

RESULTS OF VISUAL INSPECTION OF 52 BRIDGES (5/11)

NO.	REGION	BRIDGE NO.	BRIDGE TYPE	BRIDGE NAME	RATING	DETERIORATION AND DAMAGES							COMMENTS FOR COUNTERMEASURES							PHOTOGRAPHS	REHABILITATION METHODS
						SL	SU	SUB	FDTN	EMB	OTHER	SL	SU	SUB	FDTN	EMB	OTHER				
7	II	86		MAMANPARAN I R.C.D.G. 3 15.0 = 45.0	A	●															Replacement of RC.D.G. Widening Cap. Protection of pier foundation. Reinforcement of Substructure
8	II	89		SAN LUIS RC.D.G. 2 12.0 = 24.0	A	●															Widening Cap of Substructure.
9	II	109		MAGUILIAN S-I-B/TRUSS 5 15.0, 8 75.0 = 675.0	A	○	○	○													Replacement and Reinforcement of deck slab. Protection of pier foundation.
10	II	113		MALALAN S-I-B/TRUSS 2 15.70, 6 74.0 = 475.40	A	●	△														Replacement and Reinforcement of deck slab. Protection of pier foundation.
11	II	126		BALASIG TRUSS 75.00	A*				○												Replacement of deck slab. Protection of river bank / slope protection. Additional sidewalk.
12	II	129		SAN PABLO S-I-B/TRUSS 3 15.60, 4 58.0 = 278.20	A	●	●														Replacement and Reinforcement of deck slab. Protection of river bank at A <sub>1</sub> side.

NOTE: SL — Slab  
 SU — Superstructure  
 SUB — Substructure  
 FDTN — Foundation  
 ● — Seriously Damage; Replacement  
 ○ — Partially Damage; Repair  
 △ — Minor Damage; Maintenance

RESULTS OF VISUAL INSPECTION OF 52 BRIDGES (6/11)

NO.	REGION	BRIDGE NO.	BRIDGE NAME		RATING	DETERIORATION AND DAMAGES										COMMENTS FOR COUNTERMEASURES							PHOTOGRAPHS	REHABILITATION METHODS				
			TYPE	LENGTH		SL	SU	SUB	FTDN	EMB	OTHER	SL	SU	SUB	FTDN	EMB	OTHER											
						A		O				●																
13	11	139	PINACANAUN S-I-B/TRUSS	393.40	A	●																						Replacement of deck slab. Reinforcement of Pier. Protection of Pier Foundation. Slope protection. Foot protection.
14	II	154	PARED PONY/RCDG/TRUSS	193.10	A	Δ	●																					Reconstruction of two span. Replacement of deck slab. Additional Sidewalk Reinforcement of substructure Protection of Pier Foundation. Slope protection.

NOTE: SL --- Slab  
 SU --- Superstructure  
 SUB --- Substructure  
 FDTN --- Foundation  
 ● --- Seriously Damage; Replacement  
 ○ --- Partially Damage; Repair  
 Δ --- Minor Damage; Maintenance

RESULTS OF VISUAL INSPECTION OF 52 BRIDGES (7/11)

NO.	REGION	BRIDGE NO.	BRIDGE NAME TYPE LENGTH	RATING	DETERIORATION AND DAMAGES										COMMENTS FOR COUNTERMEASURES										PHOTOGRAPHS	REHABILITATION METHODS
					SL	SU	SUB	FDTN	EMB	OTHER	SL	SU	SUB	FDTN	EMB	OTHER										
1	V	19	SUNE (RIZAL) R.C. CHANNEL 2 @ 6.00 = 12.0	A	●	●																				Replacement of Precast-T. Link Slab. Widening of Abutment. Slope protection.
2	V	43	GUINOBATAN S-I-B 1 @ 27.70 = 55.60 1 @ 27.90	A			●																			Reinforcement of both Abutment. Link Slab. Slope protection.
3	V	75	SAN FERNANDO S-I-B 21.80	A	●																					Replacement and Reinforcement of deck Slab. Slope protection.
4	V	76	PAMUKID S-I-B 2 @ 6.50 = 22.50 2 @ 9.50	B	●	▲																				Replacement and Reinforcement of deck Slab.
5	V	77	SAN ISIDRO S-I-B 2 @ 6.50 = 22.50 1 @ 9.50	A	●	▲																				Replacement and Reinforcement of deck slab.
6	V	78	SAN GABRIEL R.C. SLAB 3 @ 6.50 = 19.50	A	●	○																				Replacement of RC-Slab. Widening pier Cap. Slope protection.

NOTE: SL — Slab  
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 SUB — Substructure  
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 ● — Seriously Damage; Replacement  
 ○ — Partially Damage; Repair  
 ▲ — Minor Damage; Maintenance

RESULTS OF VISUAL INSPECTION OF 52 BRIDGES (8/11)

NO. REGION	BRIDGE NO.	BRIDGE NAME TYPE LENGTH	RATING	DETERIORATION AND DAMAGES							COMMENTS FOR COUNTERMEASURES							PHOTOGRAPHS	REHABILITATION METHODS
				SL	SU	SUB	FDTN	EMB	OTHER	SL	SU	SUB	FDTN	EMB	OTHER				
7	V	PAHOHO R.C.D.G. 12.00	A	●	●	○						●	●	○					Replacement of deck Slab. Widening Pier Cap. Slope protection.
8	V	TINIGUIBAN R.C.D.G. 1 @ 6.00 = 19.90 1 @ 13.90 = 19.90	A	●	●	○						●	●	○					Replacement of RC.D.G. Widening Cap. Link slab.
9	V	SGT. MATIAS R.C.D.G. 1 @ 15.00 = 15.00	A			○								○					Replacement of deck slab. Widening Cap.
10	V	NAUSOD I S-I-B 1 @ 15.00 = 15.00	A	●	●	○						●	○	○					Replacement of deck slab. Slope protection.
11	V	SOOK S-I-B 3 @ 11.10 = 33.30	A	●	▲							●	▲						Replacement and Reinforcement of deck slab.
12	V	KANAPAWAN S-I-B 3 @ 15.20 = 45.60	A	●	▲							●	▲						Reinforcement and Reinforcement of deck slab. Slope protection.

NOTE: SL — Slab ● — Seriously Damage; Replacement  
 SU — Superstructure ○ — Partially Damage; Repair  
 SUB — Substructure ▲ — Minor Damage; Maintenance  
 FDTN — Foundation

RESULTS OF VISUAL INSPECTION OF 52 BRIDGES (9/11)

NO.	REGION	BRIDGE NO.	BRIDGE NAME TYPE LENGTH	RATING	DETERIORATION AND DAMAGES										COMMENTS FOR COUNTERMEASURES										PHOTOGRAPHS	REHABILITATION METHODS		
					SL	SU	SUB	FTDN	EMB	OTHER	S	L	SU	SUB	FTDN	EMB	OTHER											
13	V	154	BASIJAD	A	●	○																			Replacement and Reinforcement of deck slab.			
			TRUSS		●	○																						
			1 @ 58.50 = 58.50																									
14	V	173	GUMACA	A	●	○	△	△	△	△															Replacement of R.C.D.G. Widening of Cap.			
			R.C.D.G.		●	○	△	△	△																			
			6 @ 7.70 = 64.20																									
15	V	181	TALABA	A	●	○	△	△	△	△															Replacement of R.C.D.G. Widening Cap. Slope Protection. Link Slab.			
			R.C.D.G.		●	○	△	△	△																			
			4 @ 5.80 = 23.20																									
16	IV-A	188	BINAHAAN	A	●	○	△	△	△	△															Replacement of R.C.D.G. Widening Cap.			
			R.C.D.G.		●	○	△	△	△																			
			2 @ 10.00 = 48.00 2 @ 14.00																									
17	IV-A	190	PALSABANGON	A	○	○	△	△	△	△															Replacement of R.C.D.G. Pier foundation protection. Widening Cap. Slope protection.			
			R.C.D.G.		○	○	△	△	△																			
			3 @ 15.00 = 57.00 1 @ 12.00																									
18	IV-A	206	LAGNAS II	A	○	○																			Repair, Overlay of deck slab.			
			RC SLAB		○	○																						
			4 @ 5.00 = 20.00																									

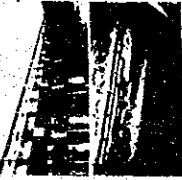



NOTE: SL — Slab  
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 SUB — Substructure  
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 ● — Seriously Damage; Replacement  
 ○ — Partially Damage; Repair  
 △ — Minor Damage; Maintenance

RESULTS OF VISUAL INSPECTION OF 52 BRIDGES (10/11)

NO.	REGION	BRIDGE NO.	BRIDGE NAME TYPE LENGTH	RATING	DETERIORATION AND DAMAGES							COMMENTS FOR COUNTERMEASURES							PHOTOGRAPHS	REHABILITATION METHODS					
					SL	SU	SUB	FDTN	EMB	OTHER	S	L	SU	SUB	FDTN	EMB	OTHER								
19	IV-A	208	STO. CRISTO R.C.D.G. 3 @ 12.00 = 36.00	A		●	○	△																	Replacement of R.C.D.G. Widening Cap.
20	IV-A	220	MAGAPONG PONY 1 @ 25.70 = 25.70	A		●	○	△																	Replacement of PC-I. Reinforcement of Abutment. Slope Protection
21	IV-A	223	BIGA S-I-8 2 @ 7.00 = 46.00 1 @ 32.00	A		○	○	○																	Replacement and Reinforcement of deck slab.
22	IV-A	227	SAN CRISTOBAL RCDG/TRUSS 2 @ 12.00 (RCDG) 73.60 1 @ 49.60 (TRUSS)	A		●	△	○																	Replacement and Reinforcement of deck slab.

NOTE: SL — Slab  
 SU — Superstructure  
 SUB — Substructure  
 FDTN — Foundation  
 ● — Seriously Damage; Replacement  
 ○ — Partly Damage; Repair  
 △ — Minor Damage; Maintenance

RESULTS OF VISUAL INSPECTION OF 52 BRIDGES (11/11)

NO.	REGION	BRIDGE NO.	BRIDGE NAME	RATING	DETERIORATION AND DAMAGES										COMMENTS FOR COUNTERMEASURES	PHOTOGRAPHS	REHABILITATION METHODS			
					SL	SU	SUB	FDTN	EMB	OTHER	SL	SU	SUB	FDTN				EMB	OTHER	
1	VIII	109	JIABONG	A	●	●	○					●	●	●	●	○	1. Replacement of reinforced concrete slab on all spans due to deteriorated concrete slab. 2. Replacement of concrete channel beams due to deteriorated beams.		Reconstruction Slope Protection	
			RC CHANNEL		●	●	○													
			11 @ 6.80 = 74.80																	
2	VIII	120	HINGBONGAN	A	▲	▲	●	●	●	●	●	●	●	●	●	●	1. Replacement of existing abutment and a new construction of abutment and foundation. 2. Location of a new bridge should be in a suitable place to avoid serious erosion for both abutment.		Reinforcement of Abutment. Link Slab. Slope Protection. Foot Protection	
			S-I-B		●	●	○													
			1 @ 21.80 = 21.80																	
3	VIII	160	JUBASAN II	A	●	●	○					●	●	●	●	●	1. Replacement of existing slab and superstructure due to deterioration of deck slab. 2. Replacement of steel structural members due to serious corrosion and loss of structural strength and stability of the truss.		Replacement of PC-I. Reinforcement of Abutment.	
			PONY		●	●	○													
			1 @ 44.60 = 44.60																	
4	VIII	161	JUBASAN I	A	○	●	○					●	●	●	●	●	1. Replacement of existing slab and superstructure due to deteriorated slab. 2. Replacement of steel members due to serious corrosion and loss of structural strength and stability of the truss.		Reconstruction. Slope Protection	
			TRUSS		○	●	○													
			1 @ 74.00 = 74.00																	

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 ▲ — Minor Damage, Maintenance





**APPENDIX 6.2**

**DIAGNOSTIC RECORD**



SUMMARY OF DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES

REGION	BR. NO.	BRIDGE NAME	RATING	TYPE	LENGTH	YEAR BUILT	WIDTH	TRAFFIC VOLUME	DETOUR	REHABILITATION METHODS	REMARKS
I	14	LABANGAN I	A*	S-I-B	100.0	1950	8.50	>2000	none	Reconstruction, Upstream SIB, 3 @ 32.5 = 260.0 m	Reconstruction
I	54	YAGANUSING	A*	RCOG	40.0	1936	sidewalk 6.20	>2000	probable	Reconstruction PC-I-Beam (15 x 20 + 15 = 50.0 m) Temporary bridge	Reconstruction
I	58	BUED	A*	TRUSS	500.4	-	truss 6.4	<2000	probable	Reconstruction, PC-I Beam 9 @ 25 = PC-I Beam 1 @ 32.5 + PC-I Beam (6 @ 25) + PC-I Beam (3 @ 31)	Reconstruction
I	65	LOMBOY	A	RCOG	45.0	1957	6.10	<2000	probable	Replacement of one span (RCOG 1 @ 15 m)	Replacement of Superstructure
I	77	BAUANG I	A	PONY	221.4	1935	no side walk 5.10	2000	none	Reconstruction, Upstream PC (precast) T 1 @ 10 + PC-I-Beam, 9 @ 25	Reconstruction
III	43	SICSICAN	A	TRUSS	150.0	-	7.40	2000	probable	Partial replacement of deck slab. Additional stringer at floor beam, 3 @ 50 = 150.0 m	Repair, replacement of deck slab
II	71	INDIANA	B	S-I-B/PCWY	98.90	-	6.00	2000	probable	Reconstruction, SIB 19.5m. Reconstruction SIB 3 @ 25.0m Additional Beam for existing SIB	Reconstruction
II	73	BATU	A*	TRUSS	350.0	-	6.15	2000	probable	Partial replacement of deck slab. Additional sidewalk (upstream), 7 @ 50 = 350.0 m	Repair, replacement of deck slab, additional sidewalk
II	109	MAGUILIAN	A*	TRUSS	675.0	1950	truss 6.15	2000	probable	Replacement of all deck slab. Reinforcement of floor	Repair, replacement of deck slab
II	113	MALALAM	A*	TRUSS	475.4	1946	6.15	2000	probable	Partial replacement of deck slab, (truss)	Repair, replacement of deck slab
II	199	PINACANAJAN	A*	TRUSS	393.4	-	6.096	2000	none	Partial replacement of deck slab, 3 @ 60 = 180 m (truss) Reinforcement of pier, river bank protection	Repair, replacement of deck slab
II	154	PARED	A*	TRUSS	193.3	1976	6.15	2000	none	Reconstruction of 2 spans PC-I-Beam (2 @ 25.0 = 50.0 m)	Reconstruction
V	19	SUJE	A	RC-SLAB	12.0	1958	7.35	2000	none	Partial replacement of deck slab 3 @ 49.2 = 147.6 (truss) Replacement of superstructure PC-I-Beam 1 @ 12.0 m (precast)	Replacement of Superstructure
V	76	SAH GABRIEL	A	RC-SLAB	19.5	1972	7.50	2000	probable	Replacement of superstructure RC-Slab, 3 @ 6.5 = 19.50 m	Replacement of Superstructure
IV-A	188	BINAHAAN	A	RCOG	48.0	-	6.70	2000	none	Replacement of superstructure, RCOG Widening of pier coping 2 @ 14.0 = 28.0 m	Replacement of Superstructure
IV-A	208	STO. CRISTO	A	RCOG	36.0	-	6.75	2000	none	Replacement of superstructure RCOG, 3 @ 12.0 = 36.0 m, Widening of pier coping	Replacement of Superstructure
IV-A	220	MAGAPONG	A	PONY	25.7	1946	6.00	2000	probable	Replacement of superstructure PC-I-Beam, 1 @ 25.7 = 25.7 m	Replacement of Superstructure
IV-A	227	SAN CRISTOBAL	A	TRUSS	73.6	-	8.00	2000	none	Partial replacement of deck slab, Reinforcement of floor	Repair, replacement of deck slab
VIII	109	JTABONG	A*	RC-SLAB	74.8	-	6.85	2000	none	Reconstruction Upstream PC-I-Beam, 3 @ 25.0 = 75.0 m	Reconstruction
VIII	120	HINGBONGAN	A*	S-I-B	21.8	1975	8.20	2000	none	Reinforcement of foundation	Reconstruction
VIII	160	JUBASAN II	A	PONY	44.6	-	7.38	2000	none	Replacement of superstructure, New construction of pier 1, PC-I-Beam 2 @ 22.3 = 44.6 m, Temporary bridge	Repair, replacement of sub-structure Replacement of Superstructure
VIII	161	JUBASAN I	A	TRUSS	74.0	1972	7.30	2000	none	Reconstruction PC-I-Beam, 2 @ 37.0 = 74.0 m	Reconstruction

LEGEND:  
 \* SUBJECT TO DETAILED SURVEY  
 † SUBJECT TO JOCKING TEST

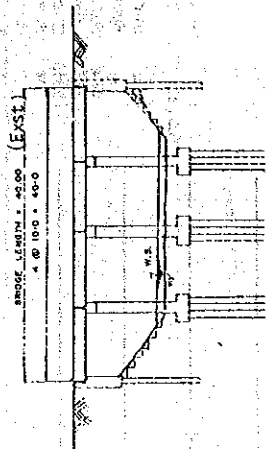
DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (1/22)

REGION	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS
	III	SL	SU	SUB	FTDN			
Br. No.	14							<p>Bridge Length = 100 (Exst.)</p> <p>25.0 S.I.B. 50.0 S.I.B. 25.0 S.I.B.</p> <p>Bridge width: 8.50 m. Sidewalks : 2 @ 0.76 m.</p>
Br. Name	LABANGAN	△	△	●				
Rating	A	<p>1. Some portions of slab with cracks</p> <p>2. Rusty steel girders.</p> <p>3. Original pier at center of bridge was washed-out by floods.</p>						
Type	S-1-B					Reconstruction, up-stream, using 8 spans S.I.B. beam @ 32.50 m. Slope protection. Foot protection.		
Length	100.00							
Year Built	1950							
Width	8.50							
		DETERIORATION DAMAGES			RATING	QTY. OF DAMAGE	REHABILITATION METHOD	REMARKS
PAVEMENT							40 mm thickness @ curb 95 mm thickness @ centerline of roadway Slope = 1.5%	
CURB & RAILING							Railing height = 1.07 m Curb height = 0.20 m from pavement	
EXPANSION JOINT							Steel	
DECK SLAB							Thickness = 190 mm.	
CONCRETE BEAM							I 1360 x 457 x 38 x 22	
STEEL BEAM								
PAINTING COND.							Steel plates bearing	
SHOE	Deflection of shoe.				B		Reconstruction of inverse T-type (H = 2 6.60 m) on bored pile foundation (Ø1200)	
ABUTMENT							Reconstruction of wall type (H=3 9.0 m, 2 11.0 m and 2 16.0 M) on bored pile foundation (Ø1200)	
PIER	Washout of center pier (temporarily supported by two steel piers).				A		Grouted Riprap	
SLOPE PROTECTION								
DRAINAGE								
APPROACH ROAD							6.70 m x 125.0 x 2	
RIVER CONDITION							D.F.W.L. Riverbed level : 5.22	
OTHERS							Temporary bridge : 2 lanes	

Note:  
 SL Slab  
 SU Superstructure  
 SUB Substructure  
 FDTN Foundation  
 EMB Embankment  
 ● Seriously Damage  
 △ Partially Damage

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (2/22)

REGION	I	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS
		SL	SU	SUB	FDTN	EMB			
Bf. NO	54								
Bf. NAME	TAGAMUSING								
RATING	A								
TYPE	RCDG								
LENGTH	40.00								
YEAR BUILT	1936								
WIDTH	6.20								
		DETERIORATION DAMAGES		RATING	QTY. OF DAMAGE				
PAVEMENT									
CURB & RAILING									
EXPANSION JOINT									
DECK SLAB	Excessive cracks and exposure of reinforcing bars underside of slab.	A							
CONCRETE BEAM	Serious cracks and exposure of reinforcing bars at support of pier 1.	A							
STEEL BEAM									
PAINTING COND.									
SHOE									
ABUTMENT	Settlement of approach pavement.	A							
PIER	Scouring of riverbed around the piers.	A							
SLOPE PROTECTION	Scouring of slope protection at approach no.1.	A							
DRAINAGE									
APPROACH ROAD									
RIVER CONDITION									
OTHERS	Too narrow carriageway width.	A							




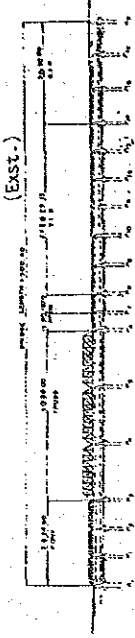
REMARKS

- River Study
- Bridge width = 7.94 m
- Sidewalks = 2 0.76 m

Note:

- SL Slab
- SU Superstructure
- SUB Substructure
- FDTN Foundation
- EMB Embankment
- Seriously Damage
- Partially Damage
- Minor Damage

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (3/22)

REGION	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS
	SL	SU	SUB	FDTN	EMB			
I								
Br. NO.	58							
Br. NAME	BUED							
RATING	A							
TYPE	PONY/TRUSS RCDG/S-1-8					Reconstruction PCI 9 @ 25.0 PCI 1 @ 32.50 PCI 6 @ 25.0 PCI 3 @ 31.0 Slope Protection		
LENGTH	500.40							
YEAR BUILT								
WIDTH	6.14							
		DETERIORATION DAMAGES		RATING	QTY. OF DAMAGE			
PAVEMENT								
CURB & RAILING						40 mm thickness @ curb 100 mm thickness @ centerline of roadway Slope = 1.5% Railing height = 1.07 m Curb height = 0.20 m from top of pavement		- Boring Test - River Study  - Bridge width : 8.00 - Sidewalks : 2 @ 0.76 m - Total length = 500.5 m
EXPANSION JOINT								
DECK SLAB						Thickness = 180 mm (PCI) Thickness = 165 (PCT)		
CONCRETE BEAM						9 @ 25.0 PCI, 1 @ 32.5 PCT; 6 @ 25.0 PCT Type IV - A, 3 @ 31.0 PCT = 500.5 m		
STEEL BEAM	Damaged steel truss members due to car collision.			B	Pony truss spans.			
PAINTING COND.								
SHOE						(Elastomeric bearing pads)		
ABUTMENT						Reconstruction of Inverse T <sub>1</sub> type (H = 2 @ 10.0 m) on H-Pile Foundation (344 x 354)		
PIER						Reconstruction of wall type (H = 6 @ 8.00 m, @ @ 8.50m (and 8 @ 7.50 m) on H = Pile Foundation) (344x354)		
SLOPE PROTECTION						Grouted Riprap		
DRAINAGE								
APPROACH ROAD						2 x 75 m		
RIVER CONDITION				A	500 m with only 1-2 m clearance.			
OTHERS	Narrow carriageway			B	6.14 m on truss spans.			

Note:


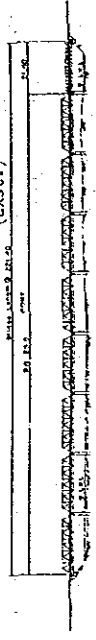
- SL Slab
- SU Superstructure
- SUB Substructure
- FDTN Foundation
- EMB Embankment
- Seriously Damaged
- Partially Damaged
- △ Minor Damage

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (4/22)

REGION	DETERIORATION AND DAMAGES						REHAB. METHODS	PHOTOGRAPHS	REMARKS
	Br. NO.	SL	SU	SUB	FDTN	EMB			
I	65	●	●						
Br. NAME	LOWBOY								
RATING	A								
T. TYPE	RCDG	Cracks near the end of beams on the first span of bridge and supported with temporary posts.							
LENGTH	45.00	Replacement of one span RCDG (1 @ 15.0) widening of pier cap.							
YEAR BUILT	1957								
WIDTH									
		DETERIORATION		DAMAGES		RATING		QTY. OF DAMAGE	
PAVEMENT		Cracking at pavement and patching repairs.				C			
CURB & RAILING									Curb height = 0.20 m from top of pavement
EXPANSION JOINT									Rubber
DECK SLAB									Thickness = 165 mm
CONCRETE BEAM		Excessive shear cracks on girders near the support (temporary timber supports at span No.1).				A			Replacement of first span, 15 m RCDG
STEEL BEAM									
PAINTING COND.									
SHOE		Rusty shoe.				C			Elastomeric bearing pads
ABUTMENT									Widening of bearing seat (Abut = 2)
PIER									Widening of Bearing Seat (Pier = 2)
SLOPE PROTECTION									
DRAINAGE									
APPROACH ROAD		Minor cracks on Approach 1 and Approach 2.				C			
RIVER CONDITION									
OTHERS									

Note:  
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 SU Superstructure  
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 FDTN Foundation  
 EMB Embankment  
 ● Seriously Damage  
 ○ Partially Damage  
 △ Minor Damage


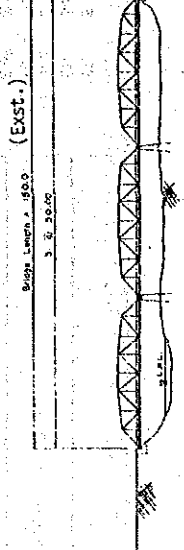
DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (5/22)

REGION	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS
	I	SL	SU	SUB	FTDN			
Br. No.	77							- Detailed Survey - Boring Test  New Construction 1 @ 10 PC Precast - T 9 @ 25 m PC I Beam Bridge width : 7.32 m Sidewalks : 2 @ 0.76
Br. Name	BAUANG I							
Rating	A							
Type	PONY							
Length	221.40							
Year Built	1935							
Width	6.10							
		DETERIORATION DAMAGES		RATING	Qty. OF DAMAGE	REHABILITATION METHOD		
PAVEMENT	Waving, cracking and patching repairs.			C		40 mm thickness @ curb 95 mm thickness @ centerline of roadway Slope = 1.5%		
CURB & RAILING	Broken in some portions of curb.			C		Railing height = 1.07 m Curb height = 0.20 m from top of pavement		
EXPANSION JOINT						Rubber		
DECK SLAB								
CONCRETE BEAM						1 @ 10 PCT 9 @ 25 PCI Type IV - A		
STEEL BEAM	Deformed steel members due to car collision			B	Additional H-beam support for deck slab with steel hangers.			
PAINTING COND.	Truss members newly repainted.			C				
SHOE						Elastomeric bearing pads		
ABUTMENT						Reconstruction of Inverse T - type (H = 2 @ 6.0 m) on R. C. Pile Foundation (Ø 1200)		
PIER						Reconstruction of wall type (H = 9 @ 11.0 m) on R. C. Pile Foundation (Ø 1200)		
SLOPE PROTECTION						Grouted Riprap		
DRAINAGE								
APPROACH ROAD						Manila side L = 110.7 m Laosg side L = 114.3 m		
RIVER CONDITION								
OTHERS	Too narrow carriageway width.			A	6.10 m with no sidewalk.			

Note:  
 SL Slab  
 SU Superstructure  
 SUB Substructure  
 FTDN Foundation  
 EMB Embankment  
 ● Seriously Damage  
 ○ Partially Damage  
 △ Minor Damage




DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (6/22)

REGION	III	DETERIORATION AND DAMAGES					REHAB. METHODS		PHOTOGRAPHS	REMARKS
		SL	SU	SUB	FDTN	EMB	OTHER	Qty.		
Br. NO.	43								 	Construction --- half lane each Bridge width : 7.40 m Sidewalks : 1.15 m
Br. NAME	SIGSICAN	●	△					40 mm thickness @ curb 56 mm thickness @ centerline of roadway Slope = 1.5% Railing Height = 1.07 m Curb Height = 0.20 m from top of pavement		
RATING	A	1. Serious cracks at the bottom of the slab. 2. Bottom chord and gusset plates are rusty.					Replacement of deck slab.			
TYPE	TRUSS						Reinforcing of deck slab.			
LENGTH	150.00									
YEAR BUILT	7.40									
		DETERIORATION DAMAGES		RATING	Qty. OF DAMAGE		REHABILITATION METHOD			
PAVEMENT										
CURB & RAILING										
EXPANSION JOINT										
DECK SLAB	Numerous diagonal cracks and repair works at underside of slab.			A		All spans.	Replacement of deck slab and additional stringer. Thickness = 165 mm, fc' = 4000 psi			
CONCRETE BEAM										
STEEL BEAM							Additional stringer (3 piece) at each span			
PAINTING COND.	Bottom chord and gusset plates are rusty.			B		30% of truss members.	100% of truss members			
SHOE										
ABUTMENT										
PIER										
SLOPE PROTECTION										
DRAINAGE										
APPROACH ROAD										
RIVER CONDITION										
OTHERS										

Note:

- SL Slab
- SU Superstructure
- SUB Substructure
- FDTN Foundation
- EMB Embankment
- Seriously Damaged
- Partially Damaged
- △ Minor Damaged



DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (7/22)

REGION	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS
	II	SL	SU	SUB	FDTN			
Br. NO.	71							<p>BRIDGE LENGTH = 98.90 (EXIST.)</p> <p>3 SPAN @ 25.0</p> <p>8.40</p> <p>5.50</p> <p>5.10</p> <p>TO MANILA</p>
Br. NAME	INDIANA							
RATING	B							
TYPE	S-1-B/PONY	<p>1. Transverse and longitudinal cracks in the deck slab.</p> <p>2. Narrow carriageway width.</p>						
LENGTH	98.90							
YEAR BUILT								
WIDTH	6.20							
		DETERIORATION DAMAGES			RATING	QTY. OF DAMAGE	REHABILITATION METHOD	REMARKS
PAVEMENT							40 mm thickness @ curb 100 mm thickness @ centerline of roadway Slope = 1.5%	- Boring Test - River Study
CURB & RAILING	Partially broken.				C		Railing height = 1.07 m Curb height = 0.20 from top of pavement	- Bridge Width : 7.32 m - Sidewalks : 2@0.76 m
EXPANSION JOINT	Slightly separated expansion joints.				B	Over P2 and P3, there is an enlarged gap due to cracking.	Steel	
DECK SLAB	Numerous transverse and longitudinal cracks and evidence of repair works				B	All spans.	Thickness = 180 mm	
CONCRETE BEAM								
STEEL BEAM							SIB (19.5 x 3@25.0) SIB 1 @ 15.5 m	New construction Widening bridge
PAINTING COND.								
SHOE							Steel Plates bearing	
ABUTMENT							(Reconstruction of Inverse-Type (H=1@8.50) on R.C. Pile Foundation (400x400)	
PIER							(Reinforcement of Pier (H=4@11.40 m) on additional R.C. Pile Foundation (400x400)	
SLOPE PROTECTION							Grouted Riprap	
DRAINAGE								
APPROACH ROAD							Approach Road Length = 2 x 30 m	
RIVER CONDITION								
OTHERS	Too narrow carriageway width				B	6.20 m with no sidewalk.		

Note:

- SL Slab
- SU Superstructure
- SUB Substructure
- FDTN Foundation
- EMB Embankment
- Seriously Damage
- Partially Damage
- △ Minor Damage


DIAGNOSTIC RECORD OF TEH 22 EXISTING BRIDGES (8/22)

REGION	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS	
	II	SL	SU	SUB	FDTN				EMB
Br. No.	73						 (Exst.) 	- River Study  Bridge width = 6.70 + 0	
Br. Name	BATU	Δ							
RATING	A	1. Minor cracks in the deck slab. 2. Scouring of slope protection and river bank at A <sub>2</sub> .							
TYPE	TRUSS								
LENGTH	350.00								
YEAR BUILT									
WIDTH	6.15								
		DETERIORATION DAMAGES			RATING	QTY. OF DAMAGE		REHABILITATION METHOD	
PAVEMENT								40 mm thickness @ curb 90 mm thickness @ centerline of roadway Slope = 1.5	
CURB & RAILING								Additional sidewalk : width = 1.30 m (upstream) Railing height = 1.07 m L = 15 + 350 + 16 = 381 m	
EXPANSION JOINT									
DECK SLAB					B	All spans.		Replacement of deck slab/additional stringer Thickness = 180 mm, fc' = 4000 psi	
CONCRETE BEAM									
STEEL BEAM								100% of Truss members	
PAINTING COND.									
SHOE									
ABUTMENT									
PIER									
SLOPE PROTECTION					A	Abutment 2 (A <sub>2</sub> ).		(Grouted riprap and gabion)	
DRAINAGE									
APPROACH ROAD									
RIVER CONDITION					A			Riverbed Protection	
OTHERS									

Note:

- SL Slab
- SU Superstructure
- SUB Substructure
- FDTN Foundation
- EMB Embankment
- Seriously Damage
- Partially Damage
- △ Minor Damage


DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (9/22)

REGION	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS	
	Br. No.	SL	SU	SUB	FTDN				EMB
II	109							- River Study  Bridge width = 6.15 m Sidewalk = 2 @ 0.75 m	
Br. Name	MAGULIAN								
Rating	A								
Type	S-I-B/TRUSS								
Length	675.00								
Year Built	1950								
Width	6.15								
	DETERIORATION DAMAGES      RATING      Qty. OF DAMAGE								
PAVEMENT	Uneven and waving pavement.					B	All spans.		40 mm thickness @ curb 88 mm thickness @ centerline of roadway Slope = 1.5%
CURB & RAILING									
EXPANSION JOINT									
DECK SLAB	Extensive cracking and potholing especially at span no. 6 of truss bridge.					A	Four spans of truss bridge.	Replacement of deck @ truss spans. Thickness = 165 mm Slope = 1.5%	
CONCRETE BEAM									
STEEL BEAM								Additional Stringers	
PAINTING COND.								100% of Truss members	
SHOE									
ABUTMENT									
PIER	Scouring					A	P3, P4, P5 and P6	(Construction of protection works around pier foundation) (4 piers)	
SLOPE PROTECTION									
DRAINAGE									
APPROACH ROAD									
RIVER CONDITION	Scouring around Pier P6 or P9.								
OTHERS									

Note:

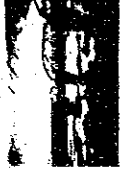
- SL Slab
- SU Superstructure
- SUB Substructure
- FTDN Foundation
- EMB Embankment
- Seriously Damage
- Partially Damage
- △ Minor Damage

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (10/22)

REGION	II	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS	
		SL	SU	SUB	FDTN	EMB				OTHER
Br. NO.	113	●	△				Partial Replacement of deck slab. Protection of Pier Foundation. - Reinforcement of deck slab.		- River  Bridge width = 6.15 m Sidewalk = 2@0.70	
Br. NAME	MALALAM									
RATING	A	1. Serious cracks in the deck slab. 2. Cracks on coping at Pier 1.								
TYPE	S-I-B/TRUSS									
LENGTH	475.40									
YEAR BUILT	1946									
WIDTH	6.15									
		DETERIORATION DAMAGES		RATING	QTY. OF DAMAGE		REHABILITATION METHOD			
PAVEMENT	Potholes at pavement			C	All truss spans.		40 mm thickness @ curb 86 mm thickness @ centerline of roadway Slope = 1.3%			
CURB & RAILING							Steel railing 6@ 74.0 m			
EXPANSION JOINT										
DECK SLAB	Big cracks at deck slab.			A	All truss spans.		Partial replacement of deck slab of Recommended thickness = 165 mm			
CONCRETE BEAM										
STEEL BEAM							100% of truss members			
PAINTING COND.										
SHOE										
ABUTMENT							Construction of Pier Foundation. Protection around the Piers(P2, P3 and P4)			
PIER	Cracks at coping of P1.			C						
SLOPE PROTECTION										
DRAINAGE										
APPROACH ROAD										
RIVER CONDITION	Scouring around Pier P2, P3 & P4									
OTHERS										

Note:  
 SL Slab  
 SU Superstructure  
 SUB Substructure  
 FDTN Foundation  
 EMB Embankment  
 ● Seriously Damage  
 ○ Partially Damage  
 △ Minor Damage


DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (11/22)

REGION	DETERIORATION AND DAMAGES					REHAB. METHODS		PHOTOGRAPHS	REMARKS
	II	SL	SU	SUB	FTDN	EMB	OTHER		
Br. NO.	139								<p>1. Heavy scouring on some piers. 2. Serious cracks in the deck slab.</p>
Br. NAME	PINACANUAN	Δ							
RATING	A								
TYPE	S-I-8/TRUSS								
LENGTH	383.40								
YEAR BUILT									
WIDTH									
		DETERIORATION DAMAGES		RATING	REHAB. METHODS		REMARKS		
PAVEMENT							40 mm thickness @ curb 85 mm thickness @ centerline of roadway Slope = 1.5	- Boring Test - River Study	
CURB & RAILING							Steel railing Curb height = 0.20 m from pavement		
EXPANSION JOINT									
DECK SLAB				A			Partial Replacement of deck slab, @ truss spans, 3 @ 60 = 180.0 m (Truss); thickness = 165 mm, fc (4000 psi)	Bridge width = 6.06 m (Truss) Sidewalk = 2 @ 0.67 m (Truss)	
CONCRETE BEAM									
STEEL BEAM									
PAINTING COND.							100% of Truss members.		
SHOE									
ABUTMENT									
PIER				A			Reinforcement of pier. P5 ~ P7		
SLOPE PROTECTION									
DRAINAGE									
APPROACH ROAD									
RIVER CONDITION							River bank protection Protection of Pier foundation (P2 ~ P4)		
OTHERS									

Note:

- SL Slab
- SU Superstructure
- SUB Substructure
- FTDN Foundation
- EMB Embankment
- Seriously Damage
- Partially Damage
- △ Minor Damage


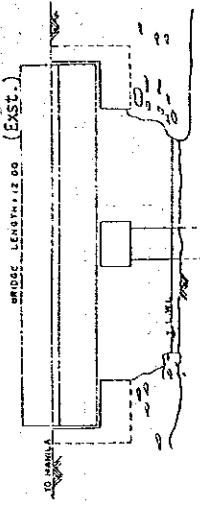
DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (12/22)

REGION	DETERIORATION AND DAMAGES						REHAB. METHODS	PHOTOGRAPHS	REMARKS
	II	SL	SU	SUB	FDTN	EMB/OTHER			
Br. NO.	154								
Br. NAME	PARED	Δ			●				
RATING	A	1. Erosion of embankment at A1 side. 2. Cracks, potholes, and exposure of reinforcing bars in the deck slab in all spans.					Replacement of Bailey and pony with two spans. (2 @ 25.0 PC I-Beam) Partial replacement of deck slab (truss spans) Protection of Pier foundation. Additional Sidewalk. Reinforcement of substructure. Slope protection.		
TYPE	PONY/RCDG/TRUSS								
LENGTH	193.10								
YEAR BUILT	1976								
WIDTH	6.15								
		DETERIORATION DAMAGES		RATING		QTY. OF DAMAGE		REHABILITATION METHOD	
PAVEMENT								40 mm thickness @ curb 85/100 mm thickness @ centerline of roadway Slope = 1.5%	- River Study For Truss
CURB & RAILING								Curb height = 0.20 m from pavement	- Bridge width 6.70/6.15 m - Sidewalk : 2 0.76 m
EXPANSION JOINT								Rubber	
DECK SLAB	Cracks, potholing and exposed of rebar and patching works on all spans.			A		All spans with potholes. Truss spans with exposed rebars.		Partial replacement of deck on truss spans thickness=165 mm, f'c' = 4000 psi	
CONCRETE BEAM								Reconstruction of 2 spans: PCI 2 @ 25.0 = 5 m Type IV-A	
STEEL BEAM									
PAINTING COND.								100% of Truss members	
SHOE									
ABUTMENT								Reconstruction of Inverse T - type (H = 1 @ 8.0 m) on R.C. Pile Foundation (400x400)	
PIER								Reconstruction of wall type (H = 1 @ 15.0 m) on R. C. Pile Foundation (400x400) Foundation Protection at P2, P3 and P4	
SLOPE PROTECTION	Eroded river bank and slope protection at Approach 2.			A		Both abutments A1 & A2.		Grouted Riprap	
DRAINAGE									
APPROACH ROAD								1 x 20 m	
RIVER CONDITION	Scouring around pier foundation (P2 ~, P4)								
OTHERS	Temporary Bailey bridge installed at Approach 1 side.			A		+ 18 m (A1 - P1)			

Note:

- SL Slab
- SU Superstructure
- SUB Substructure
- FDTN Foundation
- EMB Embankment
- EMS Seriously Damage
- Partially Damage
- Minor Damage
- Δ

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (13/22)

REGION	V		DETERIORATION AND DAMAGES				REHAB. METHODS		PHOTOGRAPHS	REMARKS
	Br. NO.	19	SL	SU	SUB	FOTN	EMB	OTHER		
Br. NAME	SUJE (RIZAL)		●	●						
RATING	A	Replacement of super-structure 1 @ 12.0, PCT beam. Link slab Widening of abutment Slope protection								
TYPE	RC-SLAB									
LENGTH	12.00									
YEAR BUILT	1958									
WIDTH	7.35									
		DETERIORATION DAMAGES				RATING	QTY. OF DAMAGE		REHABILITATION METHOD	
PAVEMENT										
CURB & RAILING	Steel railing on timber postbolted to curb in bad condition.					8	50% missing 50% in bad condition			40 mm thickness @ curb 96 mm thickness @ centerline of roadway Slope = 1.5% Railing height = 1.07 m Curb height = 0.20 m from pavement
EXPANSION JOINT										Dummy joint
DECK SLAB	Cracks and evidence of repair works (patching).					A	Whole roadway area of Span 1 and Span 2.			Thickness = 127 mm
CONCRETE BEAM	Exposed rebars, spalling of all beams. All beams on one span with temporary support.					A	A1 - P1.			Replacement of superstructure Use one span 12 m precast PC-T beam
STEEL BEAM										
PAINTING COND.										
SHOE										Elastomeric bearing pads
ABUTMENT										Widening of bearing seat
PIER										
SLOPE PROTECTION										Grouted riprap
DRAINAGE										
APPROACH ROAD										Approach Road length = 20 m x 2
RIVER CONDITION										
OTHERS										

Note:

- SL Slab
- SU Superstructure
- SUB Substructure
- FOTN Foundation
- EMB Embankment
- Seriously Damage
- Partially Damage
- △ Minor Damage




DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (14/22)

REGION	Br. NO.	Br. NAME	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS
			SL	SU	SUB	FDTN	EMB			
V	78	SAN GABRIEL	●							
RATING	A	1. Excessive longitudinal cracks were observed under the deck slab. 2. Crushing of concrete at the supports due to bearing failure.								
TYPE	RC-SLAB	Replacement of superstructure (RC-slab) 3 @ 6.5 = 19.5 m Widening of pier cap. Slope protection								
LENGTH	19.50									
YEAR BUILT	1972									
WIDTH	7.50									
			DETERIORATION DAMAGES		RATING	Qty. OF DAMAGE		REHABILITATION METHOD	REMARKS	
PAVEMENT								40 - 95 mm thickness Slope 1.5%	Bridge width: 7.32 m Sidewalk: 2 @ 0.70 m	
CURB & RAILING								Railing height = 1.07 m Curb height = 0.20 m from pavement		
EXPANSION JOINT								Dummy joint		
DECK SLAB	Excessive longitudinal cracks and vibration on slab.				A			Replacement of superstructure (RC-Slab) t = 335mm		
CONCRETE BEAM										
STEEL BEAM										
PAINTING COND.										
SHOE	Damage at supports due to crushing of concrete (slab and bridge seat).				B		A1 - A2.	Elastomeric bearing pads		
ABUTMENT								Widening of bridge seat (A1 and A2)		
PIER								Widening of pier cap - (P1 and P2)		
SLOPE PROTECTION								Grouted riprap		
DRAINAGE										
APPROACH ROAD	Potholes and cracks at Approach 1 and Approach 2.				C		30% on both A1 and A2.			
RIVER CONDITION										
OTHERS										

Note:  
 SL Slab  
 SU Superstructure  
 SUB Substructure  
 FDTN Foundation  
 EMB Embankment  
 ● Seriously Damage  
 ○ Partially Damage  
 △ Minor Damage

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (15/22)

REGION	IV-A	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS
		SL	SU	SUB	FDTN	EMB			
Bf. NO.	188								
Bf. NAME	BINAHAN								
RATING	A	●	●	△	△	△			
TYPE	R.C.D.G.	1. Extensive cracking, ponding and exposure of reinforcing bars in the top and bottom of deck slab on span no.3.					Replacement of super-structure. (2 @ 14.0 RCDG)		
LENGTH	75.00	2. Shear cracks on beams particularly over the supports, three beams on pier 2 and two interior beams on pier 3.							
YEAR BUILT	6.70								
WIDTH	6.70								
		DETERIORATION DAMAGES		RATING		QTY. OF DAMAGE		REHABILITATION METHOD	
PAVEMENT									110 mm thickness @ curb 90 mm thickness @ center of roadway Slope - 1.5
CURB & RAILING									Railing height = 1.07 m Curb height = 0.20 m from top of pavement
EXPANSION JOINT									( Rubber joint)
DECK SLAB	Serious cracks and exposure of reinforcing bars at top and bottom and big hole at span no.3.				A				Thickness = 165 mm
CONCRETE BEAM	Shear cracks on three (3) beams especially at support on Pier 2 and two (2) interior beam at Pier 3.				B				Replacement of superstructure (2 spans) with 5 beams
STEEL BEAM									
PAINTING COND.									
SHOE	Shoe deteriorated on all spans.				C				Use elastomeric bearing pads
ABUTMENT									Widening bridge seat (A1 and A2)
PIER	Scouring of P1 and P2.				C				Widening of pier cap (P1, P2 and P3)
SLOPE PROTECTION									
DRAINAGE									
APPROACH ROAD									
RIVER CONDITION	Scouring around pier P2, P3								
OTHERS									

Note:

- SL Slab
- SU Superstructure
- SUB Substructure
- FDTN Foundation
- EMB Embankment
- Seriously Damage
- Partially Damage
- △ Minor Damage

Bridge width = 6.70 m  
Sidewalk = 2 @ 0.50 m


DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (16/22)

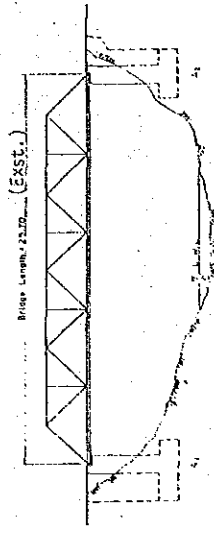
REGION	DETERIORATION AND DAMAGES				REHAB. METHODS	PHOTOGRAPHS	REMARKS	
	IV-A	SL	SU	SUB				FDTN
Br. NO.	208							
Br. NAME	STO. CRISTO	●	●	△	○	○		
RATING	A	1. Serious cracks on all beams near the supports and at intermediate points on two spans. 2. Damaged beams are now temporarily supported by timber posts. 3. Cracks and exposure of reinforcing bars in three cross beams.						
TYPE	RCOG							
LENGTH	36.00							
YEAR BUILT								
WIDTH	6.75							
		DETERIORATION DAMAGES			RATING	QTY. OF DAMAGE	REHABILITATION METHOD	
PAVEMENT								
CURB & RAILING						40 mm thickness @ curb 95 mm thickness @ centerline of roadway Slope = 1.5% Railing height : 1.07 m Curb height : 0.20 m from pavement	- Detailed Survey - Bridge width: 7.32 m - Sidewalks: 2 @ 0.76 m	
EXPANSION JOINT								
DECK SLAB						Thickness = 180 mm		
CONCRETE BEAM				A	A1 - A2 (all beams)	Replacement of superstructure utilizing wider bridge width. (3 @ 12 m RCOG, 7.32 m roadway)		
STEEL BEAM								
PAINTING COND.								
SHOE						Use elastomeric bearing pads		
ABUTMENT						Widening of seat (A <sub>1</sub> and A <sub>2</sub> )		
PIER						Widening of coping (P <sub>1</sub> and P <sub>2</sub> )		
SLOPE PROTECTION								
DRAINAGE								
APPROACH ROAD				C	20% of approach pavement.	2 x 20 m		
RIVER CONDITION								
OTHERS								

Note:

- SL Slab
- SU Superstructure
- SUB Substructure
- FDTN Foundation
- EMB Embankment
- Seriously Damage
- Partially Damage
- △ Minor Damage

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (17/22)

REGION	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS	
	IV-A	SL	SU	SUB	FDTN				EMB
Br. NO.	220								
Br. NAME	MAGAPONG	●	●						
RATING	A	1. Cracks and potholes on deck slab and asphalt pavement. 2. Steel members are rusty and partially corroded particularly the bottom chords, floor beams and stringers. 3. Carriageway width is too narrow (6.00m).							
TYPE	PONY								
LENGTH	25.70								
YEAR BUILT	1946								
WIDTH	6.00								
		DETERIORATION DAMAGES		RATING		QTY. OF DAMAGE		REHABILITATION METHOD	
PAVEMENT		Abrasion, cracking and potholes at pavement.		B		Whole area of bridge pavement		40 mm thickness @ curb 68 mm thickness @ centerline of roadway Slope = 1.5%	
CURB & RAILING		Breakage of railing.		B		30% in bad condition.		Railing height = 1.07 m Curb height = 0.20 m from top of pavement	
EXPANSION JOINT									
DECK SLAB		Cracks and potholes at bottom portion of slab.		B		A1 - A2.		Thickness = 190 mm	
CONCRETE BEAM								Use 25.7 m span prestressed concrete I-beam (Type IV)	
STEEL BEAM									
PAINTING COND.		Discoloration and rusty structural members.		A		Whole truss members (A1-A2).			
SHOE		Rusty bearing plate.		B		Width of A1 and A2.		Elastomeric bearing pads	
ABUTMENT								Reinforcement of abutment	
PIER									
SLOPE PROTECTION								Grouted riprap	
DRAINAGE									
APPROACH ROAD								30 m x 2	
RIVER CONDITION									
OTHERS		Too narrow carriageway width.		A		5.00 m. carriageway.			




Bridge width = 7.32 m  
Sidewalk: 2 @ 0.76 m

Note:


- SL Slab
- SU Superstructure
- SUB Substructure
- FDTN Foundation
- EMB Embankment
- Seriously Damage
- Partially Damage
- △ Minor Damage

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (18/22)

REGION	IV-A		DETERIORATION AND DAMAGES					REHAB. METHODS		PHOTOGRAPHS	REMARKS	
	Br. No.	San Cristobal	SL	SU	SUB	FDTN	EMB	OTHER	Qty. of Damage			REHABILITATION METHOD
	227		●	△	○				Partial replacement of deck slab. Reinforcement of floor. Repainting of truss			
	A		1. Serious cracks at bottom of deck slab. 2. Rusty condition on lower chords, cross beams and other structural members, diagonal members are bent due to vehicular collision.									
	RODG/TRUSS											
	73.60											
	YEAR BUILT											
	8.0											
			DETERIORATION DAMAGES					RATING	Qty. of Damage			
PAVEMENT										40 mm thickness @ curb 100 mm thickness @ centerline of roadway Slope = 1.5%	- Detailed Survey - Loading Test	
CURB & RAILING								B	10% missing (truss type)	Steel railing Curb height = 0.20 from pavement.	- Exist. Br. Width = 8.00 m - Sidewalks : 2 @ 0.75 - Method of construction	
EXPANSION JOINT											One lane will be utilized to accommodate traffic while the other lane is under repair.	
DECK SLAB								A	Whole area of truss bridge, P1 - P2.	Partial replacement of deck slab Provide additional stringers between the existing stringer		
CONCRETE SEAM												
STEEL BEAM								A	Whole truss bridge, P1 - P2.	Additional stringer		
PAINTING COND.								A	30% of truss members.	100% of truss members		
SHOE												
ABUTMENT												
PIER								C	P1 and P2.			
SLOPE PROTECTION												
DRAINAGE												
APPROACH ROAD												
RIVER CONDITION												
OTHERS												


Note:  
 SL Slab  
 SU Superstructure  
 SUB Substructure  
 FDTN Foundation  
 EMB Embankment  
 ● Seriously Damage  
 ○ Partially Damage  
 △ Minor Damage

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (19/22)

REGION	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS
	VIII	SL	SU	SUB	FDTN			
Br. NO.	109							- River Study - Bridge width = 7.32 m - Sidewalk = 2 @ 0.76 m
Br. NAME	JIABONG	●	●	○				
RATING	A	1. Extensive cracking and potting were observed. Especially on span no.6. Uneven and waving asphalt pavement. 2. Heavy scouring on some piers.						
TYPE	RC-SLAB					Reconstruction (PCI 3 @ 25.0m) Slope protection		
LENGTH	74.80							
YEAR BUILT								
WIDTH	6.85							
		DETERIORATION DAMAGES			RATING	QTY. OF DAMAGES	REHABILITATION METHOD	
PAVEMENT							40 mm thickness @ curb 95 mm thickness @ centerline of roadway Slope = 1:5	
CURB & RAILING							Railing height = 1.07 m Curb height = 0.20 m from pavement	
EXPANSION JOINT							Rubber joint	
DECK SLAB					A	All span.	Thickness = 190 mm	
CONCRETE BEAM					A	All span.	PCI 3 @ 25.0m. Type IV-A	
STEEL BEAM								
PAINTING COND.								
SHOE							Elastomeric bearing pads	
ABUTMENT							Reconstruction - 2 abutments of Inverse I-type (A1 and A2)	
PIER							Reconstruction wall type (2 piers)	
SLOPE PROTECTION							Grouted riprap	
DRAINAGE								
APPROACH ROAD							2 x 75 m	
RIVER CONDITION								
OTHERS								


Note:  
 SL Slab  
 SU Superstructure  
 SUB Substructure  
 FDTN Foundation  
 EMB Embankment  
 ● Seriously Damage  
 ○ Partially Damage  
 △ Minor Damage

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (20/22)

REGION	VIII	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS
		SL	SU	SUB	FDTN	EMB/OTHER			
Br. NO.	120								
Br. NAME	HINGSONGAN	△	△	●	●	●			
RATING	A	1. Serious scouring on both abutments. 2. Extensive cracks on all exposed reinforced concrete piles and some are already broken and reinforcing bars are exposed. 3. Movement (tilted) of abutment.					Reinforcement of abutment. Link slab. Slope protection Foot protection		
TYPE	S-I-8								
LENGTH	21.80								
YEAR BUILT	1975								
WIDTH	8.20								
		DETERIORATION DAMAGES		RATING		Qty. OF DAMAGE		REHABILITATION METHOD	REMARKS
PAVEMENT									
CURB & RAILING									- River study - Bridge width: 7.30 m - Sidewalk: 2 @ 0.45 m
EXPANSION JOINT									
DECK SLAB									
CONCRETE BEAM									
STEEL BEAM									
PAINTING COND.									
SHOE									
ABUTMENT	Declining abutments, exposure of reinforcing bars and extensive cracks on all R.C. pile					A		Reinforcement of abutment (A <sub>1</sub> and A <sub>2</sub> )	
PIER									
SLOPE PROTECTION	Serious scouring of slope protection on both abutments.					A		Grouted Riprap	
DRAINAGE									
APPROACH ROAD								Provide link slab	
RIVER CONDITION									
OTHERS									

Note:  
 SL Slab  
 SU Superstructure  
 SUB Substructure  
 FDTN Foundation  
 EMB Embankment  
 ● Seriously Damage  
 ○ Partially Damage  
 △ Minor Damage

DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (22/22)


REGION	DETERIORATION AND DAMAGES					RATING	QTY. OF DAMAGE	REHABILITATION METHOD	REMARKS
	Br. NO.	SL	SU	SUB	FTDN   EMB   OTHER				
VIII	160	●							
Br. NAME	JUBASAN II								
RATING	A								
TYPE	PONY								
LENGTH	44.60								
YEAR BUILT	7.38								
WIDTH	7.38								
PHOTOGRAPHS									
REHAB. METHODS	Replacement of superstructure 2 @ 22.3 PCI Reinforcement of abutment								
DECK SLAB	1. Spalling of concrete and exposed reinforcing bars on bottom of slab. 2. Steel members are rusty and corroded particularly at joints.					A		40 mm thickness @ curb 95 mm thickness @ centerline of roadway Slope = 1.5% Railing height = 1.07 m Curb height = 0.20 m from pavement	- Bridge width: 7.32 m - Sidewalk: 2 @ 0.76 m
CONCRETE BEAM	Exposed reinforcing bars and spalling at bottom slab on three (3) spans.					A		Thickness = 190 mm	
STEEL BEAM	Rusty and corroded steel members.					A		Replacement of superstructure PC I-Beam 2 @ 22.3 = 44.6m (Type IV)	
PAINTING COND.	Rusty steel members.					A			
SHOE								Elastomeric bearing pads	
ABUTMENT								Reinforcement of abutment (A1 and A2)	
PIER								Reconstruction of rigid frame type (H = 1 @ 8.50)	
SLOPE PROTECTION									
DRAINAGE									
APPROACH ROAD								2 x 30 m	
RIVER CONDITION									
OTHERS									

Note:

- SL Slab
- SU Superstructure
- SUB Substructure
- FTDN Foundation
- EMB Embankment
- Seriously Damage
- Partially Damage
- △ Minor Damage



DIAGNOSTIC RECORD OF THE 22 EXISTING BRIDGES (21/22)

REGION	VIII	DETERIORATION AND DAMAGES					REHAB. METHODS	PHOTOGRAPHS	REMARKS
		SL	SU	SUB	FDTN	EMB			
Br. NO.	161								
Br. NAME	JUBASAN I	O	●						
RATING	A	1. Exposure of reinforcing bars at deck slab. 2. Steel truss members are rusty and corroded particularly at joints of all members.					Reconstruction n of bridge (PCT 2 @ 37.0 m) Slope protection		
TYPE	TRUSS								
LENGTH	74.00								
YEAR BUILT	1972								
WIDTH	7.30								
		DETERIORATION DAMAGES			RATING	REHABILITATION METHOD			
PAVEMENT							50 mm thickness @ curb 68 mm thickness at centerline of roadway Slope = 1.5%		- Bridge width : 7.35 m - Sidewalk: 2 @ 0.76 m
CURB & RAILING							Railing height = 1.07 m Curb height = 0.20 m from pavement		
EXPANSION JOINT									
DECK SLAB							Thickness = 180		
CONCRETE BEAM							Reconstruction of bridge Prestressed T-beam		2 @ 37 = 74 m.
STEEL BEAM				A					20% of truss members are seriously corroded.
PAINTING COND.				A					90% of truss members are rusty.
SHOE							elastomeric bearing pads		
ABUTMENT							Reconstruction of inverse T-type (H = 2 @ 6.50 m) bored pile foundation (Ø1200)		
PIER							Reconstruction of wall type H = 1 @ 11.50 on bored pile foundation (Ø1200)		
SLOPE PROTECTION				C			Grouted riprap		
DRAINAGE									
APPROACH ROAD							2 x 125 m		
RIVER CONDITION									
OTHERS									

Note:  
 SL Slab  
 SU Superstructure  
 SUB Substructure  
 FDTN Foundation  
 EMB Embankment  
 ● Seriously Damage  
 ○ Partially Damage  
 △ Minor Damage



**APPENDIX 7.1**

**RESULTS OF DETAILED STRUCTURAL SURVEY**



## DETAILED SURVEY BRIDGES

BRIDGE NO.	BRIDGE NAME	BRIDGE TYPE	LOCATION	ITEMS OF DETAILED SURVEY						REMARKS
				MEASUREMENT OF MEMBERS	DETERIORATION & DAMAGES	HARDNESS TEST	CONCRETE HUMMER TEST	NEUTRALITY TEST		
14	LABANGAN I	S I B	MNR STA. 48 + 340 Calumpit , Bulacan	○	○	○	○	○	○	
58	B U E D	PONY/TRUSS RCDG/SIB	MNR STA. 211 + 453 Sison , Pangasinan	○	—	—	—	—	—	Additional
77	BAUANG I	PONY TRUSS	MNR STA. 258 + 750 Bauang , La Union	○	○	○	○	○	○	
16	ANYATAN I	RC - SLAB	PPH - NORTH STA 68 + 700 Sanldefonso , Bulacan	○	○	—	○	○	○	
208	STO. CRISTO	R C D G	PPH-South STA. 116 + 130 Sariaya , Quezon	○	○	—	○	○	○	
227	SAN CRISTOBAL	TRUSS/RCDG	PPH - South STA. 48 + 666 Calamba , Laguna	○	○	○	○	○	○	

DETAILED SURVEY OF DETERIORATION AND DAMAGES (1/3)

SR NO	BRIDGE NAME	STA.
14	LABANGAN I	48+340

(SUPER-STRUCTURE)

DESCRIPTION	MAJOR MEMBERS	SECONDARY MEMBERS	DECK SLAB		BEARING SHOE	RAILING / SIDEWALK
			TOP	BOTTOM		
PHOTOGRAPHS						
CORROSION OF STRUCTURAL STEEL	G4 between P1 and A1 - Newly painted	Between A1 and P1 - Newly painted	On expansion joint at P2	Between P1 and P1	A1	left side, near A1
CRACKING, SPALLING, LAMINATION, DISTORTION OR YIELDING	all members	all members	- Transverse cracks (3 mm) on asphalt overlay above P2 and at expansion joint at A2 (10 cm)	- Cracks due to tension force	- Newly painted	
EFFECTIVENESS OR RESTRAINT OF JOINTS	- Deflection of girder joints near pier 1 and abutment 1		at P2 and A2	3.5 m from P2 to P1 side		- Exposure of reinforcing bars of railing and cracking of sidewalk - due mainly to super-structure movement and deflection
SETTLEMENT, DEFORMATION OR ROTATION	Horizontal movement towards the center of superstructure (20 cm)			- about 5 cm gaps at construction joints		left side
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)	From A1 and A2 - Hardness Test of Flange - 130-140 HB - 2 (4700-5000 kg/cm <sup>2</sup> )		Concrete Strength - 400 kg/cm <sup>2</sup>	3.5m from P2 to P1 side	- bearing bolts are tilted at 90°	
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)	G1		at A1		at A1 and A2	
REMARKS	<p>1. Superstructure vibrates critically when heavy loaded trucks pass-by.</p> <p>2. Washed-out original concrete pier was replaced by two temporary steel piers.</p> <p>3. Steel members was not properly painted because all members still exhibit rustiness upon stripping of the new coat of paint.</p> <p>4. HB : Hardness ratio of Rinnell.</p>					

VISUAL INSPECTION

INSTRUMENTALITY INSPECTION






DETAILED SURVEY OF DETERIORATION AND DAMAGES (2/3)

		BRIDGE NAME		STA.			
		LABANGAN I		48 + 340			
(ABUTMENT)							
DESCRIPTION	PARAPHET BEARING BED	STEM	FOOTING	WING WALL	FOUNDATION	SLOPE PROTECTION	RIVER BANK
PHOTOGRAPHS							
	CRACKING, SPALLING, LAMINATION, DISTORTION OR YIELDING	A1 - No damage	A2 - Cannot be seen	A2 - Minor cracks on both sides of each abutment	A1 - Cannot be seen	A1, left side - Cracking of concrete slope protection	A1, Rs-upstream
SOIL CONDITION	A1 and A2	A1 and A2	A1 and A2	A1 and A2	A1 and A2 - Principally clay	left side - Principally supporting soil is composed clay	- Principally clay, sand and mud
SETTLEMENT, DEFORMATION OR ROTATION						A1 and A2 - Settlement of the supporting soil of concrete slope protection	Upstream, Downstream
SCOURING OR SEDIMENTATION						A1 left side - Minor scouring at both side of the abutment	- River bank protection on the one side (upstream, about 250 m)
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)	- Concrete Strength - 380 kg/cm <sup>2</sup>				A2	A1 and A2	A2, Right side
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)	A1 - Reinforcing steel not visible during testing. - Neutrality Depth - 10 mm						
REMARKS	A1						
VISUAL INSPECTION							
INSTRUMENTALITY INSPECTION							

DETAILED SURVEY OF DETERIORATION AND DAMAGES (3/3)

(PIER)

BR NO	BRIDGE NAME	STA.
14	LABANGAN I	48+240

DESCRIPTION	CAP	WALL / COLUMN	FOOTING	FOUNDATION	PROTECTION OF FOUNDATION
PHOTOGRAPHS					
	P1 - No damage	P1 - No damage	P1 - Not seen	P1 - Not seen	- Not seen
	P1 and P2	P1 and P2	P1 and P2	P1 and P2	P1 and P2
CRACKING, SPALLING LAMINATION, DISTORTION OR YIELDING					
SOIL CONDITION					
SETTLEMENT, DEFORMATION OR ROTATION					
SCOURING OR SEDIMENTATION					
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)					
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)					
REMARKS					

VISUAL INSPECTION

INSTRUMENTALITY INSPECTION

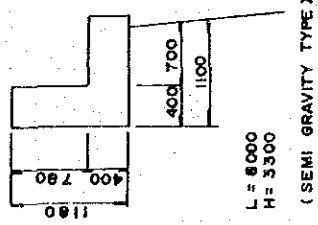
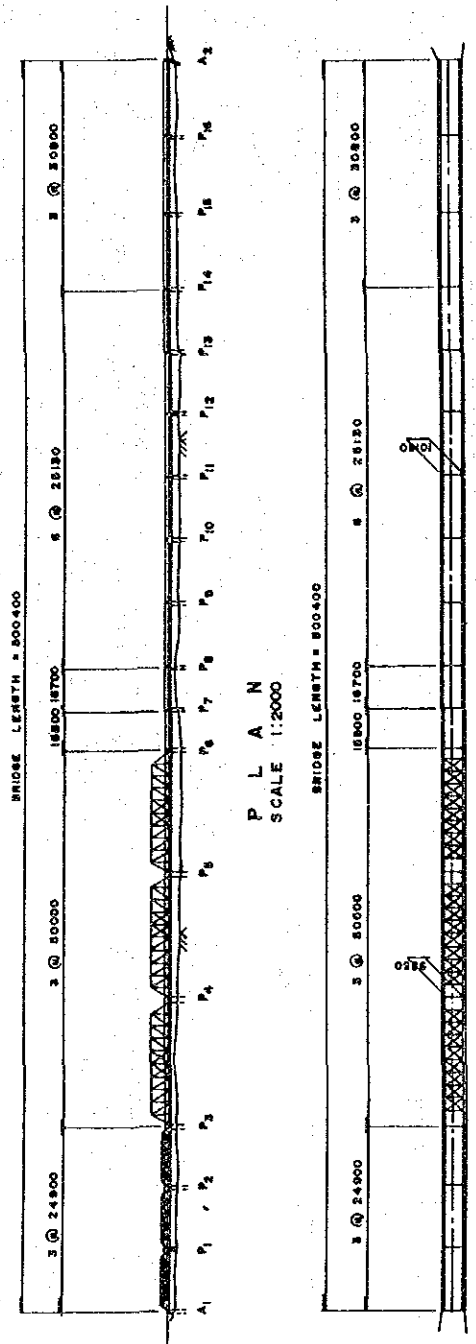




BRIDGE NO.	BRIDGE NAME	STATION
58	BUED	211 + 455

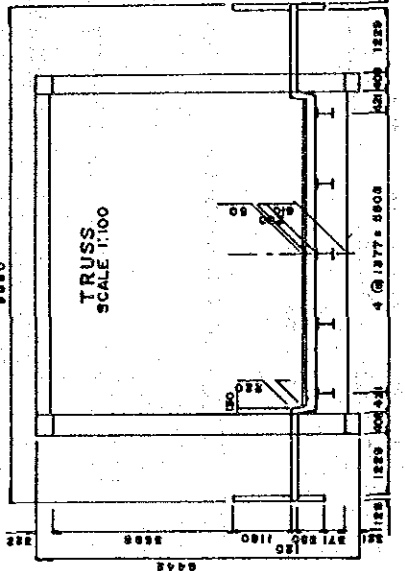
MEASUREMENT OF BRIDGE ELEMENTS

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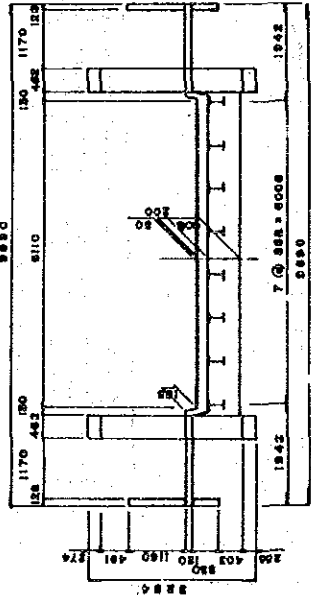


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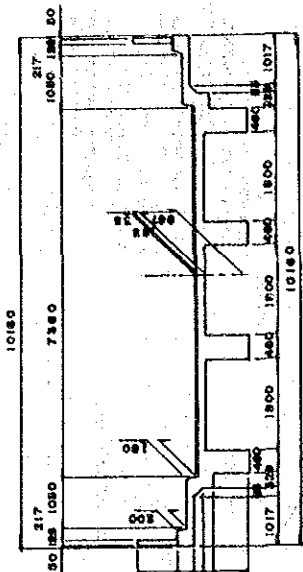
R.C.D.G.  
SCALE 1:100



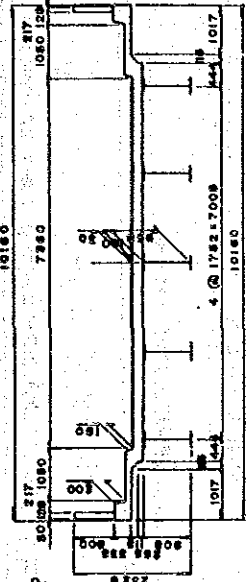
PONY  
SCALE 1:100



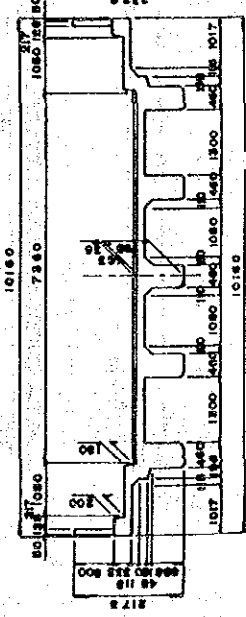
R.C.D.G.  
SCALE 1:100



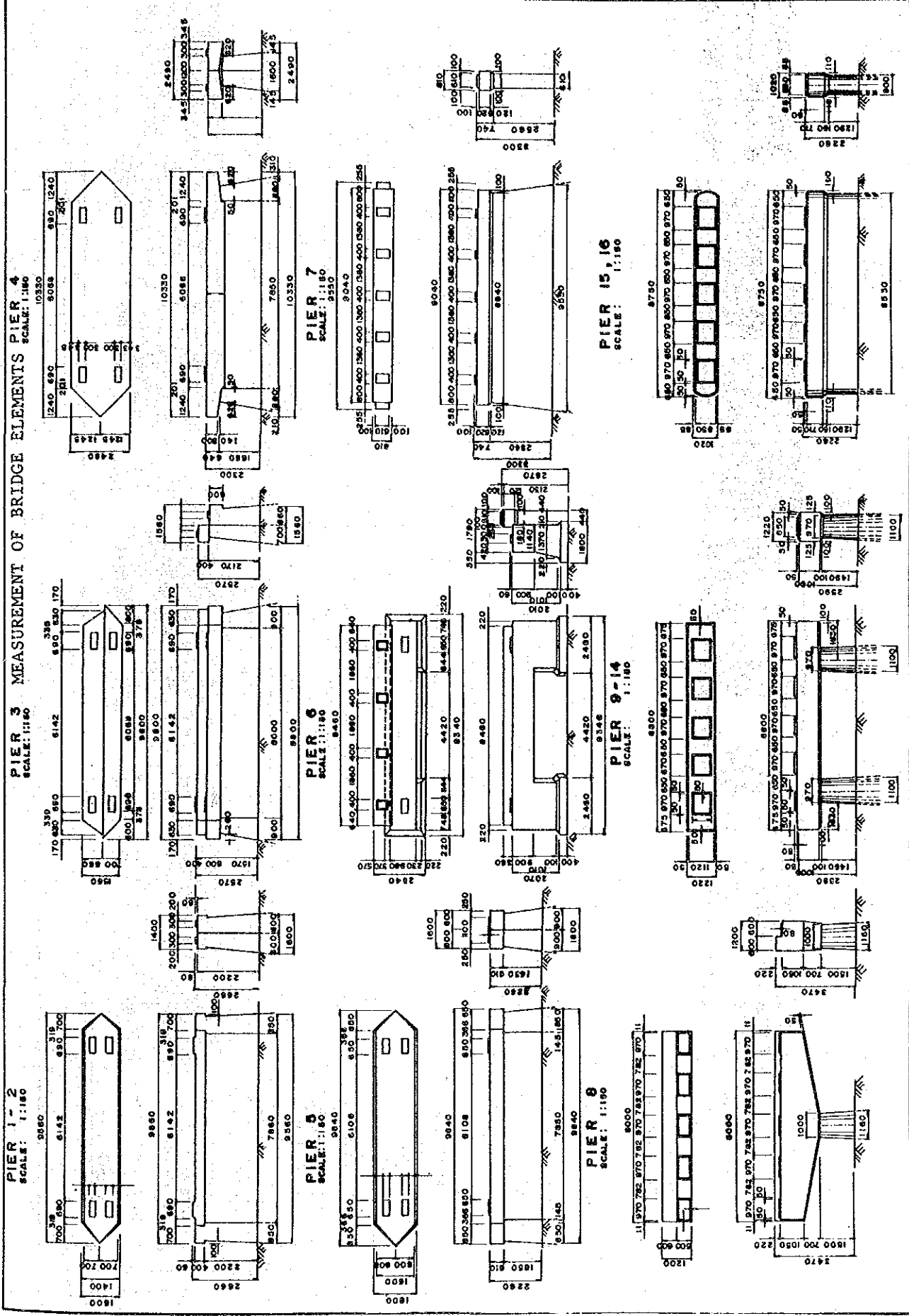
S-I-B  
SCALE 1:100



S-I-B  
SCALE 1:100









R.C.D.G.  
SCALE 1:100



DETAILED SURVEY OF DETERIORATION AND DAMAGES (1/3)

(SUPER-STRUCTURE)








BR NO. 16. BRIDGE NAME ANAYAK I. STA. 62+700

DESCRIPTION	MAJOR MEMBERS	SECONDARY MEMBERS	DECK SLAB		BEARING SHOE	RAILING/SIDEWALK
			TOP	BOTTOM		
PHOTOGRAPHS	 3rd span	 3rd span	 3rd span	 3rd span	 3rd span	 between 2nd & 3rd span
CORROSION OF STRUCTURAL STEEL	Spalling of concrete and exposure of reinforcing bars.	- All connections bolts are rusty at span 1 and 2	- No damage.	- No damage.	- Hairline cracks at railing and spalling of concrete along sidewalk.	
CRACKING, SPALLING, LAMINATION, DISTORTION OR YIELDING	span 2	Span 2	Span 2	Span 2	At P2	
EFFECTIVENESS OR RESTRAINT OF JOINTS			Three centimeter gap at expansion joint			
SETTLEMENT, DEFORMATION OR ROTATION			at P2			
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)			- Concrete Strength - 350-400 kg/cm <sup>2</sup>			
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)			Span 3			- Zero neutrality depth
REMARKS	1. Water seepage occur between channel section. 2. Deck slab and pavement are in bad condition due to extensive cracking and waving.					

DETAILED SURVEY OF DETERIORATION AND DAMAGES (2/3)

(ABUTMENT)






BRNO	BRIDGE NAME	STA.
16	ANYATAM I	66+700

DESCRIPTION	PARAPET BEARING BED	STEM	FOOTING	WING WALL	FOUNDATION	SLOPE PROTECTION	RIVER-BANK
PHOTOGRAPHS							
CRACKING, SPALLING, LAMINATION, DISTORTION OR YIELDING	A2 - No damage	A2 - No damage	A2 - Cracks occur around the wing wall of abutment	A2 - Not seen	A2 - Not seen	A1 - Severe cracking of concrete slope protection	A2
SOIL CONDITION	A1 and A2	A1 and A2	A1 and A2	A2	- Silty soil and clay	A1	- Clay and soil (ricefields on both sides)
SETTLEMENT, DEFORMATION OR ROTATION					around A1 and A2	- Settlement of concrete slope protection	Upstream & downstream
SCOURING OR SEDIMENTATION						A1	
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)							
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)							
REMARKS	- Settlement and waving at the approach road.						
VISUAL INSPECTION				INSTRUMENTALITY INSPECTION			

**DETAILED SURVEY OF DETERIORATION AND DAMAGES (3/3)**

(PIER)

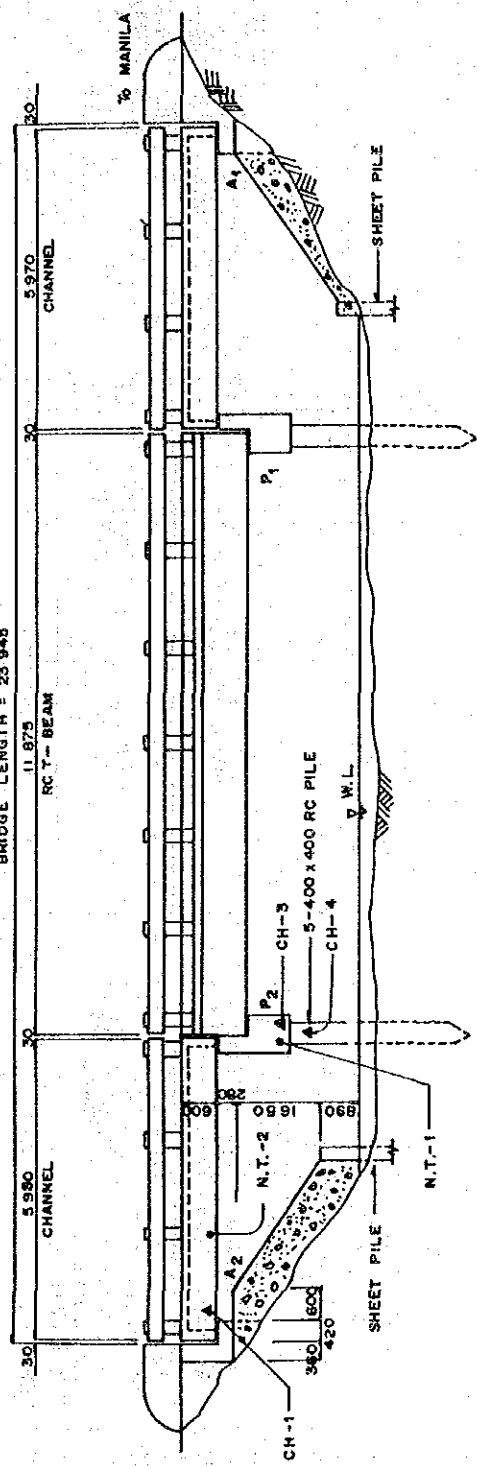
BRIDGE NO.	BRIDGE NAME	STA.
16	ANYATAM I	68+700

DESCRIPTION	CAP	WALL / COLUMN	FOOTING	FOUNDATION	PROTECTION OF FOUNDATION
PHOTOGRAPHS	 P2	 P2	 P1	 P1	 P1 and P2
CRACKING, SPALLING LAMINATION, DISTORTION OR YIELDING	- Hairline cracks and minor concrete spalling.  P2	- No damage  P1 and P2	- Not seen  P1 and P2	- Not seen  P1 and P2	_____
SOIL CONDITION	_____	_____	- Silty soil and clay  around P1 and P2	- Silty soil and clay  around P1 and P2	- Silty soil and clay  around P1 and P2
SETTLEMENT, DEFORMATION OR ROTATION	_____	_____	_____	- Rotation of piles on piers (2 piles each)  P1 and P2	_____
SCOURING OR SEDIMENTATION	_____	_____	_____	_____	_____
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)	- Concrete Strength - 450 kg/cm <sup>2</sup> -  P2	_____	_____	Concrete Strength - 480 kg/cm <sup>2</sup> -  P2	_____
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)	- Reinforcing steel not visible during testing. - Zero neutrality depth  P2	_____	_____	_____	_____
REMARKS	P2				
VISUAL INSPECTION					
INSTRUMENTALITY INSPECTION					

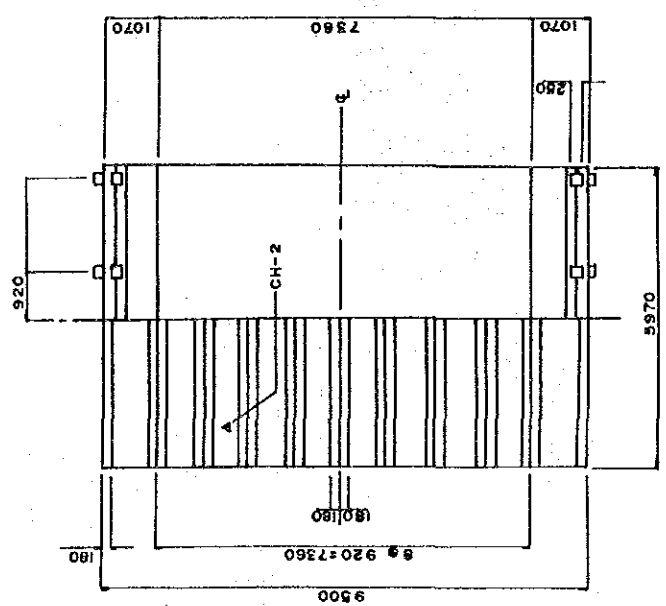
BRIDGE NO	BRIDGE NAME	STATION
16	ARYAYAM-1	68 + 700

PROFILE MEASUREMENT OF BRIDGE ELEMENTS

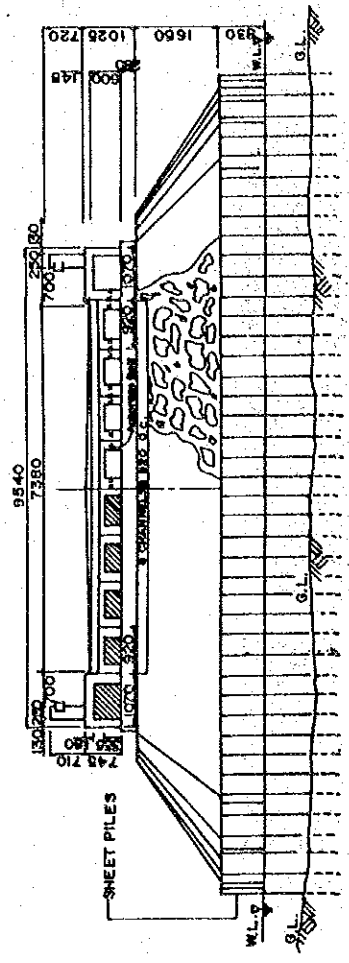
BRIDGE LENGTH = 23 945



PLAN



CROSS SECTION



NOTE:

- N.T. - NEUTRALITY TEST
- N.T.-1, NON CORROSION OF REINFORCING STEEL. NEUTRALITY DEPTH 0mm.
- N.T.-2, REINFORCING STEEL NOT VISIBLE. NEUTRALITY DEPTH 0mm.



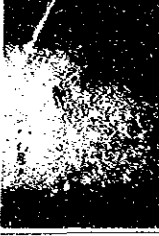



C.H. - CONCRETE HUMMER TEST.

- C.H.-1, 2, MAJOR MEMBERS 350 ~ 400 Kg/Cm<sup>2</sup>
- C.H.-3, PIER (P2) 450 Kg/Cm<sup>2</sup>
- C.H.-4, PILE 480 Kg/Cm<sup>2</sup>

DETAILED SURVEY OF DETERIORATION AND DAMAGES (1/3)

BRIDGE NAME	STA.
BAUJANG 1	258+730

(SUPER-STRUCTURE)







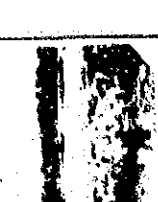
DESCRIPTION	MAJOR MEMBERS	SECONDARY MEMBERS	DECK SLAB		BEARING SHOE	RAILING/SIDEWALK
			TOP	BOTTOM		
PHOTOGRAPHS						
CORROSION OF STRUCTURAL STEEL	1st span, lower chord - Lower chord totally corroded and partial desintegration of sections. all spans	1st span - Corroded cross-beams and stringers and partial desintegration of sections. all spans	1st span	1st span	Al - Very rusty and corroded.	4th span - Rusty and deformed structural steel members.
CRACKING, SPALLING, LAMINATION, DISTORTION OR YIELDING	all spans	all spans	- Cannot be seen due to new Asphalt Concrete Overlay all spans	- Spalling of concrete and exposure of reinforcing bars. 1st spans	Al	4th span - Spalling of concrete and exposure of reinforcing bars at curbs.
EFFECTIVENESS OR RESTRAINT OF JOINTS	- Bolted connections were observed to be adequate but very rusty and some sections are very corroded. all spans	- Additional cross-beams were observed showing the inadequacy of joints at cross-beams and stringers. 1st and 3rd spans	all spans	all spans	Al	all spans
SETTLEMENT, DEFORMATION OR ROTATION	all spans	- Settlement of stringer and cross-beam joints. PI	all spans	- Inadequate restraint of bearing joint. all spans	Al	all spans
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)	1st span Top Chord 140-150 HB - 5200 kg/cm <sup>2</sup>	1st span	Concrete strength - 400 kg/cm <sup>2</sup>	- Deformation at construction points. 1st span	Al	all spans
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)	1st span	1st span	1st span - Neutrality Depth - 10 mm	1st span	Al	all spans
REMARKS	1. Almost all structural members are very rusty, corroded and partially desintegrated. 2. Inadequate restraint of joints causing the bridge to vibrate abnormally whenever heavily loaded trucks pass by. 3. Corroded reinforcing bars at the bottom of deck slab was observed during the conduct of neutrality test (Chemical Test). 4. HB : Hardness ratio of Brinell.					



DETAILED SURVEY OF DETERIORATION AND DAMAGES (2/3)

BRN#	BRIDGE NAME	STA.
77	BAWANG I	258+730






(ABUTMENT)

DESCRIPTION	PARAPHET BEARING BED	STEM	FOOTING	WING WALL	FOUNDATION	SLOPE PROTECTION	RIVER BANK
PHOTOGRAPHS							
CRACKING, SPALLING, LAMINATION, DISTORTION OR YIELDING	A1,RS - Serious cracks at parapet. - Crushed bearing bed.	A1,LS - Tortoise cracks at abutment column.	A1,RS Not seen	A1,RS - No damage	A1,RS - Not seen	A1,LS - Cracking of concrete slope protection due to settlement.	A1,RS
SOIL CONDITION	A1	A1			- Silty sand, clay and gravel.	A1 and A2 - Clay, gravel and boulders	A1 side, upstream
SETTLEMENT, DEFORMATION OR ROTATION	- Rotation of bearing base plate.					- Settlement of supporting soil of concrete slope protection.	
SCOURING OR SEDIMENTATION	A1				- Scoured river bed at abutment	A1 and A2 - Partially scoured slope protection	- Boulder spur dike at about 100 m upstream from A1 scoured river banks.
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)	- Concrete strength - 290 Kg/cm <sup>2</sup>				A1 and A2	A1 and A2	A1 side, upstream
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)	- Reinforcing bar not visible during testing. - Neutrality depth - 10 mm						
REMARKS	1. Cracking of concrete can be observed on most parts of the abutment. 2. Boulder spur dike was constructed on the river bank (upstream side) due to the scouring action of the river current and fast flood velocity.						
VISUAL INSPECTION							
INSTRUMENTALITY INSPECTION							

DETAILED SURVEY OF DETERIORATION AND DAMAGES (3/3)

(PIER)

BRIDGE NAME	BAUANG I	STA.	288+730
BR NO	77		


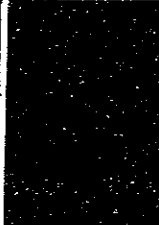
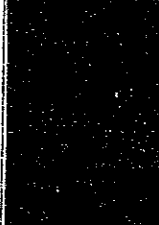
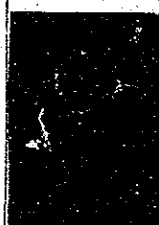

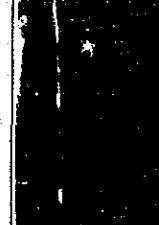
DESCRIPTION	CAP	WALL / COLUMN	FOOTING	FOUNDATION	PROTECTION OF FOUNDATION
PHOTOGRAPHS					
	P4, RS	P2	P1	P1	P1 and P2
CRACKING, SPALLING LAMINATION, DISTORTION OR YIELDING	- Minimal distance of pier cap from bearing	- Hairline cracks at pier wall and column	- Spalling of concrete	- Not seen	- No damage
SOIL CONDITION	all piers	P1	P1	all piers	all piers
SETTLEMENT, DEFORMATION OR ROTATION	- Not observed	- Not observed	- cannot be observed	- cannot be observed	- cannot be observed
SCOURING OR SEDIMENTATION	P1	P1	P1	all piers	all piers
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)	- Concrete Strength - 380 kg/cm <sup>2</sup>		- Scouring of concrete at each pier	- Not seen	- not seen
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)			all piers	all piers	all piers
REMARKS	Sedimentation of the river bed especially around piers in the last three spans causing the flow of water to change course.				



**DETAILED SURVEY OF DETERIORATION AND DAMAGES (1/3)**

(SUPER-STRUCTURE)







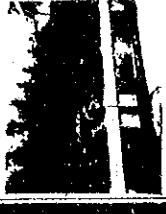
BRIDGE NO.	BRIDGE NAME	STA.
208	STO. CRISTO	116+120

DESCRIPTION	MAJOR MEMBERS	SECONDARY MEMBERS	DECK SLAB		BEARING SHOE	RAILING / SIDEWALK
			TOP	BOTTOM		
PHOTOGRAPHS	 on P1, 2nd span at G1	 on P2, between G3 & G4	 2nd span	 2nd span	 A2, left side of G2	 between 2nd & 3rd span
CORROSION OF STRUCTURAL STEEL	—	—	—	—	—	—
CRACKING, SPALLING, LAMINATION, DISTORTION OR YIELDING	- Shearing cracks at support portion of second span girders. 2nd span	- Severe cracking and exposure of reinforcing bars at second span cross beams. C2	- Cracking and spalling of concrete due to lack of wearing surface on top of the deck slab. all spans	- Tortoise cracks between girders due to settlement and water seepage. P2	- No bearing shoe A1 and A2	- No damage All spans
EFFECTIVENESS OR RESTRAINT OF JOINTS	—	—	- Five centimeter gaps at construction joints all spans	- Deflection of beams due to over-stress	—	—
SETTLEMENT, DEFORMATION OR ROTATION	- Settlement at support portion of 2nd span girders. 2nd span	- Settlement of 2nd span cross beams C2, 2nd span	- Settlement of deck slab between 2nd & 3rd spans	- Deformation at the bottom portion of deck slab. P2	—	—
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)	- Concrete Strength - 380-450 kg/cm <sup>2</sup> 1st span	—	—	—	—	—
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)	- Reinforcing steel not visible during testing - Neutrality Depth - 15 mm G1, 1st span	—	—	—	—	—
REMARKS	1. Severe cracking and spalling of concrete as well as exposure of reinforcing bars at beams near supports and at intermediate points of two spans. 2. Tension cracks on the upper portion at the beam of 1st and 2nd spans.					

DETAILED SURVEY OF DETERIORATION AND DAMAGES (2/3)

BRN2	BRIDGE NAME	STA.
208	STO. CRISTO	116 + 130

(ABUTMENT)

DESCRIPTION	PARAPET BEARING BED	STEM	FOOTING	WING WALL	FOUNDATION	SLOPE PROTECTION	RIVER BANK
PHOTOGRAPHS							
	A1, left side - Cracks at bearing bed	A2 - Spalling of concrete - Water seepage	A2, left side - Minor cracks	A1, left side - No damage	A2, left side - Not seen	A1, left side - Spalling of concrete slope protection	downstream side
SOIL CONDITION	A1 and A2	A2	A2, left side - Clay, gravel boulders and clayey sand at abutments	A1, left side	A1 & A2 - Clay, gravel, boulders and clayey sand at abutments	A1, left side	- Soil, clay, gravel and boulders at the upstream and downstream side
SETTLEMENT, DEFORMATION OR ROTATION			A1 and A2		A1 and A2		Upstream & downstream
SCOURING OR SEDIMENTATION			- Sedimentation at abutments		- Sedimentation at abutments		- No water
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)		- Concrete Strength - 380 kg/cm <sup>2</sup>	A1 and A2		A1 and A2		Upstream & downstream
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)		A2					
REMARKS	1. Existing slope protection at A1 also acts as support for G2 and G3 giving rise to tensions cracks on these beams.						



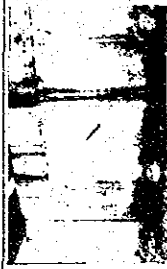


VISUAL INSPECTION

INSTRUMENTALITY INSPECTION

DETAILED SURVEY OF DETERIORATION AND DAMAGES (3/3)

(PIER)

BRIDGE NO.	BRIDGE NAME	STA.
208	STO. CRISTO	116+130

DESCRIPTION	CAP	WALL / COLUMN	FOOTING	FOUNDATION	PROTECTION OF FOUNDATION
PHOTOGRAPHS	 P1	 P1	 P1	 P1	 P2
CRACKING, SPALLING LAMINATION, DISTORTION OR YIELDING	- Severe spalling of concrete and exposure of reinforcing bars	- Spalling and exposure of reinforcing bars at pier column	- Not seen	- Not seen	_____
SOIL CONDITION	P1	P1	- Clay, gravel and boulders around piers	- Clay, gravel and boulders around piers	_____
SETTLEMENT, DEFORMATION OR ROTATION	_____	_____	- all piers	- all piers	_____
SCOURING OR SEDIMENTATION	_____	_____	_____	- Limited clearance due to sedimentation	_____
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)	_____	- Concrete Strength - 420 kg/cm <sup>2</sup>	_____	P2	_____
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)	_____	- Reinforcing steel not visible during tests. - Neutrality Depth - 20 mm	_____	_____	_____
REMARKS	1. Heavily damaged beams are temporarily supported by coconut post at P2.				

VISUAL INSPECTION

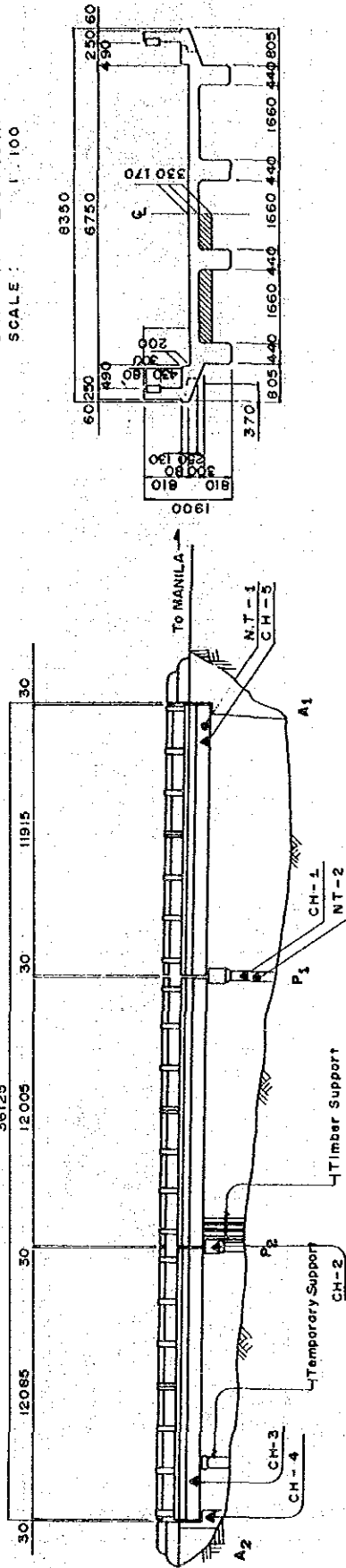
INSTRUMENTALITY INSPECTION

MEASUREMENT OF BRIDGE ELEMENTS

PROFILE  
SCALE: 1:200

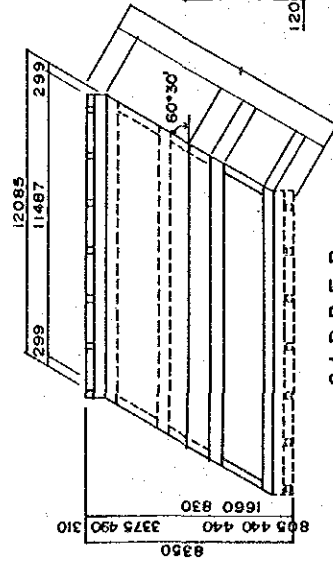
BRIDGE NO. 208  
BRIDGE NAME STO. CRISTO  
STATION 116 + 130

CROSS SECTION  
SCALE: 1:100

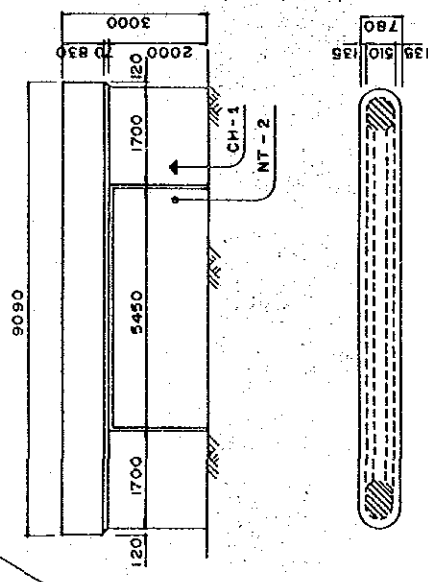


NOTE:  
1. CONCRETE HAMMER TEST (CH)  
CH-1 PIER 1 420 kg/cm<sup>2</sup>  
CH-2 PIER 2 380 kg/cm<sup>2</sup>  
CH-3 GIRDER No.3 SPAN 400 kg/cm<sup>2</sup>  
CH-4 ABUTMENT 380 kg/cm<sup>2</sup>  
CH-5 GIRDER No.1 SPAN 380 kg/cm<sup>2</sup>  
2. NEUTRALITY TEST (N.T.)  
NT-1 GIRDER NEUTRALITY DEPTH 25 mm  
NT-2 PIER 1 NEUTRALITY DEPTH 20 mm

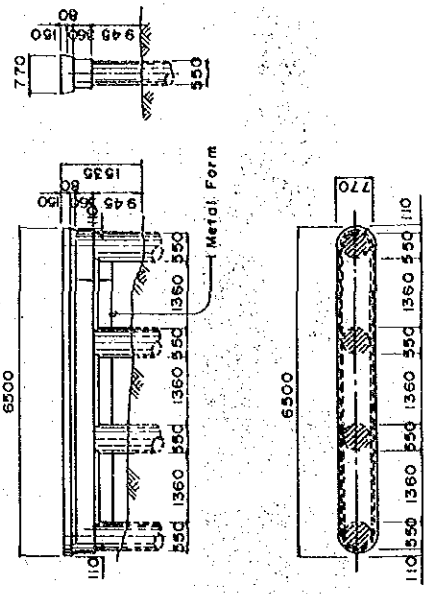
PLAN  
SCALE: 1:200



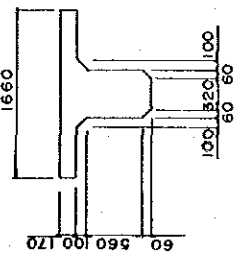
PIER 1  
SCALE: 1:100



TEMPORARY SUPPORT  
SCALE: 1:100






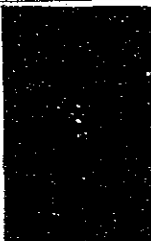


GIRDER  
SCALE: 1:50



**DETAILED SURVEY OF DETERIORATION AND DAMAGES (1/3)**

BRIDGE NO.	BRIDGE NAME	STA.
227	SAN CRISTOBAL	48+660

(SUPER-STRUCTURE)








DESCRIPTION	MAJOR MEMBERS	SECONDARY MEMBERS	DECK SLAB		BEARING SHOE	RAILING/SIDEWALK
			TOP	BOTTOM		
PHOTOGRAPHS						
CORROSION OF STRUCTURAL STEEL	Lower Chord - Structural steel members are in an advanced state of corrosion.	Upper brace - Secondary members are rusty	2nd span	2nd span	P1 Rusty bearing	2nd span - Rusty steel railing. Temporary railway (3-4) both sides
CRACKING, SPALLING, LAMINATION, DISTORTION OR YIELDING	all members	all members - Addition of floor beams (4-5)(5-6)(6-7)(7-8)	Transverse cracks - Severe cracks that may lead into the formation of pothole - Visible patching (repair of pothole)	Transverse cracks - Circular cracks that lead into the formation of pothole - Temporary (wood) repair of pothole	P1 and P2	2nd span
EFFECTIVENESS OR RESTRAINT OF JOINTS		2nd span	(2-3) Manila side	(2-3) Manila side - Water seepage at all spans - Exposure of reinforcing steel bars at midspan		
SETTLEMENT, DEFORMATION OR ROTATION		- Deformation of members		(2-3) Manila side		
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)	- Hardness Test TOP CHORD 140-160HB (5200 kg/cm <sup>2</sup> ) LOWER CHORD 130 HB (4800 kg/cm <sup>2</sup> )	All members - Cross Beam - 160 HB (5,500 kg/cm <sup>2</sup> )				
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)	2nd span	2nd span	2nd span	2nd span		
REMARKS	1. HB : Hardness ratio of brinell 2. Rusty condition of lower chords, beams and other structural members; diagonal members are bent due to vehicular collision.					



DETAILED SURVEY OF DETERIORATION AND DAMAGES (2/3)

(ABUTMENT)






BRN2	BRIDGE NAME	STA.
227	SAN CRISTOBAL	48+660

DESCRIPTION	PARAPHET BEARING BED	STEM	FOOTING	WING WALL	FOUNDATION	SLOPE PROTECTION	RIVER BANK
PHOTOGRAPHS	 A2	 A2	 A2	 A2	 A2	 A2	 downstream
	- CRACKING, SPALLING, LAMINATION, DISTORTION OR YIELDING	- Hairline cracks A2	- No damage	- No damage A1 and A2	- Not seen A1 and A2	- No damage A2, RS - Silty sand, clay and gravel	
	SOIL CONDITION						
	SETTLEMENT, DEFORMATION OR ROTATION						
	SCOURING OR SEDIMENTATION						
	NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)	- Concrete Strength - 360 kg/cm <sup>2</sup> A2					
	IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)						
	REMARKS						
VISUAL INSPECTION							
INSTRUMENTALITY INSPECTION							

DETAILED SURVEY OF DETERIORATION AND DAMAGES (3/3)

(PIER)

BR NO	BRIDGE NAME	STA.
227	SAN CRISTOBAL	48+560

DESCRIPTION	CAP	WALL / COLUMN	FOOTING	FOUNDATION	PROTECTION OF FOUNDATION
PHOTOGRAPHS	 P2	 P1	 P1	 P1	 P1
CRACKING, SPALLING LAMINATION, DISTORTION OR YIELDING	- Disintegration of concrete  Manilla side			- Not seen	
SOIL CONDITION					
SETTLEMENT, DEFORMATION OR ROTATION					
SCOURING OR SEDIMENTATION					
NON-DESTRUCTIVE TEST TO CONFIRM THE STRENGTH (HARDNESS TEST)		- Concrete strength - 350 kg/cm <sup>2</sup>			
IN-SITU TEST TO DETECT THE NEUTRALITY OF CONCRETE (CHEMICAL TEST)		P2 - Reinforcing steel not visible during testing - Neutrality Depth - 10 mm			
REMARKS	- Steel support seen at pier 2 (Galamba side).				

VISUAL INSPECTION

INSTRUMENTALITY INSPECTION

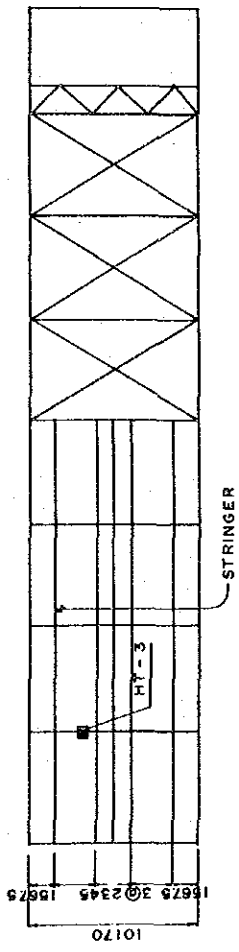
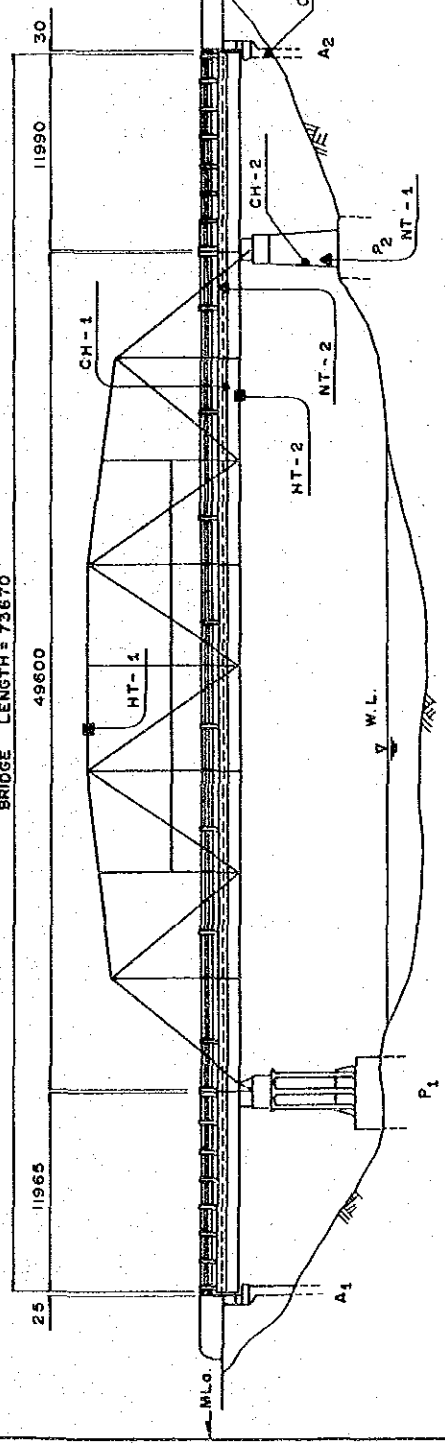
BRIDGNO.	BRIDGE NAME	STATION
227	SACRISTOBAL	48 + 666

MEASUREMENT OF BRIDGE ELEMENTS

PROFILE  
SCALE: 1:300

CROSS SECTION  
SCALE: 1:200

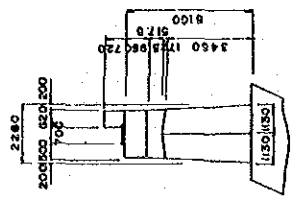
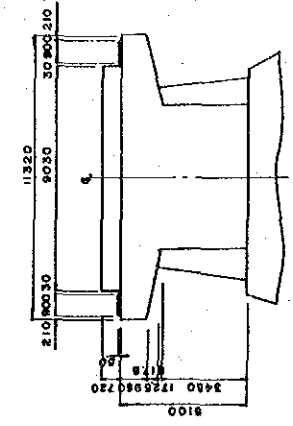
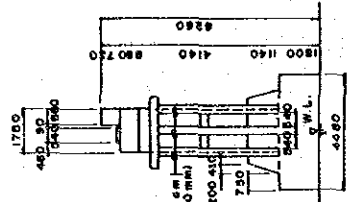
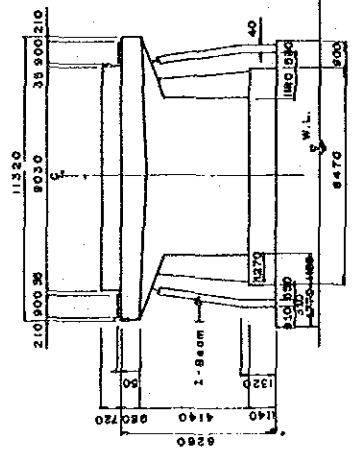
BRIDGE LENGTH = 73670



NOTE:

- HARDNESS TEST (HT):
  - HT-1 TOP CHORD 140 150HB (5200 kg/cm.)
  - HT-2 LOWER CHORD 130 HB (4800 kg/cm.)
  - HT-3 CROSS BEAM 160 HB (5500 kg/cm.)
- CONCRETE HAMMER TEST (CH)
  - CH-1 SLAB 470 kg/cm<sup>2</sup>
  - CH-2 P2 350 kg/cm<sup>2</sup>
  - CH-3 A2 360 kg/cm<sup>2</sup>
- NEUTRALITY TEST (NT)
  - NT-1 PIER 2 NEUTRALITY DEPTH 50mm
  - NT-2 SLAB NEUTRALITY DEPTH 20mm

PIER 1  
SCALE: 1:200





**APPENDIX 7.2**

**RESULTS OF GEOTECHNICAL SURVEY**





## RESULTS OF GEOTECHNICAL SURVEY (2/4)

HIGHWAY : National Highway  
 SECTION : Manila North Road  
 REGION : 1  
 BRIDGE NO. : 58  
 BRIDGE NAME : AGED Bridge  
 LOCATION : Sison, Pangasinan

DEPTH METER	LUB SYMBOL	DESCRIPTION OF MATERIALS	CLASSI- FICATION	SLOW COUNT, N							NATURAL MOISTURE CONTENT (M.M.C)	LIQUID LIMIT (LL)	UNCOMPRESSED STRENGTH (kg/cm <sup>2</sup> )
				0	10	20	30	40	50	60			
0													
1		Very dense, dark brown, coarse to fine sandy gravel, trace of silt	GM							23	5		
2										25	3		
3											60/1A	5	
4											95/21	5	
5											60/3	7	
6											50/5	No	Recovery
7											60/1	No	Recovery
		END OF BOREHOLE											

NOTE: 20-25/20

## RESULTS OF GEOTECHNICAL SURVEY

HIGHWAY : National Highways  
 SECTION : Manila - Alacapan  
 REGION : 11  
 BRIDGE NO. : 139  
 BRIDGE NAME : Chinowan Bridge  
 LOCATION : Ivucacaran, Cagayan

DEPTH METER	LUB SYMBOL	DESCRIPTION OF MATERIALS	CLASSI- FICATION	SLOW COUNT, N							NATURAL MOISTURE CONTENT (M.M.C)	LIQUID LIMIT (LL)	UNCOMPRESSED STRENGTH (kg/cm <sup>2</sup> )
				0	10	20	30	40	50	60			
0													
1		Loose, light brown, medium to fine silty sand	SM								4		
2											3		
3		Medium dense, light brown, gravelly sand; trace of silt.	SM								4		
4										50/10	3		
5										60/1A	5		
6		Very dense, dark brown, gravelly sand coarse to fine grained; little silt.	SM								15		
7											9		
8			SM								85	12	
9											14		
10											73	10	
11											60/3	No Recovery	
12		END OF BOREHOLE											



### RESULTS OF GEOTECHNICAL SURVEY (3/4)

HIGHWAY : National Highway  
 SECTION : Manila North Road  
 REGION : III  
 BRIDGE NO. : 14  
 BRIDGE NAME : Labanan Bridge  
 LOCATION : Calicut, Bulacan

DEPTH (m)	LOG SYMBOL	DESCRIPTION OF MATERIALS	CLASSIFICATION	--- BLOW COUNT, N							NATURAL MOISTURE CONTENT (w, %)	LIQUID LIMIT (LL, %)	UNCOMPRESSED COMPRESSIVE STRENGTH (kg/cm <sup>2</sup> )
				0	10	20	30	40	50	60			
0										18	30	-	
1		Medium stiff, light brown, Sandy silt, with low plasticity	M							18	27	-	
2										21	33	-	
3										26	29	-	
4										28	37	-	
5		Loose, dark brown, silty sand trace of gravel	SH							39	52	-	
6		Medium stiff, grayish brown, silt, with medium plasticity	ML							37	47	0.303	
7		Soft, dark gray, clay, highly plastic, little sand	CH							61	35	-	
8		Soft dark gray, sandy clay, with low plasticity	CL							40	23	0.431	
9										46	33	-	
10		Soft dark gray, clayey silt, with medium to high plasticity	ML							48	40	-	
11										77	55	0.162	
12										49	39	-	
13										No Recovery			
14		Loose, dark gray, silty sand, trace of gravel with shell fragments	SH							42	-	-	
15										41	50	-	
16										45	49	-	
17										33	-	-	
18										66	62	0.603	
19		Soft, dark gray, clayey silt, with medium plasticity, with shell fragments	ML							75	79	-	
20										25	72	-	
21										95	75	0.485	
22										77	77	-	
23										82	86	0.319	
24										64	-	-	
25		Soft, dark gray, clayey silt, with low plasticity, with shell fragments	ML							49	47	-	
26										38	35	0.305	
27		Medium dense, dark gray, silty sand, trace of gravel	SH							45	28	-	
28		Stiff, dark gray, clayey silt, with medium plasticity	ML							58	84	-	
29										35	32	0.584	
30										39	33	-	
31										36	-	-	
32		Medium dense, dark gray, silty sand, trace of gravel	SH							55	-	-	
33		Stiff, dark gray, clayey silt, with medium plasticity	ML							34	40	-	
34										39	37	1.244	
35										43	29	-	
36		Hard, brownish gray, clay								84	36	-	
37		Stiff, yellowish gray sandy silt	ML							38	36	1.166	
38		Stiff, yellowish gray, sandy silt	ML							35	34	-	
39										32	37	-	
40										31	75	-	
41										43	76	-	
42		Dense to very dense, brownish gray to dark gray, silty sand little gravel	SH							57	63	-	
43										53	46	-	
44										22	-	-	
45										31	31	-	
46										11	-	-	
47		END OF BOREHOLE											

## RESULTS OF GEOTECHNICAL SURVEY (4/4)

HIGHWAY: National Highway  
 SECTION: Manila North Road  
 REGION: 1  
 BRIDGE NO.: 77  
 BRIDGE NAME: Sauno II Bridge  
 LOCATION: Baumg. La Union

DEPTH (ft.)	COR. SYMBOL	DESCRIPTION OF MATERIALS	CLASSIFICATION	0 — BLOW COUNT, N						NATURAL MOISTURE CONTENT (IN. W.C.)	LIQUID LIMIT (LL)	UNCONFINE D COMPRESSIVE STRENGTH (QUI)
				0	10	20	30	40	50			
0												
1		Loose dark brown, silty fine sand	SM							22	-	-
2										23	-	-
3		Loose, dark brown, coarse to fine silty sand and gravel	SM							17	-	-
4										43	61	-
4		Soft, dark brown, clayey silt, with medium plasticity	MH							53	55	0.402
5										12	-	-
5		Medium dense, dark gray, silty sand, some gravel	SM							6	-	-
6										5	-	-
6		Medium dense, dark gray, sandy gravel	SP							35	45	-
7										35	36	1.277
8		Medium stiff, dark gray, clay with medium plasticity; little sand	CL							30	33	1.352
9										28	30	1.352
9										46	26	-
10										45	41	-
10		Stiff, dark gray, silt with medium plasticity; little sand	ML							35	35	2.150
11										37	42	-
12										38	44	-
13										35	41	-
13		Stiff, dark gray, silt with medium plasticity; little sand	ML							23	33	-
14										23	33	-
15		Dense, dark gray, medium to fine silty sand; trace of gravel	SM							23	-	-
16										22	-	-
17										17	-	-
18										21	-	-
19										14	-	-
20										17	-	-
20		Very stiff dark gray, clay, medium to highly plastic	CH							17	-	-
21										26	53	-
22										33	56	-
23										42	113	-
24										40	100	-
25										34	44	-
25		Very stiff, dark gray, clay, with medium plasticity	CL							42	45	-
26										25	47	-
26										25/25	40	-
27										31	33	-
28										29	38	-
29										29	38	-
30		Dense dark gray, silty fine sand; trace of gravel	SM							24	-	-
31										27	36	-
32		Very stiff, dark gray sandy silt	ML							114	15	-
33										53	14	-
34		Very dense, dark gray, silty sand and gravel	SM							71	10	-
35												
		END OF BOREHOLE										

NOTE: See page 2