and 40 is merely to ensure that the whole of the Works will be carried out by the Contractor in a smooth and orderly manner without any disruption, particularly in anticipation of any probable language difficulties between the Contractor and the Engineer. We would assure that there by no "another route of communication between the Employer and the Contractor", as it is clearly stated in the second sentence of Clause 13 that the Contractor shall take instructions and directions only from the Engineer or from the Engineer Representative. It is also stated in Clause 83 that the Contractor shall keep the Engineer and the Employer through the Engineer fully informed as to all matters connected with the Works.

(3) In Clauses 20 and 21, the deletion of sub-clause (2) of Clause 20 and the words "other than the excepted risks" in Clause 21 would safeguard the Kuching Port Authority against any loss and damage, and any such excepted risks should be covered by the Contractor in the policy or policies of insurance. It may cause higher price for the Tender, but we believe it cannot be substantial.

(4) In Clause 34:

(a) The additional sub-clause (8)(a) relating to rate of wages is not a repetition of sub-clause (3), nor any other sub-clause of Clause 34 has dealt with wages. (Note the sub-clause (3) of this Clause deals with "Alcoholic Liquor or Drugs".)

(b) The sub-clause (8)(b) Hours and Conditions of Labour is normal accepted wording and practice in this part of the world.

(5) In Clause 53, the new sub-clauses (2), (3), (4), (5) and (6) are in conformity with our local practice and we consider that these should stay.

Conditions of Contract

Conditions of Particular Application:

(1) It is agreed that the first sentence of Clause 11 should be deleted. Also, the word "nevertheless" in the first line of the second sentence be deleted.

(2) In Clause 10, sub-clause (i), it is agreed that the words "approved by the Employer" be changed to "furnished by the Employer".

(3) It is to be noted that the sub-clause (ii) of Clause 10 relating to cash deposit has been deleted in our subsequent amendment (copy of which was forwarded to you under my cover letter in this series of 26th February, 1970.

(4) It is considered that the last sentence of the first paragraph of Clause 14 is essential in normal engineering practice and should not be deleted. However, to make the intention more clear it is suggested that this sentence be substituted by the following:-

> "Should it be found at any time after approval has been given by the Engineer to any drawings submitted by the Contractor that the said drawings do not comply with the terms and conditions of the Contract Documents or that the details do not agree with drawings previously submitted and approved, such modifications and additions as may be deemed necessary by the Engineer shall be made therein by the Contractor and the work shall be carried out accordingly without entailing extra payment to the Contractor on account thereof.".

(5) In Clause 16, sub-clause (2), it is agreed that the words "including any Sub-contractor" be inserted immediately after the word "person"in the second line of sub-clause (2).

(6) We suggest that Clause 20 should stay as amended. The reason has already been given in Item 3 of "Form of Agreement (as amended)" above.

(7) Please refer to the sub-clause (14) (re-numbered) of Clause 34 relating to observance by Sub-contractors.

(8) In Clause 36, sub-clause (3), it is agreed that the word "and" should be retained.

(9) In Clause 44, we consider that the last sentence should stay, as it is based on the Tender Documents relating to Tanah Puteh Wharf and comparative contracts in West Malaysia.

(10) The reason we deleted the sub-clause (2) of Clause 47 is that the whole of the Project must be completed and handed over by the Contractor within the contract period of completion, so as to enable the Port to be operated without any interference. In this Project it is feared particularly that the dredging work might be delayed by the Contractor with the result that the Port cannot be operated even if all the other works in the Contract have been satisfactorily completed. We therefore decided not to accept the handing over by the Contractor of the Works in sections, and any delay in any part of the Works will have to be penalised in full.

(11) In Clause 48, the first proviso is intended for the information of the Contractor that the handing over of the Works in sections is not acceptable nor to his advantage. Anyway, in the wording the Contractor has been given option to agree with such arrangement or not, before the taking over of any section.

(12) In Clause 53, the inclusion of sub-clauses (2) to (6) and (9) is in conformity with our local practice.

(13) In Clause 60, sub-clause (9), our suggested amendment should stay, for the reason already given in Item 3 of "Form of Agreement (as amended)" above.

(14) In Clause 60, sub-clause (14), it is suggested that the first sentence be revised to read as follows:-

> "(14) The advances to be made on major plant shall cease when permanent work and materials on site to the value of thirty (30) per cent of the contract sum according to the respective items in the tender price submitted by the Contractor has been completed, exclusive of provisional sums and the provision for the cost of extra work (if any)."

(15) In Clause 60, sub-clause (20):

(i) The first paragraph should be amended to read as follows -

> "All rates and prices and all monetary statements in this Contract shall be calculated in Malaysian Dollars."

(ii) The second sentence of paragraph two should be amended to read as follows -

> "The rates of exchange for all calculations relating to foreign currency requirement shall be 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, and as stated in the Appendix to the Tender."

(16) In Clause 60, subclause (21), the word "whom" in the third line has been corrected.

(17) The Conditions of Particular Application to Dredging Work (as Part III to the Conditions of Contract) have been prepared and forwarded to you under cover of my letter in this series of 3rd April, 1970. There is no true reclamation work involved in the Prime Contract, and the Japan Port Consultants had been asked to revise the wordings, where relevant, in their final submission.

Specification (Civil Engineering, Building and Sanitary Works)

(1) Ever since your approval of the site clearance and reclamation work of this Project to be executed by local tendering, the Japan Port Consultants has been asked to revise the whole Chapter - Reclamation in Volume I. The revised text is being awaited.

(2) The Japan Port Consultants had been asked to include the contributions to the Sarawak Electricity Supply Corporation as well as the Kuching Water Board under separate items in the Bill of Provisional Sums and Contingency. These contributions together with correct provisional sums for both works will be shown in the revised text.

Specification and Bills of Quantities (Electrical Engineering Works)

(1) The electrical works will now be a local tender, and local contractors should know and comply with Notice PWD 77.

(2) It is suggested that the words "Proper Authority" in the 6th paragraph of Clause E109 be changed to "the authority concerned".

Specification and Bills of Quantities (Passengers Reception Building and Workshop)

(1) The title on the cover of Volume 7 is correct, but the Japan Port Consultants should change the Heading for Part I in the text to "Special Specification for Construction of Passengers Reception Building and Workshop", as the specifications are applicable to both buildings.

(2) The Passengers Reception Building and Workshop are planned for future extension and not included in the present Contract. Therefore, the tender documents including the electrical works have to be prepared and bound separately.

(3) In Clause E101, second paragraph, the fact that "Civil Engineering Works are included in the Prime Contract" has been mentioned in the revised text being finalised by the Consultants.

(4) The comments are noted and will be incorporated in the revised text.

(B) The Draft Tender Documents for Tugboats

The following amendments have been made to our Revised Draft Tender Documents for Tugboats, in accordance with your comments made in your letter dated 10th. April, 1970.

Instructions to Tenderers

(1) In Clause 4 - Currency, the first sentence should be amended to read as follows:-

"All prices in this Contract shall be stated in Malaysian Dollars and shall be quoted on the basis of C.I.F. Kuching."

(2) The following sentence should be added at the end of Clause 5 - Foreign Currency Requirement:-

"The rates of exchange for all calculations relating to foreign currency requirement shall be 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."

(3) Clause 8 - Validity of Tender should be amended to read as follows:-

"The Tender shall remain valid for ninety (90) days beginning at 12:00 noon East Malaysia time on the same day of the closing date and no tenderer may withdraw his tender within that period."

Tender

(1) Clause 5 should be amended to read as follows:-

"We agree to abide by this Tender for a period of ninety (90) days beginning at 12:00 noon East Malaysia time on the same day of the closing date fixed by you and it shall remain binding upon us and may be accepted at any time before the expiration of that period."

(2) In the Appendix to Tender:

i) The words "Penalty for Insufficient Bollard Pull" should be changed to "Liquidated Damanges for Insufficient Bollard Pull".

ii) The words "Penalty for Insufficient Free Running Speed" should be changed to "Liquidated Damages for Insufficient Free Running Speed."

Performance Bond

The Parenthetical material in paragraph 1 of the Performance Bond should be deleted.

Agreement

(1) The word "is" in the first line should be deleted. Also, the full stop sign after the word "part"in the tenth line should be omitted.

(2) Clause 1 - Subject Matter

Sub-clause 1 - Description:-

i) The words "of 1,000 B.H.P." in the second line of the first paragraph should be changed to "each having 1,000 B.H.P.".

ii) The words "and the Detailed Programme" should be added immediately after the word "Plan" in the third line of paragraph two.

iii) The third paragraph should be amended to read as follows:-

"If there is any discrepancy between the provisions of this Agreement and the Specifications, the provisions of this Agreement shall prevail;".

Sub-clause 3 - Principal Particulars of Vessels:-

i) In paragraph (b) - Propelling Machinery (Outline), the words "The Vessels" in the first line should be changed to"Each vessel".

ii) In paragraph (c) - Gross Tonnage, the words "The Vessels" in the first line should be changed to "Each vessel". Also, the words "in writing" should be added at the end of this paragraph.

iii) In paragraph (d) - Bollard Pull and Free Running Speed, the words "the Vessels" in the second line should also be changed to "each vessel".

(3) Clause 2 - Inspection

The words "at their own cost" should be inserted after the word "shall" in the first line of sub-clause 3.

(4) Clause 3 - Completion and Liquidated Damages

i) The first sentence of sub-clause (3) should be amended to read as follows:-

"Should the completion and delivery of either of the Vessels under the terms and conditions of this Agreement be delayed by reason of any cause or circumstance as stipulated in Clause 13 - Force Majeure, then a fair and reasonable extension of time of delivery shall be granted by the Purchasers:".

(Note that the proviso in this sub-clause should be retained as it stands.)

ii) The following sentence should be added at the end of sub-clause 4:-

"and shall be deducted from the Performance Bond mentioned in the Appendix to the Tender if sufficient and if not sufficient shall be deducted from the Contract Price then unpaid if sufficient and if not sufficient shall be recovered as a debt due from the Builders."

(5) Clause 4 - Performance Bond

The second sentence beginning with the words "The Bond shall ....." to the end of this Clause should be deleted and substituted by the following:-

"The Bond shall be in the form of a Bond with an insurance company or licensed bank operating in Malaysia or with two good and sufficient sureties (in either case to be approved by the Purchasers) to be jointly and severally bound together with the Builders to the Purchasers. Such Bond shall be in a form furnished by the Purchasers."

(6) Clause 7 - Tests and Trial Runs

i) The sub-clause 3 should be amended to read as follows:-

"Non-attainment of the performance of either or both of the Vessels as mentioned in sub-clause 2 above and as stipulated in the Specifications shall incur Liquidated Damages or rejection as detailed therein. The Liquidated Damages shall be deducted from the Performance Bond mentioned in the Appendix to the Tender if sufficient and if not sufficient shall be deducted from the Contract Price then unpaid if sufficient and if not sufficient shall be recovered as a debt due from the Builders.

In the event of rejection, all previous payments made by the Purchasers shall be refunded to them by the Builders."

(7) Clause 8 - Delivery and Final Trials

The following words in the last four lines of sub-clause 2 should be deleted:-

"and all liability of the Builders under this Agreement shall thereupon cease, save in respect of the terms of guarantee and patent rights as provided under Clauses 9 and 10 hereof".

(8) Clause 9 - Guarantee

The whole sub-clause 5 should be deleted.

(9) Clause 11 - Contract Price and Payment

i) The words "in the Specification or the General Arrangement Plan referred to" in the second and third lines of sub-clause 2 should be changed to "in the Specifications referred to".

ii) The words "in the currency of the country from which the Vessels are procured" in the second and third lines of sub-clause 4 should be deleted and substituted by the words "in Malaysian Dollars".

(10) Clause 13 - Force Majeure

This new clause should be inserted such as follows:-

"Neither the Builders nor the Purchasers shall be responsible for any failure to fulfill their obligations hereunder to the extent that such failure is due to war, blockade, revolution, insurrection, civil commotion, riot, mobilization, strike, lockout, act of God, plague or other epidemic, fire, flood, obstruction to navigation, act of government or public enemy or any other cause or circumstance beyond the control of the Builders or the Purchasers respectively and which could not have been reasonably foreseen or guarded against by them."

(Note that the subsequent clauses should be re-numbered accordingly.)

(11) Clause 14 - Arbitration

The second sentence of this Clause should be deleted and substituted by the following:-

"If there is no agreement within one calendar month, the arbitrator shall be appointed by the Chief Justice of the High Court in Borneo. Any arbitration hereunder shall be in accordance with the Arbitration Ordinance or any other written law relating to arbitration for the time being in force in Sarawak, and the award of the arbitrator shall be final and binding upon both the parties hereto."

Tender Notice

Paragraph (C) - Source of Funds should be amended to read as follows:-

"The construction of the tugboats will be financed, in part, by a loan from the Asian Development Bank, and therefore, tenders will be accepted only from builders who are incorporated under the laws of member countries and who will construct the vessels within a member country of the Bank.".

5. I may clarify that I am replying to your letters instead of the General Manager, Kuching Port Authority, and this is because the Contract Documents are still the concern at the Government-to-Government level under the terms of the Inter-Governmental Agreement.

I am, Sir,
Your obedient servant,

(LIANG KIM BANG)
Ag. Permanent Secretary,
Ministry of Communications
and Works,
SARAWAK.

J11

c.c. The Chief Secretary to the Government,
Economic Planning Unit,
Prime Minister's Department,
Kuala Lumpur.

The Permanent Secretary, (Attn: Encho Shanmughalingam)
The Treasury,
Kuala Lumpur.

The Secretary,
Ministry of Transport,
Kuala Lumpur.

Mr. T. Haruta, - (with copies of letters and
Japan Port Consultants Ltd., attachment from ADB mentioned
Kyoei Building, at paragraph 1 above)
No. 12-6, Shibuya 2-Chome,
Shibuya-ku,
Tokyo, Japan.

State Attorney General, Sarawak.

State Financial Secretary, Sarawak

Director of Public Works, Sarawak.

General Manager, KPA, Sarawak.

Mr. James Hwang, Government Ports Engineer, Sarawak.

ASIAN DEVELOPMENT BANK
COMMERCIAL CENTER P. O. BOX 126
MAKATI, RIZAL D-708, PHILIPPINES

TELS. 88-87-81, 88-26-11
CABLE ADDRESS: ASIANBANK

10 April 1970

APR 13 1970
RECEIVED
SEC. DEPT.

Mr. Andrew Chan Nam Wah
Acting General Manager
Kuching Port Authority
Kuching, Sarawak

Dear Mr. Andrew Chan:

The following draft contract documents and draft tender documents for tugboats sent to the Bank from time to time in the latter half of February and March 1970 were examined in the Bank. A note giving our comments is enclosed for your consideration.

Draft Tender Documents for Tugboats

1. Foreword
2. Conditions of Tendering
3. Tender (with Appendix)
4. Tender Guarantee
5. Performance Bond
6. Agreement

Draft Contract Documents:

1. Foreword
2. Instructions to Tenderers (as amended)
3. Tender (as amended)
4. Form of Agreement (as amended)
5. Tender Guarantee
6. Performance Bond
7. Conditions of Contract
   a. General Conditions (as substituted)
   b. Conditions of Particular Application (as amended)
8. Specification (Civil Engineering, Building and Sanitary Works)

[illegible] 20/4 [illegible] 20/4

9. Bills of Quantities (Civil Engineering, Building and Sanitary Works)
10. Specification and Bills of Quantities (Electrical Engineering Works)
11. Instructions to Tenderers, Conditions of Contract and Specification (Cargo Handling Equipment) } Not enclosed
12. Specification (tugboats), and
13. Specification and Bills of Quantities (Passenger Reception Building and Workshop).

After consideration of our comments, we await for our approval, in terms of para. 2(b) of Side Letter No. 2, the draft forms of contract, specifications and other tender documents.

Very truly yours,

C. S. VENKAT RAO
Operations Manager

Enc.

COMMENTS ON THE DRAFT TENDER DOCUMENTS FOR TUGBOATS

I. Foreword

Please see para. 1 of the Comments on the Draft Contract Documents.

II. Conditions of Tendering

1. In Paragraph 7(b), the unsuccessful Tenderers are authorized to withdraw their deposits. However, since the deposits are to be credited to the Authority, according to paragraph 7(a)(ii), it is difficult to see how the unsuccessful Tenderers may unilaterally withdraw their deposits. Perhaps this provision should indicate that the Authority will return the deposits to the unsuccessful Tenderers.

This paragraph may, therefore, be revised to read as follows:

> "(b) The cash deposit or the bank guarantee will be retained by the Kuching Port Authority until a Tender has been finally accepted; thereafter the Kuching Port Authority will return cash deposits to the respective unsuccessful Tenderers who have made such cash deposits. (Bank guarantees offered by unsuccessful Tenders will become ineffective when the Kuching Port Authority notifies such unsuccessful Tenders in writing that their Tenders are unsuccessful.) In the case of the successful Tenderer, the cash deposit will be retained by the Kuching Port Authority, or the Tenderer's Bank guarantee will remain effective, until a contract has been signed and the Performance Bond referred to in the Contract Documents has been duly executed."

2. As there is some conflict between paragraphs 8 and 13, paragraphs 8 and 13 may be revised to read as follows:

Paragraph 8

> "Tenders shall remain valid for ninety (90) days beginning at 12:00 noon East Malaysia time on the same day of the closing date."

Paragraph 13

"The Tender may be withdrawn by the Tenderer by a written request or telegraph received by the Chairman, Kuching Port Authority, before 12:00 noon East Malaysia time on the same day of the closing date."

III. Tender

1. In paragraph 3, perhaps it should be made more clear that the Tenderer has only to specify one type of guarantee.

2. Paragraph 5 should be amended to accord with paragraph 8 of the Conditions of Tendering as under:

"We agree to abide by this Tender for a period of ninety (90) days beginning at 12:00 noon East Malaysia time on the same day of the closing date fixed by you and it shall remain binding upon us and may be accepted at any time before the expiration of that period."

IV. Tender Guarantee

No comments.

V. Performance Bond

In paragraph 1, the Authority's position should be strengthened by deleting the parenthetical material. If this deletion is made, then it might be reasonable to trigger the indemnification only on a breach or default of the Contractor's obligations.

VI. Agreement

1. In Clause 1, paragraph 1, it should be made clear that each tug is to have engines of a total power of 1000 B.H.P.

The first sentence of this paragraph may be revised to read as follows:

"Two (2) steel-hulled, twin screw, diesel-driven harbour tugs, each having 1,000 B.H.P., of the class described below."

In the first and second lines from the bottom of page 12, the words "Specifications and General Arrangements" appear. This is somewhat confusing as "Specifications and the General Arrangement Plan" were previously collectively defined as "Specifications".

With respect to the provisions concerning monetary and time costs resulting from alterations, the appointment of the expert and obtaining his decision could require considerable time. It would be desirable to give the purchasers authority to order alterations effected with the expert making a later determination of the cost of time and money involved.

2. In Clause 1, paragraph 3(b), the engine specifications should be changed to coincide exactly with the engine specifications set forth in the specifications for the tugs.

This paragraph may, therefore, be revised to read as follows:

"Each vessel shall be equipped, in accordance with specifications, with a set of marine diesel engines, each engine developing a maximum continuous output of 500 B.H.P. at 400 R.P.M. or less."

In paragraph 3(c), the approval should be specified to be in writing.

3. In Clause 2, the second paragraph is susceptible to the interpretation that the purchasers will have to pay for the remedy of any defects revealed by the inspections. A specific provision should be included here to the effect that the remedying of such defects will be for the account of the Borrowers. This paragraph may, therefore, be revised to read as follows:

"All fees and charges incidental to inspection payable on account of the construction of the Vessels

shall be for the account of the Purchasers. However, the expense of making good the defect shall be for the account of the Builders."

4. In Clause 3, paragraph 4, no mention is made of the Performance Bond. It is not clear how the existence of the Performance Bond affects the liquidated damages provided for in this paragraph. At this point, it should be noted that the Performance Bond is nowhere mentioned in this Agreement, and some mention of the Bond should be made and the relation of the Bond to the various liquidated damage provisions should be made explicit.

5. In Clause 4, paragraph 2, "her" in the fifth line should be changed to "their".

6. In Clause 5, paragraph 2, there is again the problem of how the liquidated damages specified relate to the Performance Bond.

7. In Clause 5, paragraph 3, "this" in the last line should be changed to "the preceding".

8. In Clause 6, paragraph 1, it should be made clear that there should be one 6-hour trial run at maximum power for each of the vessels. This paragraph may be revised to read as follows:

"1. Trial runs shall be made at sea, and the duration of at least one trial run for each Vessel shall be 6 hours at the maximum power of 1,000 B.H.P."

9. In Clause 6, paragraph 5, it may be better to specify the delivery period to be "within 18 months after the delivery of the first Vessel."

10. In Clause 7, paragraph 1, the acknowledgment that the Builders' liability ceases may not be advisable.

11. Clause 7, paragraph 4 be deleted, as it overlaps to a large extent what is already set forth in Clause 7, paragraph 1.

12. Clause 9, paragraph 4 contradicts the currency provisions in paragraph 4 of the "Conditions of Tendering".

13. In Clause 8, paragraph 5, some provision for retention money should be made in accordance with paragraph 4.5 of the ADB Guidelines for Procurement.

14. In Clause 11, there is no "force majeure" definition. A reasonably specific definition should be included in this Clause. This Clause may be revised to read as follows:

> "Neither the Builders nor the Purchasers shall be responsible for any failure to fulfill their obligations hereunder to the extent that such failure is due to war, blockade, revolution, insurrection, civil commotion, riot, mobilization, strike, lockout, act of God, plague or other epidemic, fire, flood, obstruction to navigation, act of government or public enemy or any other cause or circumstance beyond the control of the Builders or the Purchasers respectively and which could not have been reasonably foreseen or guarded against by them."

15. In Clause 12, "her" in the first line should be changed to "their".

16. In Clause 13, only loss which is not due to the Builders' fault should be the subject of the settlement. The first sentence of this Clause be revised to read as follows:

> "Save as provided in Clause 12 hereof, if, due to no fault of the Builders, before the Vessels are delivered to the Purchasers they become a total loss or are so badly damaged that the parties agree that it would be uneconomic to complete the construction of the Vessels in accordance with the terms of this Agreement, the parties shall endeavor to agree upon a settlement fair and equitable to each of them..."

17. Clause 14 should set forth a procedure for the appointment of an arbitrator to act, which would become operative in the event that the parties were unable to agree upon the selection of an arbitrator.

18. In Clause 16, in the first sentence, reference should be made to partnership as well as to "individual or company". Perhaps the phrase "to any other individual or company" should be changed to "to any third party". In the last sentence, the words "or the legitimate assigns" should be deleted.

19. A reference to the Conditions of Contract Agreement which are mentioned in the Tender and a reference to the detailed programme which is mentioned in paragraph 6 of the Conditions of Tendering should be added to the Agreement. Also, provision should be made for which document is to govern in the event of a conflict among the various contract documents.

COMMENTS ON THE DRAFT CONTRACT DOCUMENTS

Foreword

1. Paragraph 4 indicates that the Kuching Port Authority (the "Authority") has received a loan from the ADB towards the cost of the Kuching Port Expansion Project. This statement is not accurate because the ADB loan actually was made to the Government of Malaysia, not to the Authority. The paragraph may, therefore, be revised to read as follows:

> "The Government of Malaysia has received a loan in various currencies from the Asian Development Bank, the proceeds of which it is relending through the State of Sarawak to the Authority toward the cost of new port facilities. It is intended that a portion of the proceeds of this loan will be applied to the majority of the payments under the contract for which this Invitation to Tender is issued. Payments by the Kuching Port Authority will be made only upon approval by the Asian Development Bank of an application presented by the Authority in accordance with the terms and conditions of the Loan Agreement and will be subject in all respects to the terms and conditions of the Agreement."

Instructions to Tenders (as amended)

1. In Paragraph 8, sub-paragraph (b), the unsuccessful Tenderers are authorized to withdraw their cash deposits. However, since the deposits are credited to the Authority according to Paragraph 8, sub-paragraph (a)(i), it is difficult to understand how the unsuccessful Tenderers may unilaterally withdraw their deposits. The paragraph may, therefore, be revised to read as follows:

> "(b) The cash deposits or the Bank guarantee will be retained by the Employer until a tender shall have been definitely accepted; thereafter the Employer will return cash deposits to the respective unsuccessful Tenderers who have made such cash deposits. (Bank guarantees offered by unsuccessful Tenderers will become ineffective when the Employer notifies such unsuccessful Tenderers in writing that their Tenders are unsuc-

cessful.) In the case of the successful Tenderer, the cash deposit will be retained by the Employer, or the Tenderer's Bank guarantee will remain effective, until a Contract has been signed and the Performance Bond referred to in the Contract Documents has been duly executed."

2. Reference to the Malaysian Dollar as the "Official Currency" for this contract does not appear to be correct.

3. In Paragraph 17, the correspondence with the Consulting Engineers should be required to be in English. The words "in English" may, therefore, be inserted immediately after "writing" in the fourth line of this paragraph.

4. Paragraph 22 is not so clear as it might be concerning the time such a request of withdrawal must be received. This paragraph may be revised to read as follows:

"The Tender may be withdrawn by the Tenderer by a written request or by telegraph received by the Chairman, Kuching Port Authority, before 12:00 o'clock noon East Malaysia time on the closing date."

Tender (as amended)

1. In Paragraph 3, perhaps it should be made more clear that the tenderer need specify only one type of security as a Tender Guarantee. Paragraph 5 may be revised to read as follows:

"We agree to abide by the Tender for a period of three 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 date."

2. On the second page of the Appendix, instruction (3) is incorrect. Not only does it not fit in with

respect to the blank at the bottom of the first page to which it refers, but also it would be impossible for the Tenderers, at the time when they submit their Tenders, to know the foreign exchange rates prevailing on the date the Agreement is signed. This needs to be amended.

Form of Agreement (as amended)

1. In Paragraph 1, the Authority's position can be strengthened by deleting the parenthetical material. If this deletion is made, then it might be reasonable to trigger the indemnification only on a breach or default of the Contractor's obligations.

2. Clauses 13 and 40 - Additional words "and the Employer" will create difficulties to the Contractor because it will add another route of communication between the Employer and the contractor. Similar principle can also be applied to Clause 40. It may be advisable to delete the word "Employer".

3. Clauses 20 and 21 - It is suggested to delete sub-clause (2) of Clause 20 and to delete the words "other than the excepted risks" in Clause 21. It is different from normal practice and will cause higher price for the tender.

4. Clause 34 - The additional sub-clause (8)(a) is repetition of sub-clause (3) and, therefore, it may be deleted. The sub-clause (8)(b) is not proper because it will be difficult to determine the level of working conditions of similar trade or industry.

5. Clause 53 - The new sub-clauses (2), (3), (4), (5) and (6) are not usually used in other parts of the world. If they are in conformity with local practice, they may be retained as they are but if they are not, then these sub-clauses are not recommendable.

Conditions of Contract

Completion of Particular Application

1. In Clause 6, sub-clause (3), there is a disclaimer of responsibility for the accuracy of any particulars

given or records or quantities referred to in the Contract Documents which are supplied to the Contractor for his information. This provision seems to conflict with the first sentence of Clause 11 of the General Conditions. Perhaps it would be advisable to delete the first sentence of Clause 11 of the General Conditions.

2. In Clause 10, sub-clause (i), a provision is made that "such Bond should be in a form approved by the Employer". Since the form of the Bond has already been specified by the Employer, perhaps it would be less confusing if the sentence were to read as follows:

"Such Bond should be in the form furnished by the Employer".

3. In Clause 10, sub-clause (ii), a cash deposit is specified as a suitable Bond. However, the Tender specified only that a Performance Bond be supplied in the form of a guarantee. Therefore, this sub-clause should be deleted.

4. The last sentence of the first paragraph of Clause 14 may give rise to some objections on the part of contractors because of the rather open-ended authority which it gives the Engineer to alter or add to the Contractor's programmed responsibilities.

5. In Clause 16, sub-clause (2), the words "including any Subcontractor" should be inserted immediately after the word "person" in the third line rather than immediately after the word "works".

6. In Clause 20, the suggested deletions will likely give rise to objections from some Contractors.

7. In Clause 34, it is noted that no provision is included to the effect that the Contractor should be responsible for the compliance by subcontractors with various provisions of Clause 34.

8. In Clause 36, sub-clause (3), the word "and" should not be deleted.

9. In Clause 44, Contractors may object to the last sentence.

10. In Clause 47, it is believed that Contractors will probably object to the deletion of sub-clause (2).

11. In Clause 48, it is believed that the Contractors may object to the first proviso, but amendment at this stage is not recommended.

12. In Clause 53, it is believed that Contractors will probably object to sub-clauses (2)-(6) and (9).

13. In Clause 60, sub-clause (9), with the suggested amendment of Clause 20, the reference to Clause 20 is proper.

14. In Clause 60, sub-clause (14), the formula expressed in the second sentence does not take into account any temporary advances made on materials for permanent work. Such advances for materials should be taken into account in this formula.

15. In Clause 60, sub-clause (20), the statement "The Official Currency for this Contract shall be Malaysian Dollar" is at best misleading, as there is no official currency for the Contract and should be substituted by the following:

> "The Employer may make payments to the Contractor in currencies other than Malaysian Dollars, provided full details of the ...."

16. In Clause 60, sub-clause (21), the word "whom" in the third line should be changed to "when".

17. No Conditions of Dredging and Reclamation Work have been attached to the Conditions, even though reference is made to such dredging and reclamation work conditions in the table of contents to Volume I of the Contract Documents.

Specification (Civil Engineering, Building and Sanitary Works)

1. In Paragraph S904, there are some words missing in the third line.

2. With respect to Clause S2702, it is noted that Mr. Chan, the Acting General Manager of the Kuching Port

Authority, enclosed a revision of this Clause with his letter to Mr. Tsusaka of March 19, 1970. The revision suggested by Mr. Chan has several inherent problems:

Sub-Clause (i) indicates that the provisional sum of M$450,000 should be allowed for electrical engineering works including a contribution to the Sarawak Electricity Supply Corporation. However, in another portion of the communication, Mr. Chan indicated that the contract to the electrical engineer will be for M$450,000. It may be clarified if the projected amount of the electrical engineering contract includes a contribution to the Sarawak Electricity Supply Corporation.

In Sub-Clause 2(ii), there is a specification that profit and overhead charges may be allocable with respect to the actual cost of electrical engineering works executed and completed by the Nominated Sub-Contractor. However, in Sub-clause (i), the works of the Nominated Sub-Contractor are defined or specified to include a contribution of the Sarawak Electricity Supply Corporation. No mention is made of any profit or overhead charges with respect to the contribution to the Kuching Water Port. It should be made clear in the sub-clause whether the respective contributions can support profits and overhead charges.

Bills of Quantities (Civil Engineering, Building and Sanitary Works)

1. No comments.

Specification and Bills of Quantities (Electrical Engineering Works)

1. In Clause E105, a contractor which is not from Sarawak would probably not know what is meant by Notice PWD 77. Therefore, the contents of this Notice may be set forth in this Paragraph.

2. In the sixth paragraph of Clause E109, references to "Proper Authority" do not appear to be correct.

Specification (Tugboats)

1. No comments.

Specification and Bills of Quantities (Passenger Reception Building and Workshop)

1. The title on the cover of Volume 7 is misleading in that the volume contains a specification for a passenger reception building but not a specification for a workshop. Also the volume contains specification for electrical engineering works but no mention is made of this specification on the cover of the volume.

2. It should be made clear how the Specification for Electrical Engineering Works in Volume 7 relates to the Specification of the electrical engineering works contained in Volume 4. Are there to be two electrical engineering contracts? If not, then why not combine the two Specifications?

3. In Clause E101, second paragraph, the fact that Civil Engineering Works are included in the Prime Contract may be mentioned.

4. Comments 1-4 made under Section X above also apply with respect to the Electrical Engineering Works Specification in Volume 7.

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Ops/TOT:445
22 April 1970

Mr. Andrew Chan
Acting General Manager
Kuching Port Authority
Kuching, Sarawak
Malaysia

Dear Mr. Chan:

Please refer to your letter of April 1, 1970 forwarding Pre-Tender Notice and revised Abbreviated Specifications. We in the Bank have examined these and found them in order except the following two comments on the Pre-Tender Notice which may please be considered:

Pre-Tender Notice

1. Paragraph (C) - The statement as to the restrictions upon procurement is inadequate and should be revised to read as follows:

> "....and, therefore, tenders will not be accepted from tenderers who are incorporated under the laws of a country which is not a member of that Bank or who propose to offer goods which originate from a country which is not a member of that Bank."

2. Paragraph (D) - The prospective tenderers may be instructed to list the leading personnel whom they propose to assign to work on the project, and the background of such personnel, under sub-paragraph 2, "Particulars of technical capacity of the company".

Very truly yours,

Akira Tsusaka

AKIRA TSUSAKA
Operations Manager