

Directorate of Roads, Bridges and Flood Control
Ministry of Infrastructure
The Democratic Republic of Timor-Leste

**IMPLEMENTATION REVIEW STUDY
ON
THE PROJECT
FOR
THE IMPROVEMENT OF MOLA BRIDGE
IN
THE DEMOCRATIC REPUBLIC OF TIMOR-LESTE**

December 2007

JAPAN INTERNATIONAL COOPERATION AGENCY

NIPPON KOEI CO., LTD.

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Ministry of Infrastructure
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PREFACE

In response to a request from the Government of Timor-Leste, the Government of Japan decided to conduct an implementation review study on the project for the Improvement of Mola Bridge in the Democratic Republic of Timor-Leste and entrusted the study to Japan International Cooperation Agency (JICA).

JICA sent to Timor-Leste a study team from September 19, 2007 to September 29, 2007.

The team held discussions with the officials concerned of the Government of Timor-Leste, and conducted a field study at the study area. After the team returned to Japan, further studies were made and the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of Timor-Leste for their close cooperation extended to the teams.

December 2007

Masafumi Kuroki

Vice-President

Japan International Cooperation Agency

December 2007

Letter of Transmittal

We are pleased to submit to you the basic design study report on the project for the Improvement of Mola Bridge in the Democratic Republic of Timor-Leste.

This study was conducted by Nippon Koei Co., Ltd., under a contract to JICA, during the period from September, 2007 to December, 2007. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Timor-Leste and formulated the most appropriate design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

Hiroshi Fujisawa

Chief Consultant

Implementation Review Study Team on
the project for the Improvement of Mola Bridge
in the Democratic Republic of Timor-Leste
Nippon Koei Co., Ltd.

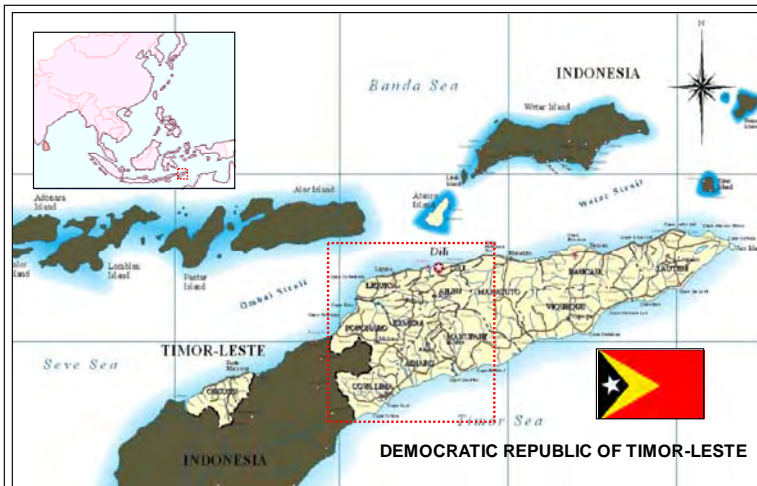
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The Project for the Improvement of Mola Bridge

LOCATION MAP



The Project for the Improvement of Mola Bridge

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Abbreviations

A/P	:	Authorization to Pay
B/A	:	Banking Arrangement
B/D	:	Basic Design (Study)
DRBFC	:	Directorate of Roads, Bridges and Flood Control
D/D	:	Detailed Design
EMP	:	Environment Management Plan
E/N	:	Exchange of Notes
JICA	:	Japan International Cooperation Agency
US\$:	United States Dollar

CHAPTER 1

BACKGROUND OF THE PROJECT

CHAPTER 1 BACKGROUND OF THE PROJECT

After the decision on the extension of self-rule of former East Timor at the referendum conducted by the Indonesian Government in August 1999, disturbance and destruction occurred in this country. As a result, 70% of the country's infrastructure was destroyed. Under the control of the United Nations Transitional Administration in East Timor (UNTAET), economic conditions improved drastically thanks to the reconstruction effort aiming at the nation's independence. However, the economic conditions became worse again after the independence of the Democratic Republic of Timor-Leste (hereinafter referred to as "Timor-Leste") in May 2002, due to the big reduction of foreign staff engaged in the aid projects. Under such circumstances, Timor-Leste (one of the less developed countries where the poorest segment of the population reaches 41% on a national level) set a goal of poverty-fighting through economic growth mainly implemented through human resource development, health care, improvement of agricultural productivity, administrative efficiency and infrastructure development.

The existing Mola Bridge (146 km far from Dili on the way to Suai from Dili and Casa) is located about 9 km upstream of the river mouth where the width of the Mola River is about 400 m. The bridge is composed of 3 steel truss spans of 180m long each. The bridge on the left bank was constructed by the Indonesian Government in 1996. The Suai side embankment of the Mola Bridge was flushed away and collapsed after a flood in 2000, therefore, district transportation is only possible during the dry season and passenger cars cannot pass throughout the year. Thus, it was decided that the Mola Bridge should be improved by extension with a new bridge on the Suai side.

In response to a request from the Government of the Democratic Republic of Timor-Leste, the Government of Japan decided to conduct a basic design study on the Project for the Improvement of Roads and Bridges, and the Japan International Cooperation Agency (JICA) sent to Timor-Leste the basic design study team in 2003.

As a result of the basic design study, a project composed of two phases was originally designed: Road construction in the first phase; and the Mola Bridge construction in the second phase. This plan was confirmed by both the Japanese and Timor-Leste Governments in 2003, and the first phase road construction was completed in March 2006, and the detailed design for the second phase started in March 2006.

Based on the study results, the Japanese government was scheduled to deliberate on the financing for the Project at a Cabinet meeting in May 2006. This was however postponed because almost two and a half years have passed after completion of the basic design study and the project cost estimated in the study was no longer valid since prices of construction commodities have risen in the last two years mainly due to the worldwide increase of steel and oil prices. It was therefore recognized that the project cost should be updated if the Project is to be resumed in this year.

After political stability was confirmed, JICA decided to resume the implementation review study for the Mola Bridge construction. In the initial plan, the Mola Bridge was planned to be constructed with the same alignment as the section which was flushed away in 2000. However, the alignment was changed this time to be straight and its detailed design was completed accordingly in March 2007.

The Timor-Leste side agreed to select the straight alignment for the Mola Bridge instead of the curved one which had been selected during the detailed design study stage, considering the road alignment, river cross-section and construction cost, but this requires resettlement for the approach road on the right bank of the Mola River.

Considering the above situation, the Government of Japan decided to conduct an Implementation Review Study on the Project for the Improvement of Mola Bridge and dispatched a study team to Timor-Leste from September 19 to September 29, 2007 to re-estimate

the project cost by investigating the latest unit costs and procurement condition in the country, as well as to discuss and confirm the implementation schedule including checking the present status of the recipient government's obligations and components. After the Study Team returned to Japan, further studies were conducted and this report was completed.

CHAPTER 2

CONTENTS OF THE PROJECT

CHAPTER 2 CONTENTS OF THE PROJECT

2-1 BASIC CONCEPT OF THE PROJECT

2-1-1 OVERALL GOAL AND PROJECT PURPOSE

The existing Mola Bridge is located on the national road between the Capital City of Dili and Suai, a main city in the southern part of Timor-Leste, and about 9km upstream of the Mola River mouth where the river width is about 400m and the steel trussed bridge (bridge length : 180m) is constructed on the left bank. Up to now, about 220m long causeways connected to the existing bridge were built twice on the right bank. But they were washed away by flood water in the rainy season just after their construction. At present only four-wheel drive vehicles and trucks can cross the river on the stony riverbed track except during flood in the rainy season. Traffic safety also is not ensured for pedestrians crossing the river.

The Timor-Leste Government expects to resolve the traffic bottleneck, improve mobility on the national road network, activate the regional development and agricultural production, and enhance the stability of people's livelihood through the implementation of the Project.

A new bridge construction as an extension of the existing bridge is required as planned in the Basic Design Study and it is confirmed through this implementation review study that no change of the project scope and concept is required.

2-1-2 OUTLINE OF THE PROJECT

The Government of Timor-Leste requested the Government of Japan to extend Japan's Grant Aid for the construction of a new bridge and approach roads connected to the existing roads which are finally outlined in the implementation review study as follows:

- Construction of a new 216m long bridge connecting the existing bridge on the left bank of the Mola River, with a straight road alignment.
- Construction of the 210m long approach road on the Suai side including relocation of two (2) houses to be done by the Government of Timor-Leste.

The planed location and type of the new bridge, etc. have been confirmed through field survey and geotechnical investigation. The facilities designed according to the basic policy are as shown in Table 2-1:

Table 2-1 Facilities of the Project

Item		Facilities
Improvement Area (Alignment)		Total Project Length : 310m (extension of a new bridge on Suai side on the straight line of the existing bridge)
Bridge	Superstructure	Steeled Trussed Bridge 4 simple spans (Galvanized) Structure width 7.43-7.47m, Structure height 6.07m
	Bridge Length	L=216m (Span Arrangement : 50+55+55+50m)
	Bridge Width	Overall width : 7.0m Carriageway : Dual (2) lane W=6.0m (3.0m+3.0m) Curb : 0.50m width of both sides

	Abutment	Reversed T-type/Foundation: Steel Tubular Pile of $\phi 500\text{mm}$ 2nos. Retaining wall at A1/ Foundation: Steel Tubular Pile $\phi 500\text{mm}$ 1no. A1 Riverbed Protection : Gabion Mattress A2 Revetment Protection : Gabion Mattress
	Pier	T-shaped Column type/ Foundation: Steel Tubular Pile $\phi 500\text{mm}$ 3nos.
	Pavement	Sand Sheet (mixture of heated bitumen and sand) $t=30\text{mm}$
Approach Roads	Length	Left bank : 10m (include A1 abutment retaining wall) Right bank : 84m
	Width	Overall width : 7.0m Carriageway : Dual (2) lane, $W=6.0\text{m}$ ($3.0\text{m}+3.0\text{m}$) Shoulder : 0.50m width of both sides
	Traffic Safety	Gaud rail (Galvanized)
	Pavement	Macadam Penetration type : $t=70\text{mm}$

2-1-3 PROCUREMENT PLAN

Bridge construction materials such as cement, reinforcing bar, form, etc. cannot be procured inside Timor-Leste, but are available in Indonesia or other neighboring countries. Furthermore, steel products such as steel tubular pile, truss bridge member, high-tension bolts and tightening tools, rubber bearing shoes and expansion joints will be imported from Indonesia to ensure good quality, and minimize the cost and transportation period. Construction equipment such as steel tubular piling machine or concrete pumping machine is not available in Timor-Leste, so this equipment will be procured from Japan.

There is none crushing plant or concrete plant in the southern area but they are available in Dili. To control the quality of concrete effectively, these plants will be procured from Dili and installed inside the camp yard.

2-1-4 IMPLEMENTATION SCHEDULE

The construction period is estimated to be 17.5 months considering interruption or inefficient execution of works inside the Mola River in the rainy season. The fiscal year of Japan will be applied to the Project implementation in accordance with the Japan's Grant Aid Guideline and it will be a three (3) years of multiple budget year programs.

After conclusion of the Exchange of Notes (E/N) between the both Governments, tender activities such as prequalification of contractors, tender evaluation, selection of the Contractor, etc. will be carried out under assistance concept by the Consultant recommended by the Japanese Government, and it will take about 3.5 months. After selection of the Contractor through competitive bidding, the Government of Timor-Leste will sign the construction contract with the selected Contractor. After receiving the Notice to Commence from the Consultant, the Contractor will start the construction work.

A Tentative Implementation Schedule is shown in Table 2-2.

Table 2-2 Tentative Implementation Schedule

[illegible]

2-2 OBLIGATIONS OF THE RECIPIENT COUNTRY

2-2-1 COMMON ITEMS OF JAPAN'S GRANT AID SCHEME

For smooth implementation of the Project, the Government of the recipient country shall fulfill the following undertakings:

- To provide the necessary data and information for implementation of the Project;
- To secure land necessary for the site of the Project (for the approach road, camp yard, storage of materials and equipment);
- To clear, level and reclaim the land prior to commencement of the Project;
- To open a bank account in the name of the Government in a bank in Japan (B/A) and issue the Authorization to Pay (A/P);
- To ensure all the expenses and prompt execution for unloading, customs clearance;
- To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
- To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;
- If necessary, to issue the permission and any other authorization for the Project implementation,
- To ensure proper maintenance, management and preservation of the facilities provided by Japan's Grant Aid;
- To bear all expenses, other than those to be borne by the Grant Aid, necessary for the construction of the facilities as well as for the transportation and installation of the equipment.

2-2-2 SPECIAL ITEMS OF THE PROJECT

- Getting the approval of Environmental Management Plan (EMP) for the project: By the end of January 2008;
- Completion of the approach road on Suai side by the Timor-Leste side including relocation of two (2) houses and setback of the house fences along the village road: By the end of November 2009;
- Provision and clearance for the camp yard and stock yards;
- Provision of the soil disposal and construction waste areas;
- Provision of the land for temporary detour.

2-3 PROJECT OPERATION PLAN

The regional offices of DRBFC are responsible for maintenance and operation of roads and bridges on the national class roads and others in Timor-Leste. After completion of the Project, the operation of maintenance works for the Mola Bridge and approach roads will be carried out by the DRBFC Maliana Office.

The operation and maintenance works, such as cleaning of drains, bearing shoes, cutting grass, pothole and revetment protection and repair are carried out by a private repair agency under contract with the DRBFC Maliana Office. Urgent repair of damaged bridges and periodical repairs at every 5 and 10 years are also carried out by the private contractor under contract with DRBFC.

The operation and maintenance works for the bridge and approach roads after completion of the Project shall be carried out in accordance with the following schedule;

2-3-1 YEARLY MAINTENANCE

Ordinary inspection for the bridge and approach roads:

- Periodic maintenance for the bridge and approach roads,
- Removal of debris and cleaning of drain pits and ditches and around bearing shoes,
- Repair of the bank/riverbed revetment around the abutments,
- Maintenance of traffic safety such as repainting of lane marks and guardrails,
- Patching repair on pavement,
- Cutting grass on slope of embankment and road shoulders.

2-3-2 PERIODICAL MAINTENANCE

- Repair of revetment around abutments and retaining walls after flood season at every five years,
- Overlay of surface layer of bridges and approach roads at every 10 years,
- Repair of bearing shoes and expansion joints at every 10 years.

2-4 PROJECT COST ESTIMATION

2-4-1 COST OF OBLIGATIONS OF TIMOR-LESTE SIDE

The Project cost required for fulfilling the undertakings to be borne by the Government of Timor-Leste is shown in Table 2-3.

(1) Project Cost to be borne by Timor-Leste Side

Table 2-3 Project Cost to be borne by Timor-Leste Side

Items	Cost (US\$)	Yen Equivalent (Thousand Yen)
1) Getting approval of the Maintenance Management Plan	1,000	120
2) Cost for the relocation of two (2) houses (Material cost for the construction of new houses, if needed)	5,000	600
3) Construction of the approach road on Suai side (L=210m)	110,000	13,200
4) Payment of bank service charges for Banking Arrangement (B/A) and Authorization to Pay (A/P)	1,000	120
Total	117,000	14,040

(2) Condition of Cost Estimate

- Estimate Time 2007 : Average rate of 6 months before the end of August 2007
- Exchange Rate : 1.0 US\$ = 120.66 Yen
- Construction Period : 17.5 months

The Project will be implemented under the Japan's Grant Aid scheme.

2-4-2 MAINTENANCE COST

DRBFC is required to bear the costs for periodic maintenance of the bridge and repair of revetment protection. The average annual maintenance costs are about 12,360 US\$ (1.483 million Yen). On the other hand, the annual maintenance budget for roads and bridges of DRBFC is 1.868 million US\$ (year 2006) in total. Hence, the annual maintenance cost for the improvement of the bridge and approach roads under the Project as estimated in Table 2-4 corresponds to only 0.66% of the DRBFC's total annual maintenance budget for district offices. Therefore it is financially possible for DRBFC to continue the maintenance of the constructed new bridge and approach road.

Table 2-4 Maintenance Cost Estimate

Classification	Frequency	Component	Work Items	Approximate Cost (US\$)
Maintenance of Bridge	Once a year	Drainage	Removal of debris and cleaning of drain pits	760
		Expansion Joint, Hand-rail	Record of damage	
		Bearing shoes	Removal of debris	
Maintenance of Revetment Protection	Once a year	Riverbed/bank protection	Choking of scoured parts and settlement	
Repair of Revetment Protection	After flood (once every five years)	Riverbed/bank protection	Repair of scored parts and settlement portion	58,000
Total per five (5) years				61,800
Average Annual Maintenance Cost				12,360

CHAPTER 3
PROJECT EVALUATION AND
RECOMMENDATIONS

CHAPTER 3 PROJECT EVALUATION AND RECOMMENDATIONS

3-1 PROJECT EFFECTS

According to the result of the socio-economic, traffic and field surveys at the basic design study and this implementation review study, the project implementation would generate the following impacts and effects:

(1) Direct Impacts and Effects

Present Status and Issues	Countermeasures Taken by the Project	Direct Impacts and Effects
Driving and pedestrian crossing the Mola River is not possible during flooding in the rainy season	Land acquisition on the right bank, scale of flood, method of construction, construction schedule in the rainy season and minimization of cost should be considered for the bridge alignment crossing the river and type of bridge	Safe and smooth river crossing is secured throughout the year, by construction of the new bridge instead of running on the riverbed.
It takes ten (10) minutes for limited types of vehicle such as 4WD or truck to pass the Mola River even in the dry season		All kinds of vehicle can cross the river in about 40 seconds. So, daily life of inhabitants will be enhanced by improved transportation of life goods and going to/from school/hospital, etc. throughout the year.

(2) Indirect Impacts and Effects

The following indirect impacts and effects would be generated by the project implementation.

- The Project will ensure smooth transportation and reduced travel time in the southern area, just enhancing agricultural production.
- After completion of the Project, the new Mola Bridge section which constitutes a bottleneck of the road network in the southern area at present will be improved and the transportation in this area will be enhanced dramatically. As a result, it is expected that economic and industrial growth will accelerate not only in the project area but also in the southern part of Timor-Leste as a whole.

3-2 RECOMMENDATIONS

The Project will provide a national class road with two carriageways by the construction of the new Mola Bridge and approach roads to improve the infrastructure for administrative and economic activities between the Capital City of Dili and Suai, a main city in the southern province of Timor-Leste.

The bridge has been designed with a view of minimizing the maintenance cost and enabling the Maliana District office of DRBFC to conduct the maintenance of the existing and new bridges in accordance with the standard specification of DRBFC. However, DRBFC should understand the foreseen technical or erosion/scouring problems related to the bridge and approach roads in the river so as to maintain them effectively and properly.

The Project will undoubtedly contribute to the peace and enhance agricultural production in the southern area of Timor-Leste. To implement the Project smoothly in line with the guideline of Japan's Grant Aid, reconciliation in Timor-Leste is a precondition and peace shall be maintained during the construction. Accordingly, continuation of domestic security and political stability in Timor-Leste is required for the successful implementation of the Project.

APPENDICES

1. Member List of the Study Team

Implementation Review Survey From September 19, 2007 to September 29, 2007

	Name	Position	Organization
1	Mr. Tetsuya KAMIJO	Leader	Resident Representative in Timor-Leste, JICA
2	Mr. Yoshimoto KOYANAGI	Project Coordinator	Senior Project Officer, Transportation and Electric Power Team, Grant Aid Management Department, JICA
3	Mr. Hiroshi FUJISAWA	Chief Consultant/ Bridge Planner	Nippon Koei Co., Ltd.
4	Mr. Tomokuni HAYAKAWA	Natural Condition Surveyor/Construction Planner/Cost Estimator	Nippon Koei Co., Ltd.

2. Study Schedule

Implementation Review Survey From September 19, 2007 to September 29, 2007

Date			JICA Member		Consultant Member		
			Leader	Project Coordinator	Chief Consultant/ Bridge Planner	Natural Condition Surveyor Construction Planner/ Cost Estimator	
			Mr. Kamijo	Mr. Koyanagi	Mr. Fujisawa	Mr. Hayakawa	
1	18	Tue		Departure from Tokyo			
2	19	Wed		Arrival at Dili			
				Briefing from JICA Office			
				Courtesy Call on Embassy of Japan (EoJ)			
3	20	Thu	Visit to Mr. Pedro Lay, Minister for Infrastructure and Mr. Jose Gaspar R. C. Piedade, Permanent Secretary				
			Visit to Mr. Carlos Ximenes, Director of Environmental Service				
			Visit to Mr. Eusebio Jeronimo, Ministry of Finance			Collection of Unit Cost	
			Meeting with DRBFC			Meeting for Geo. Survey	
4	21	Fri	Movement from Dili to Mola Bridge with 2 officers of DRBFC (Bridge and Road)				
			Site Survey, Move to Suai				
5	22	Sat	Movement from Suai to Mola Bridge				
			Site Survey for Resettlement area, Move to Dili				
6	23	Sun	Internal Meeting				
					Collection of Unit Cost, Quarry Site Visit		
7	24	Mon	Discussion with MoI and DRBFC on Minutes of Discussion (M/D)			Collection of Unit Cost	
			Visit to Mr. Eusebio Jeronimo, MoF			Cost Analysis	
8	25	Tue	Discussion with Ministry of Finance on Minutes of Discussion (M/D)			Collection of Unit Cost	
			Signature of M/D by Minister for Infrastructure, Minister for Finance and Mission Leader			Cost Analysis	
			Report to EOJ				
9	26	Wed		Leave Dili	Data Collection and Analysis	Collection of Unit Cost	
10	27	Thu		Arrival in Tokyo	Data Collection and Analysis	Meeting for Geo. Survey Cost Analysis	
11	28	Fri			Data Collection and Reporting	Meeting for Geo. Survey Collection of Unit Cost	
					Report to JICA		
12	29	Sat			Leave from Dili		
13	30	Sun			Arrival in Tokyo		

Legend

EOJ: Embassy of Japan

JICA: Japan International Cooperation Agency

MoI: Ministry of Infrastructure

DRBFC: Directorate of Roads, Bridges and Flood Control

MoF: Ministry of Finance

3. List of Parties Concerned in the Recipient Country

List of Parties Concerned in the Recipient Country

(1) Ministry of Finance

Ms. Emilia Pires, Minister

Mr. Eusebio da Costa Jeronimo, Director, National Directorate for Planning and External Assistance Coordination (NDPEAC)

Mr. Arlindo da Cruz Monteiro, Bilateral Officer, NDPEAC

Mr. Chandrasiri Perera, Budget Execution Advisor

(2) Ministry of Infrastructure

Mr. Pedro Lay da Silva, Minister

Mr. Domingos Dos Santos Caeiro, Secretary State for Public Works

Mr. Jose G. R. C. Piedade, Director General

Mr. Rui Hernani Freitas Guterres, Civil Engineer, Director of Roads, Bridges and Flood Control (DRBFC)

Mr. Milton Ramanata Monteiro, Bridge Engineer, DRBFC

Mr. Jose Augusto Freitas, Road Engineer, DRBFC

(3) Ministry of Economy and Development

Mr. Carlos Ximenes, Director of Environmental Service

Mr. Antonio Lelo, EIA Coordinator

(4) Ministry of Justice

Mr. Pedro de Sousa Xavier, Director of Land and Property

Mr. Pedro Tilman, Topographic Officer, Suai Regional Office

Mr. Julio da Tilman, Ainaro Regional Officer

(5) Secretary State for Natural Resources

Mr. Vocente da Costa Pinto, Director of Geology and Mineral Resources

(6) Embassy of Japan in Timor-Leste

Mr. Kenji SHIMIZU, Ambassador

Mr. Takashi KOIZUMI, Counsellor

Mr. Shinobu YAMAGUCHI, First Secretary

(7) JICA Timor-Leste Office

Mr. Tetsuya KAMIJO, Resident Representative

4. Minutes of Discussions

Implementation Review Study (September 25, 2007)

**Minutes of Discussions
on the Implementation Review Study
on the Project for the Improvement of Mola Bridge
in the Democratic Republic of Timor-Leste**

In response to the request from the Government of the Democratic Republic of Timor-Leste (hereinafter referred to as "Timor-Leste"), the Government of Japan decided to conduct an Implementation Review Study on the Project for the Improvement of Mola Bridge (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Timor-Leste the Implementation Review Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Tetsuya Kamijo, Resident Representative, JICA Timor-Leste Office, and is scheduled to stay in the country from September 19 to 29, 2007.

The Team held discussions with the officials concerned of the Government of Timor-Leste and conducted a field survey at the study area.

In the course of the discussions and field survey, both sides have confirmed the main items described in the attached sheets.


Dili, September 25, 2007



Pedro Lay Da Silva
Minister
Ministry of Infrastructure
Democratic Republic of Timor-Leste



Tetsuya Kamijo
Leader
Implementation Review Study Team
Japan International Cooperation Agency



Emilia Pires
Minister
Ministry of Finance
Democratic Republic of Timor-Leste

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve Mola Bridge on the road of Cassa-Suai section.

2. Project Site

The Project site is shown in Annex-1.

3. Responsible and Implementing Organizations

The responsible and implementing organization is the Ministry of Infrastructure.

The organization chart is shown in Annex-2.

4. Confirmation of the Components

After discussions, the both sides confirmed the Project components as listed below based on the result of the Detailed Design.

- Improvement of Mola Bridge (approximately 216m length)*1
- Approach Retaining Wall of left side bank of Mola Bridge (approximately 10m length)
- Approach Road of right side bank of Mola Bridge (approximately 84m length)*2

*1/ Regarding the alignment of Mola Bridge, the both sides agreed to select the straight one described as Route-B in Annex-3, considering the road alignment, cross-section space of river, and construction cost, instead of the curved one described as Route-A in Annex-3, which was selected during the Basic Design Study Stage.

*2/ Regarding the approach road of the right side bank of Mola Bridge, the Timor-Leste side shall construct a part of approach road (approximately 210m length), which pass through the settlement area and are not included in the Japan's Grant Aid, described in Annex-3. The Team explained to the Timor-Leste side that the construction of the approach road by the Timor-Leste side should be completed by the end of November 2009.

5. Japan's Grant Aid Scheme

(1) The Timor-Leste side understood the Japan's Grant Aid scheme explained by the Team, as described in Annex-4.

(2) The Timor-Leste side will take the necessary measures, as described in Annex-5, for smooth implementation of the Project as a condition for the Japan's Grant Aid to be implemented.

6. Schedule of the study

(1) The Team will proceed to further study in Timor-Leste by September 29, 2007.

(2) JICA will prepare the report and send it to the Timor-Leste side by the end of January 2008.

7. Environmental and Social Considerations

(1) The both sides confirmed that the basic agreement has been already made with the affected people regarding the resettlement at the right side bank of Mola Bridge. The Timor-Leste side explained to the Team that any kind of cash compensation would not be paid to the affected people because the Project site is the government owned and that an alternate means for compensation

shall be considered by the Timor-Leste side.

(2) The Timor-Leste side shall complete the resettlement and site clearance before commencement of the construction work.

(3) The Team explained to the Timor-Leste side that it was required to obtain an approval of Environmental Management Plan (EMP) before the Cabinet Approval of Japan in consideration of the JICA Environmental and Social Considerations Guidelines. The Timor-Leste side shall obtain an approval of EMP from the Environmental Service, Ministry of Economy and Development by the end of January 2008.

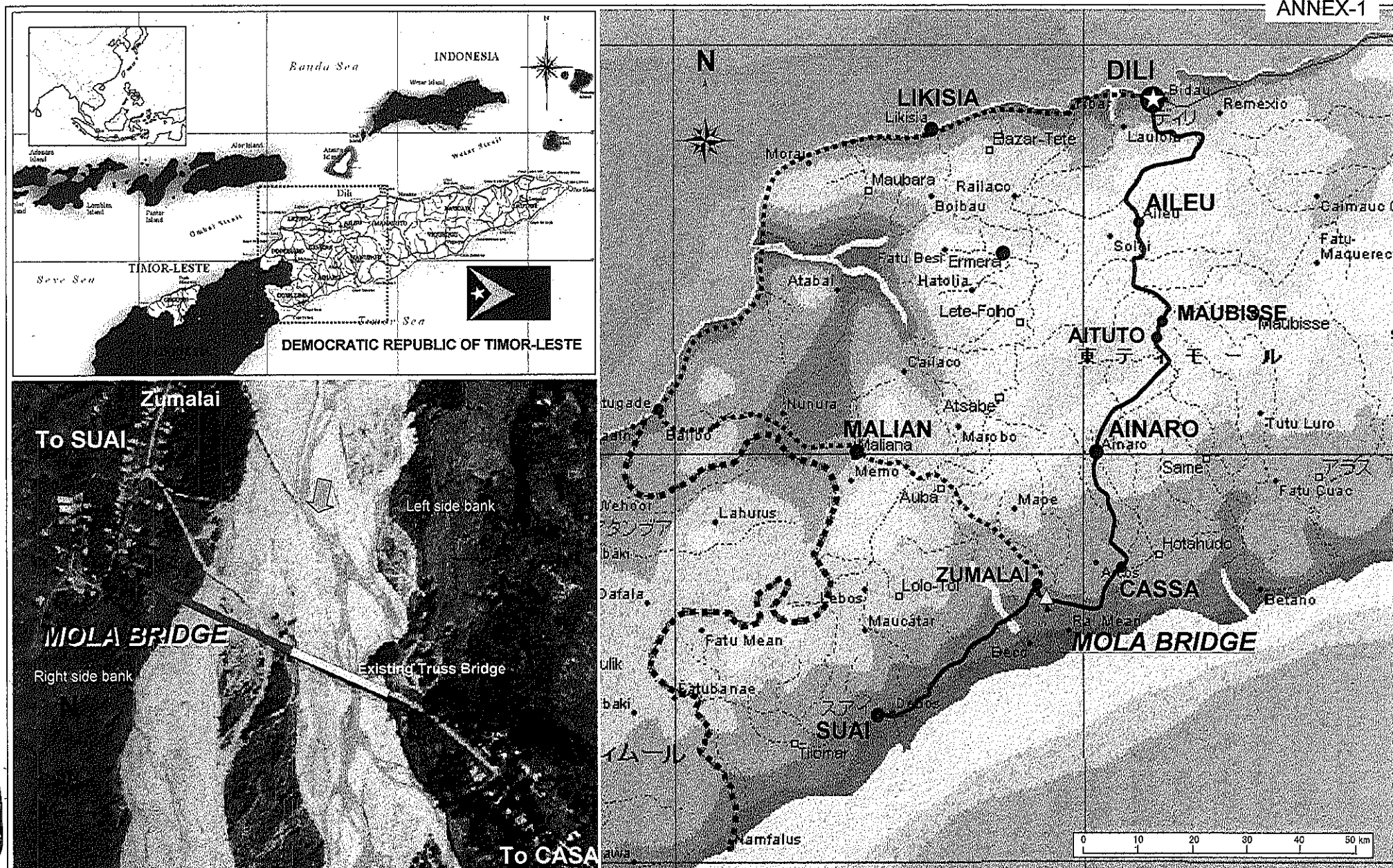
8. Other relevant issues

(1) The Timor-Leste side shall rehabilitate the retaining wall around the abutment of the left side bank of the existing Mola Bridge before commencement of the construction work.

(2) The Timor-Leste side shall secure the land use for construction camp yard and its approach road, and temporary detour during the construction stage.

(3) The Timor-Leste side shall secure the usage of the quarry for rock from Mola riverbed and sand from Fourra riverbed for the Project.

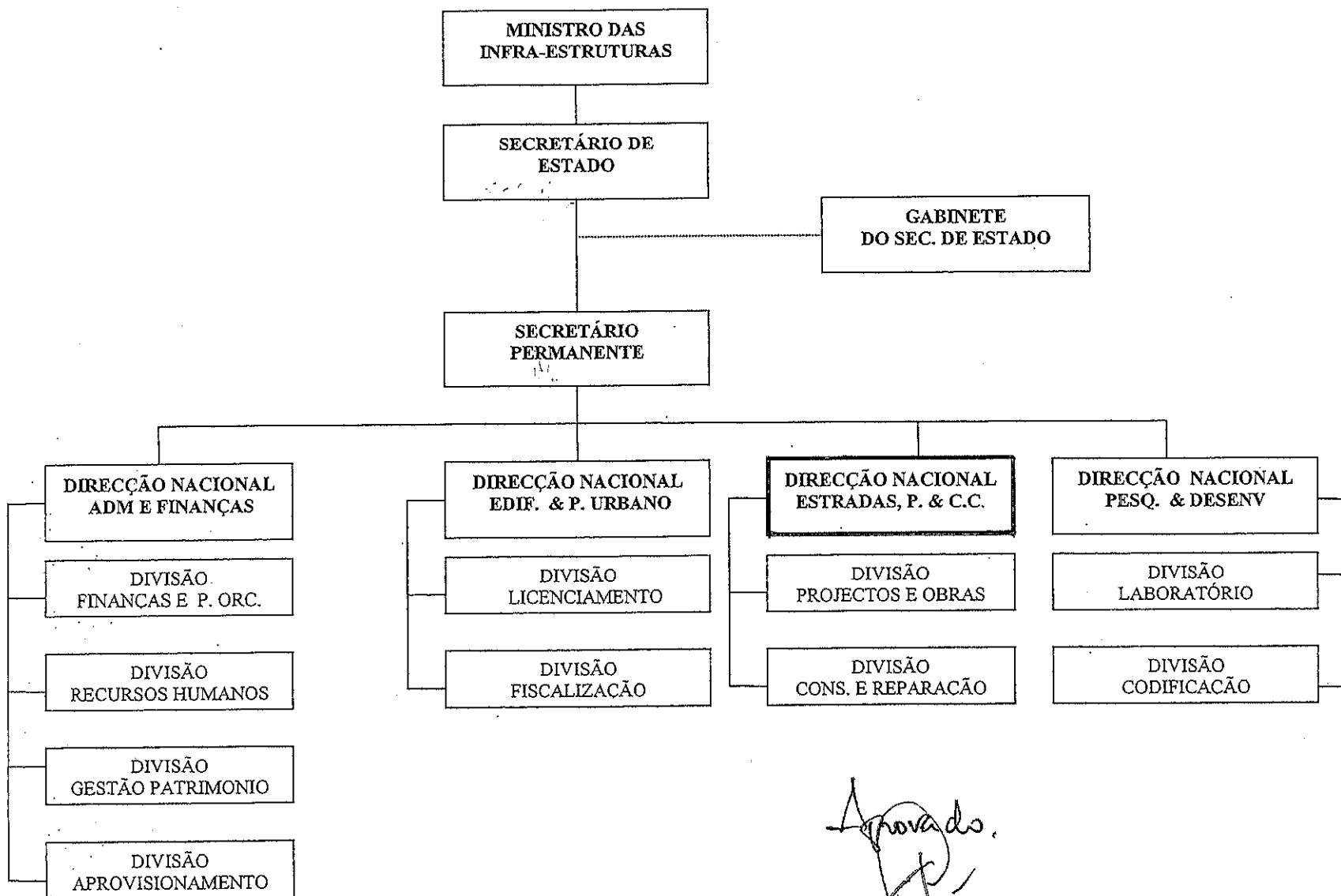




THE IMPLEMENTATION REVIEW STUDY ON THE PROJECT FOR THE IMPROVEMENT OF MOLA BRIDGE IN THE DEMOCRATIC REPUBLIC OF TIMOR-LESTE
LOCATION MAP

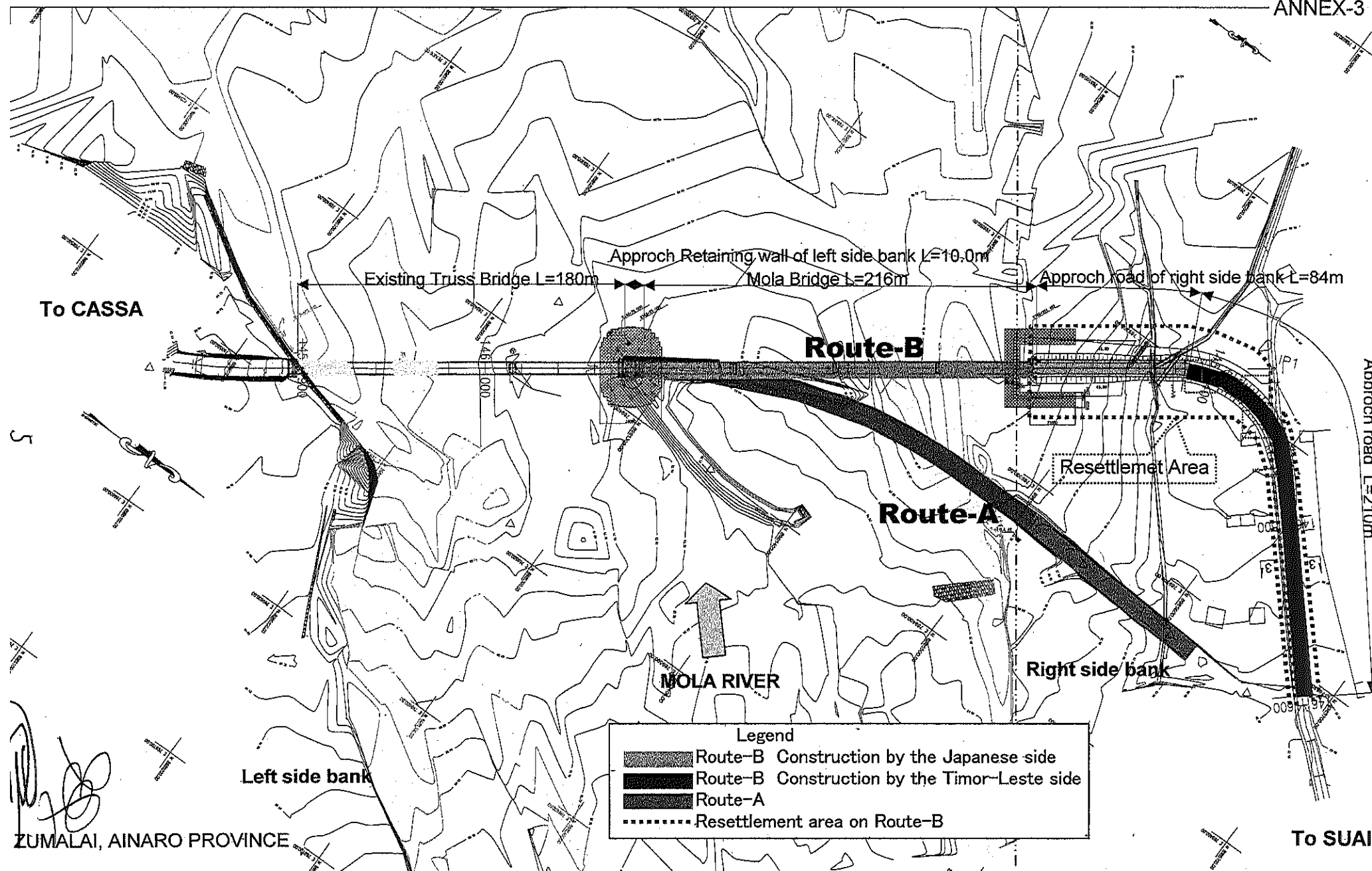
MINISTÉRIO DAS INFRA-ESTRUTURAS

ORGANIGRAMA DA SECRETARIA DE ESTADO DAS OBRAS PÚBLICAS



Apovado.

Jose G. Piedade



LOCATION MAP OF ROUTE-A AND ROUTE-B

JAPAN'S GRANT AID

The Grant Aid Scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

Japan's Grant Aid Scheme is executed through the following procedures.

Application	(Request made by the recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by the Cabinet)
Determination of Implementation	(The Note exchanged between the Governments of Japan and recipient country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study) using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

(1) Contents of the study

The aim of the Basic Design Study (hereafter referred to as "the Study") conducted by JICA on a requested project (hereafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project.
- Estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of the Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA. The consultant firm(s) used for the Study is (are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3. Japan's Grant Aid Scheme

(1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

(2) "The period of the Grant Aid" means the one fiscal year, which the Cabinet approves, the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed. However, in case of delays in delivery, installation or construction due to unforeseen factors such as national disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

(3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, consulting, constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

(4) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

(5) Undertakings required of the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as the following:

a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the Project,

b) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

c) To secure buildings prior to the procurement in case the installation of the equipment,

d) To ensure all the expenses and prompt excursion for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,

e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,

f) To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(6) "Proper Use"

The recipient country is required to maintain and use the facilities constructed and the equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(7) "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

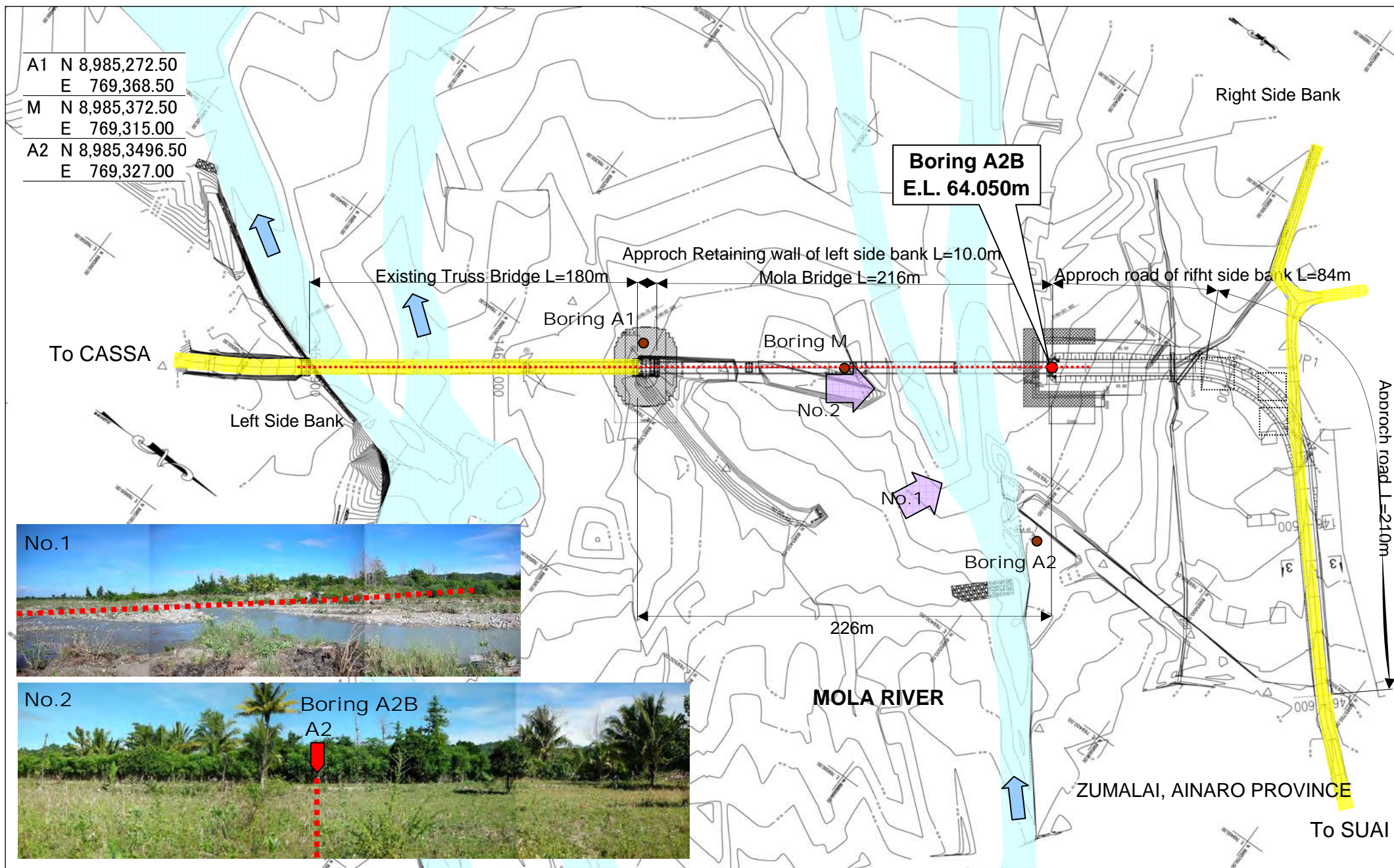
(End)

Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed		●
3	To construct gates and fences in and around the site		●
4	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
5	To ensure unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
6	To accord Japanese nationals whose service may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		●
7	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		●
8	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
9	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

5. Geotechnical Investigation Data



LOCATION MAP OF GEOTECHNICAL INVESTIGATION



Geotechnik Ltd.

geotechnical and material engineers

Report No. GET07-5117

Bore hole elevation 64.050m STN 2 elevation 67.381m

CLIENT: NIPPON KOEI CO., LTD.

PROJECT: MOLA River Bridge, Suai District, Ainaro Province, Timor Leste

BORING NO. BH # A2B

DRILLING METHOD: Mud Rotarey

DIAM: 90 mm

SHEET: 1 OF 2

SAMPLING METHOD: 50 mm split spoon barrel

CORE BARREL: HQ3/NQ3

DEPTH (m)	SAMPLES	(SPT) (REC) [RQD]	DESCRIPTION	SYMBOL	-0.075 (%)	Moisture Content (%)	CO ₃ %	LL [PL] (%)	Maximum Size Boulder mm
1		(23),[0] 0.00-1.05, R-1	Dense to very dense light grey calcareous well graded GRAVEL rounded to sub-rounded with boulder, cobble and sand (GW) matrix (Tertiary river deposit)						100
2		(50-10cm) 1.05-1.15, S-1	- with Silt and Sand (GW-GM) to 7.15m						
3		(56),[18] 1.15-2.40, R-2 (12/50-10cm) 2.40-2.65, S-2	* SPT N-Value will be reduce for engineering analyses due to presence of boulders, cobble and gravels.		7.7	4.5			85
4		(41),[0] 2.65-4.10, R-3							88
5		(7/15/50-12cm) 4.10-4.52, S-3	- yellowish light grey below 4.10 m		9.5	5.1			
6		(53),[10] 4.52-5.75, R-4	- dense below 5.75 m						125
7		(6/22/22) 5.75-6.20, S-4			5.1	7			
8		(16),[0] 6.20-7.15, R-5	- poorly graded (GP), 7.15 to 9.30 m						55
9		(10/18/20) 7.15-7.60, S-5			2.8	4.4			
10		(11),[0] 7.60-9.30, R-6	- with Silt (GP-GM), 9.30 to 10.30 m						60
11		(9/18/22) 9.30-9.75, S-6 (27),[0] 9.75-10.30, R-7 (15/20/25) 10.30-10.75, S-7			7.3	5.4			60
12		(14),[0] 10.75-11.80, R-8	- Silty poorly graded GRAVEL with Sand (GM), 10.30 to 11.80 m		12.3	10.1			82
DATE		TIME	BORING DEPTH (m)	CASING DEPTH (m)	WATER DEPTH (m)	REMARKS			
25-Sep-07		0800	24.00	23.50	1.00	Logger: S. Abbas. Murtaza			

PLATE - 2



Geotechnik Ltd.

geotechnical and material engineers

Report No. GET-07-5117

Bore hole elevation 64.050m STN 2 elevation 67.381m

CLIENT: NIPPON KOEI CO., LTD.

PROJECT: MOLA River Bridge, Suai District, Ainaro Province, Timor Leste

BORING NO. BH # A2B

DRILLING METHOD: Mud Rotarey

DIAM: 90 mm

SHEET: 2 OF 2

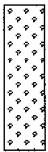





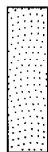



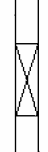



SAMPLING METHOD: 50 mm split spoon barrel

CORE BARREL: HQ3/NQ3

DEPTH (m)	SAMPLES	(SPT) {REC} [RQD]	DESCRIPTION	SYMBOL	-0.075 (%)	Moisture Content (%)	CO ₂ %	LL [PL] (%)	Maximum Size Boulder mm
13		(6/15/12) 11.80-12.25, S-8 {100},[34] 12.25-13.00, R-9	Medium dense yellowish grey calcareous poorly graded GRAVEL (GP) with boulder, cobble and sand matrix (Tertiary river deposit) 13.00 m		4.6	4.7			173
14		(7/10/14) 13.00-13.45, S-9 {65},[0] 13.45-14.30, R-10	Medium dense yellowish grey calcareous Silty GRAVEL (GM) with boulder, cobble and sand matrix (Tertiary river deposit)		20.7	5.1			90
15		(12/15/22) 14.30-14.75, S-10	- dense with Sand below 14.30 m 15.35 m		14.9	10.6			
16		(10/13/18) 15.35-15.80, S-11	Medium dense to dense grey SILT with Sand and little Gravel (MH)						
17		(9/14/16) 16.20-16.65, S-12	- medium dense to 16.95 m		71.2	27.5		50.7 [39.1]	
18		(8/15/18) 16.95-17.40, S-13	- dense dark grey below 16.95 m						
19		(10/19/21) 17.80-18.25, S-14				10.9			
20		(14/23/31) 19.15-19.60, S-15	Very weak to weak brownish grey Mudstone , moderately to severely weathered [Hard Lean CLAY with Sand (CL)]		74.2	11.4		48 [25]	
21		(12/19/25) 20.45-20.90, S-16				26.1			
22		(15/21/23) 21.60-22.05, S-17	- dark grey Sandy (CL) below 21.60 m						
23		(18/31/35) 22.55-23.00, S-18			59.8	10.3		46.9 [21.3]	
24		(20/30/33) 23.55-24.00, S-19							
DATE		TIME	BORING DEPTH (m)	CASING DEPTH (m)	WATER DEPTH (m)	REMARKS			
26-Sep-07		2200	24.00	23.50	1.00	Logger: S. Abbas. Murtaza			

PLATE - 2a

SYMBOLS AND TERMS USED ON BORING LOGS

SOIL AND ROCK TYPES (SHOWN IN SYMBOL COLUMN)										SAMPLER TYPES (SHOWN IN SAMPLES COLUMN)			
													
Sand	Silty Sand	Silt	Clay	Gravel	Limestone	Sandstone	Conglomerate	Backfill	Concrete	Split Barrel	Core Barrel		

Predominant type shown heavy

TERMS DESCRIBING DENSITY CONDITION FOR CONSISTENCY

The condition of coarse grained soils may be obtained by performing sampler penetration tests or cone penetrometer tests. Approximate correlation between these tests and the density condition are given below:

DENSITY CONDITION	SPT VALUES, N	CONE TIP RESISTANCE, MPa
Very loose	< 4	< 2
Loose	4 to 10	2 to 4
Medium dense	10 to 30	4 to 12
Dense	30 to 50	12 to 20
Very dense	> 50	20

Density versus SPT value relationship is after Terzaghi and Peck, 1968. See Lacroix and Horn, 1973 if non-standard samplers are used. Density versus cone tip resistance relationship given above, after Meyerhof 1965; is a function of depth also; see Schmertmann, 1978.

The consistencies of cohesive soils may be obtained by performing undrained shear strength tests. Degrees of consistency are given below:

CONSISTENCY	UNDRAINED SHEAR STRENGTH, kPa
Very soft	< 12
Soft	12 to 25
Firm	25 to 50
Stiff	50 to 100
Very stiff	100 to 200
Hard	> 200

TERMS CHARACTERIZING SOIL STRUCTURE

Parting	- horizontal inclusion of different soil type less than 3-mm thick
Seam	- horizontal inclusion of different soil type 3 to 75-mm thick
Layer	- horizontal inclusion of different soil type greater than 75-mm thick
Pocket	- inclusion of different soil type that is smaller than the diameter of the soil sample
Fissured	- containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical
Interbedded	- composed of alternate layers of different soil types
Silty	- containing 12 to 50 percent silt size particles
Calcareous	- containing 12 to 50 percent carbonates
Carbonate	- containing more than 50 percent carbonates

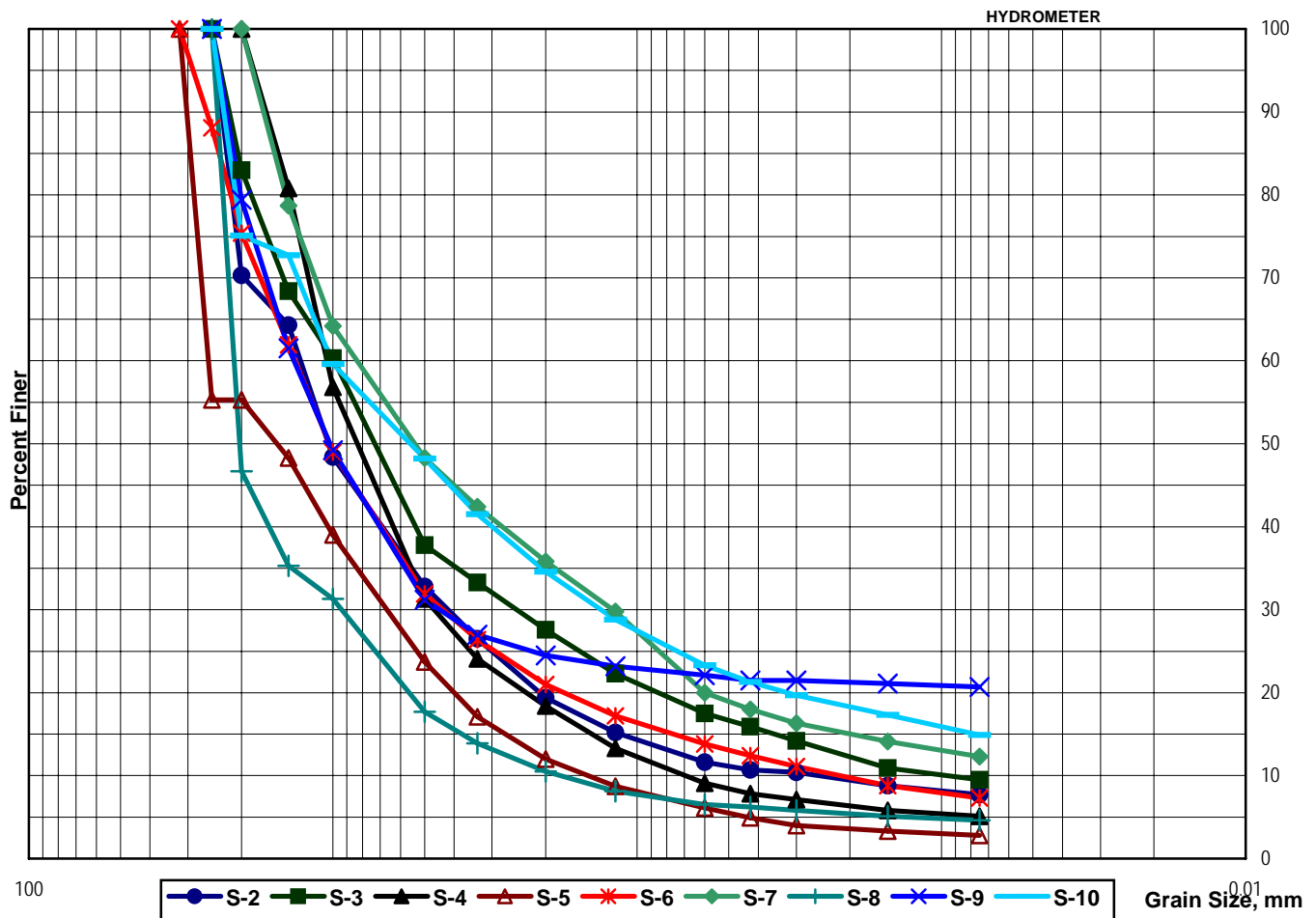
Terms used in this report for describing soils according to their texture or grain size distribution are in accordance with ASTM D 2487-90 and D 2488-90

**Geotechnical Investigation
MOLA River Bridge (BH # A2B), Suai District
Ainaro Province, Timor Leste**

Terms Related to Carbonate Classification

- 1) Non-carbonate constituents are likely to be siliceous apart from local concentration of minerals such as feldspar and mixed heavy minerals
- 2) In description, the rough proportions of carbonate and non-carbonate constituents should be quoted and details of both the particle minerals and matrix minerals should be included
- 3) Calcareous is suggested as a general term to indicate the presence of unidentified carbonate. When mineral identification is possible calcareous referring to calcite or alternative adjectives such as dolomitic, aragonitic, sideritic, etc. should be used

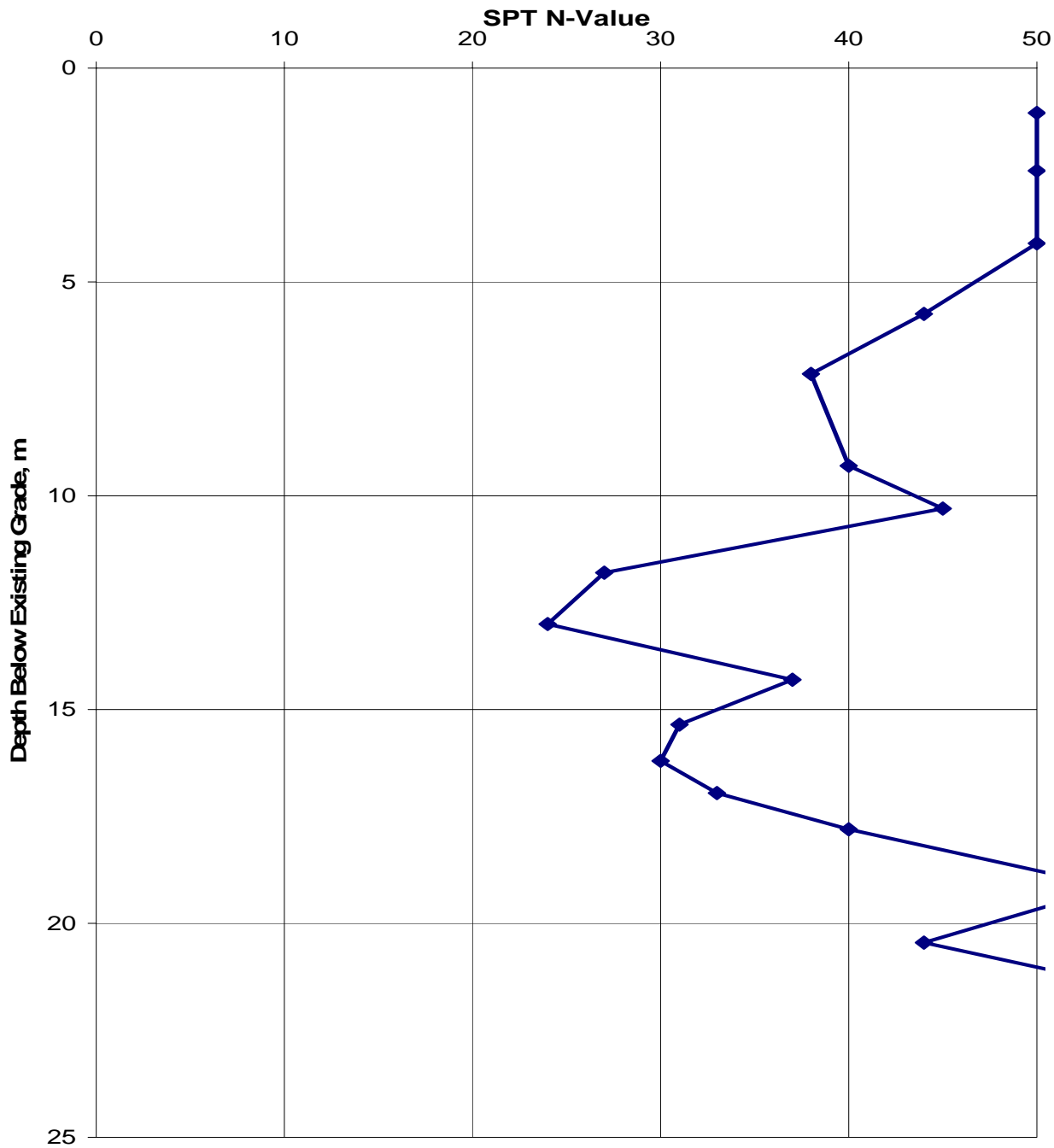
Algal	- Composed of the remains of calcareous secreting algae
Authigenic	- Formed in place by chemical or biochemical action
Bioclastic	- Consisting of fragmental remains of organisms
Coral	- Calcareous skeleton of a coral or group of corals
Detrital	- Derived of pre-existing rock fragments
Oolitic	- Made up of ooliths (0.25 to 2 mm round particles, usually carbonate)
Pisolitic	- Made up of pisoliths (2 to 10 mm round particles, usually carbonate)
Shell	- The generally hard rigid covering of an animal, commonly calcareous
Siliceous	- Containing abundant quartz or silica, generally cryptocrystalline



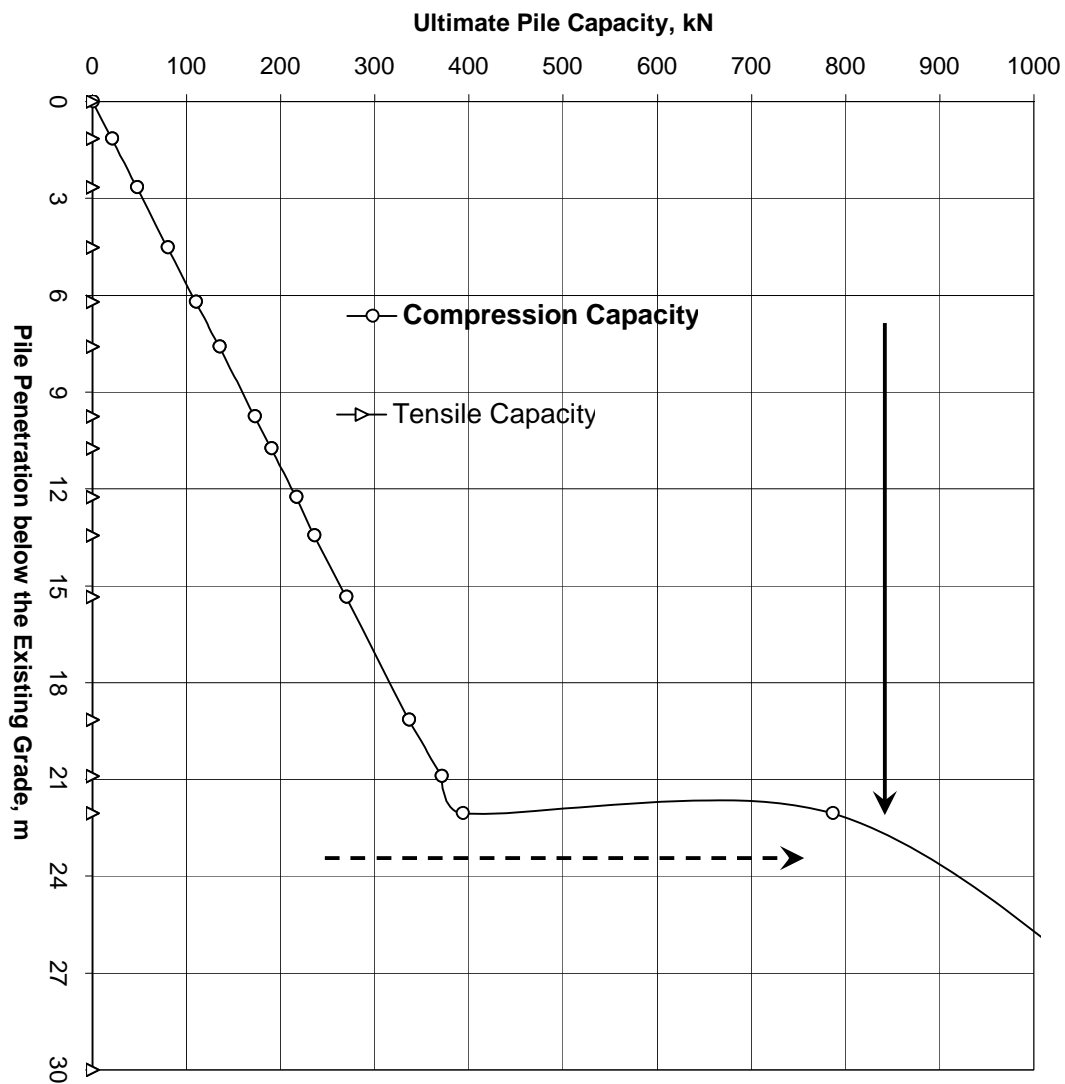
		GRAVEL / KANKAR		SAND			SILT / CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	
Specimen Identification	Depth m	Sample Nos.	Classification				-0.075
● B-A2B	2.65	S-2	Well Graded GRAVEL with Silt and Sand (GW-GM)				7.7
■ B-A2B	4.52	S-3	Well Graded GRAVEL with Silt and Sand (GW-GM)				9.5
▲ B-A2B	6.20	S-4	Well Graded GRAVEL with Silt and Sand (GW-GM)				5.1
△ B-A2B	7.60	S-5	Poorly Graded GRAVEL (GP)				2.8
τ B-A2B	9.75	S-6	Poorly Graded GRAVEL with Silt (GP-GM)				7.3
◆ B-A2B	10.75	S-7	Silty GRAVEL with Sand (GM)				12.3
+ B-A2B	12.25	S-8	Poorly Graded GRAVEL (GP)				4.6
X B-A2B	13.45	S-9	Silty Poorly Graded GRAVEL (GM)				20.7
- B-A2B	14.75	S-10	Silty GRAVEL with Sand (GM)				14.9

GRAIN SIZE CURVES

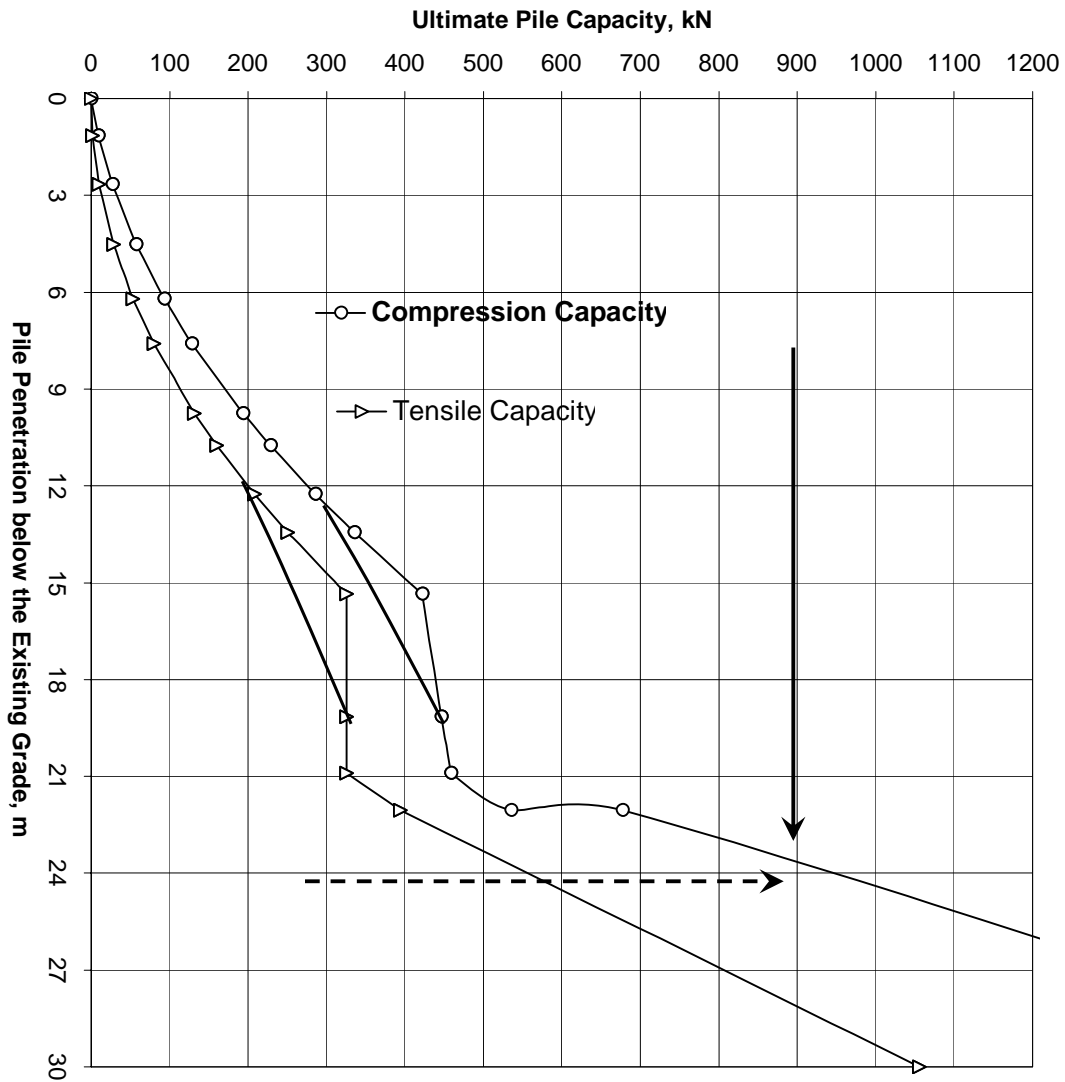
MOLA River Bridge, Suai District Ainaro Province, Timor Leste
PLATE - 5



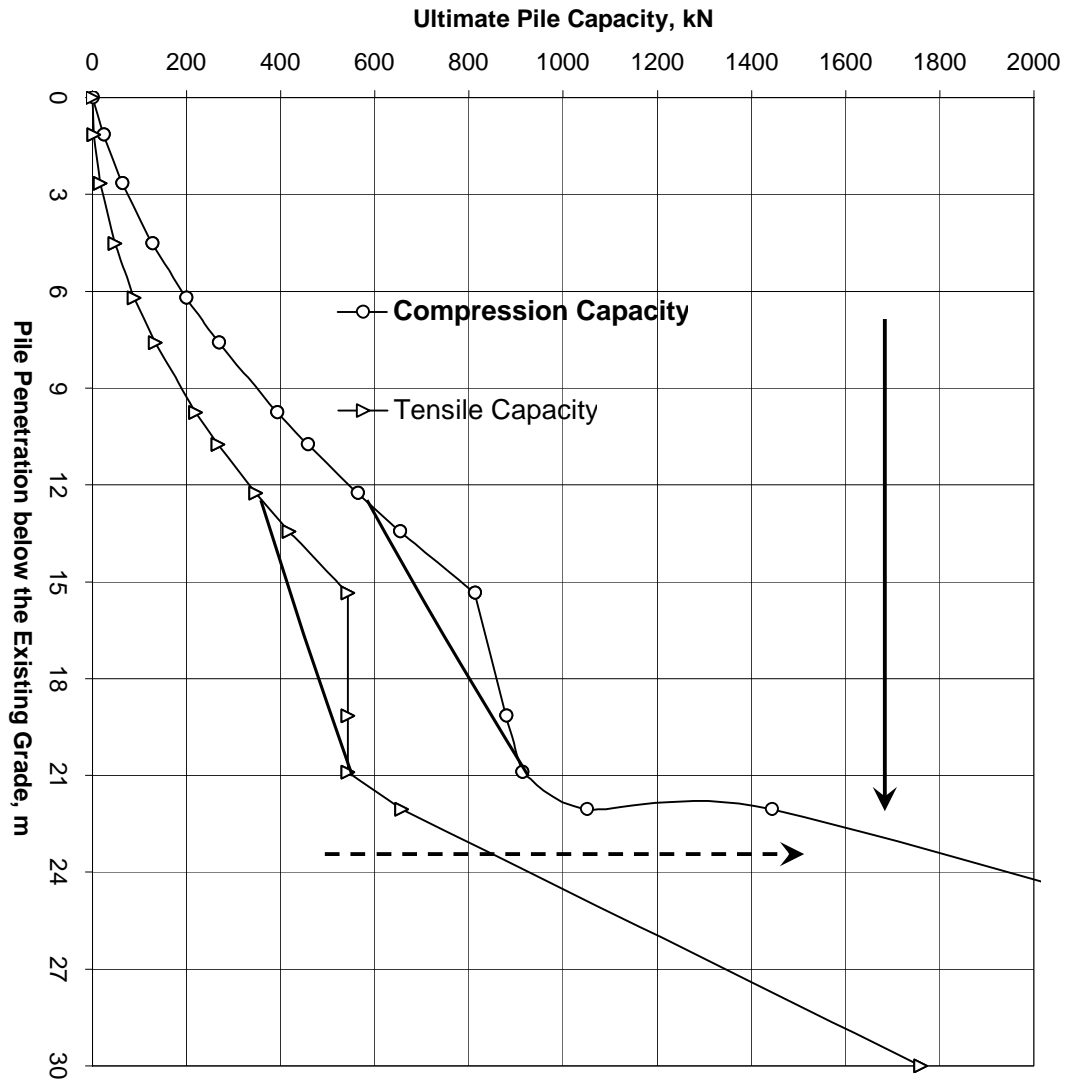
SPT N-VALUE Vs DEPTH PLOT
MOLA River Bridge, Suai District
Ainaro Province, Timor Leste



Ultimate Pile Capacity Vs Depth
H-Pile or Square Pre-Cast Concrete Pile (0.5m diameter)
MOLA River Bridge, Suai District,
Ainaro Province, Timor Leste
PLATE- 7



Ultimate Pile Capacity Vs Depth
Bored Cast-in-situ Concrete Pile (0.3m diameter)
MOLA River Bridge, Suai District,
Ainaro Province, Timor Leste
PLATE- 8



Ultimate Pile Capacity Vs Depth
Bored Cast-in-situ Concrete Pile (0.5m diameter)
MOLA River Bridge, Suai District,
Ainaro Province, Timor Leste
PLATE- 9