- $G = 9.81 \text{ m/sec}^2$
- R = normalized rock response;
- S = soil amplification spectral ratio;
- Z = reduction for ductility and risk assessment.

In the absence of data indicated above, EQ may be determined by this formula:

EQ = 0.10 (W + L/2)

for superstructure

EQ = 0.1 W

for substructure

Where:

L = total live load on the structure.

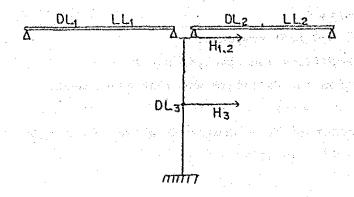
Formula (1) above cannot be applied in this feasibility study because of the absence of Maximum Expected Rock Acceleration Map and inadequate data of soils. Consequently, formula (2) is adopted since the absence of data is allowed in the NSCP.

3.2 Application of Earthquake Design (Study Team)

In case of new construction, the earthquakes design is considered for all new bridges.

In case of repair, the earthquake design is considered for the large scale rehabilitation works, reinforcing high piers and/or for long span and not considered for the minor rehabilitation works.

The earthquakes force, equivalent static horizontal force, is estimated in accordance with the NSCP and applied in the following manner.



Horizontal Seismic Forces:

Derived from superstructure is:

 $H_{1.2} = 0.x(1/2DL_1+1/2DL_2+0.5LL)$, and action point is at top of bearing

Derived from substructure is:

 $H_3 = 0.1x(DL_3)$, and action point is at gravity center.

Where:

DL: Deal Load

LL: Live Load

H;: Horizontal Seismic Force

The prescription concerning earthquake design is taken from the NSCP.

8.3 Minimum Support Length (NSCP, Appendix E and Japanese Spec-V)

Bearing seats supporting the expansion ends of girder shall be designed to provide a minimum support length N (mm).

The comparison of specification on the minimum support length between NSCP and Japanese standard is discussed as follows:

(1) NSCP, Philippines; The minimum support length N (mm) is measured, normal to the face of an abutment or pier, not less that or specified below:

N = 305 + 2.5 L + 10 H

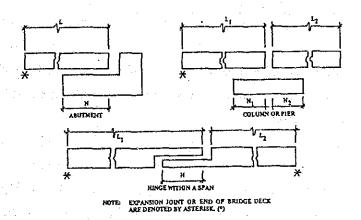
where L = length, in metres, of the bridge deck to the adjacent expansion joint, or to the end of the bridge deck. For hinges within a span, L shall be the sum of L₁ nd L₂ the distances to either edge of the hinge. For single span bridges L equals the length of the bridge deck.

For abutments

H = average height, in metres, of columns supporting the bridge deck to the next expansion joint. H = 0 for single span bridges.

For columns and/or piers

H = average height of the adjacent two columns or piers in metres.



(2) Japanese Specification

The minimum support length N (mm) is specified in the following formula.

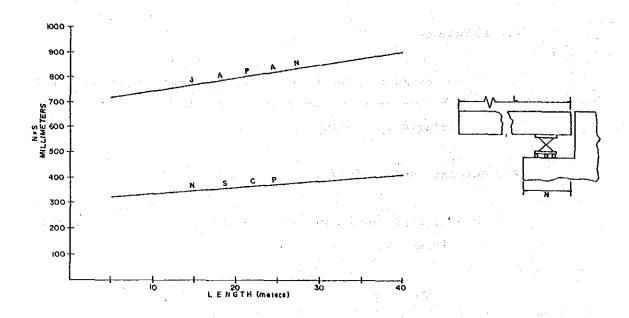
$$N = 70 + 0.5L, L \le 100 \text{ m}$$

 $N = 80 + 0.4L, L > 100 \text{ m}$

where:

- N = minimum support length (mm)
- L = length of bridge deck (m)

(3) Comparison of Minimum Support Length



As a results of the comparison study above, it was realized that the support length of Japanese standards are considerably greater than that of the Philippines.

The support length at the top of the substructure is an important factor of earthquake design. Recently, earthquake design is specially considered for bridge design in the Philippines. Thus the support length of Japanese Standard is recommendable to be applied on the preliminary design of bridges.

9 Selection of Design Method

The two kinds of design methods of bridge structures are discussed in NSCP Vol. II, i.e., SERVICE DESIGN (Allowable Stress Design) and STRENGTH DESIGN (Load Factor Design), where SERVICE LOAD DESIGN (Allowable Stress Design) is principally applied to the preliminary design while STRENGTH DESIGN (Load Factor Design) is treated as

verification of the structural durability, as necessary. The following provisions are taken from the NSCP, Vol. II.

For the Reinforced Concrete Bridges; (NSCP, 8.14.1)

- The design of reinforced concrete members shall be made either with reference to service loads and allowable stresses as provided in SERVICE LOAD DESIGN or, alternatively, with reference to load factors and strengths as provided in STRENGTH DESIGN.
- The strength and serviceability requirements of STRENGTH DESIGN may be assumed to satisfy the SERVICE LOAD DESIGN if the service load stresses are limited to the values given in Article 8.15.2.

For the Steel Bridges; (NSCP, 10.31)

- Allowable stress design is the standard design method for all structure types. It is a method for proportioning structural members using design loads and forces, allowable stresses and design limitations for the appropriate material under service conditions.

10. Superstructure Design

The design methods and manners of the superstructures such as Reinforced Concrete, Prestressed Concrete and Steel Structure shall be based on the provisions prescribed in the NSCP. The design method shall be basically SERVICE DESIGN (Allowable Stress Design) in accordance with the result of the design method previously studied (Refer to 10.4.10)

11. Substructure Design

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11.1 Pier Spacing, Orientation and Type (NSCP, 7.1)

Pier shall be located to meet navigational clearance requirements and to give a minimum interference to flood flow. In general, piers should be placed parallel with the direction of the stream current at flood stage. Adequate provisions should be made for drift increasing

span lengths and vertical clearances, proper selection of pier types and by using debris deflectors. Special precautions against scour are required when large cofferdams are placed in unstable stream beds.

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11.2 Piers (NSCP, 7.2)

The general requirements governing the depths of foundations given in Section 4 shall apply in the case of tubular steel piers except that steel tubes resting upon gravel foundation without piling shall be carried to a depth greater than 2.44 m below the permanent bed of the stream and to such additional depth as may be necessary to eliminate all danger of undetermined nature.

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Piles supporting tubular piers shall thoroughly brace the tubes by extending into the concrete filling a sufficient distance, which in general shall not be less than 1.83 to 2.44 m.

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11.3 Abutment (NSCP, 7.4)

Abutments shall be designed to withstand earth pressure as specified in Article 3.20, the weight of the abutment and bridge superstructure, live load on the superstructure or approach fill, wind forces and longitudinal forces when the bearings are fixed, and longitudinal forces due to friction or shear resistance of bearings. The design shall be investigated for any combination of these forces which may produce the most severe condition of loading.

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11.4 Foundations (NSCP,4)

Foundation bearing capacity of foundation soil shall be based on the following.

(1) Theoretical Estimation (NSCP, 4.2.1) when the age looked make the

The bearing capacity of the foundation soil may be estimated using accepted theories. Such theories are based on the measurement of soil parameters such as cohesion and angle of friction or on the results of field tests such as the standard

penetration test or the shear vane test.

(2) Approximate Values (NSCP, 4.2.3)

Where testing is not carried out, the bearing capacity and angle of friction of broad basic groups of materials given in Tables 10-8 and 10-9 may be used. These values should be used conservatively; for example, in determining lateral pressures, the minimum angle of friction shall be taken.

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Material	Safe Bearing KN per squa Minimum	
Alluvial soils	48	96
Clays	96	383
Sand, refined	96	383
Gravel	192	383
Cemented sand and gravel	479	958
Rock	479	
Jana Carallana		

Angle of Friction						
Earth. Loam	30 ⁰ to 45 ⁰	Gravel	30° to 40°			
Dry Sand	25° to 35°	Cinders	25° to 40°			
Moist Sand	30° to 45°	Coke	30° to 45°			
Wet Sand	150 to 300	Coal	25° to 25°			
Compact Earth	350 to 400					

(3.) Piles (NSCP, 4.3.1)

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In general, the penetration for any pile shall not be less than 3.05 m into hard cohesive or dense granular material nor less than 6.10 m into soft cohesive or loose granular material. Piles for trestle or pile bents shall meet these requirements and, in addition, unless refusal is encountered, shall penetrate not less than 1/3 the length of the pile.

(4) Maximum Design Loads for Piles (NSCP, 4.3,4.5)

In those cases where it is not feasible to make the required subsurface investigations or test loads, the maximum assumed design load for piles shall be as given in the tables below. These values may increase for certain combinations of loads as specified in Article 3.22.

The assumed pile loads shall be substantiated by using a pile driving formula to determine the allowable load when the piles are driven, as provided in Article 3.6.2 — Division II.

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Size or Diameter			Types of Piles	
at Butta	Timber (Kn)	Concrete (Kn)	Steel (Friction) (Kn)	Steel Point-Bearing
				1.10.10
200	40	-	142	62 MPa.
250	178	178	178	of point area,
300	214	214	214	not including.
350	249	249	249	the area of
400	285	285	<u></u>	any pile tip
500	- ,	356	-	reinforcement.
600		445		

^{*} Timber piles diameter to be measured 0.91 m from butt.

(5) Footing (NSCP, 4.4) Depth (NSCP, 4.4.2)

The depth of footings shall be determined with respect to the character of the foundation materials and the possibility of undermining. Except where solid rock is encountered or in other special cases, footings of all structures, other than culverts, which are exposed to the erosive action of stream currents shall be founded at a depth preferably not less than 1.22 m below the permanent stream bed. Stream piers and arch abutments shall be founded at a depth preferably not less than 1.83 m below stream

 bed. The above preferred minimum depth shall be increased as conditions may require.

- (6) Caisson is a hollow foundation structure which is prefabricated off-sit and transported to location, or built at the site and lowered into place as a single unit. The stability of a caisson is calculated as rigid body supported by spring at its bottom and sides. The fundamental consideration for design of caisson are as follows:
 - At the bottom of caisson, maximum reaction due to vertical loading shall not be greater than the allowed vertical soil bearing capacity.
 - In front of the side-wall of the caisson, maximum horizontal reaction due to horizontal force shall not be greater than the allowed horizontal soil bearing capacity.
 - At the bottom of caisson, resistance shear force shall not be greater than the allowed shear bearing capacity between bottom of caisson and ground.
 - Displacement of caisson shall not exceed the allowed displacement.
- 12. Material and Allowable Stress
- 12.1 Concrete (NSCP, 8.15.2.1)

Stresses in concrete shall not exceed the following.

(1) Flexure

Extreme fiber	stress in compression, fc	0.40 f _c '
Extreme fiber	stress in tension for plain	
		0.21 f _r

Modulus of rupture, of from tests, or whife data are not available:

Normal weight concr	ete		 4.05	
"Sand-lightweight"	concrete .		0.52	√fc
"All lightweight"	concrete -			
化基金基件 医皮肤 医抗脓性 化氯化钾		of outline yo		1 .

$\mathcal{E}(2)$. Shear for the proof of the second solution of the factor \mathcal{E}

For detailed summary of allowable shear stress, v_c , see Article 8.15.5.2. Shear Stress Carried by Concrete

The transport of the property of the comment of the

(3) Bearing Stress in the second will be in the second with the second continued the second continued to the second continued

The bearing stress, $\mathbf{f}_b,$ on loaded area shall not exceed 0.30 $\mathbf{f}_c{}^{\prime}.$

When the supporting surface is wider on all sides than the loaded area, the allowable bearing stress on the loaded area may be increased by $\sqrt{A_2/A_1}$, but not more than 2.

12.2 Reinforcing Steel

The tensile stress in the Reinforcing Steel fs shall not exceed the following:

•	Grade	40	reinforcement	138	MPa
	Grade	60	reinforcement	 166	MPa

12.3 Structural Steel (NSCP, 10.32.1)

Structural steel shall conform to the materials designated in Table 10.5. (The stresses in this table are in pounds per square inch). The modulus of elasticity of all grades of structural steel shall be assumed to be 200 000 Mpa and the coefficient of linear expansion is 11×10^{-6} per degree Centigrade.

12.4 Pre-stressed Concrete (NSCP, 9.15)

(1)	Pre-stressed Steel
	in Till og skriver i forskriver for til store skriver i store skriver i skriver i skriver i skriver i skriver Der kappere gjenne i skriver i
	- Temporary stress before loss due to creep and
	shrinkage 0.70 fs'
	- Stress at service load after losses 0.80 fy*
	inger en
(2)	Concrete
	and the second second of the second s
	- Temporary Stresses Before Losses Due to Creep and Shrinkage:
•	- Compression
	Pretensioned members 0.60 fci
aga Na K	Post-tensioned members 0.55 fc1
	- Tension
•	Precompressed tensile zone No tempo-
object of	rary allowable stresses are specified. See Article for
	allowable stresses after losses.
San San Artists	Other Areas
	In tension areas with
	no bonded reinforcement 1.40 Mpa or 0.25 VFc1
	not exceed 0.62 vfci'
	- Stress at Service Load After Losses Have Occurred:
	Compression 0.40 √FC
	Tension in the precompressed tensile zone
	(a) For members with bonded reinforcement 0.50 VFC
	For severe corrosive exposure conditions,
	as coastal areas 0.25 √Fc
	(b) For members without bonded reinforcement 0
	Tension in other areas is limited by the allowable temporary

stresses specified in Article 9.15.2.1.

- Cracking Stress* I have a common approximate the second approximation

Modulus of rupture from tests or if not available.	
For normal weight concrete	0.62 √Fc
For sand-lightweight concrete	0.52 √ fc
For all other lightweight concrete	0.46 √FC'

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- Anchorage Bearing Stress

Post-tensioned anchorage at service load ----- 20.70 MPa (but not to exceed 0.9 f'Ci

- Prestressing Steel

Wire, strands, or bars shall conform to anyone of the following specifications.

"Uncoated Stress-Relieved Wire for Prestressed Concrete," AASHTO M 204.

人名英格兰人姓氏格兰的变体 医皮肤 医皮肤 化二甲基酚甲基

- "Uncoated Seven-Wire Stress-Relieved Strand for Prestressed Concrete," AASHTO M 203.
- "Uncoated High-Strength Steel Bar for Prestressing Concrete." ASTM A 722.

Wire, strands, and bars not specifically listed in AASHTO M 204, AASHTO M 203, or ASTM A 722 may be used provided they confirm to the minimum requirements of these specifications.

Notations:

- fc' = specified compressive strength of concrete, MPa
- fr = modulus of rupture of concrete, MPa
- fc = extreme fiber compressive stress in concrete at service loads
- A₁ = loaded area

A2 maximum area of the portion of the supporting surface that is geometrically similar to and concentric with the loaded area.

MPa - mega pascal

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fs' - ultimate strength of prestressing steel

fy* = yield point stress of prestressing steel

fci = compressive strength of concrete at 28 days.

(Refer to Tables 10.5, 10.6 and 10.7)

Table 10.5 MINIMUM MATERIAL PROPERTIES (STRUCTURAL STEEL)

STARL BARRY PROPERTY

	H	inimum Materia Structura	l Properties		
Туре	Structural Steel	High-S Low-Allo	trength by Steel	High Yiel Quenched a Alloy	nd Tempered
AASHTO Designation ²	M 183	M 223	M 222	M244	
Equivalent ASTM Designation	A 36	A 572 Grade 50	A 588	A 514b	A 517b.c
Thickness of Plates	Up to 200mm	Up to 50mm	Up to 100mm : incl.	Up to 63 1/2mm	Over 63 1/2 mm 100 mm incl.
Shapes ^d	All Groups ^e	Shapes thru 635 kgm/m	All Groups	Not Applicable	Not Applicable
Minimum Tensile Strengt Fu (MPa)	h, 400	448	483	758	689
Minimum Yield Point or Hinimum Yield Strength, Fy (NPa)	248	345	345	689	620

^aExcept for the mandatory notch toughness and weldability requirements, the ASTM designations are similar to the AASHTO designations. Steels meeting the AASHTO requirements are prequalified for use in welded bridges.

bQuenched and tempered alloy steel structural shapes and seamless mechanical tubing meeting all mechanical and chemical requirements of ASTM A 514/A 517, except that the specified maximum tensile strength may be 965, Mpa for structural shapes and 1000 Mpa for seamless mechanical tubing, shall be considered as ASTM A 514/A517 steel.

Chaterials ordered to ASTM A 517 specifications shall comply with toughness requirements of AASHTO H 244.

 $^{
m d}$ Groups 1 and 2 include all shapes except those in Groups 3, 4 and 5. Group 3 includes L-shapes over 19 mm in thickness. HP shapes over 152 kilograms/m and the following H shapes:

Designation:

W36 x 230 to 300 Incl.

-W33 x 200 to 240 incl.

W14 x 142 to 211 incl.

W12 x 120 to 190 incl.

Group 4 includes the following W shapes: W14 x 219 to 550 incl.

Group 5 includes the following W shapes: W14 x 605 to 730 incl.

For breakdown of Groups 1 and 2 see ASTM A 6.

^eLimited to 100 mm thickness for structural members other than bearing assembly components.

Table 10.6 MINIMUM MATERIAL PROPERTIES (PINS, ROLLERS AND ROCKERS)

			al Properties and Rockers		
Ex	pansion rollers s			m in diameter	
AASHTO Designation ² with Size Limitations	H 169 100 mm in dia. or less	M 102 To 500 mm in dia.	M 102 To 500 nm in dia.	M 102 To 250 mm in dia.	M 102 To 500 mm in dia.
ASTM Designation Grade or class	A 108 Grades 1016 to 1030 incl.	A 668 lass C	A 668 Class D	A 668 Class F	A 668 ^b Class G
Minimum Yield Point, mpa Fy	248 ^a	228	258	345	345

^aFor design purpose only. Not a part of the A 108 specifications. Supplementary material requirements should provide guarantee that material will meet these values.

May substitute rolled material of the same properties.

Table 10.7 ALLOWABLE STRESSES OF MATERIALS

in in its second	4 4 0 0 0 0 0	CLASSIFICATIO	CLASSIFICATION OF MATERIALS	ALLOWABLE	STRENGTH	ر م	
		CLASS	SPECIFIED STRENGTH MPO	FORMULA	C (MPa)	C(Kg/cm²)	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
• SUPERSTRUCTURE							
			3		Ä	91 	
1. Structural Steel	Axid feasion and feasion in extreme tension members	AASHTO MI83	Fy=248	0.55 fy	136.4	1 390	
	subject to bending.	AASHTO M222	Fy = 345	0, 55 ty	8.681	1935	
							· Ta
	Compression in extrame libers of member subject to ben-						
	ding when						
	(A) Compression flange is supported faterally by embedment			0.55 fy	136.4	1390	
	in concrete						
	(B) Partially supported with 1/b not greater than 3b			137, 888 - 0.004 (1/b)			
2. Reinforcing Steal		GRADE 40	Ty.		138.0	1407	
		GRADE 60			166.0	2691	
3. Prestressing Steel	Temporary stress before loss due to creep and shrinkage	:		0.701's			
	Stress at service load ofter losses			0.80 fy	<u>;</u>		4
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Frincia (ther strass in compression (fig.)	CLASS"A"	1'c ≥ 20 68	0.40 1'c	8.272	46	
2	Extreme fiber stress in tension for plain concrete (ft)			0.21 1			
5 Prestrassed Concrete	(1.) Temporary stresses before losses due to creeb and	****			la i		
		. : :					
	A. Post - tensioned members (Compression)	CLASS"D"	1'01=34.5	0.55 f'el	6.81	261	1ct = 1'c = 6'28
	B. Pre-tensioned members (Compression)	CLASS"D"	1'c1=34.5	0,60 f'ci	20.7		fol = f c = #28
	Tension in precompressed tensile zone.	CLASS"D"	1 61=34.5	. 0	1	ļ	
	In tension greas with no bonded reinforcement	CLASS"D"	f cl= 34.5	1.40 MPa or 0.25 / r'cl	1.47	ŭ	
	12.) Stresses at service load after losses have occured						
	Transfer to the constraint transfer to	CLASS "D"	for 34, 5	0.40 f'c	 	<u>4</u>	* ,*
	A.) For members with bonded reinforcoment	CLASS"D	6,6 = 34.5	0.50 / 10	2.94	o n	
	For severe cerresive exposure conditions, such as coostal areas	CLASS D	70.34.5	0.25 Vf'c	1. 47	<u></u>	
	For members, without bonded reinforcement	CLASS"D"	1'c = 34.5		,		
	CONTRACTOR ATTENDED						
	For normal weight concrete	CLASS"D"	10:34.5	0.62 Vrc	3.64	37	
	(4.) Anchorage bearing stress	CLASS"D"	10:34.5	20.70 MPa	20.70	211	not to exceed 0.90 f'ci
			-				
• SUBSTRUCTURE							
1, Structural Staal	See No. 1 Superetructure						
2. Reinforcing Studi		GRADE 40		-	138.0	1407	
		GRADE 60			166.0	1892	
J. Steel H-Pile		AASHTO MIBS	ly=248	0.55 fy	136.4	0621	
4. Prestressing Steel	See No.3, Superstructure		*:				
5. Concrete	Normal Weight Concrete	CLASS"A"	1'c= 20.68	0.401'c	8.272	8.4	A CONTRACTOR OF THE PARTY OF TH
6. Precest Concrete Pile	Normal Weight Concrete	CLASS"C"	('c≈20.68	0,401'c	8.272	84	
Department Contracts to 10		CLASS"D"	1'0:34.5	0.401°c	3.8	14.	
A Cast-In- Place Countries Pills	Normal Weight Concrete	CLASS"C"	f'c=20.68	0.401'c	9.272	46	

13. Design Standards

In studying and determining the design criteria, the NSCP is the primary source. However, the following standards were also considered in addition to the NSCP.

- (1) AASHTO, STANDARD SPECIFICATION for Highway Bridges, THIRTEENTH EDITION, 1983
- (2) A policy on Geometric Design of Highway and Streets, AASHTO, 1984
- (3) HIGHWAY DESIGN GUIDELINES, D.P.W.H.
- (4) BRIDGE DESIGN GUIDELINES (PART IV), D.P.W.H.
- (5) SPECIFICATION FOR HIGHWAY BRIDGES, JAPAN ROAD ASSOCIATION, 1978

10.4.14 Unit Conversion

The unit being utilized in the preliminary design is based on the following relationships between Metric and Systems International Unit.

- $1 Pa = 1 N/m^2$
- 1 kgf = 9.80665 N
- $1 \text{ N/cm}^2 = 10 \text{ KPa} = 10,000 \text{ Pa}$
- $1 \text{ KN/cm}^2 = 10 \text{ MPa} = 10,000,000 \text{ Pa}$
- 1.0 $kgf/cm^2 = 9.80665 N/cm^2 = 98066.5 Pa$
- $1,000 \text{ kgf/cm}^2 = 9.80665 \text{ KN/cm}^2 = 98,066,500 \text{ Pa}$
- $70 \text{ kgf/cm}^2 = 6.865 \text{ MPa}$
- $1,200 \text{ kgt/cm}^2 = 117.68 \text{ MPa}$
- $1,400 \text{ kgg/cm}^2 = 137.3 \text{ MPa}$

APPENDIX 10.3

STANDARD BRIDGE WIDTH OF PREVIOUS PROJECTS

AP 10.2 STANDARD BRIDGE WIDTH OF PREVIOUS PROJECTS

D	ESCRIPTIONS	YEAR PREPARED	ISSUED BY	BRIDGE WIDTH
1.	.LAOAG - ALLACAPAN ROAD (PHASE II)	w	DPWH	0.76 + 7.32 + 0.76
2.	BAUANG BRIDGE (MNR)	•	DPWH	0 + 6.10 + 0
3.	PLARIDEL BRIDGE tru (PANGASINAN)	nss -	DPWH	0.76 + 7.32 + 0.76
4.	TYPICAL COMPOSITE I- BEAM BRIDGE		ONIE	
5.		May 1970 July 1982	OPWH	0.46 + 7.32 + 0.46
6.	TYPICAL ABUTMENT FOR 100 FT.SPAN AASHO		DPWH	0.76 + 7.32 + 0.76
7.	STANDARD 20,30,40, 50, AND 60 FT.	Sept. 1982	DPWH	0.76 + 7.32 + 0.76
	BAILEY BRIDGE	June 1981	DPWH	3.937
8.	STD. 100 FT. SPAN AASHO PSC-I-BEAM		•	
9	(POST TENSIONED) STANDARD 100 FT. PRESTRESSED CON- CRETE GIRDER BRIDGE SPAN	June 1982 Aug. 1978	орин Орин	0.46 + 7.32 + 0.46 0.46 + 7.32 + 0.46
0.	RC-TEE BEAM	Sept. 1971	DPWH	0.76 + 7.32 + 0.76
11.	STANDARD STEEL BRIDGE FOR 45 M SPAN (JUMBO)	Jan. 1984	DPWH	0.76 + 7.32 + 0.76
12.	STANDARD 23.0 M SPAN R.C. BOX	May 1966	DPWH	0.76 + 7.32 + 0.76
13.	STANDARD 100 FT. PRESTRESSED CONCRETE GIRDER BRIDGE	Aug. 1978	DPWH	0.46 + 7.32 + 0.46
14.	STD. 15.0 M RCDG			0.76 + 7.32 + 0.46
15.	STD. 10 M RCDG	Oct. 1975		0.46 + 7.32 + 0.46
16.	STD. RCDG BRIDGE			0.76 + 7.32 + 0.76
17.	STD. STEEL I BEAM BRIDGE (25 M)		NIPPON KOKAN	
	STD. 12 M SPAN RCDG	-		0.75 + 7.32 + 0.75
9.	STD. 12 M RCDG SPAN	Jan. 1976	DPWH	0.76 + 7.32 + 0.76
20.	STD. 12 M RCDG SPAN	-	DPWH	0.46 + 7.32 + 0.46
	STD. RCDG 14 M SPAN			•

APPENDIX 10.4

COMPARATIVE DESIGN

- 1. Comparative Design
- 2. Labangan Bridge
 - 2.1 Foundation
 - 2.2 Superstructure and Substructure
- 3. Tagamusing Bridge
- 4. Bued Bridge
- 5. Bauang Bridge
- 6. Indiana Bridge
- 7. Pinacanauan Bridge
- 8. Pared Bridge
- 9. Jiabong Bridge

1. Comparative Design

Preliminary design is carried out based on its planning conditions and design criteria, however, the actual bridge site conditions must also be considered to determine the practical way of preliminary design. Thus, a comparative design to select the most suitable rehabilitation method is important before the major preliminary design. The comparative design is concerned with the fundamental studies such as alignment, types of superstructure, substructure and foundation. The comparative design was carried out for the following bridges.

Bridge Name		Comparative Design
hreatur gy		
- Labangan	\$1 - 1.7 	Type and Span Arrangement of Bridge structures
	1 8	and Type of Foundation
- Tagamusing		Type and Span Arrangement of Bridge Structures
- Bued		Type and Span Arrangement of Bridge Structures
		and Alternative alignment
- Bauang I		Type and Span Arrangement of Bridge Structures
- Indiana	,	Type and Span Arrangement of Bridge Structures
- Pinacanauan		Type of Rehabilitation Method
- Pared		Type and Span Arrangement of Bridge Structures
- Jiabong		Type and Span Arrangement of Bridge Structures

Table of Comparative Design

	Bridge Name Cases	Span length (m)	Total Length	Superstructure Type	Remarks
ι.	LABANGAN				
•	CASE I	3 @ 26.0=78.0	•	S-I-B	
		1 @ 35.0		Continuous Steel Box	
		1 @ 60.0	260.0m	Continuous Steel Box	
٠.	e e e e e e e e e e e e e e e e e e e	1 @ 35.0		Continuous Steel Box	
		2 @ 26.0=52.0		S-I-B	

	Bridge Name Cases			Total Length	Superstructure Type	Remarks
	CASE II	2 8 26	.0=78.0		PC-I	
	CASE II		.0-/0.0	Total News	Continuous PC Box	
					Continuous PC Box	na daga jaran jarah da karan da karan Karan da karan da ka
		1 6 35			Continuous PC Box	
			.0=52.0		PC-I	
1.		26.20	.0.02.0		in i galanini di katalan a katalan ang Langan	i di North de la propertional de la companya de la La companya de la co
	CASE TIT	8 8 32	.50=260.0	260.0m	Simple PC-I	
	CASE IV	8 @ 32	.50=260.0	260.0m	Simple S-I-B	Recommended
2.	TAGAMUSING					
:	CASE I	1 @ 15	.0	The same of	PC-I	Recommended
	VIII -		1.5	50.0m		displaying a
		1 6 15	The second second			
				international design	in the state of th	
	CASE II	2 @ 25	.0=50.0m	50.0m	PC-I	
3.	BUED		to the second			
	CASE I	1 @ 25			PC-I	
			.0=200.0		Continuous PC Box	andis against
,		1 € 32	and the second s	500.5m		
			.0=150.0		Continuous PC Box	
		3 6 31	.0=93.0		PC-T	
	•		• •			
	CASE II	1 @ 25			S-I-B	
			.0=200.0		Continuous Steel Bo	
			.5	500.5m	S-I-B	
	4.0		.0=150.0		Continuous Steel Bo	
		3 @ 31	.0=93.0		S-I-B	
					i de la compania de l La compania de la co	
	CASE III	_	-		PCI	
		•	.0=150.0		Concrete PC Box	
		_	.5	500.5m		
	• •	_	.0=150.0		PC-I	
		3 @ 31	.0-93.0		PC-T	Automotive Contract

	Bridge Name Cases		Sp	an length (m)	Total Length	Superstructure Type	Remarks
	CASE IV	3	6	25.0=75.0		PC-I	Pagament de d
i,	andrasia. Tarakan merendakan berasalah	б		25.0-150.0		PC-I	Recommended
		1		32.5	500.5m	PC-T	
		6	6	25.0=150.0	de se su y un subt	PC-I	
		3	e	31-93.0		PC-T	
1						a. a vēē ^v ēē ^v ē a	\$ *
•	BAUANG I						÷
	CACDIT	_	_	05.0.005.0			
:	CASE I	9	Æ	25.0=225.0	225m	PC-I	Recommended
1	CASE II	9	6	25.0=225.0	225m	PC-I	
	CASE III	9	9	25.0=225.0	225m	PC-I	
:						10-1	
	7 17 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18					1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
•	INDIANA	4.7					
	CASE I	1	e	19.50	-	S-I-B	Recommended
1.		14 14 1	15	25.0=75.0	110.0m	S-I-B	Recommended
		1	•	15.50		S-I-B	
							•
	CASE II	1	6	19.50	•	PC-I	
. :		3	9	25.0=75.0	110.0m	PC-I	
4.		1	9	15.50		PC-I	
		;					
	CASE III	1	9	17.50	•	PC-I	
٠.		3		25.0=75.0	110.0m	PC-I	
		1	9	17.50		S-I-B	
• .	PINACANAUAN	Ī					
	CASE I	1	ρ	15.0		e T D	Dagamendad
1.5	onon I			15.9 60.0=180.0	383.40m	S-I-B	Recommended
			_	12.50=187.5		Truss S-I-B	
			e	F5+3A-T61+3		⊅⇔T≃D	
•	CASE II	1	A	15.9		S-I-B	
	onon 11		~	60.0=180.0	•	Truss	
			_	25.0=50.0	383.40m	PC-I	
;				the state of the s			
			e	12.50=137.5		S-I-B	

Bri	dge Name Cases		Span length (m)	Total Length	Superstructure Type	Remarks
7. <u>PA</u>	RED				ing consider pro-	
CA	SE I	1	€ 10.00		RCDG	
		1	€ 37.50	203.10m	PC-T	
	٠	1			RCDG	
		3	e 49.20=147.6	0	Truss	
CA	SE II	2	@ 23.75=47.5		PC-I	Recommended
		1	@ 8.00	203.10m	RCDG	
, •		3	@ 49.20=147.6	173	Truss	
<u>JI</u>	ABONG	-			医乳腺 医皮肤	
CA	SE I	11	@ 6.82=75.0	75.0m	RC-Slab	
CA	SE II	2	@ 37.5=75.0	75.0m	PC-T Beam	
CA	SE III	3	@ 25.0=75.0	75.0m	PC-I Beam	Recommended
CA	SE IV	б	€ 12.5=75.0	75.0m	Pre-cast PC-T B	eam

BRIDGE (1/2)	-
AN BRI	
LABANG	
FOR	_
DESIGN	NO
DES	TTAG
COMPARATIVE DES	TT ACIVITATION OF THE
SUMMARY OF COMPARATIVE DESIGN FOR LABANGAN	TTACINIDAT.

	N - Blows	Cast in Pile	Open Caisson
		2 8 000 1 16000	1000 th
	Soil Condi- tions for Application	Clay and silt are suitable Sand are not suitable	Gravel size less than 10 cm is suitable, but from 10 to 50 cm
	Applicable Depth	60 m Equipment preparation and ins-	is slightly difficult. 50 m
	Equipment/ Construction method	tallation is comparatively easy, and construction is suited for construction above water	Keeping amending inclination and accurate sinking of open caisson is difficult.
	Construction Period	! 	-
	Construction Cost	1,000,000 pesos	* 2,600,000 pesos
	Assessment	(1) Clay and silt soilare suita	ended for the following reasons: able for execution drills. the construction above water. er than that of caisson.
ſ	Results	Recommended	

^{*} Minimum size for construction is considered.

AP10-48

...

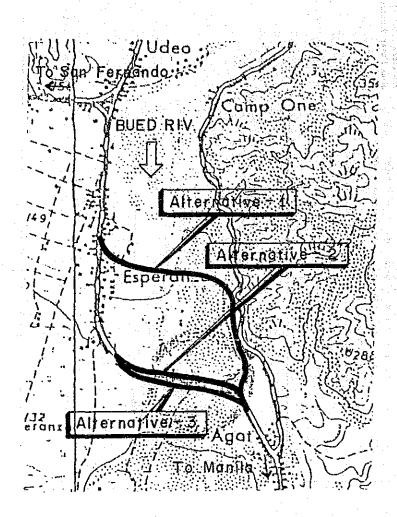
SUMMARY OF COMPARATIVE DESIGN FOR LABANGAN BRIDGE (2/2) (SUPERSTRUCTURE AND SUBSTRUCTURE)

CONSTRUCTION COST(xICPesos ASSESSMENT/RECOMMENDATION	Lowest construction cost is concrete PC-1 bridge, however, steel bridge (CASE-4) is recommendable by reason of that • It is required to make the proposed height of the bridge lower.	•A steel bridge is advantageous at places where the bearing stratum layer is very deep, likely more than 30 m.		
CONSTRUCTION COST(xIGPesos	Superstructure 38,700 Substructure 21,465 Others 6,724 Total 66,889	• Superstructure 29,117 • Substructure 23,850 • Others 6,724 Total 59,691	• Superstructure 22,730 • Substructure 17,100 • Others 6,724 Total 46,554	• Supers tructure 27,730 • Substructure 13,680 • Others 6,724 Total 48,134
FEATURES OF ALTERNATIVES	• Continuous long span bridge is provided at the low water channel. • The steel bridges are considered to minimize the superstructure's effect to the substructure. • Web height of box girder is 2.10 m. • Imported steel is required.	Continuous long span bridge is provided at the low water channel. The concrete PC bridges are considered to minimize the construction cost. Whe height of box girder is 2.50m. Local procurement of materials. is possible.	Simple span of PC-1 bridges are provided to minimize web height. Short span arrangement will give smaller construction costs than longer span arrangements. Web height of girder is 2.03 m. Local procurement of materials is possible.	Simple span of steel bridges are provided to minimize web height. The Hight superstructure is effective for reducing its reaction to substructure. Nob height of girder is 1:91 m. Imported steel is required.
ALTERNATIVES	The state of the s	TOTAL	Service and the service of the servi	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

SUMMARY OF COMPARATIVE DESIGN FOR TAGAMUSING BRIDGE

ASSESSMENT / RECOMMENDATION	CASE_1 is recommended by reason that: • The pier at the center of	Dridge (LASE-2) is disadvan- tageous because the river is considerably steep slope flow and local scouring is severe around pier foundation.	
CONSTRUCTION COST(x10 Peror)	• Substructure 2,992 • Substructure 4,110 • Others 2,060 (River Facilities,etc.)	Total 9,162	• Superstructure 3,712 • Substructure 4,404 • Others 2,060 (River Facilities,etc.) Total 10,176
FEATURE OF ALTERNATIVES	The existing RCDe's are replaced by new concrete PC-I bridge. Both side spans are extended from 10 m to 15 m. Center noise P. te domitized and see	remained two piers were reinforced.	The existing RCDG's are replaced by new concrete PC-1 bridge. The both side spans are extended from 10 m to 15 m. Pland P2 piers are demolished.
ALTERNATIVES	11/1 1/1 1/1 1/1 1/1 1/1 1/1 1/1 1/1 1/		CASE-2

4. Bued Bridge



To determine the rehabilitation method of Bued Bridge, the following three (3) alternative alignments are considered for comparison and examination with the technical economical aspects. These alternative alignments outlined as follows:

STOREM GERLERSENS ...

(1) Alternative - 1:

Realignment at the upstream side of the existing bridge is planned and approach roads and new construction of superstructure and substructure are considered: Bridge Length = 369.0 m, Approach Road Length = 1,300 m, Total Length = 1,669.0 m.

(2) Alternative - 2:

Raising of the existing bridges on the existing alignment is planned at the girder bridge portion and reconstruction of superstructure is considered at the RCDG and truss bridge portion including pony truss: Bridge Length - 500.38 m, Approach Road Length -

(3) Alternative - 3:

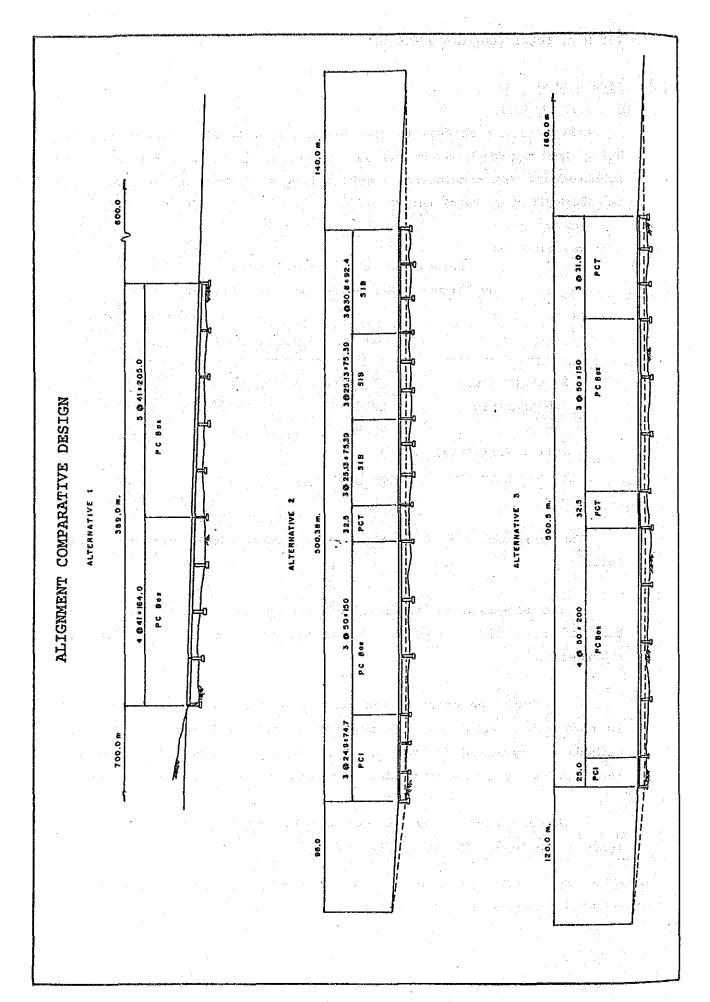
Alignment is shifted to the downstream side of adjacent existing bridge and approach roads and new construction of superstructure and substructure are considered: Bridge Length = 500.5 m, Approach Road Length = 280.0 m, Total Length = 780.5 m.

Comparison of Construction Cost on Alignment Comparison for Bued Bridge

			Unit: x10 ³ P	esos
	Alternative-l	Alternative-2	Alternative-3	•
- Superstructure	41,326	46,901	54,712	•
- Substructure	22,039	18,264	19,952	
- Others	26,981	20,228	17,838	: '
(River Facilities	, etc.)			
Total	89,346	85,393	92,502	•

The alignment of alternative-3 is recommendable because of the following:

- The alignment of alternative-1 on the steep slope of the left bank of Bued river requires the costly work of cutting slope and embankment.
- although the construction cost of alternative-2 is rather cheap in comparison with other alternatives, Sophisticated construction methods are required for raising the existing girders. Furthermore, a long and costly temporary bridge is necessary during the construction.
- Alternative-3 can be constructed without long and costly temporary bridge. (Refer to Fig. 10.8)



SUMMARY OF COMPARATIVE DESIGN FOR BUED BRIDGE

Γ	I Æ	of the state of th		
CONSTRUCTION COST(xIOPeres ASSESSMENT/RECOMMENDATION	CASE-4 of alternatives is recommendable by reason that: • As new piers coincide with the location of that of existing, the new piers do not obstruct the current of river.	 Web height is lowest among the alternatives. Construction cost is cheapest. 		
	• Superstructure 54,712 • Substructure 17,245 • Others 19,223 (River Facilities etc) - Total 91,180	• Superstructure 141,483 • Substructure 17,245 • Others 19,223 (River Facilities etc. Total 177,951	• Superstructure 41,634 • Substructure 21,752 • Others 19,223 (River Facilities,etc) Total 82,609	• Superstructure 35,102 • Substructure 24,967 • Others 19,223 (River Facilities,etc) Total 79,292
FEATURE OF ALTERNATIVES	• Long span bridges are provided at the main stream portion of the river. • Continuous concrete PC-Box and PC-T beam bridges are planned. • Web height of PC-Box is 2.50 m.	• Long span bridges are pro- vided at the main stream portion of the river. • Construction Steel-Box girder. • Web height of box girder is 2:30 m	• Concrete PC-Box and PC-T beam are provided to coin- cide with the existing pier location. • Web height of PC-Box is 2.50 m.	• Concrete PC-1 and PC-T bridges are provided to minimize the web height of girders or beams. • Web height 1s 1.75 m.
ALTERNATIVES ALTERNATIVES		CASE - 2.	CASE - 3 1922 1922 1922 1924 1925 19	110 110 110 110 110 110 110 110 110 110

SUMMARY OF COMPARATIVE DESIGN FOR BAUANG BRIDGE

ASSESSMENT / RECOMMENDATION	CASE-1 is recommended by reason that: • Construction cost is relatively cheap in comparison with other alternatives. • The cases to reinforce the existing piers have problems	that sophisticated construction methods are required and completeness of reinforcement is not so reliable. CASE-3 is very costly.	
CONSTRUCTION COST(x103Pesos)	• Superstructure 15,399 • Substructure 29,895 • Others 6,562 (River Facilities,etc) Total 51,856	• Superstructure 15,399 • Substructure 14,826 • Others 19,079 (River Facilities,etc)	• Superstructure 22,510 • Substructure 33,057 • Others 6,562 (River Facilities,etc.) Jotal 62,129
FEATURE OF ALTERNATIVES	 New construction of concrete PC-I bridge (2-lanes) is constructed in parallel with the existing bridge at upstream. The existing bridge will be demolished after completion of new bridge 	The existing pony trusses are replaced by new concrete PC-I bridge. Substructure and foundation are reinforced to sustain the new superstructure.	 In initial stage, the new concrete PC-I bridge (1-lane) is constructed as the same location of CASE-1. Finally, the existing pony trusses are removed and a new superstructure is reconstructed on the existing substructure which is reinforced.
TERNATIVES	HOLLOWELLE COST LAND		
ALTER	CASE-1	CASE-2 SUPERSTRUCTION OF SUPERSTRUCTURE THE	THE THE TAXABLE AND THE TAXABL

ALTERNATIVES	THATTON ON A THOUSANT IN		_
		COMSTRUCTION COSTEXIO PESOS	ASSESSMEN I MECOMMENDA I ION
OC 91 OC 91 T NUMBER TO SHE	The existing pony truss bridges are replaced by new S-I-B bridges.	• Superstructure 11,090 • Substructure 2,250	CASE-I is recommended because:
	laced by S-I-B bridge. The existing piers including foun-	(River Facilities, etc)	 Construction cost is the cheapest among alternatives.
	dations are reinforced to sustain	Total	
	the new superstructures.		• CASE-1 is more resistable to earthquakes than other con-
			crete type bridges.
			 Rapid construction is expected.
	The existing nony truck by door are	Cream transfer	
SEPON O SEC. 75 D		Substructure Substructure Substructure	
PCI (EXXI PONY TRUSS) (EXAL)	• Manila side span is additionally rep-	÷	
	laced by concrete PC-I bridge.	cilities,etc)	
	The existing piers including four-		
The same of the sa	new superstructures.	17,06	
	• Concrete PC-I bridges will be newly	• Superstructure 7,409	
BADGE LENGTH 1 HD.00	constructed beside the existing brid-	• Substructure 10,022	
PCI EXST PONY TRUSS FC.L.	ges. The embermetures including foundations	• Others 3,173	
5	of new construction bridge are also	יייינו ומרווירופאפנה!	
P.William	planned.	Total 20,504	
200000 200000 200000 200000			

ALTERNATIVES	FEATURE OF ALTERNATIVES	CONSTRUCTION COST (x10Pesos)	ASSESSMENT / RECOMMENDATION
	化二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十		
	• The existing piers are reinforced with additional structure to in-	• Superstructure	CASE-1 is recommended because:
CASE - 1 TOTAL BRIDGE LEMOTH - 383,40	crease rigidness of piers.	• Others 800	
(18.7) (18.7) (18.7) (18.7)		acilities, etc)	• Reinforcing works of piers
TO THE THINK THE PARTY OF THE P	river bed protection and slope pro-	Total 3,666	can be done even with the
THE RESIDENCE THE PROPERTY OF	tection at high water channel are		
	also provided.		• In case of the construction
			of a new bridge, considerable
《《《《·································			Lemborary works are necessary
			Cost of reinforcing works of
			piers is cheaper than new
The second secon			construction of 2-span-bridge.
	(6)		
	bridge is newly constructed with	Superstructure 2,833 Cibe twinters	
CASE-2. TOTAL BRIDGE LERGYH . 2021-40.	removing the existing piers which		· · · · · · · · · · · · · · · · · · ·
1 0 00 00 1 0 00 00 1 0 00 00 0 0 0 0 0	become useless	facilities, etc)	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
OCHANA CONTRACTOR	a the river training works such as river bed protection and slope pro-	Fotal 4,869	
	tection at high water channel are		- 1977年の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の
	also provided.		
			Commence of the Commence of th

ASSESSMENT / RECOMMENDATION	CASE-2 is recommended because • Construction cost of CASE-2 is cheaper than that of CASE- 1. • The web height of girders of PC-1 (2.34 m) is heigher than	that of PC-1 (1.50 m). • PC-1 bridge is advantageous when replacing the existing pony truss with a floor height of 1.20 m.		
CONSTRUCTION COST (x103Pesos)	Superstructure 3,421 Substructure 2,435 Others 1,711 (River Facilities,etc) Total 7,568		• Superstructure 3,088 • Substructure 2,472 • Others 1,711 Total 7,271	
FEATURE OF ALTERNATIVES	 The existing temporary bailey bridge behind the existing abutment is replaced by RCDG and Pony Truss located on adjacent span also is replaced by PC-T. The cap portion of piers to sustain these superstructure is widened and reinforced. Manila side abutment is recons- 	tructed.	 The existing temporary bailey bridge and pony truss are replaced by 2-span PC-1 bridge. Piers and abutment are newly constructed. 	
ALTERNATIVES	CASE-1 CASE-1 CA		CASE-2 CASE-2	

9	. Jiabong Bridge			
ASSESSMENT / RECOMMENDATION	CASE-4 is recommended because: • Construction cost is the chea,— pest alternatives • Lighter superstructure do , not affect the foundation of piers so much,	ture is convenient for its erection.		
CONSTRUCTION COST (x 103Pesos)	• Substructure 1,700 • Substructure 25,500 • Others 922 (River Facilities,etc.) Total 18,222	• Superstructure 5,133 • Substructure 7,427 • Others 922 (River Facilities,etc) Total 13,482	• Superstructure 6,159 • Substructure 6,176 • Others 922 (River Facilities, etc.) T o t a 1 13,257	• Superstructure 6,637 • Substructure 9,402 • Other 922 (River Facilities.etc) Total 17,041
FEATURE OF ALTERNATIVES	• Span Arrangement: 11 "6.82 = 75.0 m • Superstructure Type: RC-Slab • New RC-Slab bridge is constructed taking into consideration the identical span length of the existing bridge.	• Span Arrangement: 3 25.0 * 75.0 m • Superstructure Type: PC-I beam • Medium span length is planned for optimization of construction cost.	• Span Arrangement: 2 37.5 = 75.0 m • Superstructure Type: PC-T beam • Longer span length is planned to reduce the number of piers	• Span Arrangement : 6 12.5 * 75.0 m • Superstructure Type: Precast PC-T beam • Shorter span length is planned for optimization of construction cost.
ALTERNATIVES	CASE-1	CASE-2	CASE- 3	case-4

APPENDIX 11.1

DETAILED CONSTRUCTION COST FOR BRIDGES

ADOPTED PRICE

Item Description	Unit	Region 1	Region 2	Region 3	rice Region 4	Region 5	Region A	Compo	nent (%) Local	Taxe
(I) EARTHWORK AND ROAD WORKS						inspirit o	megton o	toriegn	Local	1976
00 Clearing and Grubbling	Sq.n	2.16							1000	
02 Common excavation	Cu.s		2.16 43,8		,		2.18	7	83	1
03(2) Rridge excavation above low		10.0	40,0	42.9	42.9	43.8	44.2	67	23	. 1
Water Acces	Cu.n	58.5	58.5	57.3	57.3	20.5			100	
03(2)S Bridge excavation below low	1000 575		00.0	91.3	91.3	58.5	59.0	63	27	1
water:level	Cu.n	111	111	109	109	111	110		0.01	
3(5) Shoring, cribbing, cofferdam				105	103	111	112	61	29	. 1
and related work	LS	1	1	1	1	1	1	. 72	18	1
04(1) Embankment	Cu.z	69.0	69,0	67.7	67.7	69.0	69.7	73	18	1
04(S) Selected borrow for backfill	Cu.m	120	120	118	118	120	122	36	54	
0 Aggregate subbase course	Cu.m	193	195	191	189	195	195	72	18	1
1(2) FCC Pavement (Reinforced)	Sq.m	457	474	457	423	465	474	62	28	,
I) SUPERSTRUCTURE WORKS			·		·····	<u></u>				
1(S) Removal concrete structure	Cu.m	912	912	004						
1(1) Removal steel structure (bridge)	LS	1	1	894 1	894	912	921	43	47.	i
Railing	70.	760	803	760	1	700	1	67	23	1
Z Timber structure (Detour bridge)		55700	55700	54500	717	789	803	56	34	
3(S) Structural steel (Detour bridge)	Sq.m		5380	5080	61900	45200	43300	31	59	. :
Reinforcing steel	kg	17.4	18.7	18.4	4980	5180	5430	75	. 15	
5(1) Structural concrete, Class A	Cu.m		2860	2700	16.3 2600	17.9 2760	18.5	72	16	
Prestressed concrete bridge		15600	15800	15600	14400		2760	55	35	1
s Steel bridge(I-beam)	ton		61400	60200		15800	16100	68	22	
ie. gud Paint in Transaction of the second	Sq.m		71.1	67.1	60200 65.8	61400 68.4	·62000 71.7	81 13	9 77	: .
(1) SINSTRICTURE WORKS								10		
		1				1 . t. tr 2 . 1	1,743,75			
(S) Removal of concrete structure	Cu.m		912	894	894	912	921	43	. 47	
(1) Removal of steel structure	LS	. 1	1	1	1	1	1	67	23	:
0(3) Steel H-piles	D.	3260	3380	3190	3130	3260	3410	75	15	
0(4) Precast concrete pile (400X400mm)	Д	787	831	801	742	801	816	70	20	1
0(6) Steel sheet pile	w	3290	3410	3220	3160	3290	3440	75	15	3
0(7) Precast concrete sheet pile	m	569	601	580	537	580	587	69	21	. 1
0(16) Cast-in-Place concrete pile(1200mm		7130	7540	7270	6730	7270	7400	70	20	1
4 Reinforcement steel	kg	15.1	16.2	15.9	14.1	15.5	16.2	. 72	18	. :
5(1) Structural concrete, Class A	Cu.m		2000	1890	1820	1930	1930	61	29	
5(5) Seal concrete	Cu.m	1710	1800	1710	1640	1740	1740	63	27	-
Grouted riprap	Cu.m		989	962	883	945	883	43	47	4.
Stone masonry	Cu.m		893	869	797	853	797	48	42	
Gabion	Cum	663	663	688	625	663	600	62	58	
) RIVER TRAINING WORKS						la ja		:		
O(1) Untreated timber pile	121	134	134	131	149	109	104	49	41	
0(4) Precast concrete pile (400X400mm)	m.	787	831	801	742	801	816	70	20	
(6) Steel sheet pile	TD.	3290	3410	3220	3160	3290	3440	75	15	
Reinforcement steel	kg	15.1	16.2	15.9	14.1	15.5	16.2	72	18	
(1) Structural concrete, Class A	Cu.n	1890	2000	1890	1820	1930	1930	61	29	
(5) Seal concrete	Cu.m	1710	1800	1710	1640	1740	1740	63	27	
Grouted riprap	a.uO	936	989	962	883	945	883	43	47	
Stone mesonry	. Cum	845	893	869	797	853	797	48	42	
Stone pitching (Hand-laid			F1 9							
rock embankment)	Cu.m	300	300	311	283	300	272	28	62	
Gabion	Cu.m	663	663	688	625	663	600	62	28	
SPECIAL WORKS FOR REHABILITATION	1 2 41.2									
Additional stringer	ton	41300	42900	40500	39700	41300	43300	76	14	
Additional stringer Additional sidewalk			7150	6750	6880	6690	7220	73		
Reinforcing beam of RCDG	Sq.m Cu.m	5850	6180	5960	5520	5960	6070		17 34	٠.
Widening of pier coping	Cu.m	8520	9000	8680	8040	8680	8840	56 53	34	
graciang of pict coping	Cu, li	9520	3000	0000	VEUU	0000	0010		- 31	
TEMPORARY WORKS	500									
Scaffolding	Sq.m	- 156	156	153	153	156	158	70	20	
Staging	Cu.m	220	220	216	216	220	222	62		
Temporary bridge		5180	5380	5080	4980	5180	5430	. 75	15	
Preparation works	LS									

SUMMARY OF CONSTRUCTION COST ESTIMATE (1/2)

Unit : Peso

	No.	Bridge Name	Classification	Cost	Foreign	Local	Taxe
1 4	48	PLARIDEL	Repair	27430243.02	18448071.69	6239147.03	2743024.
1 6	54	TAGAMUSING	Reconstruction	11406055.06	7593823,01	2671626.54	1140605
î 6	58	BUED	Reconstruction	89967667.15	61799860.70	19171039.74	8996766.
1 7	65	TOWBOA	Replacement of Superstructure	727816.95	423830.77	231204.48	72781.1
1 8	77 :	BAUANG I	Reconstruction	54344695.10	37334857.77	11575367.81	5434469.
1 9		RAUANG II	Reconstruction	33512812.91	22469123.20	7692408.42	3351281.
	104	STA CRUZ I	Reconstruction for Extension span	14009919.61	9824619.78	2784307.87	1400991,
	113	LANGLANGKA I	Replacement of Superstructure	1949666.36	1145944.64	608755.09	194966.
	120	STA MARTA	Reconstruction for Extension span	25175444.47	17258342.34	5399557.68	2517544.4
	148	TIPCAL	Replacement of Superstructure	2634141.57	1701682.54	669044.87	263414.
3 1	3	MARILAO	Replacement of Superstructure	889215.27	524765.92	275527.83	88921.
3 2	14	LABANGAN I	Reconstruction	55712209.06	40391523.86	9749464.29	5571220.9
3 3	22	SULTPAN	Reconstruction	92133556.67	68408313.11	14511887.89	9213355.
		Sub-total		409893443.20 (100.0 %)	287324759.33 (70.1 %)	81579339.54 (19.9 %)	40989344.; (10.0)
2 17	71	INDIANA	Reconstruction for Extension span	19714998.19	13224013.60	4519484.77	1971499.6
2 18	73	BATU	Repair	23567370.57	15646269.90	5564363.61	2356737,(
2 19	86	NAMANPARAN I	Replacement of Superstructure	3668474.49	1890752.26	1410874.78	366847.
2 20	89	SAN LUIS	Repair	230225.60	124385.27	82817.77	23022.
	109	NAGUILAN	Repair	22321970.69	14660026.94	5429746.68	2232197.
	113	MALALAN	Repair	6767872.09	3927329,45	2163755.43	676787.
	126	RALASIG	Repair	3000923.02	1738254.83	962575.90	300092.
	129	SAN PABLO	Repair	10960469.17	7346386.69	2518035.56	1096046,
	139	PINACANAUAN	Repair	11015591.78	6944414.88	2969617,72	1101559.
	154	PARED	Reconstruction	16592853.29	11025191.21	3908376.75	1659285.
3 14	3	PLARIDEL-PULILAN		21170126.42	15220493.81	3832619.98	2117012.
3 15	14	SAN ROQUE	Repair	545320.11	316563.45	174224.64	54532.
3 16	43	SICSICAN	Repair	2994489.65	1853907.57	841133.11	299448.
100	100	Sub-total		142550685.07	93917989.86	34377626.70	14255068.
				(100.0 X)	(65.8 %)	(24.1 %)	(10.0
5 27	19	SUJE(RIZAL)	Replacement of Superstructure	2352451.07	1470754.46	646451.50	235245.
5 28	43	GUINOBATAN	Repair	660203.22	381351.34	212831.56 433438.64	66020. 126474.
5 29	75	SAN FERNANDO	Repair	1264748.64	704835.13	318852.43	82376.
5 30	76	PANUKID	Repair	823762.07	422533.43	423292.85	125992.
5 31	77	SAN ISIDRO	Repair	1259921.24	710636.26	481534.43	124384.
5 32	78	SAN GABRIEL	Replacement of Superstructure	1243849.22	637929.86	71411.18	20278.
5 33	79	PAHOHO	Repair	202781.25	111091.95 673329.97	455856.83	125465.
5 34	80	TINIGUIBAN	Replacement of Superstructure	1254652.00 148878.26	89475.03	44515.41	14887.
5 35	82	SGT. HATIAS	Repair		334385.71	307396.97	71309.
5 36	B6	NAUBOD I	Repair	713091.87 667039.54	424708.85	175626.73	66703.
5 37	99	SOOK	Repair	1163000.09	642734.15	403965.93	116300.
	143	KANAPAWAN	Repair	2048324.85	1356943.98	486548.38	204832.
5 39 1	154	BASIAD	Repair	13802703.32	7960710.12	4461722.84	1380270.
		Sub-total		(100.0 %)	(57.6 %)	(32.3 %)	(10.0
4 40	173	GUMACA	Replacement of Superstructure	1916937.84	1205135.04	520109.01	191693.
	181	TALABA	Replacement of Superstructure	1984034.93	1049107.62	736523.81	198403.
	188	BINAHAAN	Replacement of Superstructure	3014253.58	1795745.47	944082.75	304425
	190	PALSABANGON	Replacement of Superstructure	3213256.29	1526736.97	1365193.69	321325
	206	LACNAS II	Repair	147430.08	89773.73	42913.34	14743
	208 208	STO CRISTO	Replacement of Superstructure	2201455.65	1145159.40	836150.68	220145
	220	MAGAPONG	Replacement of Superstructure	2253899.17	1465773.64	562735.61	225389
	223	BIGA	Repair	723830.03	439570.93	211876.10	72383
	227	SAN CRISTOBAL	Repair	4477706.85	3171463.12	858473.04	447770
	-	Sub-total		19962804.42 (100.0 %)	11888465.92 (59.5 %)	6078058.03 (30.4 %)	1996280 (10.0
							1448541
	109	JIABONG	Reconstruction	14485412.54	9841303.57	3195567.72	154191
	120	HINOGBONGAN	Repair	1541911.03	997161.34	390558.58	724919
	160	JUBASAN II	Replacement of Superstructure	7249198.46	4728667.80	1795610.81	1455824
8 52 1	161	JUBASAN I	Reconstruction	14558244.89	9746043.60	3356376.80	3783476
		Sub-total		37834766.92 (100.0 %)	25313176.31 (66.9 %)	8738113.91 (23.1 %)	(10.0
		Grand Total		624044402.93 (100.0 %)	426405101.54 (68.3 %)	135234861.02 (21.6 %)	62404440

SUMMARY OF CONSTRUCTION COST ESTIMATE (2/2)

	ldes				Unit : Peso	
eg- Bri	logo , Bridge Name	Classification	Contruction		Component	
on No	bringe issue	CIGSII ICACION	Cost	Foreign	Local	Taxes
48	PLARIDEL	Repair	00400048 00			
54		Reconstruction	27430243.02	18448071.69	6239147.03	2743024.30
58		Reconstruction	11406055.06	7593823.01	2671626.54	1140605.51
		Poplanement '. c a	89967667.15	61799860.70	19171039.74	8996766.71
65	BAUANG I	Replacement of Superstructure	727816.95	423830.77	231204.48	72781.70
77	BAUANG 1	Reconstruction	54344695.10	37334857.77	11575367.81	5434469.51
	-1 BAUANG II	Reconstruction	33512812.91	22469123.20	7692408.42	3351281.29
104	STA CRUZ I	Reconstruction for Extension span	14009919.61	9824619.78	2784307.87	1400991.96
113	LANGLANGKA I	Replacement of Superstructure	1949666.36	1145944.64	608753,09	194966.64
120	STA MARIA	Reconstruction for Extension span	25175444.47	17258342,34	5399557.68	2517544.45
148	TIPCAL	Replacement of Superstructure	2634141.57	1701682.54	669044.87	263414.16
	Sub-total		261158462.20	178000156.44	57042459.53	26115846.23
			(100.0 %)	(68.1 %)	(21.8 %)	(10.0 %)
	PLOST ESTA	D				···································
71	INDIANA	Reconstruction for Extension span	19714998,19	13224013.60	4519484.77	1971499.82
73	BATU	Repair	23567370.57	15646269.90	5564363.61	2356737.06
86	NAMANPARAN I	Replacement of Superstructure	3668474.49	1890752.26	1410874.78	366847.45
89	SAN LUIS	Repair	230225.60	124385.27	82817.77	23022.56
109	NAGUILAN	Repair	22321970.69	14660026.91	5429746.68	2272197.07
113	MALALAH	Repair	6767872.09	3927329.45	2163755.43	676787.21
126	BALASIG	Repair	3000923.02	1738254.83	962575.90	300092.30
129	SAN PABLO	Repair	10900469.17	7346386.69	2518035.56	1096046.92
139	PINACANAUAN	Repair	11015591.78	6944414.88	2969617.72	1101559.18
154	PARED	Reconstruction	16592853,29	11025191.21	3908376.75	1659285.33
	Sub-total		117840748.89	76527025.03	29529648.97	11784074.90
	The second secon		(100.0 %)	(64.9 %)	(25.0 %)	(10.0 %)
	in a second of the second of t					4,
3	MARTLAO	Replacement of Superstructure	889215.27	524765.92	275527.83	88921.53
14	LABANGAN I	Reconstruction	55712209.06	40391523.86	9749464.29	5571220.91
22	SULIPAN	Reconstruction	92133556.67	68408313.11	14511887.89	9213355.67
3	PLARIDEL-PULILAN	Repair	21170126.42	15220493.81	3832619.98	2117012.64
14	SAN ROQUE	Repair	545320.11	316563.45	174224.64	54532.01
43	SICSICAN	Repair	2994489.65	1853907.57	841133.11	299448.96
• • •	Sub-total		173444917.18		29384857.74	17344491.72
			{100.0 %}	(73.0 %)	(16.9 X)	(10.0 %)
						`
173	GUMACA	Replacement of Superstructure	1916937.81	1205135.04	520109.01	191693.78
181	TALABA	Replacement of Superstructure	1984034.93	1049107.62	736523.81	198403.49
188	BINAHAAN	Replacement of Superstructure	3044253.58	1795745.47	944082.75	304425.36
190	PALSARANGON	Replacement of Superstructure	3213256.29	1526736.97	1365193.69	321325.G3
206	LAGNAS II	Repair	147430.08	89773.73	42913.34	14743.01
208	STO CRISTO	Replacement of Superstructure	2201455.65	1145159.40	836150.68	220145.56
220	MAGAPONG	Replacement of Superstructure	2253899.17	1465773.64	562735.61	225389.92
	BIGA	Repair	723830.03	439570.93	211876.10	72383.00
			4477706.85	3171463.12	858473.04	447770.68
227	SAN CRISTOBAL	Repair		11888465.92	G078058.03	1996280.43
-	Sub-total		19962804.42	(59.5 %)	(30.4 %)	(10.0 %)
		£	(100.0 %)	(00:0 %)	1 30.4 7/	, 10.0 %)
19	SUJE(RIZAL)	Replacement of Superstructure	2352451.07	1470754.46	646451.50	235245.11
43	GUINOBATAN	Repair	660203.22	381351.34	212831.5G	66020.32
75	SAN FERNANDO	Repair	1264748.64	704835.13	433438.64	126174.86
			823762.07	422533.43	318852.43	82376.21
	PAMUKID	Repair	1259921.24	710636.26	423292.85	125992.12
77 78	SAN ISIDRO	Repair		637929.86	481534.43	124384.92
78	SAN GABRIEL	Replacement of Superstructure	1243849.22			20278.12
79	Pahoho	Repair	202781.25	111091.95	71411.18	125465.20
80	TINIGUIBAN	Replacement of Superstructure	1254652.00	673329.97	455856.83	
82	SGT. MATIAS	Repair	148878.26	89475.03	14515.41	11887.83
86	NAUBOD I	Repair	713091.87	334385.71	307396.97	71309.19
99	SOOK	Repair	667039.54	424708.85	175626.73	66703.95
143	KANAPAWAN	Repair	1163000.09	642734.15	403965.93	116300.01
. 154	BASIAD	Repair	2048324.85	1356943.98	486548.38	204832.48
	Sub-total	in the second of	13802703.32	7960710.12	4461722.84	1380270.32
	State of the		(100.0 %)	(57.6 %)	(32.3 %)	(10.0 %)
	1.0%				2105555 50	1140541 01
109	JIADONG	Reconstruction	14485412.54	9841303.57	3195567.72	1448541.25
120	HINOGBONGAN	Repair	1541911.03	997161.34	390558.58	154191.10
160	JUBASAN II	Replacement of Superstructure	7249198.46	4728667.80	1795610.81	724919.85
161	JUBASAN I	Reconstruction	14558244.89	9746043.60	3356376.80	1455824.49
-01	Sub-total	Franchischer Alle Man Man Man	37834766.92	25313176.31	8738113.91	3783476.69
	ann-rotat		(100.0 %)	(66.9 %)	(23.1 %)	(10.0 %)
	· · · · · · · · · · · · · · · · · · ·					
	Grand Total		624044402.93	426405101.54	135234861.02	62404440.29
			(100.0 %)	(68.3 %)	(21.6 %)	(10.0 %)

DETAILED CONSTRUCTION COST ESTIMATE (1/52)

1 Name of Bridge: MARILAO Classification: Replacement of Superstructure

item No.	Description	Unit	Price	Quantity	Amount	Foriegn Component	Local Component	Taxes
(1)	EARTHWORK AND ROAD WORKS			gradina Are		y Buyeng	िराहर अर्जुहरमा ।	2. * * * *
00	Clearing and Grubbling	Sq.m	2.12	-				5 : . <u> </u>
02	Common excavation	Cu.m	42.9		医多种毒性抗菌	美国 保险 化甘		ata Kilong
03(2)	Bridge excavation above low	Cu.m	57.3	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	1.00 m	45 Lid 🗕		1.5
03(2)			5.14.15	e de la serie	e di Salasa j	医表面性直肠		
77.7	water level	Cu.m	109			44 45 TO 15		: 11.4
03(5)		LS	1		al Maria 🚣 pair	elistik 🕶 🦽		10 Sept.
04(Í)	and related work Embankwent	Cuim	87.7	•	74 A → 2 A	•	The state of # 18 to a great	e trata
04(S)		Cu.m	118	-	·			· -
00	Aggregate subbase course	Cu.n	191	_	era e ja		원임하는 경우 시간	i. 📜 .
11(2)	PCC Pavement (Reinforced)	Sq.m	157					
	Sub-total				·	· · · · ·	· · · · · · · · ·	- ,
11)	SUPERSTRUCTURE WORKS	100	1000		10000 00	40460 60	22640 72	4000
01(8)	Removal concrete structure	Cu.m	894	54	48276.00	20758.68	22689.72	4827.60
01(1)		LS m	760	26	19760.00	11065.60	6718.40	1976.00
01	Railing Timber structure (Detour bridge)	span	54500	- T <u>-</u>	÷	-		-
02 03(S)		Sq.m	5080	·	<u></u>			
04	Reinforcing steel	kg	18.4	6732	123868.80	89185.54 99495.00		12386.88
05(1)		Cu.n	2700	67	180900.00	99495.00	03313.00	18090.00
07	Prestressed concrete bridge	Cu.m. ton	15600 60200		_		and the second	
08 11	Steel bridge(I-beam) Paint	So.m	67.1		-	1 - 1		
					372804.80	220504.82	115019.50	37280.48
	Sub-total			il the h	(100.0 X)			(10.0 x)
(11)	SUBSTRUCTURE WORKS	Cu. m	894					
)1(S) [*])1(1)		LS.	1			. •		-
0(3)			3190	-	-	i garria k i sa		
0(4)			801	·· -	-			
0(6)		m	3220		· · · · ·	in the same 📜	- I	-
00(7)		33) TR	580 7270			, . .		
00(16	 Cast-in-Place concrete pile(1200mm) Reinforcement steel 	kg':	15.9	· -		· - ·	-	
)4)5(1)		Cu.m	1890		·	5	e mijirati 🗕 🕒 e se 🧸	
5(5)		Çu.n	1710	ang garang 🛨 i	. .	- 1 - 1 - 1 - 1	e de la faction	-
1	Grouted riprap	Cu.m	962	- 1 44 A 📆	- 1			
15	Stone masonry	Cu.m. Cu.m.	869 688		- 2 St. 4 3	45 44 5 45 -		
9	Gabion		,					
÷.,	Sub-total	$(x_{i,1},\dots,x_{i})$			(-)	(-)	(- T) (- ,
(V)	RIVER TRAINING WORKS							
0(1)		n	131					_
00(4)		70. 181	801 3220	_		- A A A A A A A	10.77.5	· · ·
)0(6))4	Reinforcement steel	ke	15.9	· ~ .	-			-
5(1)		Cu.m	1890		-	. 	-	•
5(5)	Seal concrete	Cu.m	1710	·		•		· · · ·
4	Grouted riprap	Cu.n.	. 962 869					
5 6	Stone masonry Stone pitching (Hand-laid	Cu.m	003		3 1 127 1			100
	rock embankment)	Cu. n	311	-				
9	Gabion	Cu.m	688	<u>-</u> '	_	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	Sub-total							
')	SPECIAL WORKS FOR REHABILITATION	100			_ (-)	. (110 *) 35 (41		- '
ó	Additional stringer	ton	40500	-	-	on size = i	. 	, da 🕶
i ·	Additional sidewalk	Sq. pa	6750	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	alia aya = 1	Congretti v	ay ing paga tiliber til berg	
2	Reinforcing beam of RCDG	Cu.m	5960 8680	23	199640.00	105809.20	73856.80	19964.0
3 .	Widening of pier coping	Cu.m	0000					19964.0
	Sub-total			* .	199640.00 (100.0 %)	105809.20 (53.0 %)		(10.0 %
1)	TENPORARY WORKS	e2 -	150	201	35343.00	24740.10	7068.60	3534.3
0	Scaffolding	Sor.ma Cu.ma	153	231 1183	35343.00 255528.00	24740.10 158427.36		25552.8
1 2	Staging Temporary bridge	Sq.a	5080			100421.00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-
3	Preparation works	ĻS		1	25899.47	15294.44	8025.08	2589.9
	Sub-total		7		316770.47	198451.90	86641.52	31677.05
			•		(100.0 X)	(.62.6 X)		(10.0 X
	Grand Total	+ + + + +			889215.27 (100.0 %)	624765.92 (59.0 %)	275527.83	88921.53 (10.0 %

DETAILED CONSTRUCTION COST ESTIMATE (2/52)

2 Name of Bridge : LABANGAN I Classification : Reconstruction

		Description	Unit	Price	Quantity	Amount	Foriegn Component	Local Component	Taxes
1)	FART	HWORK AND ROAD WORKS	100	100					
é ·		Clearing and Grubbling	Sq.m	2.12	6958	14750.96	1032.57	12243.30	1475.1
)2		Common excavation	Cu.m	42.9	4737	203217.30	136155.59	46739.98	20321.7
3(2)		Bridge excavation above low					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	•	water level	Çu.m	57.3	3566	204331.80	128729.03	55169.59	20433.1
3(2)5	5	Bridge excavation below low water level	C++ ==	100					
			Cu.m	109	1913	208517.00	127195.37	60469.93	20851.70
(5)		Shoring, cribbing, cofferdam	LS	. 1 .	2155 (22	2155 172 00	1551000 04	202004 06	215547 21
		and related work Embankment	Çu.m	67.7	7866	2155472.00	1551939.84		215547.20
(1)	19.	Calculad bannon for banketil	Cu.m	118	1013	532528.20 473534.00	388745.59	90529.79 255708.36	53252.85 47353.44
(5)		Agregate subbase course	Cu.m	191	1069	202842.00	170472.24	36511.56	20284.2
(2)	2	PCC Pavement (Reinforced)	Sq.m	457	4013 1062 1843	842251.00	522195.62	235830.28	84225.1
	• •								
		Sub-total				1837444.26	3172512.09	1181187.75	183744.4
					• • •	(100.0 %)	(65.5 %)	(24.4 %)	(10.0 ×
() ·	SUPE	RSTRUCTURE WORKS		2.2					
(S)	41.5	Removal concrete structure	Cu.m	894	305	272670.00	117248.10	128154.90	27267.0
(D		Removal steel structure (bridge)	LS m	1	106590	106590.00	71415.30		10659.0
		Railing		760	572	134720.00	243443.20	147804.80	43472.0
	2	Timber structure (Detour bridge)	span So.m		-	· .	-	-	· · ·
(S)		Structural steel (Detour bridge)		5080		1070075 00			107067 0
		Reinforcing steel	kg Cu =	18.4		1878676.80			187867.6
(1)	59	Structural concrete, Class A Prestressed concrete bridge	Cu.n Cu.n	2700 15600	851	2297700.00	1263735.00	804195.00	229770.0
	1.5	Presticased conclete bildge	ton	60200	200	21973000.00			
3		Steel bridge(1-beam)	Sq.ma	67.1	7293	400060.00	17798130.00	1977570.00	2197300.0 48936.0
		Paint	3Q.M	07.1	7293	489360.30	63616.84	376807.43	40330.0
	: 1	Sub-total	12.0			27452717.10	20910235 74	3797209.66	2745271.7
. 1	1000					(100.0 X)	(76.1 X)		(10.0 X
1)	SUBS	TRUCTURE WORKS						4.74	
(S)	3.	Removal of concrete structure	Cu.m	894	204	182376.00	78421.68	85716.72	18237.6
(1)		Removal of steel structure	LS	1	410025	410025.00	274716.75	94305 75	41002.5
(3)	."	Steel H-piles	150	3190	-	• '	-	• •	-
(4)		Precast concrete pile (400X400mm)	ខា	801	-	•	*	- ·	-
(6)		Steel sheet pile	m	3220	· · · · · -	-	- .	-	~`
(7)		Precast concrete sheet pile	785	580	-	· · · · · ·		-	•
(16)	•	Cast-in-Place concrete pile(1200mm)	面	7276		10228890.00		2045778 00	1022889.0
1		Painforrement cleat	k#	15.9		2046330.00	1473357.60		204633.0
(1)		Structural concrete, Class A	Cu.m	.1890		3048570.00	1859627.70		304857.0
(5)		Seal concrete	Cu.m	1710	48	82080.00	51710.40	22161-60	8208.0
l.		Grouted riprap	CO.B	962		- '	-	-	-
,		a cone isabout y	Cu.m	869	-	-	-	-	· -
١.		Gabion	Cu.m	688	7				
						15998271 00	10898057 13	3500386.77	1599827.1
		Sub-total				(100.0 X)	(68.1 %)	(21.8 %)	(10.0 X
)	RIVE	R TRAINING WORKS							
úΣ		Untreated timber pile	IG.	131	66	8646.00	4236.54	3544.86	864.6
(4)		Precast concrete pile (400X400mm)	99	801	-			_	- '
(6)		Steel sheet pile	B ·	3220	-			-	-
		Reinforcement steel	kg		110	1749.00	1259.28	314.82	174.9
		Structural concrete, Class A	Cu.m	1890	5	11340.00	6917.40	3288.60	1134.0
(1)		Seal concrete	Cu.m	1710	+3 + <u>-</u>		- ' ·	-	
(1)				962	1 49	143338.00	61635.34	67368.86	14333.8
(1) (5)			Cu.n		177	140000.00		_	-
(1) (5)		Grouted riprap	Cu.m Cu.m	869	143	743335.00	-		
(1) (5)		Grouted riprap Stone masonry	Cu.m	869		743335.00	-		
(1) (5)		Grouted riprap	Cu.n Cu.m	869 311	-	-			<u>-</u> ·
(1) (5)	-	Grouted riprap Stone masonry Stone pitching (Hand-laid	Cu.m	869	. ~	-	84458.89	38142.72	
(1) (5)		Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion	Cu.n Cu.m	869 311	-	136224.00			
(1) (5)		Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion	Cu.n Cu.m	869 311	-	136224.00 301297.00	158507.44	112659.86	30129.7
(1) (5)	SDEC	Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total	Cu.n Cu.m	869 311	-	136224.00		112659.86	30129.
(1) (5)	SPEC	Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total HAL WORKS FOR REHABILITATION	Cu.m Cu.m Cu.m	869 311 688	-	136224.00 301297.00	158507.44	112659.86	30129.
(1) (5)	SPEC	Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total HAL WORKS FOR REHABILITATION Additional stringer	Cu.m Cu.m Cu.m	869 311 688 40500	-	136224.00 301297.00	158507.44	112659.86	30129.
(1) (5)	SPEC	Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total JAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk	Cu.m Cu.m Cu.m cu.m	869 311 688 	-	136224.00 301297.00	158507.44	112659.86	30129.
(1)	SPEC	Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total HAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk REDG	Cu.m Cu.m Cu.m ton Sq.m Cu.m	869 311 688 40500 6750 5960	-	136224.00 301297.00	158507.44	112659.86	30129.1
(1)	SPEC	Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total JAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk	Cu.m Cu.m Cu.m cu.m	869 311 688 	-	136224.00 301297.00	158507.44	112659.86	30129.7
(1)	SPEC	Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping	Cu.m Cu.m Cu.m ton Sq.m Cu.m	869 311 688 40500 6750 5960	-	136224.00 301297.00	158507.44	112659.86	30129.7
(1)	SPEC	Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total HAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk REDG	Cu.m Cu.m Cu.m ton Sq.m Cu.m	869 311 688 40500 6750 5960	-	136224.00 301297.00	158507.44	112659.86	30129.7
(1)		Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping	Cu.m Cu.m Cu.m ton Sq.m Cu.m	869 311 688 40500 6750 5960	-	136224.00 301297.00 (100.0 %)	158507.44 (52.6 %)	112859.86 (37.3 %)	30129.3
(1) (5)		Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total IAL WORKS FOR REHABILITATION Additional sidewaik Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS	Cu.m Cu.m Cu.m ton Sq.m Cu.m	869 311 688 40500 6750 5960	198	136224.00 301297.00 (100.0 %)	158507.44 (52.6 %)	112659.86 (37.3 %)	30129.
(1) (5)		Grouted riprap Stone masonry Stone pitching (Hand-taid rock embankment) Gabion Sub-total FAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Scaffolding	Cu.m Cu.m Cu.m ton Sq.m Cu.m	869 311 588 40500 6750 5960 8680	198 - - - - - - - 3146 891	136224.00 301297.00 (100.0 %)	158507.44 (52.6 %) - - - - - - - - - - - - - - 336936.60 119322.72	112659.86 (37.3 %)	30129. (10.0 :
(1)		Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewaik Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Staging	Cu.m Cu.m Cu.m ton Sq.m Cu.m	869 311 688 40500 6760 5960 8680	3146 891 950	136224.00 301297.00 (100.0 %)	158507.44 (52.6 %) - - - - - - - - - - - - - - - - - - -	112659.86 (37.3 %) 	30129.7 (10.0 2
(1)		Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total IAL WORKS FOR REHABILITATION Additional sidewaik Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Scaffolding Stagning Temporary bridge	Cu.m Cu.m Cu.m ton Sq.m Cu.m Cu.m	869 311 688 40500 6750 5960 8680	198 - - - - - - - 3146 891	136224.00 301297.00 (100.0 %)	158507.44 (52.6 %) - - - - - - - - - - - - - - 336936.60 119322.72	112659.86 (37.3 %)	13622.4 30129.7 (10.0 2
(1) (5)		Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewaik Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Staging	Cu.m Cu.m Cu.m ton Sq.m Cu.m Cu.m	869 311 688 40500 6750 5960 8680	3146 891 950	136224.00 301297.00 (100.0 %) - - - () 481338.00 192456.00 4826000.00 1622685.70	158507.44 (52.6 %) - - - - - - - - - - - - - - - - - - -	112659.86 (37.3 %) - - (-) 96267.60 53887.68 723900.00 283964.98	30129.5 (10.0 2
(1) (5(5) (5) (6) (7)		Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional stringer Additional sidewaik Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Scaffolding Staging Temporary bridge Preparation works	Cu.m Cu.m Cu.m ton Sq.m Cu.m Cu.m	869 311 688 40500 6750 5960 8680	3146 891 950	136224.00 301297.00 (100.0 %)	158507.44 (52.6 %) - - - - - - - - - - - - - - - - - - -	112659.86 (37.3 %) 	30129.7 (10.0 2
(1) (5)		Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total IAL WORKS FOR REHABILITATION Additional sidewaik Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Scaffolding Stagning Temporary bridge	Cu.m Cu.m Cu.m ton Sq.m Cu.m Cu.m	869 311 688 40500 6750 5960 8680	3146 891 950	136224.00 301297.00 (100.0 %) 481338.00 192456.00 4826000.00 1622685.70 7122479.70 (100.0 %)	158507.44 (52.6 %) - - - - - - - - - - - - - - - - - - -	112659.86 (37.3 %) 	30129.4 (10.0 2
(1) (5)		Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional stringer Additional sidewaik Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Scaffolding Staging Temporary bridge Preparation works	Cu.m Cu.m Cu.m ton Sq.m Cu.m Cu.m	869 311 688 40500 6750 5960 8680	3146 891 950	136224.00 301297.00 (100.0 %)	158507.44 (52.6 %) - - - - - - - - - - - - - - - - - - -	112659.86 (37.3 %) 	30129.7 (10.0 2

DETAILED CONSTRUCTION COST ESTIMATE (3/52)

3 Name of Bridge: SULIPAN
Classification: Reconstruction

		oldsetted . Menuseraction							
Item No.		Description	Unit	Price	Quantity	Amount	Foriegn Component	Local Component	Taxes
(1)	EART	HWORK AND ROAD WORKS				10000 70	3386 84	12761 82	170
100		Clearing and Grubbling	Sq.m	2.12 42.9	7821 255	16580.52 10939.50	7329.47	13761.83 2516.09	1658.05 1093.95
102		Common excavation Bridge excavation above low	Cu.m	46,3	. 200	1	to a state out of	Accepted with the	
1, 27 - 1, 1		water level	Cu.m	57.3	1593	91278.90	57505.71	24645.30	9127.89
103(2)	S	Bridge excavation below low water level	Cu.m	109	2576	280784.00	171278.24	81 427 - 36	28078.40
103(5)		Shoring, cribbing, cofferdam	i e	1	2155472	2155472.00	1551939.84	387984.96	215547,20
104(1)	-	and related work	LS Cu.m	67.7	7531	509848.70	372189.55	86674.28	50984.87
104(8)		Selected borrow for backfill	Cu.m	118	2453	289454.00	104203.44 175200.48	156305.16 43800.12	28945.40
200		Aggregate subbase course	Cu.m	191 457	1274	243334.00 1010427.00		282919.56	24333,40 101042,70
311(2)	٠.	PCC Pavement (Reinforced)	Sq.m						
•		Sub-total				(100.0 %)	(66.5 X)	1080034.66 (23.4 %)	(10.0 x)
(11)	SUPE	RSTRUCTURE WORKS Removal concrete structure	Çu.m	894	·		*	A SA CONTRACTOR	
101(5)		Removal steel structure (bridge)	LS	1	-		a talanis ka	The same of the same	-
401		Railing	m ·	760	723	549480.00		186823.20	54948.00
402		Timber structure (Detour bridge)	span So.a	54500 .5080	· <u>-</u>	사는 것 같다.		The state of the s	
403(S)		Structural steel (Detour bridge) Reinforcing steel	K.K	18.4	126852	2334076.80	1680535.30	420133.82	233407.68
405(1)		Structural concrete. Class A	Cu.m	2700	1012	2732400.00	1502820.00	956340.00	273240.00
407		Prestressed concrete bridge	Cu.m ton	15600 68600		45756200.00	37062522.00	4118058.00	4575620.00
408 411	200	Steel bridge(I-beam) Paint	So.m	67.1	12406	832442.60		640980.80	83244.26
•		Sub-total						6322335.83	5220459.91
	2010	TRUCTURE WORKS		* *		(100.0 4)			
101(\$)	3053	Removal of concrete structure	Cu.m	894	809	723246.00	310995.78	339925.62	
101(1)		Removal of steel structure	LS	1				ara S f aran	-
400(3)		Steel H-plies Precast concrete pile (400X400mm)	170. 170.	3190 801			- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		<u> </u>
400(4)		Steel sheet pile	N)	3220		The same of the same	and the second		
400(7)	: .	Steel sheet pile Precast concrete sheet pile	m	580	2210	16702700 00	11755590 00	3358740.00	1679370.0e
400(16) 404	Ι.	Cast-in-Place concrete pile(1200mm) Reinforcement steel	n kg	7270 15.9	147400	2343660.00	1587435.20	121858.80	234366.00
405(1)		Structural concrete, Class A	Cu.m	1890	1846	3488940.00	2128253.40	1011192.60	348894.00
405.(5)		Seal concrete	Cu.m	1710	264	451440.00 126984.00	284407.20	121888.80 59682.48	45144.00 12698.40
501 505		Grouted riprap Stone masonry	Cu.m Cu.m	962 869	132	120904.00	34003.12	03002.40	12030.40
509		Gabion	Cu.m	688	-		5 1.	and the law Tolland	-
*		Sub-total				23927970.00	16221284.70	5313888.30	2392797.00
	DINE	D Whathing Hobbs				(100 C X)		(22.2 %)	(10.0 X)
(1Y)	HIAE	R TRAINING WORKS Untreated timber bile	ps.	131	· -	10 min <u>1</u> 3 min			•
400(4)		Precast concrete pile (400X400mm)	· m	801		-	# 1 m	and the state of	<u> </u>
400(6)		Steel sheet pile	. m kø	3220 15.9		_			
404 405(1)		Reinforcement steel Structural concrete, Class A	Cu.m	1890	-	-	- ' .	-	
405(5)		Seal concrete	Cu.no	1710		-	- ·		. -
504		Grouted riprab	Си. m Су. ъ	962 869	-	· -			_
505 506		Stone masonry Stone pitching (Hand-laid	COLM	003					
		rock embankment)	Cu.m	311 .	-,	- × - − × - − × -	-		-
509		Gabion	Cu.m	688		 			
•		Sub-total					· · · · · · · · · · · · · · · · · · ·		: · · · · · · · · · · · · · · · · · · ·
(Y)	SPEC	IAL WORKS FOR REHABILITATION							
800		Additional stringer	ton Sq.ne	40500 6750		•		지금 이 출생성	-
801 802		Additional sidewalk Reinforcing beam of RCDG	Cu.m	5960	_		-		•
803		Widening of pier coping	Cu.m	8680	-	-		astro des T ee	6 18 61 5 6 <u>18</u>
•	,	Sub-total				-			()
(VD	TEMP	DRARY WORKS	1		:		(, , , , ,)		
300		Scaffolding	Sa.m	153	3975		425722.50	121635.00	60817.50
901		Staging	Cu.m	216	1287		172355.04	77837.76 1173480.00	27799.20 782320.00
902 903	- '	Temperary bridge Preparation works	Sq.m LS	5080		7823200.00 2683501.65		422676.35	268350.17
*	,	Sub-total				11392868.65	8457952.68	1795629.11	1139286.87
		Charl Tale)	•			(100.0 %)	(74.2 %)	(15.7 %)	(10.0 %)
**		Grand Total				(100.0 %)	(74.2 %)	14511887.89	(10.0 X)

DETAILED CONSTRUCTION COST ESTIMATE (4/52)

4 Name of Bridge; PLARIDEL Classification: Repair

(ten (o.	Description	Unit	Price	Quantity	Amount	Forlegn Component	Local Component	Taxes
	WORK AND ROAD WORKS	_						
0	Clearing and Grubbling	Sq.n	2.16		•	· -	-	<u>.</u>
2	Common excavation	Cu.n	43.8	~		-	. •	•
3(2)	Bridge excavation above low water level	Cu.m	58.5	_				
3(2)5	Bridge excavation below low	04.6	30.5		-	. •	· •	_
3(1)0	water level	Cu.m	111		· · · · <u>-</u>	_	<u>.</u>	_
3(5)	Shoring, cribbing, cofferdam							•
	and related work	LS	1		-	-		-
4(1)	Embankment	Cu.m	69.0	-		<u>-</u>	-	- .
4(S)	Selected borrow for backfill	Çu.n	120	. •			-	-
0	Aggregate aubbase course PCC Pavement (Reinforced)	Cu.m	193	-	-	· · · · · ·	· · · · · · ·	. +
(2)	rec (averent (methio) ced)	Sq.m	457	 	. .		-	
	Sub-total							-
					(-)	(-)	(-)	(-)
SUPER	STRUCTURE WORKS	1						
(\$)	Removal concrete structure	Cu. na	912	465	424080.00	182354,40	199317.60	42408.0
(1)	Removal steel structure (bridge)	LS	1			-		. .
	Railing Timber structure (Detour bridge)	m	760	699	531240 00	297494.40	180621.60	53124.0
	Structural steel (Detour bridge)	span Sq.a	55700 5180	·			**	•
(S) i	Reinforcing steel	k g	17.4	84018	1461913.20	1052577.50	263144.38	146191.3
(1)	Structural concrete, Class A	Cu. m	2700	. 646	1744200.00	959310.00		174420.0
	Prestressed concrete bridge	Cu. n	15600					
3	Steel bridge(I-beam)	ton	61400	-	-	:	· .	· -
	Pain!	. Sq. m	68.4	21971	1502816.40	195366.13	1157168.63	150281.6
13.1	Sub-total				FEE 10 10 CO			
	300-10121				5664249.60 (100.0 %)		2410722.20 (42.5 %)	566424.9 (10.0 %
I) SUBST	RUCTURE WORKS			•	(100.0 %)	. 41.4 //	. (12.3 41	((0.0 %
	Removal of concrete structure	Cu.m	912	330	300960.00	129412.80	141451.20	30096.0
(1)	Removal of steel structure	LS	1	_	-			
	Steel H-piles	ma.	3260	-	-			-
	Precast concrete pile (400X400mm)	10	787	-	-	-	, -	* * .
(6)	Steel sheet pile	粗	3290	·· -	-			
	Precast concrete sheet pile	B.	569	100	4753000 00	3335 400 00	050400 00	
(16)	Cast-in-Place concrete pile(1200mm) Reinforcement steel	n kg	24000 15 1	. 198 52833	4752000.00 797778.30	3326400.00 574400.38	950400.00 143600.09	475200.0 79777.8
(1)	Structural concrete, Class A	Ĉũ.m	1890	372	703080.00	428878.80		70308.0
	Seal concrete	Cu.p	1710	-	***************************************			-
	Grouted riprap	Cu.m	936	, -	-	-	_	
.	Stone masonry	Cu.a	845		-	-	-	
light of the second	Gabion	Cu.m	663		-		-	-
	Sub-total				6553818.30	4450001 08	1439344.49	655381.8
•	340				(100.0 %)	(68.0 X)		(10.0 %
RIVER	TRAINING WORKS							
	Untreated timber pile	B	134	-	. -		, - .	
(4)	Precast concrete pile (400X400mm)	FB	787	-	-	-	· -	- .
(6)	Steel sheet pile	TB	3290	-	-	•		-
	Reinforcement steel	kg	15.1	-	-	-	-	-
(1)	Structural concrete. Class A	Cu. B	1890	_		_		-
(5)	Seal concrete Grouted riprap	Cu.m Cu.s	1710 936	_	_	_	· · · <u>-</u>	
	Stone masonry	Cu.m	845	· · ·	-	_	-	_ '
	Stone pitching (Hand-laid	~u• ∗₩	- 10			•		
4	rock embankment)	Cu.a	300	-	-	-	-	
	Gabion	Cu.m	563	-	7	-	-	-
	Sub-total				· · ·	, .	-	
SPECI	AL MARKA BOD DESIABLE TO COLOR				(-))		, -)
	AL WORKS FOR REHABILITATION	ton	41300	129	5327700.00	4049052.00	745878.00	532770.6
	Additional stringer Additional sidewalk	Sq.m	6880					
	Reinforcing beam of RCDG	Cu.m	5850	_	-	·		· -
	Widening of pier coping	Cu.s	8520	-	-	- ·		-
	Sub-total				5327700.00	4049052.00		532770.0
					(100.0 ×)	(76.0 %)	(14.0 X)	(.10.0)
) TEMPO	RARY WORKS	_	155	Ense	ingente on	782071 40	217953.20	108981.
	Scaffolding	Sq. pe	156	6986 1544	1089816.00 339680.00	762871.20 210601.60		33968.
	Staging	Cu.m	-220 5180		7656040.00		1148406.00	765604.
	Temporary bridge	. Sq.a LS	2100		798939.12	537322.48		79893.
	Preparation works							
100	Ont-tale!				9884475.12		1643202.33	988447.
1 1 4	9.56.40 to tale				(100.0 X)		(16.6 %)	(10.0 :
	Acces to the second				27430243.02	18448071.69	6239147.03	2743024.
	Grand Total				(100.0 %)		(22.7 x)	(10.0

DETAILED CONSTRUCTION COST ESTIMATE (5/52)

5 Name of Bridge: TAGANUSING Classification: Reconstruction

item No.	Description	Unit	Price	Quantity	Amount	Forlegn Component	Local Component	Taxes
(1) 100	EARTHWORK AND ROAD WORKS Clearing and Grubbling	Sq.m	2.16	931	2010.96	140.77	1569.10	
102	Common excavation	Cu.m	43.8	657	28776.60	. 110		2877.66
103(2)	Bridge excavation above low water level	Cu. n	58.5	6529	381946.50	240626.30	103125.56	38194.65
103(2)	S Bridge excavation below low vater level	Cu.n	111	1540	170940.00	104273,40	49672.60	
103(5)	Shoring, cribbing, cofferdam	LS	1	· · · · · ·	. 10	الأولأ والمجاوعات		
104(1)	and related work Embankment	Cù.m	0.69	384	26496.00		4504.32	5613 60
104(5)		Cu.n	120	1597	191640.00	68990.40	103485.60 8858.70	19164.00 4921.50
200	Aggregate subbase course		193 457	255 442		125236.28	56558.32	20199.40
311(2)	PCC Pavement (Reinforced)	Sq.m			1053019.06			105301.91
•	Sub-total				(100.0 %)	(58.2 X)	(31.7 X)	(10.6 x)
(11): 101(\$):	SUPERSTRUCTURE WORKS Removal concrete structure	Çú.m	912 1	140	127680.00	54902.40	60009.60	12758.00
101(1)	Removal steel structure (bridge)	LS	1 760	110	83600.00	46816.00	28424.00	8360.00
401 402	Railing	8 p 8 n 8	55700 5180	110				
402 403 (S)	Timber structure (Detour bridge) Structural steel (Detour bridge)	Sq.a						20002
104	Reinforcing steel	kg	17.4 2700	14960 150	260304.00 405000.00	187418.88		26030.40 40500.00
405(1)	Structural concrete. Class A Prestressed concrete bridge	Cu.m.	15600	163	2542800.00	1729104.00	559416.00	254280.00
407 408	Steel bridge(I-beam)	ton	61400	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		요 그 시 기 교육 철현 학생 고 구 시 기 사람(철생 기원)	_	-
411	Paint	Sq.m	58.4					-
•	Sub-total				3419384.00 (100.0 %)	2240991.28 (65.5 %)	836464.32 (24.4 X)	341938.40 (10.0 %)
an	SUBSTRUCTURE WORKS				105792.00	45490.56	49722.24	10579.20
(0)(5)	Removal of concrete structure	Cu.m. LS	912	116	103792.00			100.3.20
101(1) 400(3)		n	3260		- · .	1		
400(3)	Dice: II piico	, sa	787	1480	1164760.00	815332.00	232952.00	116476.00
400(6)	Steel sheet pile	zn.	3290			-	, in a subject was	Ţ.,
400(7)	Precast concrete sheet pile	10 10	569 7130	- 1	-	I v rain∓yr	the state of the s	•
400(16 404	Cast-in-Place concrete pile(1200mm) Reinforcement steel	K.E	15.1	35750	539825.00	388574.00	97168.50	53982.50
405(1)	Structural concrete. Class A	CO. M	1890	353	667170.00	406973.70	193479.30	66717.00
405(5)	Seal concrete	Cu m	1710 936		_	· <u></u> .		
501	Grouted riprap	Cu.m Cu.m	845		-		and provided the provided	- ·
505 509	Stone masonry Gabion	Cu. n	663	·		<u>-</u>		
•	Sub-total				2477547.00	1656470.26	573322.04 (23.1 %)	247754.70 (10.0 %)
(I¥)	RIVER TRAINING WORKS						9669.44	2358.40
400(1)	Untreated timber pile	m	134 787	176	23584.00	11550.10	9009.44	2338.40
400(4)	Precast concrete pile (400X400mm)	16 19	3290					
100(6) 104	Steel sheet pile Reinforcement steel	kg	15.1	308	4650.80	3348.58	837.14	465.08
105(1)	Structural concrete, Class A	kg Cu.m	1890	15	28350.00	17293.50	8221.50	2835.00
405(5)		Cu.ns	1710 936	473	442728.00	190373.04		44272.80
504 505	Grouted riprap Stone masonry	Cu.m	845				14 - 2 5 . 111	- .
506	Stone pitching (Hand-laid					and the second		':
609	rock embankment) Gabion	Cu.m	300 663	759	503217.00		140900.76	
•	Sub-total				1002529.80		367711.00	100252.98 (10.0 %)
(V)	SPECIAL WORKS FOR REHABILITATION				(100.0 X)	(53.3 %)	(36.6 %)	A 6
800 :	Additional stringer	ton	41300	-	- <u>-</u>			•
801	Additional sidewalk	Sq.an Cu.aa	6880 5860	·	Ξ.		n e e e la cullaga de la	÷ ;
802 803	Reinforcing beam of RCDG Widening of pier coping	Cu. B	8520	_	_ ·	: 12; ************************************	er e	
	Sub-total				-		11611 - 23	(-)
(11)	TEMPORARY WORKS			11 -				
900	Scaffolding	SQ M	156	550	85800.00	60060.00		8580.00 7260.00
901	Staging	Cu.na Sq.na	220 5180	330 572	72600.00 2962960.00	45012.00 2222220.00		296296.00
902 903	Temporary bridge Preparation works	LS.	0100	1	332215.20	221179.31		33221.52
					3453575.20	2548471.31	559746.37	345357.52
	Sub-total				(100.0 %)	/ 73 7 X1	(16 2 %)	(10.0 X)
**	Grand Total				11406055.05	7593823.01	2671626.54	(10,0%)
					(100.0 ×)	(56.5 %)	(23.4 %)	1 10,0 47

DETAILED CONSTRUCTION COST ESTIMATE (6/52)

6 Name of Bridge : BUED Classification : Reconstruction

en		Unit	Price	Quantity	Amount	Forlegn Component	Local Component	Taxes
	EARTHWORK AND ROAD WORKS	* -				47.12		7.0
) ·	Clearing and Grubbling	Sq.m	2.16	3256	7032.96	492.31		703.30
!	Common excavation	Cu.m	43.8	191	8365.80	5605.09		836.58
1(2)	Bridge excavation above low water level	Cu.m	FO F	10515				
	the contract of the contract o	Cu.m	58.5	10915	638527.50	402272.33		63852.75
3(2)	water level	Cu.m	111	3770	418470.00	255266.70		41847.00
(5)	Shoring, cribbing, cofferdam		•••	3770	710417.00	233200.10	121335.30	41041.00
	and related work	LS	1	2524500	2524500.00	1817640.00	454410.00	252450.00
(1)	Embankment	Cu.m	69.0 120	2377	164013.00	119729.49		16401.30
(8)	Selected borrow for backfill	Cu.m	120	しつつづつ	1652640.00		892425.60	165264.00
)		Cu.m	193	637	122941.00	88517.52		12294.10
(2)	PCC Pavement (Reinforced)	Sq.m	457	1106	505442.00	313374.04	141523.76	50544.20
	Sub-total				6041932.26	3597847.87	1839891.17	604193.23
	and and the file file and decreased and				(100.0 %)	(59.5 %)		(10.0 %)
)	SUPERSTRUCTURE WORKS							
(5)		Cu.m	912	784	715008.00	307459.44	336053.76	71500.80
(1)	Hemoval steel Structure (bridge)	LS	1 j	3045042	3045042.00	2040178.14	700359.66	304504.20
	Railing	m	760	1101		468585.60		83676.00
٠., ١	Timber structure (Detour bridge)	span	55700 5180	-		· · · · · · · · · ·		
(5)	Structural steel (Detour bridge) Reinforcing steel	Sq.m	5180	150506	2653952.40 4120200.00		the second second	005005 0
		CUR	2700	152520	1120200 00	1910845.73	477711.43	265395.24 412020.00
(1)	Prestressed concrete bridge	Cu.m	15600	1729	26972400.00	18341232.00	1442070.00 5933928.00	2697240.0
1	Steel bridge (1-beam)	ton	61400			100111111	-	-
	Paint	Sq.m.	68.4	• •	·	-		- .
			~		-,			
	(i) (i) Sub-total (i) (ii) Sub-total (ii) (ii) Sub-total (iii) Sub-				38343362.40 (100.0 %)		9174621.25 (23.9 %)	3834336.24 (10.0 %)
	SUBSTRUCTURE WORKS	c	010					taka Talong
(S)	Removal of concrete structure Removal of steel structure	Cu.m LS	912	666	607392.00	201178.50	285474.24	60739.2
(1)	Steel H-piles	m	3920			17889900 00	3577980.00	2385320.0
(3) (4)	Precast concrete pile (400X400mm)	Di	787	-		11003200.00	-	-
(6)	Steel sheet pile	8	3290	_	_	-	10 mag 2 mg	<u> -</u> .
(7)	Precast concrete sheet pile	83	569		· · · ·	1995 - Artist	- <u>-</u> -	<u> </u>
(16)	Cast-in-Place concrete pile(1200mm)	, m	7130	-		grafia segara 🕶 🚊		<u> -</u>
11		k z	15.1		3237289.00		582712.02	
(1)		Cu.m	1890				1468908.00	506520.0
(5)	Seal concrete	Cu.m	1710	95		102343.50	43861.50	16245.0
	Grouted riprap	Cu.m Cu.m	936 845		-	-		-
	Stone masonry Gabion	Cu.m	563			-		-
	Sub-total				32925531.00	23674042.14	5958935.76	3292553.1
	RIVER TRAINING WORKS				(100.0 %)	(71.9 %)	(18.1 %)	(10.0 X
) (1)	Untreated timber pile	В	134	٠			· •	
ä	Precast concrete pile (400X400mm)	74	787	_	· _		-	-
(6)	Steel sheet pile		3290		_			
	Reinforcement steel	kg	15.1	-	-	· -	· · · · · · · · · · · · · · · · · · ·	<u>-</u> . ·
(1)	Structural concrete, Class A	Cu.sa	1890		- .	art and the	· -	- '-
(5)	Seal concrete	Cu.m	1710					
	Grouted Tiprap	Ctt.m	936	133	124488.00	53529.84	58509.36	12448.8
	Stone masonry	Cu.m	845	•	•		-	-
	Stone pitching (Hand-taid	Çu.m	300	_	-	· · · · · ·	<u>-</u> ·	-
	rock embankment) Gabion	Cu. n	663	-		-		_
	0401011							
	Sub-total				124488.00 (100.0 %)	53529.84 (43.0 %)		12448.8
	SPECIAL WORKS FOR REHABILITATION				(100.0 %)	1 43.0 %)	(47.0 %)	1 10.0 %
	Additional stringer	ton	41300		-	-	•	-
	Additional sidewalk	Sq.m	6880	-	=	- .		
	Reinforcing beam of RCDG	Cu.m	5850	-	~	· ·		-
	Widening of pier coping	Cu.m	8520		_		-	· -
	Sub-total							
}	TEMPORARY WORKS				(-)	(-)	(~)	(-)
,	Scaffolding	Sq.#a	156	5506	858936.00	601255.20	171787.20	85893.0
	Staging	Cu.a	220	1782			109771.20	
	Temporary bridge	Sq.a	5180		8560960.00	6495720.00	1299144.00	866096.0
:	Preparation works	LS		1	2620417.49		558379.80	
					12532353.49		2139082 20	1253235.3
	Sub-total						2139082.20 (17.0 %)	(10.0 2
	Grand Total				89967667.16	61799860.70	19171039.74	8996766.7

DETAILED CONSTRUCTION COST ESTIMATE (7/52)

7 Name of Bridge: LONBOY Classification: Replacement of Superstructure

Itez					i	Forlesn	Local	
	Description	United	Price	Quantity	Amount	Component	Componentace	Taxes
() E	EARTHWORK AND ROAD WORKS					1000	图 电电路线	11.71
00	Clearing and Grubbling Common excavation	Sq.m	2.16	<u>.</u>			a apartu ka a n kata	·
02 :	Common excavation	Cu.m	43.8					-
3(2)	Bridge excavation above low water level	Cu.m.	58.5	, . -	-	_	era e e car	• •
3(2)5	Bridge excavation below low	****				the professional and the	the following the work.	100
4 Year	water level	Cu.na	111	-			-	-
3(5)	Shoring, cribbing, cofferdam	LS	1	<u>-</u>		-		~
4(1)	and related work Embankment	Cu.ms	69.0	-	- · ·		# 10	- A
4(S)	Selected borrow for backfill	Cu.m	120	-	-	1 1 A 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ing 14 g • ₹ 19 44	•
0	Aggregate subbase course	Cu.m	193	· · · ·	_			: .
1(5)	PCC Pavement (Reinforced)	Sq. es	457					
٠.	Sub-total				(-)	· - · · ·	· · · · · · · · · · · · · · · · · · ·	(- ì
	SUPERSTRUCTURE WORKS			62		24313.92	26575.68	565
1(8)	Removal concrete structure	Cu.m	912 1	62 	56544.00	24313.92	20070.00	5654.40
(1)	Removal steel structure (bridge) Railing	LS m	760	33	25080.00	14044.80	8527.20	2508.0
Į .	Timber structure (Detour bridge)	span	55700		and the water	y a San S a n a	general transfer again	•
3(8)	Structural stee! (Detour bridge)	So.m		-		San Barrier Andrew	11920.39	54 BA
	Reinforcing steel	. Kg	17.4 2700	3806 74	66224.40 199800.00		69930.00	6622.4 19980.0
(1)	Structural concrete, Class A Prestressed concrete bridge	Cu.n	15600				er diski - e tud	
? 3	Steel bridge(1-beam)	ton	61400		, · · · •		f(y) + f(y) = f(y) + f(y) + f(y)	• .
	Paint	Sq.m	68.4	· · · · · · · · · · · · · · · · · · ·			- 66	-
1	Sub-total				347648.40		116953.27	34764.8
					(100.0 X)	(56.3 %)	(33.6 X)	(10.0 x
(S)	SUBSTRUCTURE WORKS Removal of concrete structure	Cu.m	912		ار با ا ق د	,		*
(1)	Removal of steel structure	LS	1	-	-	-	1 1 - 1 st 1 - 1 - 1 1 1 1 1 1 1	-
(3)	Steel H-piles	. m	3260	: •	-		ing the State States	
(4)	Precast concrete pile (400X400mm)	- ED	787	'	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
(6)	Steel sheet pile	B	3290	, -			artini tutta Esta alg	
(7)	Precast concrete sheet pile Cast-in-Place concrete pile(1200mm)	. ID	589 7130		7 A. 🖺 A.S.	t in ₩s		-
(16) 	Reinforcement steel	kg	15.1	2200	33220.00		5979.60	3322.0
(1)	Structural concrete, Class A	Cu.m	1890	19	35910.00	21905.10	19413.90	3591.0
(5)	Seal concrete	Cu.m	1710	1 *	-		i generalis de 😁 estado	- 1-1
	Grouted riprap	Cu.n	936	v + 5 💆		-	그 아이를 받았다.	_
i)	Stone masonry Gablon	Cuim Cuim	845 663	- M. S. I	·	-		-
					69130.00		16393.50	6913.0
	Sub-total				(100.0 %)		(23.7 X)	(10.0 %
	RIVER TRAINING WORKS					and the second		4 - W 1
(1)	Untreated timber pile	n .	134 787	_	<u>.</u>		- 1	-
)(4))(6)	Precast concrete pile (400X400mm) Steel sheet pile	· 29 79	3290	_	***			:
(6)	Reinforcement steel	kg	15.1	-			- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	1 -1 1
(1)	Structural concrete. Class A	Cu.m	1890		· •	a a a ing i ata		-:
(5)	Seal concrete	Cu.m	1710		-	•		• .
	Grouted riprap	Cu.na Cu.na	936 845	-			versitet ve≣e tied. Territoria	_
	Stone masonry Stone pitching (Hand-laid	∪u . #!	. 040	•		19 24 45		
	rock embankment)	Cu.m	300	'	_	_	العواري ة والإشارة الما	-
	Gabion	Cu.m	663		•			
							o monte at the	
	Sub-total						(-)	(-)
	Sub-total				(- T		green and the second	1.45
s		ton	41300	. •	() = 1	ing a state of the	n in en tribus. One to l e ssable	47.
S.	Sub-total SPECIAL WORKS FOR REHABILITATION	Sq.m	6880	. -				
S	Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG	5 գ. m Cu. m	5880 5850		-		**************************************	- - 11076 0
S	Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk	Sq.m	6880	13	110750.00	58702.20	40981.20	11076.0
S	Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping	5 գ. m Cu. m	5880 5850	13	110760.00	58702.80	40981.20	11076.0
S	Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pler coping	5 գ. m Cu. m	5880 5850 8520		110760.00 (100.0 %)	58702.80 (53.0 %)	40981.20 (37.0 %)	11076.0 (10.0 x
s:	Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total	Sq.m Cu.m Cu.m	5880 5850 8520		110760.00 (100.0 %)	58702.80 (53.0 %)	40981.20 (37.0 %)	11076.0 (10.0 %
))))	Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total EMPORARY WORKS Scaffolding Staging	Sq.m Cu.n Cu.n Sq.m Cu.n	5880 5850 8520		110760.00 (100.0 %)	58702.80 (53.0 %)	40981.20 (37.0 %) 50142.40	11076.0 (10.0 %
) TI	Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pler coping Sub-total EMPORARY WORKS Scaffolding Staging Temporary bridge	Sq.m Cu.m Cu.m Sq.m Cu.m Sq.m	5880 5850 8520	814	110760.00 (100.0 %) 179080.00	58702.80 (53.0 %) 111029.60	40981.20 (37.0 %) 50142.40	11076.0 (10.0 ×
) S	Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pler coping Sub-total Sub-total SEMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works	Sq.m Cu.n Cu.n Sq.m Cu.n	5880 5850 8520		110760.00 (100.0 %) 179080.00 21198.55	58702.80 (53.0 %) 111029.50 12344.59	40981.20 (37.0 %) 50142.40 6734.11	11076.0 (10.0 % 17908.0 2119.8
) S i i i i i i i i i i i i i i i i i i i	Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pler coping Sub-total EMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works Sub-total	Sq.m Cu.m Cu.m Sq.m Cu.m Sq.m	5880 5850 8520	814	110760.00 (100.0 %) 179080.00 21198.55 200278.55	58702.80 (53.0 %) 111029.60 12344.69	50142.40 5037.0 \$1 50142.40 6734.11	11076.00 (10.0 x 17908.00 2119.80 20027.80
D 1 2 3 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pler coping Sub-total Sub-total SEMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works	Sq.m Cu.m Cu.m Sq.m Cu.m Sq.m	5880 5850 8520	814	110760.00 (100.0 %) 179080.00 21198.55	58702.80 (53.0 %) 111029.50 12344.69 123374.19 (61.6 %)	40981.20 (37.0 %) 50142.40 6734.11	17908.00

DETAILED CONSTRUCTION COST ESTIMATE (8/52)

8 Name of Bridge : BAUANG I Classification : Reconstruction

10 ·	Description	Unit	Price	Quantity	Amount	Forlegn Component	Local Component	Taxes
E DEUM	ORK AND BOAD WORKS							
, C	tearing and Grubbling	Sq. n	2.16	4875	10530.00	737,10		. 1053.0
ا و	OBMON CYCAACION	Cu.m	43.8	316	13840.80	9273.34	3183.38	1384.0
3(2)	ridge excavation above low water level	Cu. m	58.5	2475	316742 60	1000.47 77	C0530 40	21674 2
	ridge excavation below low	, Vu.u	30.3	3705	216712.50	136547.77	58520.48	21674.2
	water level	Cu.m	111 .	3180	352980.00	215317.80	102364.20	35298.0
3(5) 5	horing, cribbing, cofferdam							
	and related work	LS	1	2860853	2860853.00		514953.54	286085.3
	mbankment	Cu.m Cu.m	69.0	4025	277725.00	202739.25	47213.25	27772.5
1(S) >	elected borrow for backfill	Հա.ա. Ըս.ա.	120 193	4705	564600.00 48636.00	203256.00 35017.92		56460.0
	ggregate subbase course CC Pavement (Reinforced)	Sq.m	457	4705 252 1658	757706.00	469777.72		4863.6 75770.6
	Sub-total				5103613.30 (100.0 %)		1260770.91 (24.7 %)	510361.3 (10.0 %
) SUPERS	TRUCTURE WORKS				•		and the second	
17	emoval concrete structure	Cu.m	912	267	243504.00	104706.72		24350.4
A	emoval steel structure (bridge) ailing	LS	1	1506348	243504.00 1506348.00	1009253.16		150634.8
ı K	ailing	. M	760 55700	517	392920.00	220035.20		39292.0
	imber structure (Detour bridge) tructural steel (Detour bridge)	Sq. m	5180	, _	1083132.60 1682100.00	<u>-</u>		
. 12	einforcing steel	kк	17.4	62249	1083132.60	779855.47	194963.87	108313.2
(1) \$	tructural concrete. Class A	Cu.m	2700	623	1682100.00	925155.00		168210.0
P		Cu.m	15600	703	10966800.00	7457424.00	2412696.00	
	reel oligical ocous	Cu.m. ton Sq.m	61400		-	,	•	
I. P.	aint	Sq.m	68.4					_
	Sub-total						3790894.59	
1) SUBSTR	UCTURE WORKS				* •	(65.1 %)		(10.0 %
(S) R	emoval of concrete structure	Cu.ms	912	174	158688.00	68235.84	74583.36	15868.8
	emoval of steel structure	t.s	1 3260	-	_	-		_
(3) 5	teel R-piles	В	787		_	3		
(4) P	lecast concrete pite (tooktooms	m	3290	_				_
(6) 5 (7) P	recast concrete sheet pile	;; 6	569		·		-	±, ,
(16) C	ast-in-Place concrete pile(1200mm)	R	7130	1874	13361620.00		2672324.00	
	einforcement steel	kg	15.1			1435104.00		199320.0
(1) 5	tructural concrete. Class A	Cu.m.	1890	1648	3114720.00	1899979.20	903268.80	311472.0
(5) 5	ieal concrete	Cu.a	1710	. 67	114570.00	72179.10	30933.90	11457.0
G	iteel H-piles recast concrete pile (400X400mm) rteel sheet pile recast concrete sheet pile ast-in-place concrete pile(1200mm) reinforcement steel rectural concrete, Class A real concrete recuted rivrep	Cu.m	936 845	-		_	• • -	_
, .	itone masonry labion	Cu. ns	663	٠.	_	₹.	.	-
,								
	Sub-total				(100.0 %)	12828632.14 (68.4 %)	4039886.06 (21.5 %)	1874279.4
) RIVER	TRAINING WORKS							*******
(1) (ntreated timber pile	函	134	462		30334.92		6190.
	recast concrete pile (400X400mm)	m	787	_			· <u>*</u>	
	teel sheet pile	D	3290	220				332
	leinforcement steel	kg Cu n	15.1 1890	. 11	20790.00			2079.
	tructural concrete. Class A	Cu.m Cu.m	1710	-		12001.30		2013.
	ieal concrete Fronted riprap	Cu.m	936	264		106254.72	115138.88	24710.
	itone masonry	Çu.m	845	-	-	-	-"	-
	tione pitching (Hand-laid		•		F#C00 0-		05500 00	5300
	rock embankment)	Cu.m	300 .	191	57300.00	16044.00	35526.00	5730.
•	iablon	Cu.m	663					
	Sub-total				390424.00	167707.38 (42.9 X)	183674.22 (47.0 %)	39042. (10.0
A 4.	L WORKS FOR REHABILITATION				(100.0 %)	1 42.3 %)	(41.0 A)	. 10.0
)	dditional stringer	ton	41300		-	-	<u>-</u> .	
	dditional sidewalk	Sq. m	6880	-	_		_	
	teinforcing beam of RCDG	Cu.m	5850 8520	_	_	-	_	_
¥ -	idening of pier coping	Cu.m						
	Sub-total				(-)	(- , -)	(-)	(-)
) TEMPOR	ARY WORKS	_	• • •		402250 00	202202 00	80652 00	40326
9	caffolding	Sq. na	156	2585		282282.00 216057.60		40326. 34848.
9	itaging	Çu. m	220	1584	348480.00 11898460.00		1784769.00	1189845.
	emporary bridge	\$q.a	5180		1582855.20	1087423.04		158285.
F	reparation works	LS						
- · · · -	Continui				14233055.20		2300142.04	1423305.
+ 1/1	Sub-total				(100.0 %)	(73.8 %)	. (16.1 %)	(10.0
4.3.3	Grand Total				54344695.10		11575367.81	5434469. (10.0
					(100.0 %)	(68.7 %)	(21.3 X)	

DETAILED CONSTRUCTION COST ESTIMATE (9/52)

9 Name of Bridge : BAUANG 11 Classification : Reconstruction

lten No.	Description	Unit	Price	Quantity	Amount	Forlexn Component	Local Component	Taxes
1) E/ 00 02	ARTHWORK AND ROAD WORKS Clearing and Grubbling Common excavation	Sq.m Cu.m	2.16 43.8	5511 306	11903.76 13402.80	833.26 8979.88	9880.12 3082.64	1190.33 1340.28
03(2)	Bridge excavation above low water level	Cu.m	58.5	3692	215982.00	136068.66	58315.14	21598.20
)3(2)\$	Bridge excavation below low water level Shoring, cribbing, cofferdam	Cu.m	.111		- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	riga Videas Latin	กลีกใช้ เคลื่องกลุ่ม พ.ศ.	*
4(1)	and related work Embankment	LS Cu.m	69.0	6248 3022	431112.00 362640.00	314711.76 130550.40	73289.04	43111.20 35254.0
4(S) 0 1(2)	Selected borrow for backfill Aggregate subbase course PCC Pavement (Reinforced)	Cu.m Cu.m Sq.m	120 193 457	1274	245882.00 1010427.00	177035.04 626464.74	44258,76	24588.20 101042.70
	Sub-total				2291349.56 (100.0 %)	1394643.74 (60.8 %)		229134.9 (10.0 %
	PERSTRUCTURE WORKS	Cu. m	912	228	207936.00	89412.48		20793.6
1 (5) 1 (1) [1	Removel concrete structure Removel steel structure (bridge) Railing	LS.	760		1284382.00	860535.94 175347.20	295407.86	128438.2 31312.0
2 3(S)	Timber structure (Detour bridge)	SDAN	55700 5180		-		化二二烷基苯甲烷基甲基二	-
5(1)	Reinforcing steel Structural concrete. Class A	kx Cu. m	17.4 2700 15600	51260 513	891924.00 1385100.00 8704800.00		160546.32 484785.00 1915056.00	138510.0
8	Steel bridge(1-beam)	Cu.se ton Sq.m	15600 61400 68.4	- - -	8104800.00	4		870480.0
. 1 1 24 ₂ 11	Paint Sub-total				12787262.00		3059985.90	1278726.2
	BSTRUCTURE WORKS	Cu.m	912	152	(100.0 %) 138624.00	59608.32	(23.9 x) 65153.28	(10.0 x
1(5) 1(1) 0(3)	Removal of concrete structure Removal of steel structure Steel H-piles	LS m	3250		7.6	•		•177 •
0(4)	Precast concrete pile (400X400mm) Steel sheet pile	n n	787 3290		-			-
0(7) 0(16)	Precast concrete sheet pile Cast-in-Place concrete pile(1200mm)	P) 175	569 7130	1448	10324240.00	7226968.00	2064848.00	
4 5(1)	Reinforcement steel Structural concrete, Class A	kg Cu.m	15.1 1890	1563	1893540.00 2954070.00 94050.00	1801982.70 59251.50	340837.20 856680.30 25393.50	295407.0
5(5) 1	Seal concrete Grouted riprap	Cu.m Cu.m Cu.m	1710 936 845	55 92	85112.00	37028.16	40472.64	8611.2
5 9	Stone masonry Gabion	Cu.as	663	_				-
	Sub-total	•			(100.0 %)	(68.0 %)	3393384.92 (21.9 %)	1549053.6 { 10.0 X
0(1)	VER TRAINING WORKS Untrested timber bile Precast concrete pile (400X400mm)	10 £1	134 787		·			
0(4) 0(6)	Steel sheet pile	. as kg	3290 15.1	• -	-	•		:
4 5(1)	Reinforcement steel Structural concrete, Class A	Cu.m	1890		-			•
5 (5) 4	Seal concrete Grouted riprap	Cu.m	1710 936	-	Ę		in de l' <u>⊆</u> illes. Letteres l'esternis	<u>-</u> •
)5)6	Stone masonry Stone pitching (Hand-laid	Cu.n	845	•	-			-
9	rock embankment) Gabion	Cu.m Cu.m	300 663	-	-	<u>-</u> 		
÷	Sub-total				(-)	(= ·).	(-)	(- ·
) SP	ECIAL WORKS FOR REHABILITATION Additional stringer	ton	41300		_			_
1	Additional sidewalk	Sq.m Cu.ma	6880 5850	_	-			:] .
2 3	Reinforcing beam of RCDG Widening of pier coping	Cu.m	8520		.	- 1974 () 197		
	Sub-total	,			- -	e - 5	(-)	·)
1) TE	MPORARY WORKS Scaffolding	Sq.m	156	2059	321204.00	224842.80	64240.80	32120.4
)1)2)3	Staging Temporary bridge Preparation works	Cu.ss Sq.ss LS	220 5180	1267 264 1	278740.00 1367520.00 976101.35	172818.80 1025640.00 654440.48	205128.00	27874.0 136752.0 97510.1
	Sub-total	******	**************************************		2943565.35	2077742.08	671466.73	294356.5 (10.0 %
	Grand Total				(100.0 %) 33512812.91 (100.0 %)	(70.5 %) 22469123.20 (67.0 %)	7692408.42	3351281 29 (10.0 %)

DETAILED CONSTRUCTION COST ESTIMATE (10/52)

10 Name of Bridge : STA CRUZ ! Classification : Reconstruction for Extension span

Iten No.		Description	Unit	Price	Quantity	Amount		Local Component	Taxes
	BARTI	HWORK AND ROAD WORKS							
00		Clearing and Grubbiing Common excavation	Sq.m		345	745.20	52.16	618.52	74.5
02	٠.,	Bridge excavation above low	Cu.m	43.8	2880	126144.00	84516.48	29013.12	12614.40
3(2)		water level	Cu.m	58.5	3687	415500 FG		ska deeddagaa	
3(2)5	i	Bridge excavation below low	Ç4.m	30.0	3081	215689.50	135884.39	58236.17	21568.95
,3(270		water level	Cu n	111	4523	502053.00		145595.37	50205.30
3(5)		Shoring, cribbing, cofferdam					The second second		00000101
		and related work	ĻS	1	· · · · · · ·			ti ti ili kalendari kalendari	-
4(1)		Embankment Selected borrow for backfill	Cu.m	69.0	2639	182091.00	132926.43	30955.47	18209.10
)4(5))0		Aggregate subbase course	Cu.m Cu.m	120 193	2077	249240.00	89726.40	134589.60	24924.0
1(2)		PCC Pavement (Reinforced)	Sq.m	457	85 147	16405.00 67179.00	41650.98	2952.90 18810.12	1840.50 6717.90
	. 4							10010.15	0,11.3
	rfα,	マル Súb-tótál (*) 1.5 大会 Set (*) (*) (*) (*) (*) (*) (*) (*) (*) (*)				1359546.70		420771.26	135954.6
1.5	CUDE	RSTRUCTURE WORKS				(100.0 %)			(10.0 X
	201.0	Removal concrete structure	Cu.m	912	. 4	3540.00	1660 64	1714.56	
1(5) 1(1)		Removal steel structure (bridge)	LS	1		3648.00	1908-04	1/14.86	364.8
	4.	Railing	n	760	90	68400.00	38304.00		6840.0
1 2		Timber structure (Detour bridge)	SPAR	55700	, -				-
3(5)		Structural steel (Detour bridge)	Sq.a		592	3066560.00	2299920.00	459984.00	306656.0
4		Reinforcing Steel	kg Cu.m	17.4	12023	209200.20	150624.14		20920.0
5(1)		Reinforcing steel Structural concrete, Class A Prestressed concrete bridge	Cu.m		100	270000.00	148500.00		27000.0
7		Steel bridge(I-beam)	- Cu.ma ton	61400		2640200.00	2138562.00		284020 0
1		Paint	Sq.#	68.4			30944.16		254020.0
•				******			*		73003.2
	· · :	Sub-total				6496040.20	4808422.94	1038013.24	649604.0
						(100.0 %)	(74.0 %)	(15.9 %)	(10.0 %
	SUBS	TRUCTURE WORKS		212	_			1	
1(\$)		Removal of concrete structure Removal of steel structure	Cu.m LS	912 1	. 7	6384.00	2745.12		538.4
1(1)		Steel H-piles	. pa	3260		-	-		-
0(4)		Precast concrete pile (400X400mm)	m	787	2024	1592888.00	1115021.60		159288.8
0(6)		Steel sheet pile	នា	3290	·				
0(7)		Precast concrete sheet pile	n	569	· -	-		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	-
0(16)			TD.	7130			· · · · · · · · · · · · · · · · · · ·	.	
4	. t	Reinforcement steel	kg	15.1 1890		481690.00		86704.20	
5(1) 5(5)		Structural concrete. Class A Seal concrete	Cu.sa Cu.sa	1710	405	765450.00	466924.50	221980.50	76545.0
11		Grouted riprap	Cu.m	936	_	-	Ξ.		-
5		Stone masonry	Cu.∌	845	-	-	-	3 - 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	· <u> </u>
9		Gabion	Cu.m	. 663	-	-			- .
		Sub-total				2045430 00	1001500 00		
· .		Sub-total				2846412.00 (100.0 %)		630262.78	284641.2 (10.0 %
٧)	RIVE	R TRAINING WORKS				1,0010 47	(0) 10 /17	(12.11 /4/	
0(1)		Untreated timber pile	m	134	352	47168.00	23112.32	19338.88	4716.8
0(4)		Precast concrete pile (400X400mm)	ħ	787	· -	-		19338.86	-:
0(6)		Steel sheet pile	63	3590	1.7		.	11.1	
4		Reinforcement steel	kg	15.1	308	4650.80	3348.58		465.0
5(1) 5(5)		Structural concrete. Class A	Ըս.թ Cu.p	1890 1710	15	28350.00	17293.50	8221.50	2835.0
)4		Seal concrete Grouted riprap	Cu.m	936	396	370656.00	159382.08		37065.6
5		Stone masonry	Cu.m	845			-		
6		Stone pitching (Hand-laid	24						
		rock embankment)	Cu.m	300	264	79200.00	22176.00	49104.00	7920.0
9		Gabion	Cu.គ	663	-	•	. - .	÷	-
						530024.80	225312.48	251709.84	53002.4
		Sub-total				(100.0 %)	(42.5 %)		(10.0 %
)	SPECI	IAL WORKS FOR REHABILITATION				.,00.0 47		3 41/4 /4/	
ó	J. 100	Additional stringer	ton	41300	-		~	-	-
1		Additional sidewalk	Sq.m	6880		-	-	-	-
2		Reinforcing beam of RCDG	Cu.#	5850	-	-	-	-	_
3		Videning of pier coping	Cu.n	8520	i -		·	-	
,		0.1.1.1.1							
		Sub-total				(-)	(-)	(-)	(-)
1)	TEMP	ORARY WORKS							
10		Scaffolding	Sq. m	156	385	60060.00	42042.00		6006.0
1		Staging	Cu. ₪	220	139	30580.00	18959.60		3058.0
2		Temporary bridge	Sq. p	5180		2279200.00	1709400.00		227920.0
3		Preparation works	LS		1	408055.91	286153.97	81095.35	40805.5
		Put I Laid				2777895.91	2056855-57	443550.75	277789.5
	. •	Sub-total				(100.0 %)		(15.9 %)	(10.0 %
		Grand Total				14009919.61	9824619.78	2784307.87	1400991.9
						(100.0 %)	(70.1 X)		(10.0 %

DETAILED CONSTRUCTION COST ESTIMATE (11/52)

11 Name of Bridge: LANGLANGKA l Classification: Replacement of Superstructure

Item No.		Description	Unlt	Price	Quantity	Amount	Fortegn Component	Local Component	Taxes
(1)	EART	WORK AND ROAD WORKS				111111	1.00	1860 10	
00 .		Clearing and Grubbling	Sq.m	2,16	931	2010.96	7493 99	1669.10 2568.87	201.10
02		Common excavation	Cu.m	43.8	255	11169.00	1403110	2000101	1116.90
03(2)		Bridge excavation above low	C:: n	58.5	, t- <u>-</u> -	- :	-		
		Bridge excavation below low	Cuin	30.3			at Barrel	1247 2, N. B. W. W.	the second
03(2)	3	Agter least	Cu.m	111	1 a 4 🕶		· . •	and the second	
03(5)	,	Shoring, cribbing, cofferdam				A.	and the second of	Jana (Magidal)	1.14
		and related work	LS	11.0		E 4717 00	39943.41	9301.89	5 471
04(1)		Embankment	Cu.m	69.0	793	54717.00	· · · · · · · · · · · · · · ·	y a sala naz≢sali a	
04(5)	١.	Selected borrow for backfill	Cu.m Cu.m	120 193	255	19215.00	35434.00	8858.70	4921.50
00		Aggregate subbase course PCC Pavement (Reinforced)	Sq.m	457	442	201994.00	125236.28	56558.32	20199.40
11(2)		LCC Lasezett (Velutorcea)							
j, i	4 -	Sub-total				319105.96		78956.88 (24.7 %)	31910.60
iv N	ati es	and the second of the second o				(100,0 X)	(65.2 %)	AND SALESSES	(10.0 x)
(1)		RSTRUCTURE WORKS	A		69	62928.00			6292.80
01(S)		Removal concrete structure	Cu.m LS	· 912 1	-	02320100			
01(1)		Removal steel structure (bridge)	- 10 - 10	760	31	23560.00	13193.60	8010.40	2356.00
01 02		Railing Timber structure (Detour bridge)			. 4	222800.00	69068.00	131452.00	22280.00
03(8)		Structural steel (Detour bridge)	Sq.m	5180	. · · · · · · · · · · · · · · · · · · ·		2.14	00000	
04		Reinforcing steel	kg Cu.m	17.4	7370	128238.00	92331,36	23082.84 35910.00	12823.80
Q8 (1)	ri.		Cu.n	2700	38	102600.00	148836 00	144144.00	10260.00 65520.00
07			Cu.m	15500	42	655200.00	440000.00	18 18 18 18 18 18 18 18 18 18 18 18 18 1	V3320.00
08	1 to 1 to 1		ton Som	61400 68.4	- A	_			· - ·
11		Paint	34 A	VO.9					
		Sub-total				1195326.00		372175.40	119532.60
						(100.0 %)	(58.8 %)	(31.1 x)	(10.0 %)
111)	SUBS	FRUCTURE WORKS			10.24			20200 20	
)1 (S)		Removal of concrete structure	Cu. B	912	52	47424.00	20392.32	22289.28	4742.40
01(1)		Removal of steel structure	LS	1 /					
00(3)		Steel H-piles	. B	3260				-	
00(4)		Precast concrete pile (400X400mm)		787 3290		-	-		- ·
00(6) 00(7)		Steel sheet pile Precast concrete sheet pile	5	569	_	-		restricted to	, -
00(16		Cast-in-Place concrete pile(1200mm)	Ra Ba	7130			-	orania da d i alia	. -
04		Reinforcement steel	kg	15.1	, -			ing the property of the proper	•
05(1)		Structural concrete, Class A	Cu n	1890	~	-	· • • • • • • • • • • • • • • • • • • •		
05 (5)	,	Seal concrete	Cu.ss	1710					
01		Grouted riprap	Cu.n	936	•	-	·		
05		Stone masonry	Cu.m.	845 663	_	-	<u>.</u>		
09		Gabion							
100		Sub-total				47424.00 (100.0 %)	20392.32 (43.0 %)		4742.4
17)	RIVE	R TRAINING WORKS						Parameter State	1.0
00(1)		Untreated timber pile	. R	134	-		- √.	ar a st e st .	-
00(4)		Precast concrete pile (400X400mm)	E.	787	-	- '	18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	•	
00(6)		Steel sheet pile	rs.	3790	-	-		10 J = 1 J = 1	• •
04 .		Reinforcement steel	kg	15.1	-	-	. ₹ 4×		
05(1)		Structural concrete, Class A	Cu.m	1890	-				
05(5)		Seal concrete	Cu.m Cu.m	1710 936	_	-	- .		<u>-</u> '.
04 05		Grouted riprap Stone masonry	Cu.s	845		_			· -
05 06		Stone pitching (Hand-laid	-4.~				2	and the second	
		rock embankment)	Cu.m	300	-	-	-	ing the state of	•
9		Gabion	Cu. ps	663		*	- ·,	表示设计	
		Sub-total							
		and the second of the second o				(-)	(-)	. (-)	(-)
()	SPEC	AL WORKS FOR REHABILITATION	ton	41300	_	-	_	e de la companya de l	
00 01		Additional stringer Additional sidewalk	Sq.m	6880	·	-			
)1		Reinforcing beam of RCDG	Cu.m	5850			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		• •
3		Widening of pier coping	Cu.m	8520	35	298200.00	158046.00	110334.00	29820.0
		Sub-total				298200.00		110334.00	29820.0
713	TOUR	DRARY WORKS				(100.0 X)	(53.0 %)		
71)	FRWL	DRARY WORKS Scaffolding	Sq.a	156	154	24024.00	16816.80		2402.4
)0)1		Staging	Cu. m	220	40	8800.00	5456.00		
)2		Temporary bridge	Sq.m	5180	-		15.5	tions orde t e de	· •
3		Preparation works	LS		1	56786.40	33377,03	17730.73	5678.6
•						90610 40			8961.0
100		Sub-total				89610.40 (100.0 %)	55649.83 (62.1 %)		
		_							
		Grand Total				1949666.36	1145944.64	608755.09	194966.6 (10.0 %

DETAILED CONSTRUCTION COST ESTIMATE (12/52)

12 Name of Bridge: STA MARIA Classification: Reconstruction for Extension span

llem No-		Description	Unit	Price	Quantity		Foriegn Component	Local Component	Taxes
17	EART	WORK AND ROAD WORKS							
0	4 7	Clearing and Grubbling	Sq.m	2.16	345	745.20	52.16	618.52	74.52
2		Common excavation	Cu.m	43.8	674	29521.20	19779.20	6789.88	2952.12
3(2)		Bridge excavation above low	Cu m	50 E	F911	BB 1000 50			
2/215		Bridge excavation below low	Cu.m	58.5	5711	334093.50	210478.90	90205,25	33409.35
3(2)5		water level	Cu.m	111	1746	193806.00	118221.66	56203,74	19380,60
3(5)		Shoring, cribbing, cofferdam						502.001.1	13550,00
		and related work	LS	1	-	, a		- · · · <u>-</u> /	-
4(1)		Embankment Selected borrow for backfill	Cu.m. Cu.m.	69.0	6353	438357.00	320000.61	74520.69	
4(5). 0	1	Aggregate subbase course	Cu.m	120 193	922 85		39830.40	59745.60 2952.90	11064.00
1(2)		PCC Pavement (Reinforced)	Sq.m	457	147		41650.98	18810.12	1640.50 6717.90
		Sub-totat				1190746.90 (100.0 %)			119074.69 (10.0 %)
)	SUPER	RSTRUCTURE WORKS				(100.0 .4)	(00.5 %)	1 20.0 47	(10.0 %)
(5)	7.5	Removal concrete structure	Cu.n	912	497	453264.00	194903.52	213034.08	45326.40
(11)		Removal steel structure (bridge)	LS	1		•	-	-	- '
		Railing Timber structure (Detour bridge)	B	760	755	573800.00	321328.00	195092.00	57380.00
		Structural steel (Detour bridge)	span Sq.m	55700 5180	1042	5402740.00	4052055.00	810411.00	540274.00
}(S) . I		Reinforcing steel	kg	17.4	79012	1267400 90	977334.34		135740.88
(1)		Structural concrete, Class A	Cu. no	2700	625	1687500.00	928125.00	590625.00	168750.00
1		Prestressed concrete bridge		15500	116	1687500.00 1809600.00	1230528.00		180960.00
		Steel bridge(I-beam)	ton						
		Paint Section 1	Sq.m.	68.4	5283	361357.20		278245.04	36135.72
		Sub-total				11645670.00		2729852.71	1164567.00
11.0		그 관리 시작을 받아 되었다.				(100.0 %)		(23.1 %)	(10.0 X)
	SUBST	TRUCTURE WORKS	_				*		
(S)		Removal of concrete structure Removal of steel structure	Cu.m. LS	912	-		-	-	• .
(1)		Steel H-piles	nt.	3260		ī		_	_
(3) (4)		Precast concrete pile (400X400mm)	20	787	1672	1315864.00	921104.80	263172.80	131586.40
(6)		Steel sheet pile	n	3290	-		•		~ .
(7)		Precast concrete sheet pile	5 3	569	'/ -	-		-	- '
(16)		Cast-in-Place concrete pile(1200mm)	B	7130	-		-		
		Reinforcement steel Structural concrete, Class A	kg Cu.a	15.1 1890	22000 278	332200.00	239184.00		33220.00
(1) (5)		Seal concrete	Cu.m	1710	210	525420.00	320306.20	152371.80	52542.00
1		Gronted rinran	Cu.m	935	_	→	-	4	_
		Stone masonry	Cu. n	846	-	-	-	· - ·	-
)		Gabion	Cu.m	663	• •	-	-	. .	**
	. :	Sub-total				2173484.00	1480795.00		217348.40
1						(100.0 X)	(68.1 %)	(21.8 %)	(10.0 x)
	BIAÈ	R TRAINING WORKS	_	101		20250 00	24550 10	00000 00	7075 00
)(1))(4)		Untreated timber pile Precast concrete pile (400X400mm)	es De	134 787	528	70752.00	34668.48	29008.32	7075.20
0(6)		Steel sheet pile	pa Pa	3290	_		The second second		-
1		Reinforcement steel	kg	15.1	462	6975.20	5022.86	1255.72	697.62
(1)		Structural concrete, Class A	Cu.m	1890	23	43470.00	26516.70		4347.00
5(5)		Seal concrete	Cu. ns	1710			-		-
4		Grouted riprap	Cu.m	936	594	555984.00	239073.12	261312.48	55598.40
i 3		Sione masonry Stone nitching (Hand-laid	Cu.m	845	-	-	-	-	•
		Stone pitching (Hand-laid rock embankment)	Cu.m	300	695	208500.00	58380.00	129270.00	20850.00
		Gabion	Cu.m	663			-	127	
						005600 20	20001 10	422450 82	00000
		Sub-total			•	885682.20 (100.0 %)	363661.16 (41.0 %)		88568.22 (10.0 %)
•	SPECT	IAL WORKS FOR REHABILITATION				1200.0 47	47	, 10.5 %	
		Additional stringer	ton	41300	104	4295200.00	3264352.00		429520.00
		Additional sidewalk	So n	6880	142		713180.80		97696.00
		Reinforcing beam of RCDG	Cu.m	5850	-	_	~	-	-
		Widehing of pier coping	Cu.n	8520	-				
		Qualitates				5272160.00	3977532.80	767411.20	527216.0
+ 3		Sub-total				(100.0 %)	(75.4 %)	(14.5 %)	(10.0 X
	TEMPO	DRARY WORKS							
ı"		Scaffolding	Sq.p	156	3606	562536.00	393775.20		56253.6
		Staging	Cu.m	220	248	54560.00	33827.20		5456.0
		Temporary bridge	Sq m	5180	513	2657340.00 733265.37	1993005.00 502670.17	398601.00 157268.67	265734.0 73326.5
١.		Preparation works	LS		1	133265.37	302010.11	15/208.0/	13320.5
		Sub-total				4007701.37	2923277.57	683653.67	400770.1
						(100.0 %)	(72.9 %)	(17.0 %)	
		Grand Total				(100.0 %) 25175444.47 (100.0 %)	(72.9 X) 17258342.34 (68.5 X)		(10.0 %) 2517544.45 (10.0 %)

DETAILED CONSTRUCTION COST ESTIMATE (13/52)

13 Name of Bridge : TIPCAL Classification : Replacement of Superstructure

Item No.		Description	Unit	Price	Quantity	Amount	Fortegn Component	Local Component	Taxes
			~					in 1985, 1 of the state of the control of the	
I) 00	BANT	HWORK AND ROAD WORKS	Sq.m	2.16	-	#*· ·			-
)2		Clearing and Grubbling Common excavation	Cu.m	43.8	-	•	an an in the first of	ase i ficie	- '
3(2)		Bridge excavation above low	-	,			and the second of	Contract to the second	
3(2)			Cu.m	58.5	336	19656.00	12383.28	5307.12	1965.6
3(2)5		water level Bridge excavation below low	041						
3(2)	•	water level	Cu.m	111	75	8325.00	5078.25	2414.25	832.5
9751			04.12	• • • • • • • • • • • • • • • • • • • •					
3(5)		Shoring, cribbing, cofferdam	LS	1		and the 🖷		#	-
		and related work	Cu.m	69.0	_		tina júzici s a ta		4.,
4(1)		Embankment	Crim	120	735	88200.00	31752.00		8820.0
4(8)		Selected borrow for backfill	Cu.m	193		-		-	
00		Aggregate subbase course	Sq.m	467				and the state of t	. 1
1(2)		PCC Pavement (Reinforced)							
٠.		0.1.4.4.1				116181.00	49213.53	55349.37	11618.1
	٠.	Sub-total				(100.0 %)	(42.3 %)	(47.6 X)	(10.0 x
	CHEE	POTENCTHER WARVE					and the second second	A Committee of the	311
D.	SALE	RSTRUCTURE VORKS Removal concrete structure Removal steel structure (bridge)	Cu.m	912	130	118560.00	50980.80	55723.20	11856.0
)1(S)		nemoval concrete structure	į.s	ī		-	-	- 11 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
$i(\Omega)$			ea Ea	760	77	58520.00	32771.20	19896.80	5852.0
1		Railing	span	55700					-
2		Timber structure (Detour bridge)	Span	5180				<u> -</u>	- *
3(8)	:	Structural steel (Detour bridge)	kg.	17.4	2255	39237.00	28250.64	7062.66	3923.1
4		Reinforcing steel	, n	2700		62100.00	34155.00	21735,00	5210.
5(1)	11.	Structural concrete, Class A	kr Cu.m Cu.m ton	15600	113	1762800.00	1198704.00	387816.00	176280.
7		Prestressed concrete bridge		61400			<u> -</u>		~
8			SQ.B	68.4		-			-
1		Paint	30.11						
:	100					2041217.00	1344861.64	492233.66	204121.1
5.7		Sub-total				(100.0 %)	(55.8 %)	(24.1 %)	(10.0
	CURE	Thucture MODES							
[]}	2002	TRUCTURE WORKS	Cu.m	912	· · · · · -		÷		· - ·
1(5)		Removal of concrete structure	LS	1	-	· -	-		-
1(1)		Removal of steel structure		3260	_		- '		
0(3)		Steel H-piles	PB ·	787	198	155826.00	109078.20	31165.20	15582.
0(4)		Precast concrete pile (400X400mm)	, m	3290		100020		30.00	-
0(6)		Steel sheet pile				_	11 to 1 1 1 2 1 1 1	7.84	-
0(7)		Precast concrete sheet pile	150 .	569		1 1 2	e da estat <u>u</u> ve	in garata d <u>T</u> errani	
0(16)	•	Cast-in-Place concrete pile(1200mm)	TA .	7130	2250	58135.00	41857.20	10464.30	5813.
4		Reinforcement steel	kk	15.1	3850		25202.20	17530 20	6048.0
5(1)		Structural concrete. Class A	Cu.R	1890	32	60480.00	30032.00	17539.20	
5(5)		Seal concrete	Cu.s	1710			20122 60	20704 40	6552.0
1		Grouted riprap	Cu.m	936	70	65520.00	28173.60	30794.40	0332.1
5		Stone masonry	Cu.B	845	7	-	· -		
9		Gabion	Cu.≡	663		i in the state of	.		·
							216001.80	89963.10	33996.1
		Sub-total				339961.00			
						(100.0 %)	(03.5 %)	(26.4 X)	1 10.0
٧)	RIVE	R TRAINING WORKS		2.5			5 5 6	April 1984 - Partir 1	
(1)		Untreated timber pile	m	134	; -		• •		
0(4)		Precast concrete pile (400X400mm)	36	787		~	· ·		
0(6)		Steel sheet pile	· 129	3290		-			
4		Reinforcesent steel	kκ	15.1	. •		• • •	" -,	
5(1)		Structural concrete. Class A	Cu-B	1890	_	- '	-	ing take the modern to be a fi	• •
5(5)		Seal concrete	Cu.B	1710		-	-		· -
		Grouted riprap	Cu.m	936	-	-	-	ang North American	- .
5	-	Stone masonry	Cu.a	845	-	-	into a ja⊤ ki	. • . • • . •	-
		Stone pitching (Hand-laid	4.					1. 1. 1944 1.4	
		rock embankment)	Ču. 🖪	300	· -	- ·		A Transaction	-
		Gabion	Çų. 🖪	663	₹.			· · · · · · · · · · · · · · · · · · ·	-
		Gaoton							~
		0401011						-	
		Sub-total							(· · /
•		Sub-total				(-)	.g.€j=j∋.	() , , , , , , , , , ,	T
•	SPEC					(-)	. j (€ - j = , j).	(1. Ā r -)	
•	SPEC	Sub-total	ton	41300	-	() -	.y(€ + ,=, ,) . ,="1"	in the state of th	-
	SPEC	Sub-total IAL WORKS FOR REHABILITATION	ton Sq.m	41300 6880	1	() -	.,		-
· · · · · · · · · · · · · · · · · · ·	SPEC	Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk				· · · · · · · · · · · · · · · · · · ·			-
} }	SPEC	Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG	Sq. pp	6880	-	·			-
	SPEC	Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk	Sq. m Cu. m	6880 5850	-	(-) _.			-
· · · · · · · · · · · · · · · · · · ·	SPEC	Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Videning of pier coping	Sq. m Cu. m	6880 5850	-	() 		-	
	SPEC	Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG	Sq. m Cu. m	6880 5850	- - - -			-	
))		Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total	Sq. m Cu. m	6880 5850		(-))		() -)	(-)
))) ! !		Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS	Sq. m Cu. m	6880 5850	385	(-)	42042.00	12012.00	6006
)		Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Scaffolding	Sq.m Cu.m Cu.m	6880 5850 8520	385	-)	42042.00	12012.00	6006
))		Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Scaffolding Staging	Sq.m Cu.m Cu.m Sq.m Cu.m	6880 5850 8520 156 220	395			12012.00	6006
		Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS SCAffolding Staging Temporary bridge	Sq.m Cu.m Cu.m Sq.m Cu.m	6880 5850 8520	395	-	42042.00	12012.00	6006
))) 1 2 3 3		Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Scaffolding Staging	Sq.m Cu.m Cu.m Sq.m Cu.m	6880 5850 8520 156 220	385		42042.00	12012.00 19485.74	6006. 7672.
9 0 1 2 3 3		Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Scaffolding Staging Temporary bridge Preparation works	Sq.m Cu.m Cu.m Sq.m Cu.m	6880 5850 8520 156 220	385	76722.57	42042.00 49563.67	12012.00 19485.74	6006. 7672.
0 1 2 3		Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS SCAffolding Staging Temporary bridge	Sq.m Cu.m Cu.m Sq.m Cu.m	6880 5850 8520 156 220	395	76722.57 136782.57	42042.00 49563.57 91605.57	12012.00 19485.74 31498.74	6006. 7672. 13678.
		Sub-total IAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total ORARY WORKS Scaffolding Staging Temporary bridge Preparation works	Sq.m Cu.m Cu.m Sq.m Cu.m	6880 5850 8520 156 220	385	76722.57	42042.00 49563.67	12012.00 19485.74 31498.74 (23.0 %)	6006. 7672.

DETAILED CONSTRUCTION COST ESTIMATE (14/52)

14 Name of Bridge : PLARIDEL-PULILAN Classification : Repair

tem o	Description	Unit	Price	Quantity	Amount	Foriegn Component	Local Component	Taxes
) EA	RTHWORK AND ROAD WORKS							
ó	Clearing and Grubbling	Sq.m	2.12	· · · -	-	·	· -	_
2	Common excavation	Cu.m	12.9	~	-			~ . ·
3{2}	Bridge excavation above low vater level	Cu.m	=7 3					
2/218	Bridge excavation below low	Cu.m	57.3		- ,		• •	-
(2)8	vater level	Cu.m	109		-	_	200	· <u>-</u>
(5)	Shoring, cribbing, cofferdam					1		
	and related work	LS	1 1		_		•	
(1)	Embankment Selected borrow for backfill	Cu.m Cu.m	67.7		_			7 -
(S)	Aggregate subbase course	Cu.m	118 191	-		· -		•
(2)	PCC Pavement (Reinforced)	Sq.m	457		-			-
77	Sub-total							
: : SII	PERSTRUCTURE WORKS				(-)	(-)	() .	(, -)
(S)	Removal concrete structure	Cu.m	894	173	422862.00	181830.66	198745.14	42286.2
(1)	Removal steel structure (bridge) Railing	LS m	1 760	277	200520 00	150451 30	07116 00	
	Timber structure (Detour bridge)	span	54500	377	286520.00	160451.20	97416.80	28652.0
(\$)	Structural steel (Detour bridge)	Sq.m	5080		- <u>-</u> -		<u> </u>	-
	Reinforcing steel	kg	18.4	63404	1166633.60	839976.19	209994.05	116663.3
(1)	Structural concrete, Class A	Cu.m	2700	488	1317600.00	724680.00	461160.00	131760.0
	Prestressed concrete bridge	Cu. m	15600	· · · -	· -	-	-	-
	Steel bridge(1-beam) Paint	ton Sq.m.	60200 67.1	6967	467485.70	60773.14	359963.99	46748.5
					401400.70	00113.14	499909.33	40140.
45 M	Sub-total				3661101.30 (100.0 %)	1967711.19 (53.7 %)	1327279.98	366110.1 (10.0 :
() SU	BSTRUCTURE WORKS							
(5)	Removal of concrete structure	Cu.n	894	· · -	-		- '.	-
Ω	Removal of steel structure	LS	1		-	-	-	
(3) (4)	Steel H-piles Precent concrete pile (400X400mm)	. TR .ro	3190 801					Ī.,
6)	Steel sheet pile	n:	3220	_	_	<u> </u>	_	_
(7)	Precast concrete sheet pile	m.	580	_				_
(16)	Cast-in-Place concrete pile(1200mm)	₽n	7270	· -	-			-
	Reinforcement steel	kg	15.9	3795	60340.50	43445.16	10861.29	6034.
(1)	Structural concrete, Class A	Cu.m	1890	32	60480.00	36892.80	17539.20	6048.0
(5)	Seal concrete	Cu.m.	1710 962		-			-
	Grouted riprap Stone masonry	Cu.m	869	-	-	-		
	Gabion	Cu.m	688		_			
	Sub-total				120820.50 (100.0 %)	80337.96 (66.4 %)	28400.49 (23.5 %)	12082.0
	VER TRAINING WORKS				1100.5 %		(2010 3)	, 10.0
(1)	Untreated timber pile	TP-	131	-		· · · · · · · · · · · · · · · · · · ·	-	-
(4) (6)	Precast concrete bile (400X400mm)	នា ទា	801 3220	_	-		_	_
.07	Steel sheet pile Reinforcement steel	kg	18.9	-	_	-	_	_
1)	Structurai concrete. Class A	Cu.m	1890	_	-	· _ ·	-	_
5)	Seal concrete	Cu.m	1710	· -	-	-	-	-
	Grouted riprep	Cu.m	962	-	-	-		-
	Stone mesonry	Cu.m	869	7	-	-	· -	-
	Stone pitching (Hand-laid	C	311		_	_		_
	rock embankment) Gabion	Cu.m Cu.m	688	_	_		_	_
	Sub-total							
ÇB	ECIAL WORKS FOR REHABILITATION				(-)	. ()	(-)	(-)
	Additional stringer	ton So m	10500	407	16483500.00	12527460.00	2307690.00	1648350.
	Additional sidewalk	Sq.Ma Cu.na	6750 5960		-	-	<u> </u>	-
	Reinforcing beam of RCDG Widening of pier coping	Cu.r	8680	-	-			_
	Sub-total				16483500.00	12527460.00	2307690.00	1648350.
TE	MPORARY WORKS				(100.0 %)	(75.0 %)	(14.0 x)	(10.0
ip	Scaffolding	Sq.m	153	1883	288099.00	201669.30	57619.80	28809.
	Staging	Cu.m	216		=	-	=,	· -
	Temporary bridge	Sq.m	5080	- :	- e1660F 60	442015 05	111690 71	61660
	Preparation works	LS		l	616605.62	443315.35	111629.71	61660,
	001312121				904704.62	644984.65	169249.51	90470.
	Sub-total				(100.0 %)	(71.2 %)	(18.7 %)	(10.0
	Grand Total				21170126.42	15220493.81		2117012.
					(100.0 ×)	(71.9 %)	(18.1 %)	(10.0

DETAILED CONSTRUCTION COST ESTIMATE (15/52)

15 Name of Bridge : SAN ROQUE Classification : Repair

	Description	Unit	Price	Quantity	Amount	Forlegn Component	Local Component	Taxes
 [)	EARTHWORK AND ROAD WORKS						e de la ser com	
0	Clearing and Grubbling	Sq.m	2.12	· -	· -	4 - <u>3</u> - 3 -	sa kalaya 🗓 🔑	-
2	Common excavation	Cu.m	42.9		· •		ម៉ូសា មក្សែត	
3(2)	Bridge excavation above low	d	. 6.2. 3		_		2	1
	vater level	Cu.m	57.3	14.5	1.0			
3(2)	S Bridge excavation below low water level	Cu. m	109	-		-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
3(5)	Shoring, cribbing, cofferdam	0.01			:	4.30 30 23	and the second second	
	and related work	LS	1.	. •	- "	- ,	an king tr <u>i</u> lling	-
4(1)	Embankment	Cu.m	67.7	· · · · · · · · · · · · · · · · · · ·				
)4(S)	Selected borrow for backfill	Cu na	118				- 10	
00	Aggregate subbase course	Cu.m Sq.p	191 457	·				
(2)	PCC Pavement (Reinforced)	. *						
	Sub-total				· - >	(-)	(-)	(-)
11)	SUPERSTRUCTURE WORKS					0021 6	6 9664.14	
1(5)	Removal concrete structure	Cu m	894	- 23	20562.00	8841.6	9 3004-14	2056.2
)1(1)		LS	1 .		ing size		Santana 🙀 🚎	
)] .	Ralling	M Span	760 54500	_		- · · · · - · · ·		_
)2	Timber structure (Detour bridge) Structural steel (Detour bridge)	Span Sq. m.	5080		÷.			<u>-</u>
)3(S))4	Reinforcing steel	ke	18.4	2280	41952.00	30205.4		4195.2
5 (1)	Structural concrete. Class A	Cu.n	2700	23	62100.00	34155.00	0 21735.00	6210.0
7	Prestressed concrete bridge	Cu.m	15600	·				•
98	Steel bridge(1-beam)	ton	60200	. ·		- 1 ± 14	i di Maria 💆 i ed	
i 1	Paint	a.p2	67.1					
	Şub-total		;	*	124514.00 (100.0 %)	73202.10 (58.7 %		12461.4 (10.0 x
115	SUBSTRUCTURE WORKS				110010 2.			
01(S)	Removal of concrete structure	Cu.m	894	<u> </u>	- "	- ·		-
1(1)	Removal of steel structure	LS	1 '	-				•
0(3)	Steel H-piles	en en	3190	-	-			· •
0(4)	Precast concrete pile (400X400mm)	10	801		· · · · · · · · · · · · · · · · · · ·	- -	antaga int <u>E</u> rana	Ī.
(6)00	Steel sheet pile	TO.	3220	-				_
30(7)	Precast concrete sheet pile	. 19	580 7270	- 1	<u>.</u>	2 <u>1</u> 1	<u>-</u>	
00(16)		m ke	15.9		: <u>-</u>	1 × <u>-</u> 111	. · · · · · · · · · · · · · · · · · · ·	
04	Reinforcement steel	Cu.m	1890		_		in a series	
05(1) 05(5)	Structural concrete. Class A	Cu m	1710	-	- '	_	•	-
)1	Grouted riprap	Cu. p	962	. -	. =	. ; - ,	-	_ `
) S	Stone masonry	Cu.m	869	-	-	-	and the state of the state of	- · · · · · -
9	Gabion	Cu.m	688		- 			
	Sub-total		•		(-)	(-)	· · · · · · · · · · · · · · · · · · ·	(-)
(V)	RIVER TRAINING WORKS					•	St. Carlotte	18.8
00(1)	Untreated timber pile	m	131	_	· -	`	in a same a 🖶	,
,,,,	Precast concrete pile (400X400mm)						a contract of the contract of	
	Liedar conciere bire (400)4400****	TB:	801	-			5. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	#
0(4) 0(6)	Steel sheet pile	Th.	801 3220	. -	. <u>1</u> 4		Santa de la Caractería de La Caractería de la Caractería	
0(4) 0(6) 14	Steel sheet pile Reinforcement steel	na Kg	801 3220 15.9		· [4			
00(4) 00(6) 04 05(1)	Steel sheet pile Reinforcement steel Structural concrete. Class A	m kg Cu.a	801 3220 15.9 1890	- - -		- 1 (2		
00(4) 00(6) 04 05(1) 05(5)	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete	m kg Cu.a Cu.m	801 3220 15.9	-	- - - - -			
00(4) 00(6) 04 05(1) 05(5)	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap	m kg Cu.a	801 3220 15.9 1890 1710					
00(4) 00(6) 04 05(1) 05(5) 04	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete	m kg Cu.m Cu.m	801 3220 15.9 1890 1710 962 869		2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		
00(4) 00(6) 04 05(1) 05(5) 04	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry	m kg Cu.m Cu.m Cu.m Cu.m	801 3220 15.9 1890 1710 962 869		-	7 7 7 7 7 1 1 1 1 1 1 1 1 1 1 1 1		
90(4) 90(6) 94 95(1) 95(5) 94 95	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid	m kg Cu.m Cu.m Cu.m	801 3220 15.9 1890 1710 962 869			27. 27. 27.		
90(4) 90(6) 94 95(1) 95(5) 94 95	Steel sheet bile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment)	m kg Cu.m Cu.m Cu.m Cu.m	801 3220 15.9 1890 1710 962 869	1		2		
90(4) 90(6) 94 95(1) 95(5) 94 96	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total	m kg Cu.m Cu.m Cu.m Cu.m	801 3220 15.9 1890 1710 962 869	y 2 y 2 y 2 y 2		2 - 2 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 -		
90(4) 90(6) 94 95(1) 95(5) 94 96	Steel sheet bile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION	m kg Cu.m Cu.m Cu.m Cu.m	801 3220 15.9 1890 1710 962 869					
90(4) 90(6) 94 95(1) 95(5) 94 95 96	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer	m kg Cu.m Cu.m Cu.m Cu.m	801 3220 15.9 1890 1710 962 869 311 688			2 - 2 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 -		
90(4) 90(6) 94 95(1) 95(5) 94 95 96 97	Steel sheet bile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION	m kg Cu.g Cu.m Cu.m Cu.m Cu.m	801 3220 15.9 1890 1710 962 859 311 688 40500 6750 5960	-	95360.00	(-)		
90(4) 90(6) 94 95(1) 95(5) 95(6) 99	Steel sheet bile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk	m kg Cu.g Cu.m Cu.m Cu.m Cu.m cu.m	801 3220 15.9 1890 1710 962 869 311 688	16 22	95360.00	53401.65 101208.8		
90(4) 90(6) 94 95(1) 95(5) 95(6) 99	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG	m KK Cu.m Cu.m Cu.m Cu.m Cu.m cu.m cu.m	801 3220 15.9 1890 1710 962 859 311 688 40500 6750 5960		190960.00 286320.00	101208.8	0 70655.20 0 103077.60	19095.0 28632.0
00(4) 00(6) 05(1) 05(1) 05(5) 04 05 06 09	Steel sheet bile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitchink (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcink beam of RCDG Widenink of pier coping	m KK Cu.m Cu.m Cu.m Cu.m Cu.m cu.m cu.m	801 3220 15.9 1890 1710 962 859 311 688 40500 6750 5960		190960.00	101208.8	0 70655.20 0 103077.60	19095.0 28632.0
90(4) 90(6) 94 95(1) 95(5) 94 96 99	Steel sheet bile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone misonry Stone misonry Stone misonry Stone bitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS	m KK CU.G CU.M CU.M CU.M CU.M CU.M CU.M CU.M CU.M	801 3220 15.9 1890 1710 962 859 311 688 40500 6750 5960 8680	22	190960.00 286320.00 (100.0 %)	101208.8 154610.4 (54.0 %	0 70655,20 0 103077.60 0 (36.0 %)	19095.(28632.((10.0)
00(4) 00(6) 04 05(1) 05(1) 05(5) 06 06 07 00 07 00 07 00 07	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding	m KK CU.G CU.m CU.m CU.m CU.m Cu.m Cu.m Cu.m	801 3220 15.9 1890 1710 962 869 311 688 40500 6750 3960 8680		190960.00 286320.00 (100.0 %) 75735.00	101208.8 154610.4 (54.0 %	0 70658.20 0 103077.60 (36.0 %) 0 15147.00	28632.0 (10.0 2 7573.5 4276.8
00(4) 00(4) 00(6) 04 05(1) 05(5) 04 09 00 00 00 00 00 00 00 00 00	Steel sheet bile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitchink (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcink beam of RCDG Widenink of pier copink Sub-total TEMPORARY WORKS Scaffoldink Stagink	m KK CU.G CU.M CU.M CU.M CU.M CU.M CU.M CU.M CU.M	801 3220 15.9 1890 1710 962 859 311 688 40500 6750 5960 8680	495 198	190960.00 286320.00 (100.0 %)	154610.44 (54.0 % 53014.5 26516.1(0 70655.20 0 103077.60 (36.0 %) 0 15147.00 6 11975.04	28632.0 (10.0) 7573.5 4276.8
50(4) 504 505(1) 505(1) 505(1) 505 506 509 71) 500 500 500 500 500 500 500 500 500 50	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding	m kg Cu.g Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	801 3220 15.9 1890 1710 962 869 311 688 40500 6750 5960 8680	22 	190960.00 286320.00 (100.0 %) 75735.00 42768.00	101208.8 154610.4 (54.0 %	0 70655.20 0 103077.60 (36.0 %) 0 15147.00 6 11975.04	19095.0 28632.0 (10.0 x 7573.5 4276.8
00(4) 00(6) 04 05(1) 05(5) 04 05 05 05 05 05 05 05 05 05 05 05 05 05	Steel sheet pile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging Temporary bridge	m KK CU. m	801 3220 15.9 1890 1710 962 869 311 688 40500 6750 5960 8680	495 198	190960.00 286320.00 (100.0 %) 75735.00 42768.00	101208.8 154610.4 (54.0 x 53014.5 26516.1 9220.2	0 70655.20 0 103077.60 0 36.0 %) 0 15147.00 6 11975.04 9 5074.60 5 32196.84	19096.0 28632.0 (10.0 % 7573.5 4276.8 1588.3
00(4) 00(4) 04 05(1) 05(1) 05(5) 04 05 05 05 00 00 01 00 01 00 01 01 02	Steel sheet bile Reinforcement steel Structural concrete. Class A Seal concrete Grouted riprap Stone masonry Stone masonry Stone misching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works	m KK CU. m	801 3220 15.9 1890 1710 962 869 311 688 40500 6750 5960 8680	495 198	190960.00 286320.00 (100.0 %) 75735.00 42768.00 15883.11	161208.8 154610.4 (54.0 x 53014.5 26516.1 9220.2 88750.9 (66.0 x	0 70655.20 0 103077.60 0 36.0 %) 0 15147.00 6 11975.04 9 5074.60 5 32196.84	28632.0 (10.0 % 7573.5 4276.8

DETAILED CONSTRUCTION COST ESTIMATE (16/52)

1	16 Name of Bridge : SICSICAN Classification : Repair							
tem	Description	Unit	Price	Quantity	Amount	Fortegn Component	Local Component	Taxes
	BARTHWORK AND ROAD WORKS	***						
Ó	Clearing and Grubbling Common excavation	Sq.m	2.12	-	-		· -	-
2 3(2)	Bridge excavation above low	Cu.m	12.9	_		-		-
	water level Bridge excavation below low	Çu. m	57.3	-			· : -	-
3(2)5	vater level	Cu.m	109	•	-			
3(5)	Shoring, cribbing, cofferdam and related work Embankment	LS	i 5			<u>-</u>	•	_
(1)	Calabiad houran ton backtill	Cu.m Cu.m	67.7 118		· -	-	-	-
((\$)	Aggregate subbase course	Cu.m	191		-	· _		-
1(2)	PCC Pavement (Reinforced)	Sq.m	457				- 	
	Sub-tota)				· - ·	(-)	,	· - ·
j) St	SUPERSTRUCTURE WORKS Removal concrete structure	c	004					
(S) (1)	Removal steel structure (bridge)	Cu.m LS	894 1	165	147510.00	63429.30	69329.70	14751.0
1	Ralling Timber structure (Detour bridge)	m SDAN	760 54500	165	125400.00	70224.00	42636.00	12540.0
2 3(S)	Structural steel (Detour bridge)	Sq m	5080	-	_	· -	_	·
4 5(1)	Reinforcing steel Structural concrete, Class A	kg Cu.m	18.4 2700	,19844 153	365129.60 413100.00	262893.31 227205.00		36512.9 41310.0
7	Prestressed concrete bridge Steel bridge(I-beam)	Cu.m ton	15600 60200	-	-	- '		-
8 1	Paint	So.m.	67.1	5189	348181.90	45263.65		34818.1
	Sub-total				1399321.50	689015.26	590374.09	139932.1
(I) Št	SUBSTRUCTURE WORKS				(100.0 %)	(47.8 %)	(42.1 %)	(10.0 x
1(5)	Removal of concrete structure	Cu.m	894		-	-	· · · · ·	- ·
l(1))(3)	Removal of steel structure Steel H-biles	LS #	1 3190	-	<u>-</u> -	_		
)(4))(6)	Precast concrete pile (400X400mm) Steel sheet pile	E) OD	801 3220	-	_	· <u>-</u>		-
0(7)	Precast concrete sheet pile	\$pr	580	_	-	· -	-	
)(16) -	Cast-in-Place concrete pile(1200mm) Reinforcement steel	h kg	7270 15.9	-	_	-	-	-
5(1) 5(5)	Structural concrete, Class A Seal concrete	Cu.m Cu.m	1890 1710	-	-	-	-	-
Ι.	Grouted riprap	Cu. ₪	962	-	-	-		-
5	Stone masonry Gabion	Cu.m	869 688	_	_	-	-	- '
	Sub-total							
					(-)	(-)	(-)	(-)
/) RI)(1)	RIVER TRAINING WORKS Untreated timber pile	a	131		_	-	_	_
(4)	Precast concrete pile (400X400mm)	D D	801 3220	-	-	_	-	-
)(6) t	Steel sheet pile Reinforcement steel	na kg	15.9	-	-	-	~	-
5(1) 5(5)	Structural concrete. Class A Seal concrete	Cu.m.	1890 1710	-	-	-		_
1	Grouted riprap	Cu.m	962 869	_	-			-
<u>.</u>	Stone masonry Stone pitching (Hand-laid	Cu.m		-				
,	rock empankment) Gablon	Cu.m	311 688		-	-	-	-
:								
	Sub-total				(-)	(-)	(-)	(-)
) SF	SPECIAL WORKS FOR REHABILITATION Additional stringer	ton	40500	31	1255500.00	954180.00	175770.00	125550.0
l	Additional sidewalk	Sq. ma	6750		2	<u>-</u> .	_	-
} }	Reinforcing beam of RCDG Widening of pier coping	Cu.a Cu.a	5960 8680	-		Ξ.		-
	Sub-total				1255500.00	954180.00		125550.
	And the state of t				(100.0 %)	(76.0 %)		
1) TE	TEMPORARY WORKS Scaffolding	Sq m	153	1650	252450.00	176715.00		25245.0
<u>!</u>	Staging	Cu.na Sq.na	216 5080	-	-			· -
i i	Temporary bridge Preparation works	LS LS	2004	1	87218.14	53997.31	24499.02	8721.8
	Sub-total				339668.15	230712.31		33966.8
					(100.0 %) 2994489.65	(67.9 %) 1853907.57	(22.0 %) 841133.11	(10.0 5 299448.9
	Grand Total				(100.0 %)	(61.9 X)		(10.0)

DETAILED CONSTRUCTION COST ESTIMATE (17/52)

17 Name of Bridge: INDIANA Classification: Reconstruction for Extension spon

ltem							Forlegn		T
No.		Description	Unit	Price	Quantity	Amount	Component	Component	Taxes
(1) 100	EART	HWORK AND ROAD WORKS Clearing and Grubbling	Sq.m	2.16	904	1952.64	136.68	1620.69	195.26
102		Common excavation	Cu.m	43.8	1209	52954,20	35479.31	12179.47	5295.42
103(2)		Bridge excavation above low water level	Cu.m	58.5	7781	455188.50	286768,76	122900.90	45518,85
103(2)	5	Bridge excavation below low water level	Cu.m	111	1122	124542.00	75970.62	36117.18	12454,20
103(5)		Shoring, cribbing, cofferdam	LS	1		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	සම්බන්ත්ර ලිසින්	్ గథాగాలో, పైకుకు శ కృయిక్షన్ కృష్ణికు కృష్ణ	· · · · · · · · · · · · · · · · · · ·
104(1)		and related work Embankment	Cu.m	69.0	6264	432216.00	315517.68 108432.00	73476.72	43221.60
104(S) 200		Selected borrow for backfill Aggregate subbase course	Cu.m Cu.m	120 195	2510 255 442	301200.00 49725.00	35802.00	8950.50	4972.50
311(2)		PCC Pavement (Reinforced)	Sq.m	474	442	209508.00	129894.96	58852.24	20950.80
*		Sub-total				1627286.34 (100.0 %)	988002.01	476555.69 (29.2 %)	162728.63 (10.0 x)
(11)	SUPE	RSTRUCTURE WORKS		~	115	104880.00	15098.40	49293.60	10488,00
101(S) 101(1)		Removal concrete structure Removal steel structure (bridge)	Cu.m LS	912 1	597718	597718.00	400471.06	137475.14	59771.80
401		Railing	118	803	242	194326.00	108822.56 483476.00	66070.84 920164.00	19432.60 155960.00
402 403(S)	• •	Timber structure (Detour bridge) Structural steel (Detour bridge)	span So.aa	55700 5380	er and er 🗝	1559600.00	John State + 1	ar saids of 😎 Lizabi	199300.00
404		Reinforcing steel	k.r.	18.7	34040	636548.00		114578.64 284284,00	53654.80
405(1) 407	4.	Structural concrete, Class A	Cu.m	2860 15800	284		440/32,00		81224.00
408		Reinforcing steel Structural concrete. Class A Prestressed concrete bridge Steel bridge(1-beam)	ton	15800 61400	114	6999600.00		629964.00	
411		Paint	Sq.m	71.1		184860.00		142342.20	18485.00
•		Sub-total			•	11089772.00 (100.0 X)	7636622.38 (68.8 %)		1108977.20 (10.0 %)
(111) 101(S)	SUBS	TRUCTURE WORKS Removal of concrete structure	Cu.m	912	. 7	6384.00	2745.12	3000.48	638.40
101(1)		Removal of steel structure	LS	1	-	- '	100 - 100 g T - 200	enig okku k ≅ eria d	. .
400(3)		Steel H-piles Precast concrete pile (400X400mm)	ES EN	3380 831	920	764520.00	535164.00	152904.00	76452.00
400(4) 400(6)		Steel sheet pile	m	3410	-		english to the same		• • •
400(7)		Precast concrete sheet pile		601 7540	-	· <u>-</u>		in to distinct	<u> </u>
400(16	,	Cast-in-Place concrete pile(1200mm) Reinforcement steel	kĸ	16.2	64900	1051380.00	756993.60	189248.40	105138.00
405(1)		Structural concrete. Class A	Cu.m	2000 · · · · · · · · · · · · · · · · · ·	810	1620000.00	988200.00	469800.00 64152.00	162000.00 23760.00
405(5) 501		Seal concrete Grouted riprap	Cu.m	989	- 132	-	-	-	
505		Stone masonry	Cu.m	893 663		-	<u> </u>	a lega pētasati Notas pētasat	<u>. </u>
509		Gabion							
*		Sub-total			***	3679884.00 (100.0 %)		879104.88 (23.8 %)	(10.0 X)
([¥) 400(1)	HIVE	R TRAINING WORKS Untreated timber pile	15	134	264	35376.00		14504.16	
400(4)		Precast concrete pile (400X400mm)	m m	831 3410					
400(6) 404		Steel sheet pile Reinforcement steel	kg .	16.2	308	4989.60	3592.51	898.13	498.96
405(1)		Structural concrete. Class A	Cu.m	2000 1800	15	30000,00	18300.00	8700.00	3000.00
405(5) +5 04		Seal concrete Grouted riprap	Cú.m	989	475	469775.00	202003.25	220794.25	46977.50
505		Stone masonry	Cu.m	893	-		- :	· · · · · · · · · · · · · · · · · · ·	
506		Stone pitching (Hand-laid rock embankment)	Cu.m	300	_	-	en, ve l a i		
509		Gabion	Cú.mo	663	884	586092.00	353377.04	164105.76	58609.20
*		Sub-total			*	1126232.60 (100.0 %)	604607.04	409002.30 (36.3 %)	112623.26 (10.0 X)
(V) 800	SPEC	IAL WORKS FOR REHABILITATION Additional stringer	ton	42900	1	42900.00	32604.00	5 5	*
801		Additional sidewalk	Sq.m	7150	<u>.</u>	42500.00	741		-
802		Reinforcing beam of RCDG	Cu.m Cu.m	6180 9000	r a sa <u>I</u>	-	<u> </u>	5 - <u>7</u> 47-7	
803		Widening of pler coping							1000 00
•		Sub-total				12900.00 (100.0 %)	32604.00 (75.0 %)	6005.00 (14.0 %)	4290.00 (10.0 %)
(VI) 900	FEMP	ORARY WORKS Scaffolding	Sq.m	156	1125	175500.00	122850.00	35100.00	17550.00
901		Staging	Cu.m	220	980	215500.00	133672.00	60368.00	
902 903		Temporary bridge Preparation works	Şq.m LS	5380	220 1	1183600.00 574223.25	887700.00 385165.44		57422.32
						2148923.25		404643.48	214892.32
* ,		Sub-total			•	(100.0 X)	(71.1 X)	(18.8 X)	(10.0 X)
**		Grand Total				19714998.19	13224013.60	4519484.77 (22.9 %)	1971499.82 (10.0 %)
	· ·					(100.0 %)	(01.0 %)	, ; (; 22.9 %)	

DETAILED CONSTRUCTION COST ESTIMATE (18/52)

		angle and engles and e Handard and engles and	·						
ten lo		Description		Price	Quantity	- Amount		Local Component	Taxes
) B	ARTI	HWORK AND RUAD WORKS	1.4						
0		Clearing and Grubbling Common excavation	Sq.m	2.16	-	-	· - ·	-	
2 3(2)		Bridge excavation above low	Çu.m	43.8		•			-
3127		water level	Cu.m	58.5	3036	177606.00	111891.78	47953.62	17760.6
3(2)\$		Bridge excavation below low water leve!	Ըս. դ	111	0550	1072038.00	CE2042 10	010001 00	107909 6
3(5)		Shoring, cribbing, cofferdam			3036	1012038.00	000040.10	310891.02	. 107203.8
. 1		r_t_=ba	LS	1	-		<u>-</u> '	-	-
4(1) 4(S)		Embankment Selected borrow for backfill	Cu.m Cu.m	69.0 120	4510 : 794			52902.30 51451.20	31119.0 9528.0
ġ.,		Aggregate subbase course	Cu.m	195			* .	3110111	3020.0
1(2)		PCC Pavement (Reinforced)	Sq. an	474	-	- <u>-</u> -		-	·
1		Sub-total				1656114.00 (100.0 %)		463198.14 (27.9 %)	165611.4 (10.0 %
	UPE	RSTRUCTURE WORKS			1				
1(S) 1(1)		Removal concrete structure Removal steel structure (bridge)	Cu.m. LS	912 l	267	243504.00	104706.72	114446.88	24350.4
1(1)		Relling	m	803	385	309155.00	173126.80		30915.5
2		Timber structure (Detour bridge) Structural steel (Detour bridge)	span Sq.m kg Cu.m	55700	1220		7010000 00		005011.0
3(S) 4	-	Reinforcing steel	KK	5380 18.7	1738 45650	9350440.00 853655.00		1402566.00 153657.90	935044.0 85365.5
5(Ì)		Structural concrete. Class A	Cu.m	2860		1003860.00	552123.00	351351.00	100386.0
7 8		Prestressed concrete bridge Steel bridge(I-beam)	Cu.m ton	15800 61400		7	<u>-</u>	· · · <u>*</u> · ·	
1	4.1	Paint	Sq.m	71.1	10063	715479.30	93012.31	550919.06	
		Sub-total				12476093.30 (100.0 X)		2678053.54 (21.4 %)	
	បនទា	TRUCTURE WORKS	6						
(S) (I)		Removal of concrete structure Removal of steel structure	Cu.m LS	912 1					_
(3)		Steel H-piles	m	3360		•		-	
0(4)		Precast concrete pile (400X400mm) Steel sheet pile	ts ·	831 3410	_	-	<u>-</u> .	<u>-</u> . ''	<u>.</u>
D(6) D(7)		Precast concrete sheet pile	75	501			Ξ.	·	_: _:
(16)		Cast-in-Place concrete pile(1200mm)	m	7540	-	-			-
(5(1)		Reinforcement steel Structural concrete. Class A	kg Cu.m	16.2 2000	.		_	_	-
5(\$)		Seal concrete	Cu.m	1800	· -		-		-
1		Grouted riprap	Cu.m	989	348	344172.00	147993.96	161760.84	34417.2
5 . }		Stone masonry Gabion	Cu.s» Cu.s»	893 563			-	_	
		Sub-total				344172.00	147993.96		
() R	IVE	R TRAINING WORKS				(100.0 %)	(43.0 A)	(47.0 X)	(10.0)
(1)		Untreated timber pile	con con	134	220	29480.00	14445.20	12086.80	2948.0
0(4) 0(6)		Precast concrete pile (400X400sm) Steel sheet pile	. m.	831 3410		_	- -	-	
4		Reinforcement steel	K.K	16.2	4950	80190.00		14434.20	8019.0
5(1)		Structural concrete, Class A	Cu.m	2000	248		302560.00	143840.00	49600.0
5(5) 1		Seal concrete Grouted riprap	Cu.n	1800 989		1168009.00	502243.87	548964.23	116800.9
5		Stone masonry	Cu.m	893	-	-		-	- '
6		Stone pitching (Hand-laid rock embanksent)	Cu.m	300	_	_	_	<u>.</u> .	_
9 .		Gabion	Cu.m	663	3218	2133534.00			213353.4
٠		Sub-total				3907213.00 (100.0 %)	2199776.95 (56.3 %)	1316714.75	390721.3
) S	PEC	IAL WORKS FOR REHABILITATION				1100.0 47	, JU.J A)	(00.7 %)	
•		Additional stringer	ton	42900	-	0006350.55	2044627 62	669447 50	200575 /
l 2		Additional sidewalk Reinforcing beam of RCDG	Sq.m Cu.m	7150 6180	545	3896750.00	2844627.50	662447.50	389675.6
j		Widening of pier coping	Cu.m	9000	-		.	-	- '
		Sub-total		****		3896750.00	2844627.50 (73.0 %)		389675.0
) т	EMPO	DRARY WORKS				(100.0 %)			
		Scaffolding	Sq.m	155 220	3850	600600.00	420420.00	120120.00	60060.0
		Staging Temporary bridge	Cu.m Sq.m	5380	_		· -	· -	- :
i .		Preparation works	LS		1	686428.27	455716.60	162058.84	68642.8
						1287028.27	876136.60		128702.8
		Sub-total Grand Total				(100.0 %) 23567370.57	(68.0 %) 15646269.90		(10.0 ¢ 2356737.0

DETAILED CONSTRUCTION COST ESTIMATE (19/52)

19 Name of Bridge: NAMANPARAN I Classification: Replacement of Superstructure

ltem. ∛o.						D!	T a a a 1	
	Description	Unit	Price	Quantity	Amount			Taxes
)	EARTHWORK AND ROAD WORKS				1501 10	110:69	1312.33	
0 '	Clearing and Grubbling	Sq.m	2.16	732	1581.12		231,70	
2 .	Common excavation	Cu.m	43.8	53	1007.40	0.4.70	******	100,7
3(2)	Bridge excavation above low	Cu.m	58.5			and the = grade	ale trade 🛊 🗗 🖸	200
منفته	water level	Cu.m	30.3					,
3(2)5		Çu.m	111	•		and the second of the second		
3(5)	water level Shoring, cribbing, cofferdam	44	****	4	2.5		化多型铁矿 化多层	
3(3)	and related work	LS	1				FC10 07	
4(1)	Embankmen t	Cu. m	69.0	479	33051.00	24127.23	5618.67	3305.1
4(\$)	Selected borrow for backfill	Cu.as	120	212	41340.00		7441.20	4134.0
G		Cu.m	195	369	174906.00		18973.68	17490.6
1(2)	PCC Pavement (Reinforced)	Sq.m	474					
	Cut Askal				251885.52	163119.39	63577.58	25188.5
	Sub-total				(100.0 %)	(64.7 X)	(25.2 %)	(10.0 5
D '	SUPERSTRUCTURE WORKS					20240 00		
1(5)	Removal concrete structure	- Cu.m	912	180	154160.00		77155.20	
1(1)	Removal steel structure (bridge)	LS	1 1				27028.98	
1	Ratling	, m	803	99 17	946900.00	293539.00		
2	Timber structure (Detour bridge)	Span	55700				330011100	34030.0
3(S)	Structural steel (Detour bridge)	So.m	5380 18.7	21736	406463.20		73163.38	40646.
4	Reinforcing steel	KÆ	2860	218		342914.00	218218.00	
5(1)	Structural concrete. Class A	Cu.as Cu.as	15800			ing a grant of the second	itus Pysy <mark>+</mark> tanit.	-
7	Prestressed concrete bridge Steel bridge(I-beam)	ton				i galattat a	it it die by b e te is di	-
8 1	Paint	Sq.m	71.1	. -	-	4.1 A 7.1 S	作的数 (a * 14) 标	-
	Sub-total						954236.56	222050.
					(100.0 %)	(17.0 %)	(142.9 X)	(10.0)
H)	SUBSTRUCTURE WORKS	_		_		_		_
E(S)	Removal of concrete structure	Cu.n	912 J			_		
(1)	Removal of steel structure	LS	3380		-	u list ⊨isa		
(3)	Steel H-plies	EA 69	831	-				
(4)	Precast concrete pile (400X400mm)	R	3410			4.1	-	-
(6)	Steel sheet pile Precasi concrete sheet pile	 på	601	-	-	÷ 4	e granden g e ken i s	-
)(7))(16)		. n	7540	-		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	 (i) (i) (i) (i) (i) (i) (i) (i) 	-
l	Reinforcement stee!	ke	16.2	-	- - *	er er er 🗢 🗡 🧸	in the first of the contract o	· · · · · · -
(1)	Structural concrete. Class A	Cu.a	2000	/ *	· · - ·			-
(5)	Seal concrete	Çu. p	1800		-	10 May 10 10 10 10 10 10 10 10 10 10 10 10 10	in a national f actoria	
	Grouted riprap	Cu.m	989		-	•		
	Stone masonry		893	–	-	-	-	
5	State Manager 1	Cu.m.			********	41106 00	18564 00	
	Gabion	Cu.m	663	100	66300.00	41106.00	18564.00	
				100	66300.00	41106.00 41106.00 (62.0 %)	18564.00	6630.
)	Gabion Sub-total			100		41106.00	18564.00	6630.
) D	Gabion Sub-total RIVER TRAINING WORKS		663	100	66300.00	41106.00	18564.00	6630.
n)(1)	Gabion Sub-total RIVER TRAINING WORKS Untreated timber pile	Cu.m		100	66300.00	41106.00	18564.00 (28.0 %)	5630.
7) (1) (4)	Gabion Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm)	Cu.m	663	100	66300.00	41106.00	18564.00 (28.0 %)	5630.
7) (1) (4) (6)	Gabion Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel	Cu. b	134 831 3410 15.2	100	66300.00	41106.00	18564.00 (28.0 %)	5630.
() (1) (4) (6)	Gabion Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel	Cu.m m m m kg Cu.m	134 831 3410 15.2 2000	100	66300.00	41106.00	18564.00 (28.0 %)	5630.
(1)	Gabion Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile	Cu.m m m kg Cu.m Cu.m	134 831 3410 15.2 2000 1800	100	66300.00	41106.00	18564.00 (28.0 %)	5630.
73)(1))(4))(6) (6) (1) (5)	Gabion Sub-total RIVER TRAINING WORKS Untreated timber pile Procast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap	Cu.m m m m kg Cu.m Cu.m	134 831 3410 15.2 2000 1800 989	100	66300.00	41106.00	18564.00 (28.0 %)	5630.
(1) (4) (6) (1) (5)	Gabion Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry	Cu.m m m kg Cu.m Cu.m	134 831 3410 15.2 2000 1800		66300.00	41106.00	18564.00 (28.0 %)	5630.
73 (1) (4) (6) (6) (1) (5)	Sub-total RIVER TRAINING WORKS Untreated timber pile Procast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid	M m m m m m m m kg Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893	100	66300.00	41106.00	18564.00 (28.0 %)	5630.
(1) (4) (6) (1) (5)	Sub-total RIVER TRAINING WORKS Untreated timber pile Procast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment)	M m m kg Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893	100	66300.00	41106.00	18564.00 (28.0 %)	5630.
(1) (4) (6) (1) (5)	Sub-total RIVER TRAINING WORKS Untreated timber pile Procast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid	M m m m m m m m kg Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893	100	66300.00	41106.00	18564.00 (28.0 %)	5630.
(1) (4) (6) (1) (5)	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion	M m m kg Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893	100	66300.00	41106.00	18564.00 (28.0 %)	5630.
(1) (4) (6) (1) (5)	Sub-total RIVER TRAINING WORKS Untreated timber pile Procast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment)	M m m kg Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893	100	66300.00	41106.00	18564.00 (28.0 %)	5630.
(1) (4) (6) (6) (1) (5)	Gabion Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class & Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total	M m m kg Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893	100	66300.00	41106.00 (62.0 %)	18564.00 (28.0 %)	5630.
(1) (4) (6) (6) (1) (5)	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION	M m m kg Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893	100	66300.00	41106.00 (62.0 %)	18564.00 (28.0 %)	5630.
(1) (6) (5)	Sub-total RIVER TRAINING WORKS Untreated timber pile Procast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class & Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk	m m m m kg Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 16.2 2000 1800 989 893 300 663		66300.00	41106.00 (62.0 ×)	18564.00 (28.0 %)	5630.
(1) (4) (6) (1) (5)	Gabion Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class & Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer	M m m kg Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893 300 663		66300.00 (100.0 x)	41106.00 (62.0 ×)	18564.00 (28.0 x)	6630.
(1) (4) (6) (1) (5)	Sub-total RIVER TRAINING WORKS Untreated timber pile Procast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class & Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk	m m m m kg Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 16.2 2000 1800 989 893 300 663	100	66300.00	41106.00 (62.0 ×)	18564.00 (28.0 %)	6630.
(1) (4) (6) (5)	Sub-total RIVER TRAINING WORKS Untreated timber pile Procast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class & Seal concrete Grouted ribrap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping	M m m kg Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893 300 663		65300.00 (100.0 %)	41106.00 (62.0 ×)	18564.00 (28.0 x)	6630. (10.0
(1) (4) (6) (5)	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG	M m m kg Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893 300 663		66300.00 (100.0 x)	41106.00 (62.0 %)	18564.00 (28.0 x)	6630. (10.0
77) 0(1) 0(4) 0(6) 4 6(1) 6(6)	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Add) tional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total	M m m kg Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893 300 663		65300.00 (100.0 %)	41106.00 (62.0 %)	18564.00 (28.0 x)	52200.
(1) (1) (1) (6) (6) (6) (7) (7)	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS	M m m kg Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 15.2 2000 1800 989 893 300 663 42900 7150 6180 9000		66300.00 (100.0 x)	41106.00 (62.0 %) 	18564.00 (28.0 x)	52200. (10.0)
77) (14) (14) (15) (15) (15) (15)	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidevalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding	M m m k K Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Sq.m Cu.m Sq.m Cu.m Sq.m Sq.m Sq.m Sq.m Sq.m Sq.m Sq.m Sq	134 831 3410 16.2 2000 1800 989 893 300 663 42900 7150 6180 9000	58	66300.00 (100.0 %)	41106.00 (62.0 %)	18564.00 (28.0 x)	52200. (10.0
77) 0(1) 0(4) 0(6) 4 6(1) 6(5) 1 1 1 1 1 1 1 1	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class & Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPRCIAL WORKS FOR REHABILITATION Additional stringer Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging	M m m kg Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 16.2 2000 1800 989 893 300 663 42900 7150 6180 9000		65300.00 (100.0 %)	41106.00 (62.0 %) 276660.00 276660.00 (53.0 %) 310582.80	18564.00 (28.0 x)	52200. (10.0
77) (14) (14) (16) (15) (15) (17) (17) (17) (17) (17) (17) (17) (17	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMFORARY WORKS Scaffolding Staging Temporary bridge	Cu.m m m k cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 16.2 2000 1800 989 893 300 663 42900 7150 6180 9000	2277	66300.00 (100.0 x)	41106.00 (62.0 %) 	18564.00 (28.0 x)	52200. 52200. 50094.
5 9 9 9 9 9 9 9 9 9 9 9 9 9	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPRCIAL WORKS FOR REHABILITATION Additional stringer Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works	M m m kg Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 16.2 2000 1800 989 893 300 663 42900 7150 6180 9000	58	66300.00 (100.0 x)	41106.00 (62.0 %) 276660.00 276660.00 (53.0 %) 310582.80 55070.46	18564.00 (28.0 x) 	52200. 52200. 50094.
9 90(1) 90(1) 90(4) 4 66(1) 66(5) 4 66(1) 9	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class & Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPECIAL WORKS FOR REHABILITATION Additional sidevalk Reinforcing beem of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works Sub-total	Cu.m m m k cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 16.2 2000 1800 989 893 300 663 42900 7150 6180 9000	2277	\$6300.00 (100.0 %)	41106.00 (62.0 %) 276660.00 276660.00 (53.0 %) 310582.80 55070.46	18564.00 (28.0 x) 193140.00 193140.00 (37.0 x) 140263.20 41093.44	52200. 52200. 52200. 10094. 10584.
9 90(1) 90(1) 90(4) 4 66(1) 66(5) 4 66(1) 9	Sub-total RIVER TRAINING WORKS Untreated timber pile Precast concrete pile (400X400mm) Steel sheet pile Reinforcement steel Structural concrete, Class A Seal concrete Grouted riprap Stone masonry Stone pitching (Hand-laid rock embankment) Gabion Sub-total SPRCIAL WORKS FOR REHABILITATION Additional stringer Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works	Cu.m m m k cu.m Cu.m Cu.m Cu.m Cu.m Cu.m Cu.m	134 831 3410 16.2 2000 1800 989 893 300 663 42900 7150 6180 9000	2277	66300.00 (100.0 x)	41106.00 (62.0 x) 62.0 x) 276660.00 (53.0 x) 310582.80 55070.46	18564.00 (28.0 x) 	52200.1 (10.0)

DETAILED CONSTRUCTION COST ESTIMATE (20/52)

20 Name of Bridge : SAN LUIS Classification : Repair

lem).	Description	Unit	Price	Quantity	Amount	Foriegn Component	Local Component	Taxes
	WORK AND ROAD WORKS						:	
)	Clearing and Grubbling	Sq.m	2.16	-	-	_	1	_
i, to	Common excavation	Cu.m	43.8		-	-	-	-
3(2)	Bridge excavation above low							
	water level Bridge excavation below low	Cu.m	58.5	· -	-	_	-	
3(2)5	water level	Cu.m						
	Shoring, cribbing, cofferdam	CU.M	111	-	-			_
3(5)	and related work	LS	ι .	_	_			
((1)	Embankment	Cu.n	69.0		_		-	
(8)	Selected borrow for backfill	Cu.m	120		_	· -	_	- -
)	Aggregate subbase course	Cu.m	195		-		_	_
(2)	PCC Pavement (Reinforced)	Sq.m.	474		-			-
	Sub-total				***********			
CUDDE	RSTRUCTURE WORKS				(-)	(-)	. (-)	(-)
	Removal concrete structure	Cu.m	912					
(8)	Removal steel structure (bridge)	LS	1	_		· -		
(1)	Railing	19	803		·	_		
	Timber structure (Detour bridge)	SPAN	55700					-
(S)	Structural steel (Detour bridge)	Sq.m	5380	_	_			_
,,,,,	Reinforcing steel	h.g.	18.7	• •	-	_	• -	
(1)	Structural concrete. Class A	Cu.a	2860	• -	_	· · -	and the state of t	-
î :	Prestressed concrete bridge	Cu.m	15800	ta 🕌	-	-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-
3	Steel bridge(l-beam)	ton	61400	-	••	•	1.5	-
i -	Paint	Sq. m≘	71.1		-	- '		· · · · · ·
	Sa Sub-total and the second of				(-)	(-)	(-)	(· -)
	FRUCTURE WORKS	ć	010					
(S)	Removal of concrete structure	Cu.m	912	-	~	-	•	-
	Removal of steel structure	LS	1	-	-	•	•	
(3)	Steel H-piles	8	3380	-	-	~	•	-
0(4)	Precast concrete pile (400X400mm)	D	831		-			-
(6)	Steel sheet pile	m	3410	-	-		· .	-
)(7)	Precast concrete sheet pile Cast-in-Place concrete pile(1200mm)	En Año	601		_	_		-
(16)		kg	7540 16.2	_	_	_		Ξ
	Reinforcement steel Structural concrete, Class A	Cu.m	2000					
5(1) 5(5)	Seal concrete	Cu.as	1800		_	_		_
l .	Grouted riprap	Cu.m	989		_	_		- '
	Stone masonry	Cu.m	893	_	_	_	_	
?	Gablon	Cu.m	663		-			
	Sub-total				(-)	(-)	(-)	(-)
() RIVEP	R TRAINING WORKS					•	1	
(1)	Untreated timber pile	(3)	134	-	• •	· - ·	-	-
9(4)	Precast concrete pile (400X400mm)	m	831	~	· = · ·	÷ *	•	.
)(6)	Steel sheet pile	避	3410	-	- .	-		-
ı	Reinforcement steel	k#	16.2	-	-	-	-	-
ω.	Structural concrete, Class A	Cu.n	2000	-	-		_	-
(\$)	Seal concrete	Cu. B	1800	-	-	<u>-</u>	-	-
!	Grouted ripray	Cu.ne	989		~	-		-
i	Stone masonry	Cu.n	893	-	-		-	. ~
5	Stone pitching (Hand-laid	C	300		_	_	_	-
n San	Fock embankment)	Cu.m.	663	· <u>-</u>		_	_	_
	Gabion							
	Sub-total				(-)	(-)	(-)	(-)
SPECI	IAL WORKS FOR BEHABILITATION						-	
)	Additional stringer	ton	42900		-	-	-	-
	Additional sidevalk	Sq. n	7150		-		- 1	-
	Reinforcing beam of RCDG	Cu.m	6180					1000-
	Videning of pier coping	Cu.m	9000	22	198000.00	104940.00	73260.00	19800.0
	·				100000 00	104940.00	73260.00	19800.0
1	Sub-total				198000.00 (100.0 %)			(10.0 %
`. 								
	DABA MUBKS					· -	-	-
() TEMPO	DNAHY WONKS	So.n	156					
) TEMPO	Scaffolding	So.m Cu.m	156 220	116	25520.00			
() TEMPO	Shary Works Scaffolding Staging	Cu.m.		116	- '	·-		- '
() TEMPO	DNAMY WORKS Scaffolding Staging Temporary bridge		220	116 - 1	6705.60	3622.87	2412.17	670.5
() TEMPO	DNAMY WORKS Scaffolding Staging Temporary bridge Preparation works	Cu.pa Sq.pa	220	_	6705.60	3622.87	2412.17	670.5
() TEMPO	SNAMY WORKS Scaffolding Staging Temporary bridge Preparation works Sub-lotal	Cu.m. Sq.m LS	220	_	6705.60 32225.60	3622.87 19445.27	2412.17	670.5 3222.5
() TEMPO	DNAMY WORKS Scaffolding Staging Temporary bridge Preparation works	Cu.m. Sq.m LS	220	_	6705.60	3622.87 19445.27 (60.3 %)	2412.17 9557.77 (29.6 %)	670.5

DETAILED CONSTRUCTION COST ESTIMATE (21/52)

21 Name of Bridge: NAGUILAN Classification: Repair

Item No.		Unit	Price	Quantity	Amount	Forlegn Component		Taxes
(1) 100 102	EARTHWORK AND ROAD WORKS Clearing and Grubbling Common excavation	Sq.m. Cu.m.	2.16 43.8		-	(1984年) 1985年 第188	Talah Majada Kabupatèn Balah Caraman	- 14g - 1
103(2)	Bridge excavation above low water level	Cu.m	58.5	-	- · · ·	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		`. <u>.</u>
103(2)	water level	Cu.m	111	.	•			
103(5)	Shoring, cribbing, cofferdam and related work Embankment	LS Cu.m	1 69.0	<u>-</u>	•	-	Habkal, [†] iga Jaat ∰esini	•
104(S) 200	Selected borrow for backfill Aggregate subbase course	Cu.m Cu.m	120 195	- 1	- 11.5 - 3	·····································		
311(2)	PCC Pavement (Reinforced)	Sq.m	174					
• db	Sub-total SUPERSTRUCTURE WORKS				(-)	i (1 • 1) Takin kub	e (i 2e i). Berek Mepalekan	(-) sepa
101(S) 101(1)	Removal concrete structure Removal steel structure (bridge)	Cu.m LS	912 1	1035	in a second	egy + 1546±₹346	443642.40	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
401 402	Railing Timber structure (Detour bridge)	m span Sq.m	803 55700	1320	1059960.00	593577.60	360386.40	105998.00
403(S) 404	Structural steel (Detour bridge) Reinforcing steel	kg	5380 18.7	131923			444052.82 1015015.00	246696.01 290290.00
405(1)	Prestressed concrete bridge	Cu.m Cu.m	2860 15800 61400				والمناء = ومن أبد ومن	
408 411	Steel bridge(I-beam) Paint	ton So.m	71.1	17251	1226546.10	159450.99	944440.50	122654.61
•	Sub-total		•		8600286.20 (100.0 %)	4531720.46 (52.6 %	3208537.12 (37.3 %)	860028.62 (10.0 %)
(111) 101(S)	Removal of concrete structure	Cu.m	912	<u>.</u>	<u>.</u> (
101(1)	Removal of steel structure Steel H-piles	LS m	1 3380 831					
400(4) 400(6) 400(7)	Precast concrete pile (400X400mm) Steel sheet pile Precast concrete sheet pile	Ja Da	3410 601		-	-		<u>.</u>
400(16) 404		m Kg	7540 16.2	· .			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	÷. ÷
405(1)	Structural concrete, Class A Seal concrete	Cu.m Cu.m	2000 1800	-	-			<u>:</u>
501 505 509	Grouted riprap Stone masonry Gabion	Cu.m Cu.m Cu.m	989 893 663] : [-		en en la la Timba La transfer de la company	
*	Sub-total						en marina de la designa de la constanta de la c La constanta de la constanta d	
(IV)	RIVER TRAINING WORKS		104		-	(-)	, -)	(-)
400(1) 400(4)	Untreated timber pile Precast concrete pile (400X400mm)	20 13 13	134 831 3410				<u>.</u>	.
400(6) 404 405(1)	Steel sheet pile Reinforcement steel Structural concrete. Class A	kg Cu⊥ms	16.2 2000	-	- 	Ţ··	-	- • .
405(5) 504	Seal concrete Grouted riprap	Cu.m	1800 989	-	- ·	-		
505 506	Stone masonry Stone pitching (Hand-laid	Cu. B	893	-	•	-		
509	rock embankment) Gabion	Cu.sa	300 663	1690	1120470.00		313731.60	112047.00
*	Sub-total				1120470.00 (100.0 %)		313731.60	112047.00
(V) 800	SPECIAL WORKS FOR REHABILITATION Additional stringer	ton	42900	203	8708700.00	S. 44 (1) 18 (18 18 18 18 18 18 18 18 18 18 18 18 18 1	1219218.00	870870.00
801 802	Additional sidewalk Reinforcing beam of RCDG	So.m Cu.m	7150 6180	; - -	-		ing kalandi Tabilia. Pada kalandi Tabilia	<u>.</u>
303	Widening of pier coping	Cu.n	9000		9709760 00		1219218.00	870870.00
* (¥1)	Sub-total TEMPORARY WORKS				8708700.00 (100.0 %)	(76.0 %		(10.0 X)
900 901	Scaffolding Staging	Sq.m Cu.m	156 220	5610	875160.00	612612.0	175032.00	87516.00
902	Temporary bridge Preparation works	Sq.m LS	5380		2367200.00 650154.49	1775400.00		236720.00 65015.45
	Sub-total		. ,		3892514.49	2816003.00 (72.3 %		389251.45 (10.0 X)
	Grand Total				(100.0 %) 22321970.69			2232197.07

DETAILED CONSTRUCTION COST ESTIMATE (22/52)

22 Name of Bridge : MALALAM Classification : Repair

No.	Description	Unit	Price	Quantity	Amoun t	Fortegn Component	Local Component	Taxes
	WORK AND ROAD WORKS	1 11						
00 1	Clearing and Grubbling	Sq.m	2.16	_	-			· -
2	Common excavation	Cu.m	43.8	_	-	<u></u>		
3(2)	Bridge excavation above low	_	25 75				4	
·	water level	Cu.m	58.5	-		.	_	-
	Bridge excavation below low water level	C					1.1	•
	Shoring, cribbing, cofferdam	Cu.m	111	-	*	-	-	
(5)	and related work	LS	1					
(1)	Embankment	Cu. n	69.0	:]	_	<u></u>	. -	-
	Selected borrow for backfill	Cu.m	120	_	_			
0	Aggregate subbase course	Cu.m	195		_	<u> </u>		
(2)	PCC Pavement (Reinforced)	Sq.m	474	_	_	·	and the 🚅 and the	. <u>-</u> .
	Sub-total							
CUDED	STRUCTURE WORKS				(-)	(-)	(~ `į)	(-)
	Removal concrete structure	Cu.m	912		0.4000.4.00			
	Removal steel structure (bridge)	LS.	312	377	343824.00		161597,28	34382.40
	Railing	13	803	488	391864.00	250442 04		20186 40
	Timber structure (Detour bridge)	span	55700	. 400	391804.00	\$13449.94	133233.76	39186.40
(5)	Structural steel (Detour bridge)	M. pZ	5380					
1	Reinforcing steel	kg.	18.7	48807	912690.90	657137.45	164284.36	91269.09
α)	Structural concrete, Class A	Cu.m	2860	376	1075360.00	591448.00		107536.00
	Prestressed concrete bridge	Cu.m	15800	-		-	0.0010.00	
	Steel bridge(1-beam)	ton	61 100	· _				
	Paint	Sq.m	71.1	12767	907733.70	118005.38		90773.37
	Sub-total							
11.22	计划 医神经神经病 经收益 化二甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基				3631472.60 (100.0 %)	(47.7 %)	1534446.35	363147.26 (10.0 %)
	RUCTURE WORKS							
	Removal of concrete structure	Cu.m	912	-	-	-		_
	Removal of steel structure	LS	l	, -	-	•	·	-
	Steel Repiles	I)s	3380	-	-	-		
	Precast concrete pile (400X400mm)	93	831	-	- .	-	- ·	-
	Steel sheet pile	72	3410	-	•	· · · · · ·	•	-
	Precast concrete sheet pile	III:	601		-	-		-
	Cast-in-Place concrete pile(1200mm)	19 1	7540	•	-	•		- '
	norman dement acce.	kg	16.2	-	· -		-	-
	Structural concrete. Class A	Cu.m	2000	-	-	-		-
	Seal concrete	Cu.s	1800 989	-		-	-	-
	Grouted riprap	Cu.m Cu.m	893	_	-	Ξ.		
	Stone masonry Gabion	Cu.m	653			Ξ΄,	1 2	Ξ.
	Sub-total				-			
) RIVER	TRAINING WORKS				(-)	(-)	. (-)	(~)
	Untreated timber pile	19	134	-	-			·
(4)	Precast concrete pile (400X400mm)	· —	831	_	_			-
	Steel sheet pile	fa .	3410	_	-			
	Reinforcement steel	kg	16.2	-	•		· -	-
	Structural concrete. Class A	Cu.na	2000		_	_	. •	<u>.</u> .
	Seal concrete	Cu.m	1800	-	-			_
• •	Grouted rinran	Cu.m	989	_	-	•	-	
	Stone masonry	Cu.m	893		-	-	-	-
	Stone pitching (Hand-laid	w - m)						
	rock embankment)	Cu.m	300	_	_	+ : 1		_
	Gabion	Cu.m	663	1267	840021.00	520813.02	235205.88	84002.1
	Sub-total				840021.00			84002.1
	Charles and the control of the contr				(100:0 %)	(62.0 %)		(10.0 %
	AL WORKS FOR REHABILITATION		42000	_				_
	Additional stringer	ton	42900		-	_		-
	Additional sidewalk	Sq.m	7150		-	_	-	_
	Reinforcing beam of RCDG	Cu.m	6180		-		-	_
	Widening of pier coping	Cu.m.	9000					
	Sub-total				(-)	(-)	. (-)	(-)
	RARY WORKS				•			
		Sq. m	156	2076	323856.00	226699.20	64771.20	32385.6
	Scaffolding	Sq.as Cu.as	220	20.0	020000100	-	01/11/04	~
	Staging Temporary bridge	5q.m	5380		1775400.00	1331550.00	266310.00	177540.0
	resporary oringe Preparation works	LS		1	197122.49		63022.00	19712.2
	Sun-total	,			2296378.49		394103.20	229637.8
1000	Sun-total				(100.0 %)	(72.8 X)	(17.1 %)	(10.0 %
	Grand Total				6767872.09	3927329.45 (58.0 %)	2163755.43	676787.2
	utana total				(100.0 %)		(31.9 ×)	

DETAILED CONSTRUCTION COST ESTIMATE (23/52)

23 Name of Bridge: BALASIG Classification: Repair

iem O.	Description	Unit	Price	Quantity	Amount	Foriegn Component	Local Component	Taxes
) E/	ARTHWORK AND ROAD WORKS			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1996年1997年		
0	Clearing and Grubbling	Sq.ma	2.16	· · · · · · · · ·			Terror Brech	-
2	Common excavation	Cu in	13.8					-
3(2)	Bridge excavation above low	Çu.m	58.5	792	46332.00	29189.16	12509.64	4633 2
2/216	water level Bridge excavation below low	Çu.nı	36.0				That I have a	
3(2)5	water level	Cu.m	111	968	107448.00	65543.28	31159.92	10744.6
3(5)	Shoring, cribbing, cofferdam						in de la company de la com La company de la company d	
	and related work Embankment	LS		-		-	기업이 가는 사람이 되었다. 아버지 말을 하는 것이 되었다.	
4(1)		Cu.n	69.0		39960.00		21578.40	
4(8)	Selected borrow for backfill	Cu.m Cu.m	120 195		33300.00		in the second	
0 1(2)	Aggregate subbase course PCC Pavement (Reinforced)	Sq. m	474	· -		ing the second	er e	
1(2)	100 Idvenent (Reinforced)							
	Sub-total				193740.00	109118.04	65247.96	19374.
\$1.5	<u>a de la capaci</u> na de la capacina del la capacina de la capacina d			e espera	(100.0 %)	1 30.3 47		10.0
1) St	PERSTRUCTURE WORKS Removal concrete structure	Cu. m	912	102	93024.00		43721.28	9302.
1(S) 1(1)	Removal steel structure (bridge)	LS	i			t., •• . i		
i	Railing	87	1 803	165	132495.00	74197.20	45048.30	13249.
2	Timber structure (Detour bridge) Structural steel (Detour bridge) Reinforcing steel	span	66700	-			પ્રાથમાં મહત્તું હોઈ!	
3(S)	Structural steel (Detour bridge)	Sq.m	5380	16622	311018.40		55983.31	31101.
4 . :	Reinforcing steel	. kg	18.7	16632 128	366080.00		128128.00	
5(1)	Structural concrete, Class A Prestressed concrete bridge	Cum	2860 15800				المرز الأهراب والمراز	-
7 8	Steel bridge(1-heem)	ton		· · · · · · · · · · · · · · · · · · ·	1 2		ly maga de <mark>se</mark> ttiget. Till a glade e t lage	
1	Steel bridge(1-beam) Paint	Sq.m	71.1	2175	154642.50	20103.53	119074.73	15464.
				.~~			201055-62	
	Sub-total			٠.	1057259.90 (100.0 %)	(\$2.9 %)	391955.62 (37.0 %)	105725
11) - St	IBSTRUCTURE WORKS	_			•			4 2
(\$)	Removal of concrete structure	Cu.so	912	_				_
(1)	Removal of steel structure	LS	1 3380		_	and the second	-	
(3)	Steel H-piles Precast concrete pile (400X400mm)	e D	831		-	_ :		-
)(4))(6)	Steel sheet pile	m	3410					-
0(7)	Precast concrete sheet pile		601		. .		*	
0(16)	Cast-in-Place concrete pile(1200mm)	m -	7540	, · · -	-	- ≥	er 🔫 eren	-
4	Reinforcement steel	K.C.	16.2	-	•	5: 1		-
5(1)	Structural concrete, Class A	Cu.m	2000	_		-	_	_
5(5)	Seal concrete	Cu.m.	1800 989		_	_		_
1	Grouted riprap	Cu.m	893	· · · · · -	_	-	•	·
5 9: •	Stone masonry Gabion	Cu.m	663	_	-	. → _ +		
	Sub-total							
ט ט	EVER TRAINING WORKS				(-)		Section (Section)	C:: - ::
0(1)	Untreated timber pile	tn	134	123	16482.00			1648.
0(4)	Precast concrete pile (400X400mm)	m	831		-	: - -		· •
0(6)	Steel sheet pile	- 29	3410				000 10	-
4	Reinforcement steel	kg	16.2	308.	4989.60		898.13 8700.00	498 3000
5(1)	Structural concrete, Class A	Cu.m	2000	15	30000.00	18300.00	9100.00	
5(5)	Seal concrete Growted ringer	Cu.m. Cu.m.	1800 989	554	547906.00	235599.58	257515.82	54790
	Grouted riprap Stone masonry	Cu.m	893	-			-	
4							44 14 34 4 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
5								-
5	Stone pilching (Hand-laid rock embankment)	Cu . m	300		•			17503
.	Stone pitching (Hand-laid	Cu.m	300 663	264	175032.00	108519.84	49008.98	
.	Stone pitching (Hand-laid rock embankment)			264	175032.00 774409.60	374088.11	322880.53	77440
3 3	Stone pilching (Hand-laid rock embankment) Gablan	Cu.m	663	264 	175032.00	374088.11	322880.53 (41.6 %)	77440
si Si	Stone pitching (Hand-laid rock embankment) Gabiun Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer	Cu.m	663 		175032.00 774409.60 (100.0 %)	374088.11 (48.3 %)	322880.53 (41.6 %)	77440 (10.0
si Si	Stone pitching (Hand-laid rock embankment) Gabiun Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk	Cu.m ton Sq.m	663 	264 108	175032.00 774409.60	374088.11 (48.3 %)	322880.53 (41.6 %)	77440 (10.0
SF	Stone pilching (Hand-laid rock embankment) Gabian Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sldewalk Reinforcing beam of RCDG	Cu.m ton Sq.m Cu.m	42900 7150 6180		175032.00 774409.60 (100.0 %)	374088.11 (48.3 %)	322880.53 (41.6 %)	77440 (10.0
Si	Stone pitching (Hand-laid rock embankment) Gabiun Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk	Cu.m ton Sq.m	663 		175032.00 774409.60 (100.0 %)	374088.11 (48.3 %)	322880.53 (41.6 %)	77440 (10.0
SF	Stone pilching (Hand-laid rock embankment) Gabian Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sldewalk Reinforcing beam of RCDG	Cu.m ton Sq.m Cu.m	42900 7150 6180		175032.00 774409.60 (100.0 %) 772200.00	374088.11 (48.3 %) 563706.00	322880.53 (41.6 %) 131274.00	77440 (10.0 77220 77220
SI	Stone pitching (Hand-laid rock embankment) Gabiun Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total	Cu.m ton Sq.m Cu.m	42900 7150 6180		175032.00 774409.60 (100.0 %) 772200.00	374088.11 (48.3 %) 563706.00	322860.53 (41.6 %) 131274.00 131274.00 (17.0 %)	77440 (10.0 77220 77220 (10.0
SF	Stone pitching (Hand-laid rock embankment) Gabium Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total	Cu.m ton Sq.m Cu.m	42900 7150 6180		175032.00 774409.60 (100.0 %) 772200.00 772200.00 (100.0 %)	374088.11 (48.3 %) 563706.00 (73.0 %) 8)135.60	322860.53 (.41.6 %) 131274.00 (17.0 %) 23181.60	77440 (10.0 77220 77220 (10.0
SF	Stone pitching (Hand-laid rock embankment) Gabium Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total EMPORARY WORKS Scaffolding	Cu.m ton Sq.m Cu.m	42900 7150 6180 9000	108	774409.60 (100.0 %) 772200.00 	374088.11 (48.3 %) 563706.00 (73.0 %) 8)135.60	322880.53 (41.6 %) 131274.00 (17.0 %) 23181.60	77440 (10.0 77220 77220 (10.0
SF	Stone pitching (Hand-laid rock embankment) Gabium Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sldewalk Reinforcing beam of RCDG Widening of pier coping Sub-total EMPORARY WORKS Scaffolding Stagling	Cu.m ton Sq.m Cu.m Cu.m	42900 7150 6180 9000	743	175032.00 774409.60 (100.0 %) 772200.00 172200.00 (100.0 %) 115908.00	374088.11 (48.3 %) 563706.00 (73.0 %) 81135.60	322860.53 (.41.6 %) 131274.00 (.17.0 %) 23181.60	77440 (10.0 77220 77220 (10.0
SF	Stone pitching (Hand-laid rock embankment) Gabium Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total EMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works	ton Sq.m Cu.m Cu.m	42900 7150 6180 9000	108	175032.00 774409.60 (100.0 %) 772200.00 772200.00 (100.0 %) 115908.00	374088.11 (48.3 %) 563706.00 (73.0 %) 81135.60	322860.53 (41.6 %) 131274.00 (17.0 %) 23181.60	77440 (10.0 77220 77220 (10.0 11590
SF	Stone pitching (Hand-laid rock embankment) Gabium Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total EMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works Sub-total	ton Sq.m Cu.m Cu.m Sq.m Cu.m	42900 7150 6180 9000	743	774409.60 (100.0 %) 772200.00 (100.0 %) 772200.00 (100.0 %) 115908.00 87405.53	374088.11 (48.3 %) 563706.00 (73.0 %) 81135.60	322880.53 (41.6 %) 131274.00 (17.0 %) 23181.60 28036.19	77440 (10.0 77220 77220 (10.0 11590
SF	Stone pitching (Hand-laid rock embankment) Gabium Sub-total PECIAL WORKS FOR REHABILITATION Additional stringer Additional sidewalk Reinforcing beam of RCDG Widening of pier coping Sub-total EMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works	ton Sq.m Cu.m Cu.m Sq.m Cu.m	42900 7150 6180 9000	743	774409.60 (100.0 %) 772200.00 (100.0 %) 772200.00 (100.0 %) 115908.00 87405.53	374088.11 (48.3 %) 563706.00 (73.0 %) 81135.60	322860.53 (41.6 %) 131274.00 (17.0 %) 23181.60	77440 (10.0 77220 77220 (10.0 11590

DETAILED CONSTRUCTION COST ESTIMATE (24/52)

					•			
;	24 Name of Bridge : SAN PABLO						4.4	
	Classification : Repair							
						Foriegn	Local	
Vo.	Description	Unit	Price	Quantity	Amount	Component	Component	Taxes
)) E	ARTHWORK AND ROAD WORKS Clearing and Grubbling	Sq.m	2.16	_	_	· ±		_
)2	Common excevation above low	Cu.m	43.8	• •	-	•		-
3(2)	vater level	Cu.m	58.5			-		-
3(2)5	Bridge excavation below low water level	- Cu.m	111	_	_	· · · · · · · · ·		- '
3(5)	Shoring, cribbing, cofferdam and related work	LS	. 1		_	-	•	_
(1)	Embankment Selected borrow for backfill	Ըu.m ∍Cu.m	69.0 120		•		-	-
)4(S))0	Aggregate subbase course PCC Pavement (Reinforced)	Cu, m	195	-	-	- .	-	-
(2)		Sq.m	474					
	Sub-total				(-)	(-)	(-)	(-)
) S (\$) :	UPERSTRUCTURE WORKS Removal concrete structure	Cu, m	912	455	414960.00	178432.80	195031.20	41496.00
1(1)	Removal steel structure (bridge)	LS	803	510	409530.00	229336.80		_
)1)2	Timber structure (Detour bridge)	span	55700	310	409000.00	-		40330.00
)3(\$))4	Structural steel (Detour bridge) Reinforcing steel	So.m .kg	5380 18.7	59719		804056.62		111674.53
5(1) 7	Structural concrete, Class A Prestressed concrete bridge	Cu.m Cu.m	2860 15800	459	1312740.00	722007.00		· -
8	Prestressed concrete oridge Steel bridge(1-beam) Paint	ton Sg.m	61400 71.1	7809	\$55219.90	72178.59		
•	Sub-total	******			3809195.20		1422263.88	380919.52
					(100.0 %)		(37.3 %)	(10.0 %)
(11) S (1(S) :	UBSTRUCTURE WORKS Removal of concrete structure	Cu.m	912	-	-	-		- 100
)1(1))0(3)	Removal of stéel structure Steel H-piles	LS m	1 3380	_	-	Ĵ.	-	_
0(4)	Precast concrete pile (400X400mm) Steel sheet pile	D)	831 3410	_	, -	-		· _
0(7)	Precast concrete sheet pile Cast-in-Place concrete pile(1200mm)	64 69 88	601 7540	• =	<u>.</u>	-	_ :	-
)0(16))4	Reinforcement steel	kg	16.2	-	-	-	- ·	_
5(1) 5(5)	Structural concrete. Class A Seal concrete	Cu.m Cu.m	2000 1800	• -	<u>.</u>	· · · · · · · · · · · · · · · · · · ·	-	-
01 ·	Grouted riprsp Stone masonry	Cu.m Cu.pa	989 893		-	-	<u> </u>	
9	Gablon	Cu.m	663	:211	139893.00	86733.56		13989.30
1.1	Sub-total			,	139893.00 (100.0 ×)	86733.66 (62.0 X)		13989.30 (10.0 %)
	THE TOAINING WORKS				(300.0 %)	-		
0(1) 0(4)	Untreated timber pile Precast concrete pile (400X400mm)	. 93 . 93	134 831	-			-	_
0(6) 4	Steel sheet pile Reinforcement steel	B Kg	3410 16.2		-	_	, <u> </u>	
5(1) 5(5)	Structural concrete. Class A Seal concrete	Cu.m Cu.m	2000 1800		-		· •	_ :
4.5	Grouted Tiprap	Cu.m	989	-	-	-		-
05 06	Stone masonry Stone pitching (Hand-laid	Cu.n	893	-	-			
	rock embankment) Gabion	Cu.m Cu.m	300 563	-	- -	-		-
-	Sub-total							-
) s	SUB-total				(~)	(-)	(-)	(-)
O .	PECIAL WORKS FOR REHABILITATION Additions stringer	ton	42900	92	3946800.00	2999568.00	552552.00	394680.00
)1)2	Additional sidewalk Reinforcing beam of RCDG	Sq.pi Cu.m	7150 6180	-	-		·	-
3	Widening of pier coping	Cu.m	9000		-			
	Sub-total				3946800.00 (100.0 %)	2999568.00 (75.0 %		394680.00 (10.0 %)
(I) T	ENPORARY WORKS	c	156	2424	378144.00	264700.8	9.1.	37814.40
10	Scaffolding Staging	Sq.# Cu.#	220	-	-	1775400.0	= ·	236720.00
)3 3	Temporary bridge Preparation works	Sq.as LS	5380	440 1	2367200.00 319236.97	213972.4		31923.70
	Sub-total				3064580.97	2254073.2		305458.10
	and the state of t				(100.0 %) 10950469.17	(73.5 % 7346386.6		(10.0 %) 1096046.92
	Grand Total							

DETAILED CONSTRUCTION COST ESTIMATE (25/52)

25 Name of Bridge: PINACANAUAN Classification: Repair

Item No.		Description (1997)	Unit	Price	Quantity	Amount	Forlegn Component	Local Component	Taxes
 1)	EADYL	WORK AND ROAD WORKS					Commence of the second	an salas e legas	aspendin Ti
00	PURT		Sq.m	2.16	Samuel A	-	i i kanan kanan ing kanan kanan Kanan kanan ka	organis (n. 15. 1 . miliano) Normalis (n. 16. miliano)	
2	5	Common excavation	Cu.m	43.8		- · · · · · · · · · · · · · · · · · · ·			
3(2)		Bridge excavation above low	2.5	F0 F	. 1287		17432.39	20328,17	7528.95
		water level	Cu.m	58.5	1201	10203.04	. * 1. Jewi 1888	eroviti kusulis i	. 0.0.35
03(2)	5	Bridge excavation below low	Cu.m	111	3493	387723.00	236511.03	112439.67	38772.30
3(5)		water level Shoring, cribbing, cofferdam				and the second	化邻基氯化丁烷基苯	Birth Waller	
,,,,,		and related work	LS /	m (1 1 . 1	· 	<u>.</u>	ini ayika. Ma	4. (1. 4) - Albert (1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	. 2
14(1)		Embankment	Cu. R	69.0	207		14000.40	10245 60	9566
04(8)		Selected borrow for backfill	Cu.a	120	297		12030140	47	
00		Aggregate subbase course	Cu.m Sq.m	195 174		1 fr 🚽			
11(2)		PCC Pavement (Reinforced)	74.11						
		Sub-total				498652.50 (100.0 %)		(30.4 %)	49865.25 (10.0 x)
Ď	SUPE	RSTRUCTURE WORKS						100 x	1000
1(8)		Removal concrete structure	Cu.m	912		137712.00	59216.16	64724.64	13771.20
(1)10		Removal steel structure (bridge)	LS.	1	198	158994.00	89036.64		15899,40
1		Railing	· m	803 55700	196				
)5	-	Timber structure (Detour bridge)	span Sq.m	5380					
03(S) 04		Structural steel (Detour bridge) Reinforcing steel	. kg	18.7	19660	367642.00	264702.24		
05(1)		Structural concrete, Class A	Cu.m	2860	164	469040.00	257972.00	164164.00	
07		Prestressed concrete bridge	Cu. m	15800			ĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸ		-
80		Steel bridge(I-beam)	ton	61400	5090	361899.00		278662.23	35189.90
и 🐬		Paint	Sq.m	71.1	3090	361699.00			
 A		Sub-total				1495287.00 (100.0 %)	717973.91 (48.0 %)	627784.39 (41.9 %)	149528.70 (10.0 x)
TIL	SUBS	TRUCTURE WORKS				10 mm	14 T T 1 T 1 T 1 T 1 T 1 T 1 T 1 T 1 T 1		
01(\$)		Removal of concrete structure	Cu.m	912 :	75	68400.00	29412.00	32148.00	6840.00
01(1)		Removal of steel structure	LS	1	• -	, · -	and the first of the second	s e s iste i	•
00(3)		Steel H-piles	m.	3380					
00(4)		Precast concrete pile (400X400mm)	- т	831		<u>-</u>			_
00(6)		Steel sheet pile	· m	3410 601	, ·	- 1 Table 1		الأفاضل ويجوني	,
00(7)		Precast concrete sheet pile Cast-in-Place concrete pile(1200mm) Reinforcement steel	10	7540		74 × 5 + 11	n a Bras a , isa	. valour interprésió Provincia de Provincia	- <u>-</u>
00(16) 04	,	Painforcement steel	kg.	16.2	46200	748440.00	538876.80	134719.20	74844.00
)5 (1)		Structural concrete, Class A	Cu.m	2000	: 471	942000.00	574620.00	273180.00	94200.00
35(5)		Seal concrete	Cu.m	1800	174		197316.00	84564.00	31320.00
01		Grouted riprap	Cu.w	989	-	·		Zeronia in Setata da Partiri da P Partiri da Partiri da P	: . <u>.</u>
05		Stone masonry	Cu.m	893	· · · · ·		-		
9		Gabion	Cu.m	663					
: .		Sub-total			•	2072040.00 (100.0 %)	(64.6 %)	524611.20 (25.3 %)	207204.00 (10.0 %)
EVO	RIVE	R TRAINING WORKS						0.00.70	2063.60
00(1)		Untreated timber pile	RA .	134	154	20636.00	10111.64		2003.00
00(4)		Precast concrete pile (400X400mm)	m m	831 3410	: =				
30(6)		Steel sheet pile	k#	16.2	374	6058.80	4362.34	1090.58	505.88
04 05(1)		Reinforcement steel Structural concrete, Class A	Cu.a	2000	19	38000.00	23180.00		3800.00
05(5)		Seal concrete	Cu.m	1800	.				
04		Grouted riprap	Cu.n	989	1169	1156141.00	497140.63		115614.10
05		Stone masonry	Cu. m	893	· '	-			:
)6		Stone pitching (Hand-laid	C-1 -	300		· <u>-</u>			· · ·
		rock embankment)	Cu.n Çu.n	663		1348542.00		377591.76	134854.20
9		Gabion							
		Sub-total				2569377 80 (100.0 %)	(53.3 %)		256937.78 (10.0 X
7)	SPEC	IAL WORKS FOR REMABILITATION						r i i karûr .	
00		Additional stringer	ton	12900			; T	• • • • • • • • • • • • • • • • • • • •	
1		Additional sidewalk	So.m	7150 6180	· · · -	_			· 🚣 .
2		Reinforcing beam of RCDG Widening of pier coping	Cu.a Cu.a	9000	:	_		ng a da g ilikin	. · · · ·
		Sub-total				(- ,)	€ 1- ⁵ 5	(- 5)	· (-),
1)	TEMPO	GRARY WORKS					1 1 1	24710.40	10056 3
00		Scaffolding	Sa.m	156	792	123552.00	86486.40	47555.20	16094 0
)1		Staging	Cu.m	220	772	169840.00 3766000.00	105300.80	564900.00	376600.0
)2		Temporary bridge	So.m LS	\$380	100	320842.48	2024900.00	86493.72	32084.2
93		Preparation works							
		Sub-total				4380234.48	3218551.71	723659.32 (16.5 %)	438023.4
					*	(100.0 %)	(73.4 %)	(16.5 X)	(10.0 %
		Grand Total				11015591.78 (100.0 %)	6944414.88	2969617.72 (26.9 %)	1101000

DETAILED CONSTRUCTION COST ESTIMATE (26/52)

26 Name of Bridge: PARED Classification: Reconstruction

Item No. Description	Unit	Price	Quantity	Amount	Fortegn Component	Local Component	Taxes .
(I) EARTHWORK AND ROAD WORKS				~~~~~~~			
100 Clearing and Grubbling	Sq,m	2.16	-		· · · -	<u>-</u>	-
Common excavation	Cu.m	43.8	•	_	.	an en	- :
103(2) Dridge excavation above low water level	Cu.m	58,5	2424	141804.00	89336.52	38287.08	14180.40
103(2)S Bridge excavation below low	44	00.0	2424	(41004.70	. 03330.32	36431.00	14400.40
vater level	Cu.m	111				•	<u>-</u>
103(5) Shoring, cribbing, cofferdam							•
and related work	LS Cu.m	1 69.0	3553	126152 00	100504 51	20045 50	17615 20
released hannou for booksill	Cu.m	120	2553 2020	176157.00	128594.61 87264.00	29946.69 130896.00	17615.70 24240.00
104(S) Aggregate subbase course	Cu.m	195		-	-	100050.00	-
311(2) PCC Pavement (Reinforced)	Sq.m	474		· -	-	-	-
Sub-total			~~	560361.00	205105 12	199129.77	56036.10
				(100.0 X)		(35.5 %)	(10.0 %)
(II) SUPERSTRUCTURE WORKS							and the second
101(S) Removal concrete structure	Cu.m	912	339	309168.00		145308.96	30916.80
101(1) Removal steel structure (bridge)	LS	1 803	318447	318447.00	213359.49	73242.81	
Transfer district Physican College	m Span	55700	435	349305.00	145010.40	118763.70	34930.50
403(S) Structural steel (Detour bridge)	Sq.m	5380	361	1942180.00	1456635.00	291327.00	194218.00
104 Reinforcing steel	kя	18.7	45210	845427.00	608707.44	152176.86	84542.70
405(1) Structural concrete Class A	ຸ Ĉû.π Cu.π	2860	398	1138280.00	626054.00	398398.00	113828.00
407 Prestressed concrete bridge 408 Steel bridge(1-beam)	ton	15800 61400	136	2148800.00	1461184.00	472736.00	214880.00
411 Paint	Sq.m	71.1	4243	301677.30	39218.05	232291.52	30167.73
\$ub-total				7353284.30		1884244.85 (25.6 %)	735328 43 (10.0 %)
(III) SUBSTRUCTURE WORKS	Cu.m	912	128	116736.00	50196 49	54865.92	11673.60
101(5) Removal of concrete structure 101(1) Removal of steel structure	LS	1		-	50130.40	3450013E	11010100
400(3) Steel H-piles	m	3380	•				- :
400(4) Precast concrete pile (400X400mm)	m	831	908	754548.00	528183.60	150909.50	75454.80
(00(6) Steel sheet pile	'n	3410 601		-		<u> </u>	-
400(7) Precast concrete sheet pile 400(16) Cast-in-Place concrete pile(1200mm)	n n	7540		_	· <u>-</u>	· 4.	-
404 Reinforcement steel	kg	16.2	10920	662904.00	477290.88	119322.72	66290.40
405(1) Structural concrete. Class A	Cu.m	2000	477	954000.00	581940.00		95400.00
405(5) Seal concrete	Cu.m	1800	9	16200.00	10206.00	4374.00	1620.00
501 Grouted riprap	Cu.m.	989 893		-		<u>-</u>	
505 Stone masonry 509 Gablon	Cu.m	663	• -	-	- '	-	-
• Sub-total				2504388.00 (100.0 %)	1647816.96 (65.8 %)	606132.24 (24.2 %)	250438.80 (10.0 %)
(IV) RIVER THAINING WORKS							
400(1) Untreated timber pile	ŵ	134	-		-		
400(4) Precast concrete pile (400X400mm)	m m	831 3410		_			<u>-</u>
400(6) Steel sheet pile 404 Reinforcement steel	kg	16.2	-	· -			-
405(1) Structural concrete, Class A	Ĉû.a	3000	_	- "	-	-	-
405(5) Seal concrete	Cu. മ	1800	· -				
504 Grouted riprap	Cu. n	989 .	311	307579.00	132258.97	144562.13	30757.90
505 Stone masonry	Cu.p	893	-	-	· · · · · · · · · · · · · · · · · · ·		_
506 Stone pitching (Hand-laid rock embankment)	Cu.ps	300		_	_	· · · · · ·	- .
509 Gabion	Cu.m	663	496	328848.00	203885.76	92077.44	32884.80
* Sub-total				636427.00	336144.73		63642.70
(V) COROLLI MORNO COR COMMENTATION				(100.0 %)	(52.8 ×)	(37.1 X)	(.10.0 X)
(Y) SPECIAL WORKS FOR REHABILITATION 800 Additional stringer	ton	42900	· -	-	-	· · · · · · · · · · · · · · · · · · ·	_
801 Additional sidewalk	Sq.m	7150	471	3367650.00	2458384.50	572500.50	336765.00
802 Reinforcing beam of RCDG	Ըս. Թ	6189	_	-		<u> </u>	
803 Widening of pier coping	Cu.m	9000		_			-
• Sub-total				3367650.00 (100.0 %)	2458384.50 (73.0 %)		336765.00 (10.0 %)
(VI) TEMPORARY WORKS	,						
900 Scaffolding	Sq.n	156	1821	284076.00	198853.20		28407.60
901 Staging	Cu.m	220	999	219780.00 1183600.00	136263.60 887700.00		21978.00 118360.00
902 Temporary bridge	Sq.a	5380	220 1	483286 99	321122.07		48328.70
903 Preparation works	LS •						
* Sub-total				2170742.99	1543938.87	409729.82	217074.30
				(100.0 %)	(71.1 %)	(18.8 %)	(10.0 %)
** Grand Total				(100.0 %)	(66.4 %)		1659285.33 (10.0 %)
				1100.0 %7			1 10.0 47

DETAILED CONSTRUCTION COST ESTIMATE (27/52)

27 Name of Bridge: SUJE(RIZAL) Classification: Replacement of Superstructure

Item No.	Description	Unit	Price	Quantity	Amount	Forlegn Component	Local Component	Taxes
	IWORK AND ROAD WORKS						and the second second	
00	Clearing and Grubbling	So.m	2.16	568	1226.88	85.88		122.69
02	Common excavation	Cu. n	13.8	9.1	4117.20	2758.52	946.96	111.72
03(2)	Bridge excavation above low					ang maga 🚅 tan	18 18 18 18 18 18 18 18 18 18 18 18 18 1	100
	water level	Cu.m	58.5					7.7
03(2)5	Bridge excavation below low	·	111	_	_		医乳腺 特别基础 等级	
	water level	Cu.m	111				and the second	71.4
)3(8)	Shoring, cribbing, cofferdam	LS	1	- '				21.15
	and related work	Cu.m	69.0	479	33051.00	24127.23	5618.67	. 3305.10
H(1)	Embankment	Cu. n	120					
14(5)	Selected borrow for backfill Aggregate subbase course	Cu.m	195	170	33150.00	23868.00	5967.00	3315.00
)0 1{2}	PCC Pavement (Reinforced)	Sq.m	165	295	137175.00	85048.50	38409.00	13717.50
	IOD largarit ittellinger.							
	Sub-total				208720.08	135888.14		20872.01
1.5					(100.0 %)	(65.1 %)	(24.8 %)	(10.0 %)
I) SUPER	STRUCTURE WORKS						22575 00	600 -01-3
1(\$)	Removal concrete structure	Cu.m	912	55	50160.00	21568.80	23575.20	5016.00
1(1)	Removal steel structure (bridge)	LS	1 1		00534 00	11.07.01	6974.76	2051
1	Raiting	5	789	26	20514.00			2051.40
2	Timber structure (Detour bridge)	· span		4	180800.00	56048.00	106672.00	18080.00
3(\$)	Structural steel (Delour bridge)	So.n	5180	-		9923.76	2480.94	1220 0
4	Reinforcing steel	KÆ	17.9	770	13783.00	12141.00		1378.30
5(1)	Structural concrete. Class A Prestressed concrete bridge	Cu m	2760 .	39	22080.00 616200.00		135564.00	2208.00
7		Cu.m.	15800	39	010200.00	113010.00	100004.00	61620.00
8	Steel bridge(I-beam)	ton	61400	Miller Britain	or y sy⊈ati	. একট্টিক	a an Ethica	
1	Paint	Sq.m.	68.4					
					003537 00	530188.40	282994.90	90353.70
	Sub-total				(100.0 %)	(58.6 %)		(10.0 x)
					1100.0 41	1 30.0 47		. 10.0 %
	TRUCTURE WORKS	Cu.m.	912	32	29184.00	12549.12	13716.48	2918.40
1(8)	Removal of concrete structure	-,	1	-	231041000			
1(1)	Removal of steel structure	LS	3260	132	430320.00	322740.00	64548.00	43032.00
0(3)	Steel H-piles	m	801		400020100	-		
	Precast concrete pile (400X400mm)	. M	3290	_			and the Light dis	
0(6)	Steel sheet pile	.m.	580	_	_	<u>-</u>		
0(7)	Precast concrete sheet pile	<u>m</u>	7270		_			=
	Cast-in-Place concrete pile(1200mm)	n kg	15.5	11660	180730.00	130125.60	32531.40	18073.00
4	Reinforcement steel	KZ	1930	117	225810.00	137714.10		22581.00
5(1)	Structural concrete. Class A	Cu.m	1740		223010.03	(3),,,,,,		22001.00
5(5)	Seal concrete	Cu.m	945	.72	68040.00	29257.20	31978.80	6804.00
1	Grouted riprap	Cu.m Cu.m	853		50040.50			-
5	Stone masonry	Cu.m	663	_		-		_
9 .	Gabion	. Cu.m						
and the second	Sub-total				934084.00	632415.02	208259.58	93408.40
	340-10141				(100.0 %)	(67.7 X)		(10.0 %)
ממטום ול	TRAINING WORKS							
	Untreated timber pile	ła.	109		-	_		
0(1) 0(4)	Precast concrete pile (400X400mm)	 20	801	· <u>-</u>	· <u>-</u>	-		-
	Steel sheet pile		3290		.			- ·
0(6)	Reinforcement steel	kg	15.5	· _		- '	-	-
4	Structural concrete, Class A	Cu.m	1930			2 7 m		-
5(1) 5(5)		Cu.a	1740	-	_	-	- 1 ± - 1	- '
5(5) 4	Seal concrete Grouted riprap	Cu.m	945	·	. +	.		
	Stone masonry	Cu.m	853	· -		_		-
	Stone pitching (Hand-laid	~4.0						
5	rock embankment)	Cu.m	300	_	_	** - *	- · · ·	-
,	Gabion	Cu.m	663	-	<u> </u>	<u>.</u>	and the second	
7 .	CEDICO.							
	Sub-total	•				-		
	30b total				(-)	(-).	(-)	(- ')
CDUCI	AL WORKS FOR REHABILITATION				•	•		
	Additional stringer	ton	41300	-	· <u>-</u>			-,
) !		Sg.m	6690	• -	-	<u> </u>	그는 분기 골목하다	-
	Additional sidewalk Reinforcing beam of RCDG	Cu.a	5960	_		1. 3 ± 6 ± 6		
		Cu.a	8680	25	217000.00	115010.00	80290.00	21700.00
3	Widening of pier coping							
	Sub-total			· ·	217000.00	115010.00	80290.00	21700.00
	Jun total				(100.0 %)	(53.0 %)	(37.0%)	(10.0 %)
, Teure	RARY WORKS				1100.0 41	00.0 A7		
		Sq.m	156	132	20592.00	14414.40	4118.40	2059.20
	Scaffolding	Cu.m	220	132	20092.00	14414.40		
	Staging	Sq.m	5180		_			
	Temporary bridge	LS.	0100	·	68517.99	42837.51	18828.68	6851.80
3	Preparation works		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			.1001.001.	10000.00	4
	Cub-total				89109.99	57251.91	22947.08	8911.00
	Sub-total				(100.0 %)	(64.2 %)		(10.0 X)
	Grand Total				2352451.07	1470754.46		235215.11
	Grand Total							(10.0 X)
1.					(100.0 %)	(62.5 %)	(27.4 %)	((0.0 **

DETAILED CONSTRUCTION COST ESTIMATE (28/52)

28 Name of Bridge : GUINOBATAN Classification : Repair

0	Description	Unit	Price	Quantity	Amount	Forlegn Component	Local Component	Taxes
) EARTH	WORK AND ROAD WORKS							
ó (Clearing and Grubbling	Sq.m	2.16		•	. 4		_
2 .	Common excavation	Cu.m.	43.8				, · · · · · · · · · · · · · · · · · · ·	-
3(2)	Bridge excavation above low							
	water level	Cu.m	58.5	474	27729.00	17469.27	7486.83	2772.9
	Bridge excavation below low	C					the decision of the con-	
	vater level Shoring, cribbing, cofferdam	Cu, as	111	312	34632.00	21125.52	10043.28	3463.2
3(5)	and related work	LS				* * * * * * * * * * * * * * * * * * *	***	
ا دىن	and related work Embankment	Cu.m	1 69.0	200	10724 00	1 405 00	3354.78	1072
	Selected borrow for backfill	Cu.a	120	286 773	19734.00 92760.00	33303 60	50090.40	1973.4 9276.0
	Aggregate subbase course	Cu.a	195	113	92100.00	22232,00		7210.0
	PCC Pavement (Reinforced)	Sq.m	165		· <u>-</u>		_ · ·	
• • • • • • • • • • • • • • • • • • • •								
	Sub-total				174855.00	86394.21	70975.29	17485.5
	 Strategic Constitution of the constitution 				(100.0 %)	(49.4 %)	(40.5 %)	(10.0)
	STRUCTURE WORKS	-					•	
	Removal concrete structure	Cu.m	912	. •	. =	-	·	
(1) [Removal steel structure (bridge) Railing	LS B	1	-				
	Timbér structure (Detour bridge)	E)	789	·. -	-	-	. •	_
	Structural steel (Detour bridge)	Span	45200	· -	-	· · · ·	• •	_
(5)	Railing Timber structure (Detour bridge) Structural steel (Detour bridge) Reinforcing steel, Structural concrete; Class A Prestressed concrete bridge Steel bridge(1-beam)	. 20'E	5180 17.9	-	_	-	· · · · · · · · · · · · · · · · · · ·	_
(1)	Structural concrete, Class A	Cu e	2760	-	_		<u>-</u>	
(1)	Prestressed concrete bridge	Cu.m	15800		_		_	_
	Steel bridge(1-beam)	ton	61400	_				-
, . i	Paint	Sq.n	68.4	· · · <u>-</u>			-	
7 :								
	Sub-total				(-)	(- N		, - ,
) SUBSTI	RUCTURE WORKS	•			, - ,	, - ,	•	`. '
	Removal of concrete structure	Cu.m.	912	-	- .	-	•	*
	Removal of steel structure	LS	1	-	-	-	. •	-
	Steel H-piles	32	3260	-	-	-	-	-
	Precast concrete pile (400X400mm)	m	801	-		-		-
	Steel sheet pile	æ	3290	-	-	-	-	
	Precast concrete sheet pile	lts:	580	-		• •	· · · · · ·	-
(16)	Cast-in-Place concrete bile(1200mm)			·	- .
	Reinforcement steel	ke	15.5		150040.00	108028.80		15004.
(1)	Structural concrete, Class A	Cu.ss	1930		187210.00	114198.10	54290.90	18721.
	Seal concrete	Cu.m	1740	· -	₹.	· •	-	-
	Grouted riprap	Cu.n	945		-	-	· · · · · · · · · · · · · · · · · · ·	-
	Stone masonry	Cu.n	853		-	-		-
	Gablon	Cu.a.	663 		-			
	4 Sub+total				337250.00 (100.0 %)		81298.10 (24.1%)	33725. (10.0
RIVER	TRAINING WORKS							
(1)	Untreated timber pile	Ð	109	66	7194.00	3525.06	2949.54	719.
(4)	Precast concrete pile (400X400mm)	f p	801					
	Steel sheet pile	72	3290	_	_ `		-	-
	Reinforcement steel	kя	15.5	110	1705.00	1227.60	306.90	170.
	Structural concrete, Class A	Cu.m	1930	. 6	11580.00	7063.80	3358.20	1158.
	Seal concrete	Cu.m	1740		-	.		
	Grouted riprap	Cu.m.	945	47		19098.45		4441.
	Stone masonry	Cu.m	853	75	63975.00	30708.00	26869.50	6397.
	Stone pitching (Hand-laid						÷	
	rock embankment)	Cu. na	300	7	-			-
	Gabion	Cu.m	663		- 	- 		
	Sub-total				128869.00	61622.91		12886. (10.0
	AL WORKS FOR REHABILITATION				110010 47			
	Additional stringer	ton	41300	· -	-	-		~
	Additional sidewalk	Sq.m	6690	-	-	-	-	_
-1	Reinforcing beam of RCDG	Cu.m	5960	-	-	-	7	. +
	Widening of pier coping	Cu.m	8680	-	- 			
	Sub-total				(-))	(- ~)	(- 3
TEMPO	RARY WORKS				. ,	- •	•	•
	Scaffolding	Sq.m	156	•	-	-	-	-
	Staging	Cu.m	220	.	-	-	-	_
	Staging Temporary bridge	Sq.m	5180	· · · -	-			-
	resporary orloge Preparation works	LS.		1	19229.22	11107.32	6198.98	1922.
	LICAGISTON ACTVS							
					19229.22	11107.32	6198.98	1922.
	Sub-total							
	Sub-total				(100.0 %)	(57.7 %)		
	Sub-total Grand Total					(57.7 %) 381351.34 (57.7 %)	212831.56	(10.0 66020. (10.0

DETAILED CONSTRUCTION COST ESTIMATE (29/52)

29 Name of Bridge : SAN FERNANDO Classification : Repair

ltem No.		Unit	Price	Quantity	Amount	Fortegn Component	Local Component	Taxes
	PARTINOPE AND DAIR CORPS			,		7.77	SANOT HE BOOK	
l) 00	EARTHWORK AND ROAD WORKS Clearing and Grubbling	Sq.m	2.16		- :-:	4.5		
2	Common excavation	Cu.n	43.8	·	-	a system	Factor (* 1500 - 1500	
3(2)	Bridge excavation above low					2 - 22 THE PART		5.5
- 1	water level	Cu.m	58.5	-	-		The state of the s	•
3(2)	Bridge excavation below low		111			_		
0 (E)	water level	Cu.m	. 111		2.5%	2. 19.25 Sec. 1. 24.50	Attended to the party	
3(5)	Shoring, cribbing, cofferdam	LS	1 .	-	-			- '
4(1)	and related work Empankment	Cu.s	69.0	179		24127.23		3305.10
4(5)		Cu.n	120				កាលមានិក្សាក្រែក ភាពសេខ ព្រះគ្រឹងទៅ	• •
0	Aggregate subbase course	Cu. p	195			in in Alexander (* Transchie) In Alexander (* Elevation	i distable	
1(2)	PCC Pavement (Reinforced)	Sq.m	165					
	Sub-total				33051.00	24127.23	5618.67	3305.16
	360-10141				(100.0 %)	(73.0 %)	(17.0 %)	(10.0 x
) .	SUPERSTRUCTURE WORKS		-				1	
(5)	Removal concrete structure	Cu.≱o	912	60			25718.40	5472.0
(1)	Removal steel structure (bridge)	LS	789			o de la compansión de la La compansión de la compa		
1	Railing	7 1	789 452 0 0	7	316400:00	98084.00	186676.00	31640.0
2		S D A N	5180					2.44
3(5)	Structural steel (Detour bridge)	Sq.m kx	17.9	8085	144721.50	104199.48	25049.87	14472.1
(5(1)	Reinforcing steel Structural concrete, Class A	Cu.ms	2760	62	171120.00	94116.00	59892.00	17112.0
7	Prestressed concrete bridge	Cu. n	15800	· -	. "		26049.87 59892.00	- :
8	Steel bridge(1-beam)	ton	61400			100 64	28019.38	2022
í	Paint	So. no	68.4	532	35388.80	4/30.04	28019.30	3638.8
					723350.30		326355.65	72335.0
3	Sub-total				(100.0.%)	(44.8 X)	(15 1 %)	(10.0 x
ris i	SUBSTRUCTURE WORKS						化对面工作的 电光点电缆	Professional Control
(8)	Removal of concrete structure	Cu.m	912	.	- wi	- 1 to 1 t		-
άź	Removal of steel structure	LS	1	· . =	-			- '
(3)	Steel H-piles	59	3260	-	- :		•	- ·
(4)	Precast concrete pile (400X400mm)	m	801		-			
(6)	Steel sheet pile	m	3290					_
9(7)	Precast concrete sheet pile Cast-in-Place concrete pile(1200mm)	Ht.	580 7270				1	
0(16)) Cast-in-Place concrete pile(1200BB)	м Кø	15.5	_			in garage =1 wife 1	
4	Reinforcement steel Structural concrete. Class A	Cu.a	1930	· _	· · · · · ·		그는 그 수술 가다.	· · -
5(1) 5(5)	Seal concrete	Cu.m	1740	•	-	-	· •	-
ì	Grouted riprap	Cu.m	945	66	62370.00	26819.10	29313.90	6237.0
5	Stone masonry	Cu. pa	853			-	en de la companya de La companya de la co	-
3	Gabion	Cu.m	663					
	Sub-total				62370.00	26819.10	29313.90	6237.0
	Sub-total				(100.0 %)		(47 0 X)	(10.0 %
7)	RIVER TRAINING WORKS					1	in the position of	er (j. 1945)
0(1)	Untreated timber pile	B	109		-		ar idit⊕isa ti	-
0(4)	Precast concrete pile (400X400mm)	Ð	801		-	· · · · · · · · · · · · · · · · · · ·		
(6)	Steel sheet pile	類	3290	-				_
4	Reinforcement steel	kg.	15.5 1930		= .		e - 1 - 1 - 1 - 1	-
(1)	Structural concrete. Class A	Cu.na Cu.na	1740	·	_	_		4 '
5(5) 4	Seal concrete Grouted riprap	Cu.m	945	-		-	one (Day of € of S	- :
5	Stone masonry	Cu.m	853		-	-	18.5 = 1	-
	Stone pitching (Hand-laid	- * - *-				1000000	in the particle of the	
	rock embankment)	Cu.n	300	· · -	_	·		
)	Gabion	Cu.m	663		-		. 	
								_
	Sub-total				, -)	(-)	(+)	(-)
,	SPECIAL WORKS FOR REHABILITATION				•		a Bertskiit	1.5
,	Additional stringer	ton	41300	. 9	371700.00		52038.00	37170.0
า	Additional sidewalk	Sq.m	6690		-	_		-
		Cu.z	5960	. : 🕶		- ·	•	-
l			8680	-				
2	Reinforcing beam of RCDG	Cu.a						37170.0
2	Reinforcing beam of RCDG Widening of pier coping	Cu.a			371700.00		52038.00	(10.0 %
2	Reinforcing beam of RCDG	Cu.a				ረ ማደ ሶ ሃነ	2 14 A 21	
1 2 3	Reinforcing beam of RCDG Widening of pier coping Sub-total	Cu.a			(100.0 %)	(76.0 %)	(14.0 %)	di Propinsi Salah
1 2 3	Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS		156	. 240	(100.0 %)		gradien (187)	di Maria
1 2 3 1)	Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding	Sq.m	156 220	240	(100.0 %) 37440.00	26208.00	7488.00	3744.0
1 2 3 (i) 0	Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging	Sq.m Cu.m	220		(100.0 %)	26208.00	7488.00	3744.0
1 2 3 (1) 0 1	Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging Temporary bridge	Sq.m		·	37440.00	26208.00 - 20529.18	7488.00 - 12624.43	3744.0 3583.7
1 2 3 (1) 0 1	Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging	Sq.m Cu.m Sq.m	220	•	(100.0 %) 37440.00 - 36837.34	26208.00 - 20529.18	7488.00 12624.43	3744.0 3583.7
1 2 3 (1) 0 1 2	Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works	Sq.m Cu.m Sq.m	220	•	37440.00 37440.00 - 36837.34 74277.34	26208.00 - 20529.18 46737.18	7488.00 12624.43 20112.43	3744.0 3583.7 7427.7
0 1 2 3 1) 0 1 2 3	Reinforcing beam of RCDG Widening of pier coping Sub-total TEMPORARY WORKS Scaffolding Staging Temporary bridge Preparation works	Sq.m Cu.m Sq.m	220	•	(100.0 %) 37440.00 - 36837.34	26208.00 20529.18 46737.18 (62.9 %)	7488.00 12624.43	3744.0