CHAPTER 8

OVERALL EVALUATION OF BRIDGE CONDITION

Appendix 8.6.1-1 (1/20) OVERALL EVALUATION OF BRIDGE CONDITION

-	ation/Name of Road	Manila City		DELFAN	BRIDGE (UPSTR		Year Constructed	1965		
1.464		Bonifacio D	rive				Test constructed	1965		
	Elevation			57		46000				
	ength of Bridge		Doced RSB @ bot. of girder due to truck collision:	Bottom of Box Girder (C	Gerber). Spall wi Exposed RSB.	Expension	jour @ gener: Spaling with e	ixposed rebara.		
		1					Lane Width	3.70m		
Su	erstructure Type		PC Gerber Box Girder Bridge (5-Span)		Substructure Type	Abutment: Wa	il ((timber pile)), Pier: Wal	l ((timber pile))		
		Members	Location of Damaged Parks	Damage		Reason for As				
		memoera		Assessment *1	a. 7					
			"Span 1: Bottom of box girder (Abut 1)	н	0.5m ² spalling of concrete with exposed passing trucks resulting to collision.	d rebars observed due to ins	sufficient vertical clearance, 4.38n	1 < 4.9m < 5.0m, for		
		e PC BOX GIRDER	*Span 1: Bottom of box girder at midspan	н	More than 2m ² of honeycomb was mea					
			*Span 1: Bottom of box girder	н	3.85m ² of spalling was observed with ex- collision .	xposed rebars due to insulfi	cient vertical clearance for passin	g trucks resulting to		
	Superstructure		*Span 2: Sidelace of web (Pier 2)	н	There are many locations of spalling with	th exposed rebars at bottom	of girder.			
			*Span 3: Bottom of box ginder at gerber	я	There are 5 locations of spalling with e	exposed rebars at gerbers 1	and 2.			
			*Span 3: Gerber Hinge	м	0.15m ² to 0.30m ² spalling was measure		am box			
\$2		DECK SLAB	*Span 1: Bottom of box girder *Span 2: Bottom of box girder	S	0.13mm hairline cracks on many locatio 0.05mm hairline cracks and freelime in r			-		
aupun		DEC		м		in gradient				
Structural Soundness	Substructure	ABUTMENT	"Span 1: Whole Abutment A	м	Discoloration of surface is observed ove	er the entire abutment due to	o unsealed expansion.			
	Substructure			β,	Span 3: Pier 3 body	м	0.4mm wide vertical crack is observed fr	rom top to bottom of Pier		
		PIER	Span 3. Pier 3	м	1.2m ² of spalling with exposed rebars w	as observed due to vessel o	collision.			
				s	Maximum inclination at A1 is 1.1 degree	s > 1.0 degree: Alicwable in	clination angle JRA. In-depth sur	vey necessary.		
	Foundation							-		
	Accessory	Span 1: Bearing Shoe		м	Corrosion spread over all bearing	g shoes of Abut 1 & Pie	er 1.			
	Diagnosis Evaluation	Category "B"	: Repairs necessary for box girder concrete damage, s : In-depth study necessary to mitigate vertical clerance	of side span road	bars and cracks sealing. under crossing					
		* No as-built drawnos	: In-depth study necessary to check Abutment AI 1.1 de Pier and foundation insufficient under present sesmic design requirement	egree inclination						
ter	Seismic Resistance		sary to determine required strengthening.	a. moustais varietaurity						
Disas	Wind Resistance	Not critical to win	nd action - Low vulnerability							
dity to	Flood Resistance	Not critical to floo	od overtapping - Low vulnerability							
Vulnerability to Disaster			hening necessary to comply with new code;							
Ň	Evaluation		t to wind and flood action							
	Traffic Limit		le to seismic action (S20) Semi-Trailer Truck (32.7 tons)							
e for			anes (One Direction) Level of service : D (V/C Ratio = 0.82	2)						
Inction	Smooth Driving Condition	Non-sleep slope at	approach road, non-corrugation and curvature on bridge							
Function			nt necessary to provide sufficient vertical clearance for b	ridge undercrossin	9					
	Evaluation	• Meets minimum	traffic functionality requirements							
ser		Vertical clearance > reg	gulated : Horizontal clearance > preferable							
15	100 10 Feb		20 household identified							
alls										
Special Issues	Evaluation	Squatters identified needs relocation								
all Eval	Evaluation		fied needs relocation nd environmental impact							

H : Heavy M : Medium S : Small

Diagnosis Evaluation "A" : Urgent measures shall be applied; Conduct In-depth Survey "B" : Urgent measures not required; Conduct In-depth Survey "C" : In-depth survey not required

Appendix 8.6.1-1 (2/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loc	tion/Name of Road	Manila City Bonifacio D			RIDGE (DOWNST	Year Constructed	1988		
			8 8 (3	0	8 6	3		
			26650 48000		BR:00E_LE007++)	46000 06650			
		10 HOKAS 3	40	15000	28000 14800				
		-	the state of the s		1.		10 C V 18		
				1 <u>, </u>	- A		-		
			44773 (MARCH 101		0000 (000				
		1	1 2 1111 / 1			<u> </u>			
			19112 / H	11					
	Elevation	(and the second							
	2101011011	10 55				The second			
						The family of the second se			
		See.		Entrail.	States and the second				
		日本人			"前来"中学的"				
					and the second second				
		14-14							
						4			
			Crack on Box Girder @ midspan (\$)	Concrete spall w	exposed rebars (M)	Cracks on Box Wall Face (S	ĩ		
	ength of Bridge					No. of Lane	4		
	ingth of Bridge	202,90m. (26.6	5+46.00+57.60+46.00+26.65)			Lane Width	3.70m		
Sup	erstructure Type		PC Gerber Box Girder Bridge (5-Span)		Substructure Type	Abutment: Wall ((timber pile)), Pier: Wall	((timber nile))		
					contractor (p)	Abountent. Wan (Gunder pho)), Pier. Wan	((under pile))		
		Members	Location of Damaged Parks	Damage		Research for Assessment			
			Excellur of Damaged Parks	Assessment *1		Repoor for Assessment			
		RDER	Span 2: Bottom of Box Girder	s	irregular pattern of <0.2mm cracks due to	alkali - aşşreşate reaction			
		DX GI	Span 3. Side face of web (above P3 downstream)	s	Horizontal cracks of 0.10mm width is note	d caused by drying strinkage at construction stage due to I	big cross section.		
	Superstructure	ä .	Span 4: Bottom of Box Girder	s	Irregular pattern of <0.2mm cracks due to	caused by drying shrinkage at construction stage due to big cross section kall - aggregate reaction.			
			Span 3 downstream. Bottom of sidewalk (cantilever)	s	Cracks of 0.12mm width due to inferior co				
		DECK SLAB					_		
2		DEC							
Structural Soundness		И							
I Sou		ABUTMENT	"Span 1: Whole Abutment A	M	Discoloration of surface is observed over t	the entire abutment due to unsealed expansion.			
actura	Substructure	Substructure	AB						
Stru		œ	Span 3. Pier 3 body	м	1.5m2 of exposed rebars at pier wall due t	o insufficient provision of concrete cover.			
		PIER	Span 3 Pier 3	M	Spall of 2.0m2 of pier wall side caused by	usessal politikan			
	Foundation			-					
				S	Maximum inclinator is 0.57 degree at P4				
	Accessory	Bearing Shoe		S	No Damage				
	Diagnosis Evaluation	Category "C"	: Repairs necessary to seal concrete cracks						
	<u>.</u>		: In-depth study not necessary						
aster	Seismic Resistance	* Seismic demand gre	eater than plastic capacity of wall piers. In-depth study necessary to provi	de sufficient cordinement n	einforcement. Moderate vulnerability				
Vulnerability to Disaster	Wind Resistance	Not critical to w	ind action - Low vulnerability						
pility 1	Flood Resistance	Not critical to fic	od overtapping - Low vulnerability						
Inerat	Evaluation	* Not critical to v	vind and flood action						
n^		* Study on pier c	confinement reinforcement strengthening necessary						
ð	Traffic Limit	AASHTO MS18 (I	H\$20) Semi-Trailer Truck (32.7-tons)						
Function	Volume/ Capacity	31,652 (2002) 4 L	anes (One Direction) Level of service : D (V/C Ratio = 0.8	2)					
Function	Smooth Driving Condition	Non-sleep slope a	at approach road, non-corrugation and curvature on bridge						
	Evaluation		ition meets minimum requirement for traffic functionalit	9					
2	River Navigation		regulated : Horizontal clearance > preferable.						
sons	Utilities	None	An and an and a provide the						
	Informal Dwellers		n 20 household identified.						
cial Is:									
Special Issues	Evaluation	* Minimal social and environmental impact							
05 10007	Evaluation	Minima social and environmental impact Bridge reasonably sound and meets minimum traffic functionality requirements							
00 	Evaluation uation NOTES	1000		irements					

- - 2. Disanosis Evaluation "A" : Urgent measures shall be applied; Conduct In-depth Survey "B" : Urgent measures not required; Conduct In-depth Survey "C" : In-depth survey not required

Appendix 8.6.1-1 (3/20) OVERALL EVALUATION OF BRIDGE CONDITION

.04	rence/Bridge Name	Manila City		Pa	2 JONE	S BRIDGE	
Loca	tion/Name of Road	Burgos Str	oot				Year Constructed
			(0) 300 1014 1014 1014 1014 1014 1014 1014	EL-19.13	1074L LENGTH OF 8 43400	EL=15.18	(2) 9 390 10 800000 ELIVERIT
	Elevation			ľ	+ ^D		
			CONSIGNATION OF THE STREET	Ru	Dured bottom Fange	and 1/3 height of web	Lateral deformation 220mm
Le	ength of Bridge	114.41m. (35.5	51 + 43.40 + 35.50)				No. of Lane
Sup	erstructure Type		3-Span Continuous Steel Plate Girder Bric	lge		Substructure Type	Abutment: Wall Type (Spread), Pier: Wall Type (Cale
		Members	Location of Damaged Parks	Damage Rating (X,Y,Z)	Damage Assessment *1		Reason for Assessment
			Span 1: Weld portion of steel plates	п	н	Remarkable deterioration due to corros	ion.
			Span 1: Lower plate of main girder (Near A1)		н	Extensive corrosion of 8 girders.	
		102-1	Span 2: Bottom flange and web of exterior girder at upstream side		нн	Ruptured bottom frange and 1/3 height-	of web due to vessel collision.
		STEEL HGIRDER	Span 2: Main girder, G8, Near P2	U.	н	Lateral deformation is 250mm due to ve	essel collision.
		EL HGI	Span 2: Sway bracings	н.	н	Ruptured sway braces on 2 locations.	
	Superstructure	STEE	Span 1.2.3: Sway bracings		н	Missing top members in 10 locations.	
			Span 3: Sway bracing (A2)		н	Corrosion spreads over entire member	
	-		Span 3: Downstream exterior girder		м	Lateral deformation is \$0mm.	
			Span 3. Interior girder G4, Near A2	1	н	Extensive corrosion.	
	-		Span 3: Bettom of Deck Stab		м	Cracks at bottom deck with writin of 0.3	- 0.8 mm
ness		DECK SLAB	Span 3: Bottom of Deck Slab	u.	м	Wide area of deterioration to poor const	ruction
Sound		8		-			
Structural Soundness		ABUTMENT	Abutment A2 Wall	W	S	Horizontal cracks on wall.	
	Substructure	PIER	Per 1 Booy	īV	S	Versical cracks of pier body	
		Existing Carsson			н	Does not meet latest code requirement	
	Foundation			-			
		Abutment A1 Bearing	Shoes	н	н	Extensive corrosion of bearing sh	roes at Abutment A!
	Accessory	Pier 2 Bearing St	ides.	п	н	Extensive corrosion of bearing sh	ioes at Pier 1.
	Diagnosis Evaluation	Category "A"	Urgent measure for Ruptured Exterior Girder at upstree In-depth study necessary to determine permanent repa Repair / maintenance work necessary to prevent furthe	ir/rehabilitation	of ruptured girde		
Vulnerability to Disaster	Seismic Resistance	Pier and Foundator High vulnerability	L (Execting Caleson) are insufficient under latest code seismic requirements, l	in-depth study is ne	eded to determine requ	red strengthening	
lty to t	Wind Resistance	Not critical to wi	nd action. Low Vulnerability				
erabili	Flood Resistance		od. Low Vulnerability				
Vutn	Evaluation		vulnerable to seismic forces. In-depth study is needed to lent to wind and flood action.	determine req	uired strengthenin	g of substructure.	
			id Rating: 0.00 Inventory Level, 0.76 Operating Level (Exterior	Girder, Upstrea	im Side)		
Function		57,216 (2002) 4 L	anes Level of Service: D (V/C Ratio = 0.74)				
Fun	Smooth Driving Condition	Fair					
5	Evaluation		ality reduced by decrease in live load capacity and steep s	slope at approa	ch.		
			legulated (Near Piers); Horizontal Clearance: Preferable				
Issue	the second s	the second s	C Telecommunication Pipe, 2 - ¢100 mm GI Telephone Line,	1 - 0100 mm PV	/C Electrical Line, 1	- ¢340 mm Water Line	
Special Issues			rs under Jones Bridge and environmental impact				
~	Evaluation		tion of ruptured girder and sway braces are needed, minor	measures	essary to leave	traffic functionality	
A DECEMBER OF A	ation		collision protection.	measures neo	wasary to improve	tranic functionality.	

Appendix 8.6.1-1 (4/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loca	lion/Name of Road	Manila City Rizal Street		a3 MAC A			Year Constructed	1948
		Rizal Street	(A)	(19)	(P2)		a)	
	Elevation		10 PAAN	TOTAL LENG	2011 OF BREDGE - 114800 40000 4 MPVN RL+12.99 4 MVN RL+12.99 4 MVN RL+10.00	37000	TO HALOCKAN	
			Crack @ Bot Deck Stab near A1	Bearing Shoe M	Avec/Tited	Con: Spail w'Exp.Re	bars @ Abut A2 Coping	
Le	ngth of Bridge	114.60m. (35.5	1 + 43.40 + 35.50)				No. of Lane Lane Width	4 3.70m
Sup	erstructure Type		3-Span Continuous Steel Plate Girder Bridge		Substructure Type	Abutment: Wall Typ	e ((Timber Pile)), Pier: Wall 1	
		Members	Location of Damaged Parks	Damage Assessment *1		Reason for A	ssessment	
			Span 1: Bottom flange, G3 near P1	н	9 pieces missing/cut rivets at bottom	fange due to vessel collision	e	
		2	Span 1. Bottom Spice Plate, G7 near P1	н	Vertical deformation (>5mm) at botho	m flange splice.		
		STEEL FORDER	Span 2: Bottom Flange, G5	н	About 200 pieces of rivets were miss		o vessel collision	
		1911	Span 2. Bottom of Girder, G4, G7 & G3	н	Bottom fiange of Girder were deform			
		STEE	Span 2: Sway Bracing				The second second second	
	18111111111111			м	Missing sway brace of bottom membrace			
	Superstructure		Span 3: Sway Bracing	н	High corresion at sway bracing due to	o influence of utilities progres	sive corresion.	
			Span 1: Bottom of Deck Slab between G2 - G3	S	Transverse cracks of about <0.3mm	width at bottom of deck slab		
		AB	Span 1: Bottom of Slab at sidewalk downstream	м	Concrete spall with exposed rebars of	10 2m ² due to inadequate so	norete cover.	
		DECK SLAB	Span 2: Bottom of Deck Slab between G2 & G4	S	Transverse cracks of <0.3mm at the	bottom of deck stab. 2 location	ons	
ss		DE	Span 2: Bottom of Deck Siab between G1 & G2	м	Concrete spall with exposed rebars o	f <0.3m² due to inadequate o	oncrete cover. 2 locations	
undne			Span 2 & 3 Bottom of Deck Slab, Midscan	M	Honeycombs of 0.1 - 0.3m ² is measu	red at the bottom of deck sla	2 locations	
ral Sou		5	Abutment A2, downstream side	н	3.5m2 concrete spall and exposed rai	tars was noted at A2 wall.		
Structural Soundness	ABUTMENT	ABUTME						
	Substructure							
		PIER						
				s	Maximum inclination longitudinal at P	l is 2.65 degrees > 1.0 degre	e: Allowable inclination angle JRA. In	-depth survey
	Foundation				necessary			
		Bearing Shoe at A1, P	P1 P2 8 42	s	Surface corrosion to all bearing	-		
	Accessory			2	Sunace corresion to an bearing	anoes,		
	Diagnosis Evaluation *2	category b	: In-depth study necessary to monitor pier inclination : Repairs/maintenance necessary to replace missing	rivets and member, a	and seal cracks on concrete a	nd paint corroded men	nbers	
Vulnerability to Disaster	Seismic Resistance	* No as-built plans. Pr * High vulnerability	er and foundation insufficient under present seismic design requirements					
y to D	Wind Resistance	Need to repair s	way bracing - Low vulnerability					
rabilit	Flood Resistance	Not critical to flo	od overtapping - Low vulnerability					
Vulne	Evaluation		ood action but needs repair of sway bracing to stabilize study on pler strengthening for seismic action	under wind action				
đ	Traffic Limit	MS18 (HS20) Sen	ni-Trailer Truck (32.7 tons)					
Function	Volume/ Capacity	46,323 (2002) 4 la	ines Level of Service: C (V/C Ratio = 0.52)					
Funct	Smooth Driving Condition	Steep slope at ap;	arcach road					
1	Evaluation	* Sufficient condi	ition for traffic functional requirements.					
	River Navigation		gulated; horizortai clearance < preferable					
souss	Utilities	Deterioration, Left	12-Ф 100 Asbestos Telephone, Right, 1-Ф 340 GI Waterlin	e				
Special Issues	Informal Dwellers	None						
Spe	Evaluation		and environmental impact					
	ation	* In-depth study r * Traffic function:	necessay to monitor pier inclination					

1. Damage Assessment H : Heavy M : Medium S : Small 2. Diagnosis Evaluation "a" : Urgent measures shall be applied; Conduct In-depth Survey "b" : Urgent measures not required; Conduct In-depth Survey "c" : In-depth survey not required

Appendix 8.6.1-1 (5/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loc	ation/Name of Road	Manila City Quazon Bot	ulevard				Year Constructed	1946
L	Elevation ength of Bridge	102.40m.	Errodel Te Beam				Corroted Gusset Paile	4 3.70m
Su	perstructure Type		3-Main Structure, Single Steel Arch Brie	dge (1-Span)		Substructure Type	Abutment: Wall Type ((timber pile))
_		Members	Location of Damaged Parks	Damage Rating (X,Y,Z)	Damage Assessment *1		Reason for Assessment	
_			Truss A.B.C - Bottom Chord Members	1	н	Corrosion of Member Connections		
		ARCH MEMBER	Truss A C - Top Chord Members		н	Corrosion of Member Connections		
		HME	Truss A.B.C - Vertical Members	п	Ĥ	Corresion of Member Connections		
		ARC						
			Truss A.B - Hangers		н	Corrosion of Member Connections		
	Superstructure		Longitudinal Tie Beam	K	HH	Extensive corrosion and loss of section	of members	
	acpersoruciure		Gusset Plates	1	нн	Extensive corrosion and loss of section	of members	
		SIE	Ends of Braces	1	HH	Extensive corrosion and loss of section	of members	
		FLOOR SYSTEM	Ends of Stringers (abutments)	1	нн	Extensive corrosion and loss of section	of members	
685		FLO				and an official state of the second		
Structural Soundness			Additional atringers at abutment		HH	Extensive corrosion and loss of section	of members	
ural S			Stringers supporting the sidewalks	1	нн	Extensive corrosion and loss of section	of members	
Struct		LN3	Abutments & Pylons	ж	м	Cracks on the face of the wall		
		ABUTMENT						
	Substructure	2						
	Gossociate							
		PIER						
						Not accessible for inspection		
	Foundation					HULBLOCERNE ICE REGELEENT		
	Diagnosis Evaluation		Manufly anyoning label associations up doe to a					
	*2	Category "A"	Heavily corroded joint connections under the fl	oor deck slab and y	rater leaking at a	outments stemmed from insum	cient maintenance activities.	
-	Access Western	Pier and Foundation Moderate Vulnerabil	(timber piles) are insufficient under latest code seismic requiren	nents, in-depth study is n	eeded to determine rea	pured strengthening		
saster	Seismic Resistance							
10 01	Wind Resistance	Not critical to wi	nd action - Low vulnerability					
Childre	Flood Resistance		od overtapping + Low vulnerability					
vuinerability to Disaster		Bridge is mode	rately vulnerable to seismic forces.					_
	Evaluation	 Bridge is suffic 	ient to wind and flood action.					
	Traffic Limit	30-ton Truck Lo	ad Rating: 0.92 Inventory Level, 1.59 Operating Lev	el (deck frame, guss	et plate and joint o	onnections)		
Function	Volume/ Capacity	85, 137 (2002) 4 L	anes Level of Service: F (V/C Ratio = 1.22)					
Funct	Smooth Driving Condition	Good						
	Evaluation	Traffic functional	lity reduced by decrease in live load capacity.					
	River Navigation		Regulated : Horizontal Clearance > Regulated					
	Utilities	3 - 340mmø G.I. p	ipe water lines					
cancel Intanfo	informal Dwellers	(Heavy – 18 house	eholds identified)					
ł	Evaluation	* Moderate social	and environmental impact					
_	IN CONTRACTOR							
	luation	Replacement / F	Rehabilitation of corroded connections of deck fr	ame system, minor	measures necess	any to improve traffic functions	liter	

1. Damage Assessn H : Heavy M : Medium S : Small 2. Diaanosis Evaluation "a" : Urgent measures shall be applied; Conduct In-depth Survey "b" : Urgent measures not required; Conduct In-depth Survey "c" : In-depth survey not required

Appendix 8.6.1-1 (6/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loca	tion/Name of Road	Manila City Ayala Bould			ALA BRIDGE		Year Constructed	1935 EAST 19 WEST
	Elevation	Polea por			Arean (Carlos Arean) Internet and Arean (Carlos Ar			
Le	ingth of Bridge	142.00m (65.35		Severe corrosion at Ma	in Girber bottom chord (H).	Deformed shape	of stringer due to increase in str No. of Lane	6
Sup	erstructure Type		Steel Truss Bridge		Substructure Type	Abutment: Closed	Lane Width Type(timber pile), Pier: Wal	3.70m I Type (timber p
		Members	Location of Damaged Parks	Damage Assessment *1		Reason for A	ssessment	
			Bottom Chord/South-East Truss	(H)	Deformed, heavily corroded			
		BG	Stringer/North Span - South Span	н	Missing, loss end section crack	(broken / fractured)		
		S BRIC	Deck Bracina/South Span - East Truss	н	Missing			
		TRUS		н	Heavily corroded			
				-				
		6		н	Heavily corroded			
	Superstructure			н	Heavily corroded			
			Deck Stab/North Span-South Span	м	Crack			
			Bearing/ All locations	н	Heavily corroded			
SS			37 Test Location for UFD	s	No Defects			
aupur		DEC	130 Test Location for UTG	S	7mm to 25mm			
ral Sot			40 Test Locations for Brinell Hardness	S	328 MPA - 540 MPA			
ructur			36 Test Locations for Dye Penetrant Test	s	No Defect			
ŝ		E.	North Abut/Wall Wingwall	н	Fail in bending, Shear			
		UTMER	South Abut/Wall Wingwall	н	Fail in bending, Shear			
		ABI						
	Substructure		Wall	м	17 HR (Rigid)			
		E	Confinement	м	Spiral Requirement needed			
		۵.		s	Sufficient			
	Exundation		analis gear orbing		North & South Abut/Compressive	Piles C/D=0.72 & 0.6	37	
				н	Piles/ Compressive Piles, C/D R	itio = 0.65		
			: Existing bridge needs strengthening to meet the pr		th for a bridge.			
	•2	Category "A"	: Pile Foundation can not comply with the new AASH	ITO Codes.	S. 24			
	Seismic Resistance	Substructure for	undation not sufficient against new seismic design criteria (I	Div. 1A AASHTO). High	vulnerability	2		
aster	Wind Resistance	70000000000						
Superstructure Superstructure Stringer/Narith Span - South Span Superstructure Superstructure Guaset Plate/ North Span AlloCations Superstructure Stringer/Narith Span - South Span Superstructure Stringer/Narith Span - East Truss Superstructure Guaset Plate/ North Span Mid-Truss Superstructure Stringer/Narith Span - South Span Superstructure Superstructure Superstructure Supe	we have a set because the second							
			it substructure to meet the requirements of the new sei	smic codes (Div. 1A c	f AASHTO)			
c	The second second second	No. Company Street	E (V/C=0.80, Houriy Vol = 1,777 Vph, AADT = 40,390 PCU	3)				
unctio	Smooth Driving							
ű.				0.01				
	1775-1757-1859							
sones			400mm), 16 Electricity Lines and 8 Telecommunication Line	15.				
opecial issues		Light						
ade	Evaluation	* Historical situa	tion shall be considered.					
0.0	rall Evaluation		ation of superstructure and retrofit of substructure nece	end of the second				
Ove			nce shall be improved at least up to regulatory vertical c					

Appendix 8.6.1-1 (7/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loc	ation/Name of Road	Manila City		Pa6 NAG	TAHAN BRIDGE	Year Constructed	1966
1.10122		Nagtahan S			100 an 100 mil		
				Contraction of the second seco		30000000000000000000000000000000000000	
			* 8*2000 (10000) 80009	1 6772D	AND STREAM	orazoni nanozi nanozi nanozi nanozi nanozi nanozi nanozi inan	
					<u>z - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - </u>		To particle and
				- 100		t should should be should be down	-
				100			
	Elevation	200	and the second s		1	The state of the s	
	Elevation	and the second second	the second second second			「「「「「「「「」」」」	2.1
		1999					
		1		State Binks	I ALL AND A		
		1 5	NAMES OF STREET	1. Sec. 1. Sec. 1	NAGTAHAN CRACKS ON		17
		1		ALC: "	世中・1 1-0.55mmt	the state of the second	1
		125	Damaged Backwall	and the second second	A REAL PROPERTY AND A REAL		200
	ength of Bridge	431.39m (7 @	15+12+45.6+57.73+45.60+15.95+10+9.9+12.7+14.6+14.3	Cracking of concr	ete @ Pier 1.	Cracking of concrete @ Fler 2 No. of Lane	8
	ongen of Bridge	14.9+15+14.11	14.65+14.20+15.15)			Lane Width	3.00m
Sup	perstructure Type		R.C. Girder Bridge (Multi-Span)/		Substructure Type	Abut: Wall Type/Pier: Column Bent/Wall 1	Type/
			3 Span Continuous Truss/R.C. Girder (Multi-Spa	n)		Column Bent	
		Members	Location of Damaged Parks	Damage		Reason for Assessment	
-		(1920) 19835		Assessment *1			
		MBEF	Span 1: End Diaphragm	м	Honeycomb of End Diaphragm with maxim		
		RCDG MEMBER	Span 19. Bottom of Girder	м	Typical Horizontal Cracks @ Bottom of G with max. width of 0.20 mm	rder No. 1 (Left Side, Facing España)	
		RCD					
			Bottom Chord at Span 10	w.	Corrosion over whole member		
			Lateral Bracing at Span 10	м	Contation over whole member		
			Lateral Bracing at Pier 10	M	Corrosion over whole member		
		ER	Vertical Member at Pier 10	м	Corrosion over whole member		
	Superstructure	TRUSS MEMBER	Bottom Chord at Girder 1	S	Surface spot corrosion		
	e e por de la secte	uss i	Vertical Member at Pier 9 and Center of Span 11	s	Sight deformation of flanges. 2 locations.		
		IR					
			Diagonal Members at Piers 9 & 10 and Center of Spon 10	S	Surface spot corrosion. 3 locations		
			Vertical Member at Center of Span 10	S	Local corrosion and rust spots		
			Lateral Bracing at Pier 9	S	Local spot corresion		
550		98	Span 5: Bottom of Deck Slab	м	0.2m2 Spalling of concrete with exposed a	ebars	
Structural Soundness		DECK SLAB	Deck Slab Bottom Surface at Denter of Span 9	м	inacequate treatment @ construction joint	Spalling of concrete @ girder no. 8; from .Span 1-8; with maxim	um area = 1
al Se		DE	Span 19: Bottom of Deck Stab (Sidewalk Pontion)	н	Horizontal cracks with width = 1.00 mm, (1	ypical from P15-A2) @ cantilever deck stab (Sidewark Portion)	
ructu		-	Pier 8 Backwal	s	< 1 0m2 Spalling and exposed rebar		
ŝ		ABUTMENT	Pier 8 Backwall between Girders 1 & 2	s	0.10m2 hoseycomb		
		ABU	Par 11	M	1.5m2 concrete scalling		
	Substructure						
		~	Pier 9 and Pier 10 Upper Body	м	0.5mm wide vertical cracks		
		PIER	Pier 9 Upper Body	м	1.0m2 spalling and exposed rebar		
			Pier 9 and Pier 10 Lower Body	м	1 2m2 and 1.0m2 spalling and exposed ret	xars	
				м	Maximum inclination longitudinal at P10 is	2.29 degree > 1.0 degree in-depth	
	Foundation			м	survey necessary Maximum inclination longitudinal at	P15 is 0.850 dampa	
		Railings at Pier 8	Center of Spans 9,10 and 11	s	Deformed and missing one membe	o province of the second second	
	2 - 2020 Nov 20104	Span 8: Expansi	on Joint	м	G	r wide, with GAP = 70 mm.∷There is no sealant @ this	s portion
	Accessory	Span 15: Expans Span 19: Expans		M	Expansion Joint opening is too wide		
		Span 19: Expans Span 23: Expans		M	Expansion Gap is clogged and with Expansion Gap @ A2 is wide, with		
	Diagnosis Evaluation		: Maintenance needed to prevent further member co : Repair of concrete cracks necessary	- YAA			
	•2	Category B	: In-depth study necessary to monitor pier inclination	and a second			
iateo	Seismic Resistance	* No as-built plan	s. Pier and foundation insufficient under present seismic re-	quirements. High vuiner	ability		
	Wind Resistance	Not critical to w	nd action. Low vulnerability				
a fund	Flood Resistance	Not critical to flo	od overtapping. Low vulnerability				
AUNTERADING TO LABOR	Evaluation		der wind and flood action	and a star			
2	munitum	sepin study	needed to monitor pier inclination and strengthening	o, serainic demand			
	Traffic Limit	AASHTO MS-18	HS-20) Semi-Trailer Truck (32.7 tons)				
tion	Volume/ Capacity	83,148 (2002) 4 L	anes Level of service : D (V/C Ratio = 0.73)				
Function	Smooth Driving Condition	Nori-steep slope,	corrugation and curvature				
		* Traffic function	ality meets minimum requirements				
-			> regulated; horizontal clearance > preferable				
			sion. Left: 8-Φ100 PVC Telephone: Center: 8-Φ PVC Telep	phone			
		LOUIS COLLEGE VILL	20 households identified				
sames mondo			I and environmental impact				
-	Evaluation		07				
Eval	uation	* Bridge reasona	bly sound but needs in-depth monitoring of pier inclina	ation.			
	NOTES						
		nent	2. Diagnosis Evaluation				

2. Traffic limit in metric tons

Appendix 8.6.1-1 (8/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loc	ation/Name of Road	Manila City Thomas Cl		Pa7 PAN	DACAN BRIDGE		Year Constructed	1997
			22000	(47400 (89:00E 46000	(KOST+) 2510E		8	
		τp	TART AVE				10 AURORA AVE	
		-		<	ції П	шаўдання на на П	T T	
				1		*		
	Elevation				An Ani FEO2 - 1 FO2 - 1	In the second second		
			Slab Crack bet G5-G8 near P-3	E32 Honeycomb / Expose	to Rebars on G-6 near P3	Exposed rebars	on tie beam bet. Col. 2, 3	
L	ength of Bridge	147.40 m (23.8	s + 25.0 + 46.0 + 25.1 + 27.5)				No. of Lane Lane Width	4 3.00m
Sup	perstructure Type		PC I Girder Bridge (5-Span)		Substructure Type	Abutm	ent: Wall Type, Pier: Column	
		Members	Location of Damaged Parks	Damage Assessment *1		Reason for A	ssessment	
		8	Span 2: Bottom of PC Groter, GB	н	Honeycomb with exposed rebars of 0.	42m2 at bottom of girder is	caused by inadequate compaction of	construction work
		PCI GIRDER	Span 2: End pf PC Grider, G1	н	Exposed rebars (0.8m2) at bottom of (pirder is the result of improp	er provision of concrete cover.	
			Span 2: Bottom of Deck Slab	м	Deteriorationitiscolor at bottom of stat	a observed due to include	iet travelog of controls on ar	
			Span 3: Bottom of Deck Slab	M	0.3 - 0.35mm crack at bottom of slab	and the second second second		
			Span 4: Bottom of Deck Slab	м	0.3 - 0.35mm crack at bottom of stab is	and the Andrea Charles Shi		
	Superstructure	m						
		Superstructure ਲ XO SO SO SO SO SO SO SO SO SO SO SO SO SO						
seau								
structural Soundness		н						
Inral		ABUTMENT						
Struc		ABU						
	Substructure		Span 3: Pier 3 Body (Tie Beam)	м	Remarkable damage on pier te beam	due to vessel collision		
		PIER	Span 4. Pier 4 Body (Tie Beam)	м	Remarkable damage on pier tie beam			_
		đ.	Span 4: Pier 4 Body (Tie Beam)	-				
			apari v: Pier 4 body (18 Beam)	м	Remarkable damage on pier tie beam a			
	Foundation			S	Maximum inclination is 0.57 degree at	P3.		
	Accessory	Elastomeric bea	ing pad		No Damage			
	1151201220							
	Diagnosis Evaluation *2	Category "C"	: Repair of concrete cracks and damages necessary : In-depth study not necessary					
	Seismic Resistance	* No as-built plan	s. Need to verify pile bent confinement reinforcement under	r seismic action. Low vi	Inerability			
19610	Wind Resistance		ind action. Low vulnerability		nene kölö nä			
2	Flood Resistance		ood overtapping. Low vulnerability					
Interest of Automation	Evaluation		der wind and flood action tic capacity sufficient under seismic force but needs ve	rification of confinem	ent reinforcement.			
	Traffic Limit	AASHTO MS-18	(HS-20) Semi-Trailer Truck (32.7 tons)					
5	Volume/ Capacity		Lanes Level of service : B (V/C Ratio = 0.32)					
Function	Smooth Driving							
ш. Г.	Condition		corrugation and curvature					
	Evaluation River Navigation		hality is sufficient Regulated, Honzortal clearance > preferable					
	Utilities	None	uðumun - verkens væsanna - hig signs					
	Informal Dwellers		n 20 households identified					
	Evaluation		al and environmental impact					
Eval	luation	* Bridge is reaso	ably sound with sufficient traffic functionality					
	NOTES							
	1. Damage Assessi H : Heavy M : Medium S : Small		2. Diagnosis Evaluation "A" Urgont measures shall be applied; Conduct "B" Urgont measures not required; Conduct In- "C" in-depth survey not required	In-depth Survey depth Survey				

Appendix 8.6.1-1 (9/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loca	tion/Name of Road	Manila City Replicate St		Pa8		GAN BRIDGE	Year Constructed	1979
		Bonifacio Str				6		
	Elevation		18522		46-00 4100 4100 4100 4100 4100 400 400 400	ng φ j		
	ength of Bridge	98.10m (18.50+6	Exposed Bars on Main Girder (H)	Crac	ks on Gerber Hinge	2 (H) Cracks (on Pier 2, Pile Cap (M) No. of Lane	6
	ingth of Bridge	190.10m (10.50+6	1,10+18.50)				Lane Width	3.20m
Sup	erstructure Type		PC Gerber I Girder Bridge (3-Spa	in)		Substructure Type	Abutment: Wall Type((steel pipe pile)), Pier: Wa pile))	ill Type((steel p
		Members	Location of Damaged Parks	Damage Rating (X,Y,Z)	Damage Assessment *1		Reason for Assessment	
			Span 2' Bottom of Girder G12	(III)	м	0.2m2 Spalling of concrete due to crack pro	ogressing on the girder	
			Span 2: Bottom of Girder G12	H.	н	0.75m2 of exposed rebars		
		×	Span 2 near P1: Side of Girser G12	11	м	< 0.3m2 of exposed rebers		
		PCI GIRDER	Span 2 near P2: Side of Girder G12	11	и	0.18m2 of exposed rebars due to insufficien	t provision of concrete cover	
		PCIO	Span 2 . Gerber Hinges 1 and 2		нн			ations
	Supersnutture							
			Exterior girders at pier supports				ansion stresses at service loads. <u>4 locations</u>	
			Span 2. Midspan of Girder 12	4	+	Longitudinal bracks and exposed rebars ca.		
		AB	Span 2. Bottom of Diaphragm between G8 & G7 Span 2. Diaphragm between G7 & G6		M	0 2m2 of honeycomb caused by interior con Crack width of 0.35mm.	npaction of concrete.	
dness		DECK SLAB	Span 2: Diaphragm between G1 & G2		M		notion of processia	
soun		BEC	Span 2. Diaphragen between G5 & G6	10	M N	0 25m2 honeycomb caused by interior comp Crack width of 0 40mm	actor o concele	
Structural Soundness		100	Span 1: Abutment 1	IV	s	0.3mm cracks on two locations		
Stru		ABUTMENT	Scan 1, Aburment A1	u	н	Corroded anchor bars, 12 sets (24 pleces)		
		ABUT	Span 3. Abutment A2		н			
	Substructure		Span 3: Pier 3 Body (Tie Beam)	in in		Corroded anchor bars, <u>12 sets (24 pieces)</u>		
		×			м	Remarkable damage on pier lie beam due te		
		PIER	Span 4. Pier 4 Body (Tie Beam)		м	Remarkable damage on pier tie beam due to	o vessel collision	
			Span 4. Pier 4 Body (Tie Beam)	10	м	Remarkable damage on pier tie beam due to	o vessel collision.	
	Foundation			37	S	Maximum inclination is 0.34 degree longitud	inal at A1.	
	Accessory	Span 1: Bearing pa	ad at A1, downstream girder	111	м	Deformation of elastomeric pad due	to excessive loading.	
	Diagnosis Evaluation	Category "A"	: Repairs of concrete cracks necessary : Cracks at Gerber hinge parts related to bridge det	sign and/or construe	ction quality.			
sastor	Seismic Resistance	* No as-built plans	Pier and foundation details need to be checked under se					
Vuinerability to uisaster	Wind Resistance	Not critical to win	d action. Low vulnerability					
moera	Flood Resistance	Not ontical to floo	od overtapping. Low vulnerability					
Aun	Evaluation		study on pier and foundation to check adequacy/safe ind and flood action.	ty under seismic ac	tion.			
-	Traffic Limit	20-Ion Truck	Load Rating : 0.63 Inventory, 1.06 Operating					
Ę	Volume/ Capacity	31,973 (2002) 6 La	ines Level of service : C (V/C Ratio = 0.53)					
Function	Smooth Driving Condition	Steep slope at app	roach, corrugation on bridge					
	Evaluation		ustment necessary at approach					
-	River Navigation		effic load reduces functionality gulated, horizontal clearance > preferred					
			phates, funzoital destance > preterred					
	1400000	Medium - 9 House						
	Evaluation	• Minimal social a	nd environmental impact					

- OTES 1. Damage Assessment H : Heavy M : Medium S : Small
- 2. Diagnosis Evaluation "A": Urgent measures shall be applied; Conduct In-depth Survey "B": Urgent measures not required; Conduct In-depth Survey "C": In-depth survey not required

Appendix 8.6.1-1 (10/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loca	tion/Name of Road	Burgos Stre	et Extension				Year Constructed	1986			
_			Ø	B	e	3	0	Carrier Contraction			
			10 × 19 28	6900 IDN	110000 100000 30000 0710 GF ALSHITD EINERE PHO GARCER (1972 V) ELETER	TTTTTTTTT	19.80 TL-20.57				
	Elevation		Cracks on Main, Girder (H)	Honey Comb.	200. (
L	angth of Bridge	207.489m (8.29 7.533+8.156 + 7	+9+9+8.742+30+50+30+7.2+7.558+ .75+8+8+8.26)				No. of Lane Lane Width	4 3.70m			
Sug	erstructure Type	PC Box	Girder with Gerber I Girder Bridge (3-Span), R.C. Flat Sl	ab (4/8 Spans)	Substructure Type	Abutment: Wall	Type, Pler: Colum Type (bon Footing				
		Members	Location of Damaged Parks	Damage Assessment *1		Reason for A	Assessment				
			Span 5: Sideface of web near Pier 4, upstream	н	0.6 - 1.5mm horizontal parallel cracks						
		g	Span 5: Sideface of web near Pier 4, downstream	н	0.4 - 0 65mm horizontal parallel cracks						
		PC BOX GIRDER	Span 5: Bottom of PC Girder near Pier 4	н	More than 0.6mm longitudinal crack in	one location					
		BOX (Span 6. Bottom of end Disphragm between G4 & G5	н	1.5m2 honeycomb in one location						
		PG	Span 7: Sideface of web near P7, upstream	н	0.8mm horizontal parallel cracks						
	Superstructure		Span 7: Sideface of web near P7, downatream	м	0.3mm horizontal parallel cracks						
		-	Span 1: Deck Stab Surface	N	Numerous pracks 0.5 mm width is obse	overf on Dark Stab aurfac	e Tunina un to Shan 3				
		SLAB	Span 4: Deck Slab Surface	M	Transverse 0.35 mm cracks on Deck Si		e stypica up to open a				
		RC FLATSLAB	Span 8 Deck Slab Surface	M	Aligator cracks of 0.45 nm maximum w		kape				
22		RC		57							
Structural Soundness		ABUTMENT	Span 1; Abutment A1 Wall	н	Horizontal crack @ Abutment A1 wall >	0.6 mm width is observed	(, possibly poor treatment of construct	ion joint			
Struct	Substructure	ABUT									
	Substructure	Substructure	000000000	00000000	PIER	Span 7: Pier No. 6 Body, Column 4	M	1 5m2 splitting of concrete & reinforcem	ient due to alkal-aggregat	a reaction	
	Foundation			s	Maximum inclination at A1 is 0.63 degree Maximum inclination at P7 is 0.44						
		Span 1: Right & I	Left lane @ span 1	м	Missing member and corroded m		an 10& Other Spans				
	Accessory	Span 4: Expansio	on Jt.	м	Faulting of expansion Jt. Causes	tilting of plates of ab	out 25 mmVertical				
	-	Spans 5 & 7: All b	earing shoes at P4 & P7	м	corrosion spreads all over the en	fre shoes					
	Diagnosis Evaluation *2	Category "B"	: Urgent repair of concrete cracks necessary : In-depth strudy necessary to check/monitor anchor	block horizontal crae	cks						
ster	Seismic Resistance	* Pile bent insuffic	tient to present seismic demand requirements impact. Mode	rate vulnerability							
o Disa	Wind Resistance	Not critical to wi	nd action. Low vulnerability								
stify to	Flood Resistance	Not critical to flo	od overtapping. Low vulnerability								
Vulnerability to Disaster	Evaluation	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	vind and flood action								
_	Traffic Limit	Vulnerable to s AASHTO MS-18 (eismic action HS20) Semi-Trailer Truck (32.7 tons)								
ç			anes Level of service : D (V/C Ratio = 0.70)								
Function	Smooth Driving		proach road, curvature on bridge								
	Evaluation	• Meets minimum	n traffic functionality requirements								
	River Navigation		egulated, horizontal clearance>preferred								
	Utilities	None									
sanss	Informal Dwellers	Medium : Less that	in 20 households identified								
cial Issues	informat owellers	* Minimal social and environmental impact									
Special Issues	Evaluation	* Minimal social a	and environmental impact								
		* Bridge reasona	and environmental impact bly sound but urgent repairs necessary to seal concrete ality is within the minimum requirement.	cracks and monitori	ing of anchor block cracks are r	required.					

Appendix 8.6.1-1 (11/20) OVERALL EVALUATION OF BRIDGE CONDITION

	tion/Name of Road	EDSA			UPE BRIDGE (C		Year Constructed	1962
		(A1)	P1			P2	1	A2
			0		114440	6		Az
		95	35700		42800		35940	
			21212-212-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2					
				<u>anya ny </u>	5×1×1×1×1×1×1×	M N	51 X X X X X X X X X X	
		100.00.00			÷ R			a partie
			H-L		al .		1	23444
			- Hand and M	/		Casesan St.		
	Elevation			\sim			$\langle \rangle$	
			1.	/	S	000000	<pre>/</pre>	
			Deformed Stringer			E -	allan.	NDALI R.IOSIN
			burnet line	Spall w/ exp	osed rebar @ face of pier 1	Ver	tical crack on face of coping	@ Pier 2
Ler	ngth of Bridge	114.44m. (35.70	+42.80 + 35.94}				No. of Lane Lane Width	8 3.00m
Supe	erstructure Type		3-Span Continuous Truss Bridge		Substructure Type	Abutment: Wall Ty	pe (spread, timber pile), Pier timber pile)	
		Members	Location of Damaged Parks	Damage Assessment *1		Reason for a	Assessment	
		B	Span 1: Lateral Bracing at Panel 33 - Bay 6, Panel 34 - Bay 4, Panel 35 - Bay 7	м	Broken by vehicle, 3 locations			
		MEMB	Spans 2 & 3: Sway Bracing at Panel 17 - Bay 8; Bay 9; Panel 6	м	Deformed member, <u>4 locations</u>		5	
		TRU	Span 3: Top Chord at Girder 2, Panel 4 & 6 - Bay 1	М	Reduction of cross-section due to corr	osion. 2 locations		
			Span 3: Sway Bracing at Panels 1 to 2	М	4, 2 & 2 pieces of rivets missing, respe	ctively, <u>2 locations</u>		
	Superstructure	FLOOR	Span 3: Stinger at Panel 11	м	Deformed floriges			
		LAB						
dness		DECK SLAB						
Structural Soundness			Span 1: Abutment A Coping (Coping face)	м	0.483mm wide random cracks below g	tder		
uctura		ABUTMENT						
St		ABU						
	Substructure		Span 2: Pier 2 Upstream Side Wall	н	1.753mm wide vertical cracks			
		PIER	Span 2: Pier 2 Wall at Upstream Construction Joint	н	1.194mm wide vertical cracks			
		E.	Span 2: Pier 2 Wall at Downstream Side	н	2,794mm wide vertical cracks			
			Span 2. Pier 2 Extended Coping	н	2.764mm wide vertical crack			
	Foundation			S	Maximum inclination is 0.86 degrees at	A1.		
	Diagnosis Evaluation	Category "C"	: Repair of damaged/corroded members and cracked co	ncrete needed				
	'2	category c	: In-depth study not necessary					
Vulnerability to Disaster	Seismic Resistance Wind Resistance		ations are sufficient under present seismic design requirements lepth study for corrective action necessary. Low vulnerability	. Moderate vuinera	раку			-
iny to	Flood Resistance	2010 10200100	d overtapping. Low vulnerability					
	Evaluation	* Not critical to fi	lood action but needs repair of sway bracing					
e			on substructure seismic resistance necessary					
-	Traffic Limit	Accession to a second	HS20) Semi-Trailer Truck (32.7 tons) anes Level of service : F (V/C Ratio = 1.23)					
-	Volume/ Capacity	- rear fundant a m	the subscription of the su					
-	Smooth Driving	Non-steen slope	compation and curvature					
-	Smooth Driving Condition		corrugation and curvature					
Function	Smooth Driving Condition Evaluation	* Traffic function	corrugation and curvature ality reduced by level of service regrand, horzontal cleance < preferred					
Function	Smooth Driving Condition Evaluation River Navigation	Traffic function Vertical clearance > re	ality reduced by level of service	Vaterline, 12-Φ100	PVC Telephone			
-	Smooth Driving Condition Evaluation River Navigation Utilities	Traffic function Vertical clearance > re	ality reduced by level of service sguard: horzontal clearance < preferred	Vaterline, 12-Φ100	PVC Telephone			

1. Damage Assessment H : Heavy M : Medium S : Small

2. Diagnosis Evaluation "a" : Urgent measures shall be applied; Conduct In-depth Survey "b" : Urgent measures not required; Conduct In-depth Survey "c" : In-depth survey not required

Appendix 8.6.1-1 (12/20) OVERALL EVALUATION OF BRIDGE CONDITION

-	ation/Name of Road	EDSA				BRIDGE (Both S		Year Constructed	1979
			0	5		-53	6		
			(A)			3	3		
			-	707A, 8703	8. 1860 ¹¹⁴ - 114	441	· · ·		
			35700	192.	42803	3594			
		Çoce 10 PA	LAN 274	1			1	a average off-seedy	
			17 V 7	7	1	500	F		
			al III		. 1				
			[socol	104 	5	tores and the	=/+	(MC N.43) (350+350+) (1+20-20-1)	
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			1052 9.20	il ili	1				
			And the second s	11:15	S. AST		\sim \sim \sim \sim	d drad Ser	
		Printer .			120+320-1-1 (220+320-1-1 (221-29]	1 出出 入村 /四		An Avera Day	
	Elevation				1				
		Y.	Burt		1	V			
		1 3			1			The Contest	
		100	1					the state	
		No.	TILLA		-	RETTING AVENUE			
								A State	
		199	Cracks at Gerber Hinge	Contraction of the local division of the loc				- Alter	
			anana er adnan unfig	A DE		the sea			100
					-		Contraction Contraction	acks at gerber hinge	at the
				-	Constant of the		- Ch	in for not thirds	
					Call III I I I I I I I I I I I I I I I I	1			
_				Expose	d Rebar and Spall	ing at Girder			
L	ength of Bridge	114.44m. (35.70	+42.80 + 35.94)					No. of Lane Lane Width	4 3.00m
Curr	perstructure Type					Substructure Type			
205	personal activities rype		PC Gerber Girder Bridge (3-Span	0		Substructure Type	Abutment: Wall Typ	e (spread, PSC pile), Pier: W	all Type (PSC
		Members	Location of Damaged Parks	Damage Bating	Damage		Reason for A	ssessment	
		0.00000000		Rating (X,Y,Z)	Assessment *1				
			Span 2 : Gerber Hinge 1 of Girder 5 to 8	1	н	Corrosion of Exposed Rebars			
			Span 2 : Middle span of Girder 5	1	н	Corrosion of Exposed Rebars			
		DER	Span 2 : Gerber Hinge 2 of Girder 1	0	н	Corrosion of Exposed Rebars			
	Superstructure	PC I GIRDER	Span 1 : Bottom of Center span of Girder 1, 3, 4 to 8	11	M	Cracks and Corrosion of Exposed Reb	ars		
		24	Span 2 : Gerber Hinge 1 of Girder 1 & 5 to 8	0	ня	Wide Cracks at Gerber Hinge, Spalling	and Exposed Rebars		
			Span 2 Middle of Grder 8	(a)	м	Cracks and Corrosion of Exposed Reb	ers		
22	1		Span 2 : Genter Hinge 2 of Girder 1, 5, 6 & 8		HH	Wide Cracks at Gerber Hinge, Spalling	and Excosed Rebars		
upun			Abutment AZ	1	H	Cracks on the face of the abutment.			
					<u>n</u> .	Contra or the act of the aptimited			
100		MEN							
uctural soc	-	ABUTMEN							
Structural Soundness	Substructure	ABUTMENT							
	Substructure		Pier 2 Wat (US & DIS)		м	Corrosion of Exposed Rebars			
Seructural Soc	Substructure	PIER	Per 2 Wat (US & DIS)	8	м	Corrosion of Exocaed Rebars			
on municipality	Substructure		Per 2 Wat (US & DIS)	£.	м	Corresion of Exposed Rebars			
		E Bearing of Girder	5, Pier 1	8	M	Corrosion of Exocosed Rebars			
Seruciaral Soc	Foundation	PIER	5. Pier 1 5. Pier 2	8 0	M				
	Foundation Accessory Diagnosis Evaluation	Bearing of Girder	5, Pier 1	8 0	M	Rust is scattered generated extensively			
-24 INCENTAL 200	Foundation	Bearing of Girder Bearing of Girder Category "A"	5. Pier 1 5. Pier 2 • Cracks at Gerber hinge parts related to bridge desi	ii ii ign and/or construc	M M ction quality.	Rust is scattered generated extensively Rust is scattered generated exte	ansively		
>	Foundation Accessory Diagnosis Evaluation	Bearing of Girder Bearing of Girder Category "A" • Pier and Founda	5. Pier 1 5. Pier 2 • Cracks at Gerber hinge parts related to bridge desi ion (PSC piles) are insufficient under latest code seismic	ii ii ign and/or construc	M M ction quality.	Rust is scattered generated extensively Rust is scattered generated exte	ansively		
>	Foundation Accessory Diagnosis Evaluation *2 Seismic Resistance	Bearing of Girder Bearing of Girder Category "A" • Pier and Founda • High Vuinerabilit	8. Pier 1 6. Pier 2 • Cracks at Gerber hinge parts related to bridge desi ion (PSC piles) are insufficient under latest code seismic /	ii ii ign and/or construc	M M ction quality.	Rust is scattered generated extensively Rust is scattered generated exte	ansively		
>	Foundation Accessory Diagnosis Evaluation 2 Seismic Resistance Wind Resistance	Bearing of Girder Bearing of Girder Category "A" • Pier and Founda • High Vulnerabilit Not critical to wing	 a. Pier 1 b. Pier 2 b. Cracks at Gerber hinge parts related to bridge desition (PSC piles) are insufficient under latest code seismic Action. Low vulnerability 	ii ii ign and/or construc	M M ction quality.	Rust is scattered generated extensively Rust is scattered generated exte	ansively		
>	Foundation Accessory Diagnosis Evaluation *2 Seismic Resistance	Bearing of Girder Bearing of Girder Category "A" • Pier and Founda • High Vulnersbilt Not critical to wing Not critical to floo	 a. Pier 1 b. Pier 2 b. Cracks at Gerber hinge parts related to bridge desition (PSC piles) are insufficient under latest code seismic / action. Low vulnerability d overlapping. Low vulnerability 	ii ii ign and/or construc	M M ction quality.	Rust is scattered generated extensively Rust is scattered generated exte	ansively		
>	Foundation Accessory Diagnosis Evaluation 2 Seismic Resistance Wind Resistance	Bearing of Girder Bearing of Girder Bearing of Girder Category "A" • Piler and Founda • High Vulnersbillt Not critical to wind Not critical to floo • Bridge Is highly	 a. Pier 1 b. Pier 2 b. Cracks at Gerber hinge parts related to bridge desition (PSC piles) are insufficient under latest code seismic A action. Low vulnerability d overlapping. Low vulnerability vulnerable to seismic forces. 	ii ii ign and/or construc	M M ction quality.	Rust is scattered generated extensively Rust is scattered generated exte	ansively		
	Foundation Accessory Diagnosis Evaluation '2' Seismic Resistance Wind Resistance Flood Resistance Evaluation	Bearing of Girder Bearing of Girder Bearing of Girder Category "A" • Pier and Founda • High Vuinerabilit Not critical to wind Not critical to floo • Bridge is highly • Bridge is suffici	 B. Pier 1 Fier 2 Cracks at Gerber hinge parts related to bridge desition (PSC piles) are insufficient under latest code seismic // action. Low vulnerability d overtapping. Low vulnerability vulnerability to seismic forces. ent to wind and flood action. 	ii iign and/or constru- cequirements, In-de	M M ction quality. spth study a neede	Rust is scattered generated extensively Rust is scattered generated exte d to determine required strengthe	ansively		
	Foundation Accessory Diagnosis Evaluation *2 Seismic Resistance Wind Resistance Floor Resistance Evaluation Traffic Limit	Bearing of Girder Bearing of Girder Bearing of Girder Category "A" • Pier and Founda • High Vulnerabilit Not critical to floo • Bridge is highly • Bridge is sufficil 14.4-ton Truck . L	 a. Pier 1 b. Pier 2 b. Cracks at Gerber hinge parts related to bridge desition (PSC piles) are insufficient under latest code seismic A action. Low vulnerability d overtapping. Low vulnerability vulnerability vulnerability vulnerability out of wind and flood action. action. 0.74 Operating Level (code) 	ii iign and/or constru- cequirements, In-de	M M ction quality. spth study a neede	Rust is scattered generated extensively Rust is scattered generated exte d to determine required strengthe	ansively		
	Foundation Accessory Diagnosis Evaluation 2 Seismic Resistance Wind Resistance Floor Resistance Evaluation Traffic Limit Volume/ Capacity	Bearing of Girder Bearing of Girder Bearing of Girder Category "A" • Pier and Founda • High Vuinerabilit Not criticul to floo • Bridge is highly • Bridge is suffici 14.4-ton Truck., L 94,330 (2002) 4 L	 B. Pier 1 Fier 2 Cracks at Gerber hinge parts related to bridge desition (PSC piles) are insufficient under latest code seismic // action. Low vulnerability d overtapping. Low vulnerability vulnerability to seismic forces. ent to wind and flood action. 	ii iign and/or constru- cequirements, In-de	M M ction quality. spth study a neede	Rust is scattered generated extensively Rust is scattered generated exte d to determine required strengthe	ansively		
	Foundation Accessory Diagnosis Evaluation *2 Seismic Resistance Wind Resistance Floor Resistance Evaluation Traffic Limit	Bearing of Girder Bearing of Girder Bearing of Girder Category "A" • Pier and Founda • High Vulnerabilit Not critical to floo • Bridge is highly • Bridge is sufficil 14.4-ton Truck . L	 a. Pier 1 b. Pier 2 b. Cracks at Gerber hinge parts related to bridge desition (PSC piles) are insufficient under latest code seismic A action. Low vulnerability d overtapping. Low vulnerability vulnerability vulnerability vulnerability out of wind and flood action. action. 0.74 Operating Level (code) 	ii iign and/or constru- cequirements, In-de	M M ction quality. spth study a neede	Rust is scattered generated extensively Rust is scattered generated exte d to determine required strengthe	ansively		
>	Foundation Accessory Diagnosis Evaluation *2 Seismic Resistance Wind Resistance Flood Resistance Evaluation Traffic Limit Volume/ Capacity Smooth Driving	Bearing of Girder Bearing of Girder Bearing of Girder Category "A" • Pier and Founda • High Vuinersbill Not critical to wind Not critical to wind Not critical to Mon • Bridge is highly • Bridge is sufficil 14.4-ton Truck _ L 94.330 (2002) 4 La Good	 a. Pier 1 b. Pier 2 b. Cracks at Gerber hinge parts related to bridge desition (PSC piles) are insufficient under latest code seismic A action. Low vulnerability d overtapping. Low vulnerability vulnerability vulnerability vulnerability out of wind and flood action. action. 0.74 Operating Level (code) 	ii iign and/or constru- cequirements, In-de	M M ction quality. spth study a neede	Rust is scattered generated extensively Rust is scattered generated exte d to determine required strengthe	ansively		
Function	Foundation Accessory Diagnosis Evaluation 2 Seismic Resistance Vind Resistance Flood Resistance Evaluation Traffic Limit Volumer Capacity Smooth Driving Condition	Bearing of Girder Bearing of Girder Bearing of Girder Category "A" Category "A" High Vuinerabilit Not critical to wind Not critical to floo High Vuinerabilit Not critical to floo Beidge is highly Bridge is suffici 14.4-ton Truck _ L 94.330 (2002) 4 La Good	5. Pier 1 5. Pier 2 • Cracks at Gerber hinge parts related to bridge deal ton (PSC piles) are insufficient under latest code selamic / action. Low vulnerability d overtapping. Low vulnerability vulnerability outnerability outnerability outnerability insufficient of service. F (VIC Ratio + 1.23)	ii iign and/or constru- cequirements, In-de	M M ction quality. spth study a neede	Rust is scattered generated extensively Rust is scattered generated exte d to determine required strengthe	ansively		
	Foundation Accessory Diagnosis Evaluation 2 Seismic Resistance Flood Resistance Evaluation Traffic Limit Volumer Capacity Smoth Driving Condition	Bearing of Girder Bearing of Girder Bearing of Girder Category "A" Category "A" High Vuinerabilit Not critical to wind Not critical to floo High Vuinerabilit Not critical to floo Beidge is highly Bridge is suffici 14.4-ton Truck _ L 94.330 (2002) 4 La Good		ii iign and/or constru- cequirements, In-de	M M ction quality. spth study a neede	Rust is scattered generated extensively Rust is scattered generated exte d to determine required strengthe	ansively		
	Foundation Accessory Diagnosis Evaluation 2 Seismic Resistance Flood Resistance Evaluation Traffic Limit Volumer Capacity Smoth Driving Condition Evaluation River Navigation	Bearing of Girder Bearing of Girder Bearing of Girder Category "A" Category "A" High Vuinerabile Not critical to wind Not critical to wind Not critical to floo - Bridge is highly - Bridge is highly - Bridge is suffici 14.4-ton Truck - L 94.330 (2002) 4 La Good * Traffic functions Vencal Clearance > R	8. Pier 1 5. Pier 2 • Cracks at Gerber blinge parts related to bridge desi tion (PSC piles) are insufficient under latest code seismic 4. action. Low vulnerability 3 overtapping. Low vulnerability vulnerability vulnerability outinerability ent to wind and flood action. action. Cover and flood action. action Level of Service. F (V/C Ratio * 1 23) lifty reduced by level of service and load limitations. spuRMd. Horzonal Cestance < Reputates Telephone lines	ii iign and/or constru- cequirements, In-de	M M ction quality. spth study a neede	Rust is scattered generated extensively Rust is scattered generated exte d to determine required strengthe	ansively		
	Foundation Accessory Diagnosis Evaluation 2 Seismic Resistance Vind Resistance Flood Resistance Evaluation Traffic Limit Volume' Capacity Smoth Driving Condition Evaluation River Navigation Utilities	Bearing of Girder Bearing of Girder Bearing of Girder Category "A" • Pier and Founda • High Vuinerabilit Not critical to Nind Not critical to Nind Not critical to Nind • Bridge is suffici 14.4-bon Truck _ L 94.330 (2002) 4 Liz Good • Traffic functions Vencal Cearance > R 20 – 100mme PVC (Light – 2 househo	8. Pier 1 5. Pier 2 • Cracks at Gerber blinge parts related to bridge desi tion (PSC piles) are insufficient under latest code seismic 4. action. Low vulnerability 3 overtapping. Low vulnerability vulnerability vulnerability outinerability ent to wind and flood action. action. Cover and flood action. action Level of Service. F (V/C Ratio * 1 23) lifty reduced by level of service and load limitations. spuRMd. Horzonal Cestance < Reputates Telephone lines	ii iign and/or constru- cequirements, In-de	M M ction quality. spth study a neede	Rust is scattered generated extensively Rust is scattered generated exte d to determine required strengthe	ansively		

Diagnosis Evaluation
 ^{*}A*: Urgent measures shall be applied; Conduct In-depth Survey
 ^{*}B*: Urgent measures not required; Conduct In-depth Survey
 ^{*}C*: In-depth survey not required

H : Heavy M : Heavy M : Medium S : Small

Appendix 8.6.1-1 (13/20) OVERALL EVALUATION OF BRIDGE CONDITION

	tion/Name of Road	Pasig City				Year Co	enstructed	1997		
Elevation		Pasig City	Contraction of the second seco		Anthor commit					
		Diag Crack	@ Right Web rear End Disph @ Bay 1	Honeycomb at I	Bay 3. End Diaptragm	Random cracks at E	lay 1. t=0.203mm			
L	ength of Bridge	272.960 m. (24.8	35 + 24.95 + 25.12 + 25.0 + 24.85 + 45.88 + 22.21+ 26.95	+ 26.70 + 26.45)			f Lane	6		
					and a second		Width	3.00m		
Sup	erstructure Type		PC I Girder Bridge (10-Span)		Substructure Type	Abutment: Wall Type (spread, bo	plie), Pier: plie)	Column Type (oc		
		Members	Location of Damaged Parks	Damage Assessment *1		Reason for Assessment				
-			Span 6: Top flange at Bay 1 above Pier 6	н	0.3m Φ pothole with remarkable depth	above P1 and 0.7m® pothole near P2				
		DER	Span & Bottom of girder flange	н	1.80m ² honeycomb on one location					
		PC I GIRDER	Span 6: Girders 4 & 8 near Pier 6 Support	м	0.45 - 1.60m ² honeycomp on <u>2.3pcatic</u>	ons				
		8	Span 9: End block upstream	м	2.261mm crack is just construction join	nt which enabled free lime occurrence in the infe	riar jaint			
			Span 9: Greer 12 at end block	N.	0.12m ² Spalling with exposed rebars on one location Missing, Pactured, or loose due to compoien.					
	Superstructure	Superstructure 양 정	Span 1 & 2: Pothole above P1, 1.2m from P2 Span 4: Bottom of slab at Pier 3, bay 6	н	Massing, Hestined, or loose due to corrosion.					
			Span 6: Honeycomb at bottom slab, bay 78.8	н	0.12 to 0.15m ² of spaling with exposed rebars. <u>2 locations</u> 0.54m ² honeycomb on one location					
	102030000000000		Span 6: Crack at bottom of cartilever stab mear pier	н	u skm honeycoma on one koasion 1.00m ² honeycomb on one location					
			Span 6: End diaphragm at P6, bay 10	м	Table Received an one location					
		DECK SLAB	A8 Spans: Restraining bars at end diaphragms	н	Missing, fractured, or loose due to com	oson				
			E		Span 7: Deck slab at bay 1 & 2	м	0.12 to 0.15m2 of spatting with expose	d rebars, 2 locations		
ndnes				Span 8. Honeycomb at bottom slab, bay 4	н	0.54m2 honeycomb on one location				
al Sou			Span 8: End Diaphragmislab at pier 8	н	1 09m2 honeycomb on one location					
Structural Soundness		-	Span 8: End Daptragmislab at pier 8 Downstream side of Abut 1	H	0.635mm crack on one location 0.355mm beneratal crack on one locat	ton. This maybe due to less reinforcement at el	sd or shririkase			
ŝ		ABUTMENT	Abut B wall near bearing	н	0.61mm vertical cracks due to increase					
		VBI	Abut B Restraining Bar	н	50% kosening					
	Substructure		Span 4: Fier 3 coping downstream	M	0.255mm crack due to alkaline aggrega	xie reaction				
		~	Span & Pier 6 coping at bay 2	м	0.381 Vertical crack on one location du	e to increase in load concentration				
		PIER	Span 5: Pier 6 coping, cownstream end		2 134mm vertical crack on one location					
			Span 8: Pier 8 coping at bottom		0 23m2 of insufficient concrete cover or					
	Foundation		Span 9: Pier 9 coping at bottom		3.0m2 of insufficient concrete cover on Maximum inclination is 0.63 degrees at					
		All restraining bar		н		missing bars and bolls, some are fractured				
	Accessory	Pier 9 coping, bay	/11	м	0.33 Vertical crack					
	Diagnosis Evaluation	Category "B"	* Repairs of cracks and other concrete damages neco	And a second state data of the second se	240					
a a	Seismic Resistance	Most piers sufficie	 In-depth monitoring of girder behavior during passa int under seismic demand forces except P8 with C/D = 0.7 		aea					
Disast	Wind Resistance		action. Low vulnerability	and the summarial						
Hty to	Flood Resistance		d overtapping. Low vulnerability							
Vulnerability to Disaster		trate to the second	ind and flood action							
TR.	Evaluation	* Reasonably sou	und under selsmic action							
			HS20) Semi-Trailer Truck (32 7 tons)							
Function	Parasite Data la se		ines Level of Service: E (V/C Ratio = 0.85)							
Fur	Constitution	Steep slope at app	sroach road							
8	and the second second		ality limited by level of service							
soos	River Navigation	Vertical clearance > re	guiation; horizontal clearance < preferred					_		
10	Informai Dwellers		20 households identified							
cial			ren ava (130%) (1777) (25.6%) (11							
Special Issues	Evaluation	• Minimal social a	and environmental impact							

Appendix 8.6.1-1 (14/20) OVERALL EVALUATION OF BRIDGE CONDITION

	tion/Name of Road	A. Luna Str Pasig City		all BAN	MBANG BRIDGE		Year Constructed	1991			
	Elevation	- тіці Рig	Image: series of the	BAMBAN 51 Diceore	BRDDE (LEDTH) 92020 40190 		©7 ©8 35950 CHANDEL @EAM 12150 11950 118 CHANDEL @EAM 12150 11950 118 CHANDEL @EAM 12150 11950 118 CHANDEL @EAM CHANDEL				
Le	ngth of Bridge	163.320m (12.0	+11.65+11.7 + 25.9+40.19+25.9+12.15+11.95+11.85)				No. of Lane	2			
	erstructure Type		PC I Girder Bridge (3-Span), (# Girder, 3 Span + 3 Spar	1))	Substructure Type	Abutment: Wall T	Lane Width ype, (PSC Pile), Pier: Colum	3.70m n Type (PSC Pi			
		Members	Location of Damaged Parks	Damage		Reason for A					
				Assessment *1		Reason for A	ssessment				
		YPE	Span 3: End block at both sides of Girder 1, P3	н	0.55mm wide of horizontal crack						
		PC I GIRDER AND CHANNEL TYPE GIRDER	Span 4: End block at both sides of Girder 3 at P4	н	0.60mm wide of diagonal crack						
		ER	Span 5: End block of Girder 1 & 4 at Pier 5	н	0.65mm to 0.80mm wide of horizontal 8	i diagonal crack, <u>2 locatio</u>	<u>ns</u> .				
		GIRL	Span 6: End block of Girder 2 & 3 at Pier 5	н	0.45mm to 0.50mm wide of horizontal 8	dagonal crack. 2 locatio	ns.				
	Superstructure	Superstructure	Superstructure	Superstructure	IRDEF	Span 6: End block at both sides of Girder 3, P6	н	0.50mm wide of horizontal crack			
		C16	Span 6: End block at both sides of Girder 2 at P6	н	0.60mm wide of horizontal crack						
		-	Span 8: Innerface of web at Girder 7 at Pier 7	н	3.00mm wide of diagonal crack						
		TAB	Span 1 Top of Stab	н	1.00mm wide of transverse cracks on to	ng.					
dness		DECK SLAB	Span 3: Bottom of Stab at P3	н	0.35m2 area of exposed rebar						
Soun		0									
Structural Soundness			Span 1: Abutment A coping near Girder G?	н	1.50mm wide random cracks						
Stru		TMENT	Span 9: Abutment B backwall at upstream side	н	10.00mm wide of fractured on abutment						
		E	Span B: Face of Abutment B under Girder 5	н	1.50mm wide of vertical crack						
	Cubato alura	ABU	Shan 9: Face of Abutment R under Girder 3 to Girder 7		1 Mmm wide of disasses areas						
	Substructure	ABU	Span 9. Face of Abutment 8 under Girder 3 to Girder 7 Span 9 Abutment 8 Backwall at Downstream	н	1.00mm wide of diagonal crack.						
	Substructure		Span 9 Abutment 8 Backwall at Downstream	н	12.0mm wide of fractured on abutment						
	Substructure	PIER ABU	Span 9 Abutment 8 Backwall at Downstream Span 5: Coping face at Pier 5	H	12.0mm wide of fractured on abutment 0.40mm wide of vertical crack						
			Span 9 Abutment 8 Backwall at Downstream	H M H	12.0mm wide of fractured on abutment 0.40mm wide of vertical crack 2.50mm wide of diagonal crack	nited at Day 2					
	Foundation	PIER	Span 9 Abutment 8 Backwall at Downstream Span 6: Coping face at Pier 5 Span 8: Top of coping at Pier 7 along Bay 8	H M H S	12.0mm wide of fractured on abutment 0.40mm wide of vertical crack 2.50mm wide of diagonal crack Maximum inclination is 0.63 degrees for	Consequences and a second					
	Foundation Accessory Diagnosis Evaluation	G. Span 9: Bearing Plate	Span 9 Abutment 8 Backwall at Downstream Span 6: Coping face at Pier 5 Span 8: Top of coping at Pier 7 along Bay 8	H M H	12.0mm wide of fractured on abutment 0.40mm wide of vertical crack 2.50mm wide of diagonal crack	Consequences and a second					
	Foundation Accessory Diagnosis Evaluation *2	Span 9: Bearing Plate Category "C"	Span 9 Abutment 8 Backwall at Downstream Span 9 Coping face at Pier 5 Span 8: Top of coping at Pier 7 along Bay 8 of Abutment 8 • Repair of concrete cracks necessary • In-depth survey not necessary	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
0) Å	Foundation Accessory Diagnosis Evaluation 2 Seismic Resistance	Span 9: Bearing Plate Category "C" * Plastic capacity	Span 9 Abutment 8 Backwalf at Downstream Span 9: Coping face at Pier 5 Span 8: Top of coping at Pier 7 along Bay 8 of Abutment 8 • Repair of concrete cracks necessary • In-depth survey not necessary of piers sufficient under seismic forces but need to check on o	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
erability to isaster	Foundation Accessory Diagnosis Evaluation *2 Selsmic Resistance Wind Resistance	Span 9: Bearing Plate Category "C" * Plastic capacity Not critical to winc	Spen 9 Abutment 8 Backwalf at Downstream Span 9 Coping face at Pier 5 Span 8: Top of coping at Pier 7 along Bay 8 e of Abutment 8 • Repair of concrete cracks necessary • In-depth survey not necessary of piers sufficient under seismic forces but need to check on of 5 action. Low vulnerability	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
Vurnerability to Disaster	Foundation Accessory Diagnosis Evaluation *2 Seismic Resistance Wind Resistance Flood Resistance	Span 8: Bearing Plate Category "C" * Plastic capacity Not critical to wind Not critical to floor	Spen 9 Abutment 8 Backwalf at Downstream Span 9 Abutment 8 Backwalf at Downstream Span 8: Top of copieg at Pier 7 along Bay 8 of Abutment 8 • Repair of concrete cracks necessary • In-depth survey not necessary of piers sufficient under selismic forces but need to check on of a action. Low vulnerability d overtapping. Low vulnerability	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
	Foundation Accessory Diagnosis Evaluation *2 Seismic Resistance Wind Resistance Flood Resistance Evaluation	Span 9: Bearing Plate Category "C" * Plastic capacity Not critical to wind Not critical to floor	Spen 9 Abutment 8 Backwalf at Downstream Span 9 Abutment 8 Backwalf at Downstream Span 8: Top of coping at Pier 7 along Bay 8 of Abutment 8 • Repair of concrete cracks necessary • In-depth survey not necessary of piers sufficient under seismic forces but need to check on of a action. Low vulnerability d overtapping. Low vulnerability er wind, flood and seismic action	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
	Foundation Accessory Diagnosis Evaluation *2 Seismic Resistance Wind Resistance Flood Resistance Evaluation Traffic Limit	Span 9: Bearing Plate Category "C" * Plastic capacity Not critical to winc Not critical to floor * Not critical und AASHTO MS-18 (Spen 9 Abutment 8 Backwalf at Downstream Span 9 Abutment 8 Backwalf at Downstream Span 8: Top of coping at Pier 7 along Bay 8 of Abutment 8 • Repair of concrete cracks necessary • In-depth survey not necessary of piers sufficient under seismic forces but need to check on of a cotion. Low vulnerability d overtapping. Low vulnerability ler wind, flood and seismic action HS20) Semi-Trailer Truck (32.7 tons)	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
	Foundation Accessory Diagnosis Evaluation *2 Selsmic Resistance Wind Resistance Flood Resistance Evaluation Traffic Limit Volume/ Capacity	Span 9: Bearing Plate Category "C" * Plastic capacity Not critical to kinc Not critical to floor * Not critical und AASHTO MS-18 (20,779 (2002) 2 la	Span 9 Abutment 8 Backwall at Downstream Span 9 Abutment 8 Backwall at Downstream Span 8: Copieg tace at Pier 5 Span 8: Top of copieg at Pier 7 along Bay 8 and Abutment 8 * Repair of concrete cracks necessary * In-depth survey not necessary of piers sufficient under seismic forces but need to check on of paction. Low vulnerability d overtapping. Low vulnerability d overtapping. Low vulnerability d overtapping. Low vulnerability fer wind, Rood and seismic action HS20) Semi-Traiter Truck (32.7 tons) anes Level of Service: D (V/C Ratio = 0.46)	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
	Foundation Accessory Diagnosis Evaluation *2 Selsmic Resistance Wind Resistance Flood Resistance Evaluation Traffic Limit Volume/ Capacity	Span 9: Bearing Plate Category "C" * Plastic capacity Not critical to kinc Not critical to floor * Not critical und AASHTO MS-18 (20,779 (2002) 2 la	Spen 9 Abutment 8 Backwalf at Downstream Span 9 Abutment 8 Backwalf at Downstream Span 8: Top of coping at Pier 7 along Bay 8 of Abutment 8 • Repair of concrete cracks necessary • In-depth survey not necessary of piers sufficient under seismic forces but need to check on of a cotion. Low vulnerability d overtapping. Low vulnerability ler wind, flood and seismic action HS20) Semi-Trailer Truck (32.7 tons)	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
	Foundation Accessory Diagnosis Evaluation 2 Selismic Resistance Wind Resistance Flood Resistance Flood Resistance Evaluation Traffic Limit Volume/ Capacity Smooth Driving Condition Evaluation	Span 9: Bearing Plate Category "C" * Plastic capacity Not critical to wind Not critical to floor * Not critical und AASHTO MS-18 (20,779 (2002) 2 iz Steep slope at app * Meets minimum	Span 9 Abutment 8 Backwall at Downstream Span 9 Abutment 8 Backwall at Downstream Span 8: Coping tace at Pier 5 Span 8: Top of coping at Pier 7 along Bay 8 and Abutment 8 • Repair of concrete cracks necessary • In-depth survey not necessary of piers sufficient under selismic forces but need to check on of staction. Low vulnerability d overtapping. Low vulnerability er wind, flood and selismic action HS20) Semi-Trailer Truck (32.7 tons) anes Level of Service: D (V/C Ratio = 0.46) proach road, curvature on bridge traffic functionality requirements	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
Traffic Capacity & Function	Foundation Accessory Diagnosis Evaluation 2 Selismic Resistance Wind Resistance Flood Resistance Flood Resistance Evaluation Traffic Limit Volume/ Capacity Smooth Driving Condition Evaluation River Navigation	Span 9: Bearing Plate Category "C" * Plastic capacity Not critical to winc Not critical to floor * Not critical und AASHTO MS-18 (20,779 (2002) 2 la Steep slope at app * Meets minimum Verical clearance > m	Span 9 Abutment 8 Backwall at Downstream Span 9 Abutment 8 Backwall at Downstream Span 8: Coping tace at Pier 5 Span 8: Top of coping at Pier 7 along Bay 8 and Abutment 8 * Repair of concrete cracks necessary * In-depth survey not necessary of piers sufficient under seismic forces but need to check on of a cotion. Lew vulnerability d overtapping. Low vulnerability d overtapping. Low vulnerability er wind, flood and seismic action HS20) Semi-Trailer Truck (32.7 tons) anes Level of Service: D (V/C Ratio = 0.46) proach road, curvature on bridge h traffic functionality requirements guiator: horizonal clearance < preferred	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
Traffic Capacity & Function	Foundation Accessory Diagnosis Evaluation 2 Selismic Resistance Flood Resistance Flood Resistance Evaluation Traffic Limit Volume/ Capacity Smooth Driving Condition Evaluation River Navigation Utilities	Span 9: Bearing Plate Category "C" * Plastic capacity Not critical to winc Not critical to floor * Not critical und AASHTO MS-18 (20,779 (2002) 2 la Steep slope at api * Meets minimum Verical clearance > m Left: 6-0-100 PVC	Span 9 Abutment 8 Backwall at Downstream Span 9 Abutment 8 Backwall at Downstream Span 8 Coping tace at Pier 5 Span 8 Top of coping at Pier 7 along Bay 8 of Abutment 8 * Repair of concrete cracks necessary * In-depth survey not necessary of piers sufficient under seismic forces but need to check on of staction. Low vulnerability d overtapping. Low vulnerability devertapping. Low vulnerability er wind, flood and seismic action H520) Semi-Traiter Truck (32.7 tons) anes Level of Service: D (V/C Ratio = 0.46) proach road, curvature on bridge in traffic functionality requirements aguator: hotomaticlearance < preferred Telephone	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
Special issues Traffic Capacity & Vuinerability to Disaster Disaster	Foundation Accessory Diagnosis Evaluation 2 Selismic Resistance Vind Resistance Flood Resistance Flood Resistance Evaluation Traffic Limit Volume/ Capacity Smooth Driving Condition Evaluation River Navigation Utilities Informal Deellers	Span 9: Bearing Plate Category "C" * Plastic capacity Not critical to winc Not critical to floor * Not critical to floor * Not critical und AASHTO MS-18 (20,779 (2002) 2 la Steep slope at app * Meets minimum Verical clearance > m Left: 6-0-100 PVC Light: Only 4 hour	Span 9 Abutment 8 Backwall at Downstream Span 9 Abutment 8 Backwall at Downstream Span 8: Coping tace at Pier 5 Span 8: Top of coping at Pier 7 along Bay 8 and Abutment 8 * Repair of concrete cracks necessary * In-depth survey not necessary of piers sufficient under seismic forces but need to check on of staction. Low vulnerability divertapping. Low vulnerability devertapping. Low vulnerability devertapping. Low vulnerability er wind, flood and seismic action HS20) Semi-Trailer Truck (32.7 tons) anes Level of Service: D (V/C Ratio = 0.46) proach road, curvature on bridge h traffic functionality requirements guiator; horizontal clearance < presented Telephone scholds identified	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					
Traffic Capacity & Function	Foundation Accessory Diagnosis Evaluation 2 Selismic Resistance Vind Resistance Flood Resistance Evaluation Traffic Limit Volume/ Capacity Smooth Driving Condition Evaluation River Navigation Utilities Informal Deellers Evaluation	Span 9: Bearing Plate Category "C" * Plastic capacity Not critical to winc Not critical to floor * Not critical to floor * Not critical und AASHTO MS-18 (20,779 (2002) 2 la Steep slope at app * Meets minimum Verical clearance > rr Left: 6-e100 PVC Light : Only 4 hous * Minimal social at	Span 9 Abutment 8 Backwall at Downstream Span 9 Abutment 8 Backwall at Downstream Span 8 Coping tace at Pier 5 Span 8 Top of coping at Pier 7 along Bay 8 and Abutment 8 * Repair of concrete cracks necessary * In-depth survey not necessary of piers sufficient under seismic forces but need to check on of staction. Low vulnerability d overtapping. Low vulnerability devertapping. Low vulnerability er wind, flood and seismic action H520) Semi-Traiter Truck (32.7 tons) anes Level of Service: D (V/C Ratio = 0.46) proach road, curvature on bridge in traffic functionality requirements aguator: hotomaticlearance < preferred Telephone	H M H S M	12.0mm wide of fractured on abutment 0.40mm wide of versical crack 2.80mm wide of degonal crack Maximum inclination is 0.63 degrees fon Corrosion spread of bearing state under	Consequences and a second					

Appendix 8.6.1-1 (15/20) OVERALL EVALUATION OF BRIDGE CONDITION

	ation/Name of Road	Pasig Boule Pasig City	vard Extension		RGAS BF			Year Constructed	1992
_		Pasigiony							10000
Elevation			19.30 TREENT A1 P1 P1 P1 P1 P1 P1 P1 P1 P1 P	30.50	122.44 7.50 P2	35.60	7.50 22.0 P3		
Le	ngth of Bridge	122.440m (19.3	+30.5+50.6+22.04)					No. of Lane Lane Width	2 3.70m
Sup	erstructure Type		PC Gerber I Girder Bridge (4-Sp	an)		Substructure Type	Abutment: Wall Type (st	eel pipe pile), Pier: Co pipe pile)	olumn Type (:
		Members	Location of Damaged Parks	Damage Rating (X,Y,Z)	Damage Assessment *1		Reason for Assess	nent	
			Span 1: Top flange of Girder 3 at Pier 1			1.00mm wide vertical crack.			
			Span 3: Face of Girder 1 at Gerber GH1			Spalling with exposed rebar	A=0.45m2.		
			Span 3: Face of Girder 1 at Gerber GH2			Spalling with exposed rebar	A=0.24m2.		
		œ	Span 2: Girder G1 at top of Pier 2			Flexural Crack width 2mm, d	epth of crack 17mm		
		PC I GIRDE	Span 3: Girder G1, GH1, L,			Flexural Crack width 2mm, depth of crack 17mm Crack width 1-3mm, depth of crack 44m			
			Span 3: Top flange of Girder 4 at Pier 2			Crack width 1-3mm, depth of crack 44m 0.45mm wide vertical crack			
	Superstructure		Bridge Deck Profile						
						Settlement of Span 3, 4 gide	Sector Contractor		
			Bridge Deck Profile			Lift-up of Span 2 and Span 4	, 8 girders		
inoss				_					
ounog		SLAB	Span 1: Bottom of slab	_		0.30m2 area of spalling at bo			
Structural Soundness		DECK SLAB	Span 3: Bottom of Cantilever Slab			3.0mm wide crack at bottom,	1.44m2 area of honey comb		
Struc			Abutment A1, Backwall			Crack width 1.0mm			
		ABUTMENT	Addition A 1, Datawaii			Crack width 1.0mm			
	Substructure	ABUT							
	Subsubcidite		Pier 3 Coping	-		Wide cracks near bottom of c	aning width=Emm		
		PIER		-		whee clacks hear ooliom of c	oping, wiom-smm		_
	Ferredative	Pier P2 Steel Pile		_					
	Foundation	FIELE FILL STOOL FILE				Foundation sufficient in latest	code requirement		
	Accessory		Repair of cracks in girders necessary						
	Diagnosis Evaluation *2	Category "A"	In-depth study on deflection and rotation of gird	ler slab necessary i	o verify safety/ar	lequacy of bridge			
	Evaluation 2	1.000.000.000.000	* In-depth study on gerber hinge connection to de						
ster	Seismic Resistance		ficient under present seismic load requirement but ner	eds improvement on	confinement reinfo	orcement.			
Vulnerability to Disaster	Wind Resistance	Low vulnerabilit Not critical to wi	y. nd action. Low Vulnerability						0.000
lity to	Flood Resistance	Not critical to flo	od. Low Vulnerability						
denad	Particular	Bridge is mode	rately vulnerable to seismic forces but needs imp	rovement on confin	ement reinforcer	nent.			
Na la	Evaluation	Bridge is suffic	ient to wind and flood action.						
	Traffic Limit	CONTRACTOR OFFICE	ad Rating: 0.83 Inventory Level (Strength Limit State)	1.000					
tion	Volume/ Capacity		anes (One Direction) Level of Service: E (V/C Ratio	= 0.85)					
Function	Smooth Driving Condition	Fair	19 / 2 / Y						
	Evaluation	Traffic function	ality reduced by decrease in live load capacity and	d level of service.					
2	River Navigation	Vertical Clearance	e > Regulated; Horizontal Clearance: Preferable						
Special Issues	Utilities	Left 8-Φ100 PVC							
	Informal Dwellers	Heavy : More that	n 20 households identified						
cial c									
impade	Evaluation	• Moderate socia	and environmental impact						

H : Heavy M : Medium S : Small

Diagnosis Evaluation
 ^{*}A^{*} : Urgent measures shall be applied; Conduct In-depth Survey
 ^{*}B^{*} : Urgent measures not required; Conduct In-depth Survey
 ^{*}C^{*} : In-depth survey not required

Appendix 8.6.1-1 (16/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loc	ation/Name of Road	Pasig Bould Pasig City	ward Extension		BRIDGE (Down		Year Constructed	1973
			(A1) (P1)	(2)		(P3)	(A2)	
				E miter		-	9	
			30620 30830	AL LEBOTH OF	BRIDGE=142800 50700		1650	
			20 25 25	25 25		25 25		
		Que 10, 148	1 to the second s				70 94044 () 10 94044 () 10 10 10 10 10 10 10 10 10 10 10 10 10 1	
		1367	RF AND B	v W	DFL = 14.348	14	× F	
		8			ŕ		Start order N	15.)
			(5500) . (4000)	X 14	44		(L=23.5	
		L(PSC PLCS)) /(400+400			1(tres.	N_LES/J	
	Elevation	((1+23.5m))	(PSC P.(SI))	(44)	C (PilES)) DeACOmmili- (E Cmili			- 1.00
			(11+20.0m))			-		
			1	TAL RIVERBED	WDTH = 40000			
					X	VARCAN		
		Crad	k and exp. Rebar @ Bot. Slab along Bay 2	Bottom Flange	Slightly Corroded	Diagonal	Crack & Spall @ Coping Face unde	- G-2
Lo	angth of Bridge	142.800m (30.6	32+30.85+50.70+30.65)				No. of Lane Lane Width	2 3.70m
Suc	erstructure Type		Steel Plate Girder Bridge (4-Span)		Substructure Type	Abutment: Wa	II Type ((steel pipe pile)), Pie	
oup					Substitute type		((steel pipe pile))	
		Members	Location of Damaged Parks	Damage Assessment *1		Reason for	Assessment	
		GIRDER	Span 1: Bottom flange, above P1	S	Surface rust, local spot			
		EL GI	Span 2: Botom flange, above P1	s	Surface rust, local spot			
		STEEL	Span 3: Bottom flange above bearing at P2	s	Surface rust, local spot			
	Superstructure		Span 3: Cantilever slab at midspan, upstream side	н	1m2 honeycomb			
		LAB	Span 3: Cantilever slab at midspan, upstream side	м	0.45mm wide crack, transve	rse		
		DECK SLAB	Span 3: Cantilever slab above P3, upstream side H 1m2 honeycomb					
2		JO DO	Span 3: Bay 1, above Pier 2	M	0.12m2 exposed rebar			
dnes			Span 3: Bay 2, above Pier 2	н	1.5mm wide crack, transvers	10		
Sour		ABUTMENT						
Structural Soundness		BUT						
Struc	Substructure	-	Span 2: Pier 2 Coping at Bay 1					
		PIER	opartz, Pierz Coping at Bay 1	м	0.6mm wide vertical crack			
		Id						
				· · · · · · · · · · · · · · · · · · ·			0324333	
	Foundation		Prove 4 10 10 2 2 10 10 10 10 10 10 10 10 10 10 10 10 10	S	Maximum inclination is 0.52		at Pier 1.	
	Accessory		Spans 1. 2, 3, & 4 Bearing Shoe • Urgent repair/maintenance work needed for concr	M	Reduction in cross section, commo	n in all bearing shoes		
	Diagnosis Evaluation *2	Category "C"	* Monitoring of girder behavior under heavy trucks i		rroded steel memoers.			
			in a second s	lecessary				
ister	Seismic Resistance	* No as-built pla	ns. In-depth study on Pier performance under seismic act	ion needed. Moder	ate vulnerability			
o Disa	Wind Resistance	Not critical to win	nd action. Low vulnerability					
dity t	Flood Resistance	Not critical to flor	od overtapping. Low vulnerability					
Vulnerability to Disaster	Evaluation	• Not critical to	wind and flood action					
ⁿ			h study on seismic performance					
	Traffic Limit	10.000000000000000000000000000000000000	(HS20) Semi-Trailer Truck (32.7 tons)			1		
tion	Volume/ Capacity	26,800 (2002) 2	ianes (One Direction) Level of Service: E (V/C Ratio	= 0.85)				
Function	Smooth Driving Condition		, corrugation and curvature					
	Evaluation	Traffic functio	nality is limited by level of service					
	River Navigation	Vertical clearance	e > regulated; horizontal clearance < preferred					
sues	Utilities		el Waterline: Right: 12-Φ100 PVC Telephone					
opocial Issues	Informal Dwellers	Heavy : More the	an 20 households identified					
spe	Evaluation	* Moderate soci	al and environmental impact					
	aluation	* Bridge reason	ably sound but needs in-depth monitoring of girder u	nder heavy trucks				

H : Heavy M : Medium S : Small Diagnosis Evaluation "A" - Urgent measures shall be applied; Conduct In-depth Survey "B" : Urgent measures not required; Conduct In-depth Survey "C" : In-depth survey not required

Appendix 8.6.1-1 (17/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loc	ation/Name of Road	Ortigas Ave Pasig City	nue		SARIO BRIDGE		Year Constructed	1952
			(A) (P)	@2	P3	P4	(P5)	(A2)
			-		175350	1		1
			25500 31200	31190	30980	31070	25410	
		=		• []u	*) DFL=14.678	*) (M	11	4/1
					X			
	Elevation		# /		/	1111		
			A BAR AND A	N. C. Walter	1-0.00	Barry /	A A A A A A A A A A A A A A A A A A A	10
			The stand of the	S SHA		V	1-15-	
			A REAL PROPERTY OF	ALC: NO. O	Sent San	10	The second	
			A State State	ALL AND	H.	1	A States In-	
			NING TH	10		La contrata		
			2 12	The second		1		
			All results in the course was a set of a second second of	Transverse crack of Cantile	ver slab at downstream side (H).	Random cracks on	end block. PSC Girder (G2) (H)	
L	ength of Bridge	175.240m (25.3	36+31.25+31.17+30.98+31.07+25.41)		·		No. of Lane Lane Width	6 3.20m
Sup	erstructure Type		PC I Girder Bridge (6-Span)		Substructure Type	Abutment: Wall Ty	ype (PSC pile, timber pile),	Pier: ColumnT
						(PSC	pile, timber pile, steel pip	e pile)
		Members	Location of Damaged Parks	Damage Assessment *1		Reason for A	Assessment	
			Span 3:Girder 1	0.0000000000000000000000000000000000000				
				м	0.30mm random crack due to bent			
		PCI GIRDER	Span 5:Girder 1	н	0.50mm random crack due to bent		a osta a contrata anti n a-	
		CIGI	Span 6: Girder 2 (Girder 4, Girder 5)	н	0.813mm random crack due to mov			
		a.	Span 6: Girder 4	н	1,50mm random crack is caused by	splitting of concrete and	reinforcement	
			Span 6: Girder 5	н	Long crack 1.50mm. The crack is c	aused by splitting of conc	rete thus exposing rebars.	
			Span 1: Bottom Cantilever Slab	н	Transverse crack 0.61mm du			
			Span 1: Bottom of Slab, Bay 3 etc.	н	Random cracks 2.15 mm due		i bar.	
	Superstructure		Span 2: Bottom of Slab	M	0.255m2 spalling of concrete			
			Span 2: Bottom of Slab at Bay 6, etc. Span 2Bottom of Slab, Bay 7, etc.	н	Several random crack 0.61mr	- 2002 / 201 By Control / 2010		
		IAB	Span 2: Bottom of Cantilever Slab	н	Exposed rebar 0.174m2 is caused by splitting of concrete and reinforcement. Transverse crack 0.869mm is caused by fatigue due to repeated load.			
		DECK SLAB	Span 2: Bottom of Slab, Bay 1	M	Fransverse crack 0.899mm is caused by fatigue due to repeated load. Honey comb 0.12m2			
1055		ä	Span 2: Bottom of Slab	н	Spalling 0.45m2			
Structural Soundness		Span 2: Bettom of Slab Span 3: Bottom of Slab Span 4: Bottom of Cantilever	Span 3: Bottom of Slab	м	Random cracks 0.35mm is du	e to shrinkage of pla	stered concrete.	
urals			Span 4: Bottom of Cantilever	н	Transverse crack 0.61mm due	e to fatigue by repeat	ed loading.	
itruct			Span 5: Bottom of Cantilever	м	Random crack 0.35mm is cau	sed by poor compact	ion and inferior joints.	
			Span 6: Bottom of Cantilever	н	Random crack 0.766mm is ca	used by lack of rigidi	ly of girder and fatigue by rep	peated load.
		ENT						
		ABUTMENT						
	Substructure	2						
	1.000.000000000000000000000000000000000	œ	Span 2: Coping at Pier 1	м	2mm horizontal crack is cause	d by presence of mu	d in aggregates.	
		PIER	Span 2: Coping at Pier 3	S	Diagonal crack 0.61mm is cau	sed by external shea	r force.	
			Span 5: Coping at Pier 5	м	0.381mm random crack is cau	sed by increase in lo	ad, horizontal force or lack o	f reinforcing bar.
	Foundation			S	Maximum inclination is 0.52 to	ngitudinal at A2.		
	Accessory		Spans 1, 2, 3, 4 & 5: Steel Bearing P1, P2, P3, P4 & P5		Moderate corrosion, reduction	of cross section		
			Every girder end	н	Prevention devices with steel rope			
	Diagnosis Evaluation *2	Category "B"	* Repairs of concrete cracks necessary					
	Evaluation 2		* In-depth study of deck slab needed					
ster	Seismic Resistance	Pier insufficient	under present seismic design requirements. Moderati	e vulnerability				
Vulnerability to Disaster	Wind Resistance	Not critical to win	d action. Low vulnerability					
dity to	Flood Resistance	Not critical to floo	d overtapping. Low vulnerability					
nerab	Endeding	* Not critical to v	wind and flood action					
Vut	Evaluation	• In-depth study	needed to verify pler sufficient under present seis	smic requirement				
	Traffic Limit		HS20) Semi-Trailer Truck (32.7 tons)					
Function	Volume/ Capacity	85,059 (2002) 6 1	Lanes Level of service : F (V/C Ratio = 1.22)					
Fun	Smooth Driving Condition	Non-steep slope.	corrugation and curvature					
	Evaluation	* Traffic function	nality is limited by level of service					
500	River Navigation	Vertical clearance	e > regulated; Horizontal clearance < preferred					
allss	Utilities		PVC Telephone; Right : 12 - §100 PVC Telephone					
Special Issues	Informal Dwellers		n 20 households identified					
1	Evaluation		al and environmental impact ably sound but In-depth monitoring of slab necess.	201				_
	luation	minelle reasous						



Diagnosis Evaluation
 "A": Urgent measures shall be applied; Conduct In-depth Survey
 "B": Urgent measures not required; Conduct In-depth Survey
 "C": In-depth survey not required

Appendix 8.6.1-1 (18/20) OVERALL EVALUATION OF BRIDGE CONDITION

Refe	rence/Bridge Name			Ma3 MA	RCOS BRIDGE				
Loca	ition/Name of Road	Marcos Hig Marikina Ci					Year Constructed	1980	
				9 B	16 P	PB	(B)	2	
			22330 80000 27500 30750 222	101AL LE 30000	NGTH OF BRIDGE-311080 30000 30000	30000 30	30000 221	00 TO GUEZO	
		TO MARKANA CIT	Y					- Y	
				Î Î					
Elevation									
		Hor	izantal crack @ Pier 4 Coping (H). H	oney comb on outer to	ice of girder, upstream (H)	Heavy corro	sion and deformation of Bearing s	noe.(H)	
Le	ngth of Bridge	311.680m (22.0	03+30.0+27.5+30.15+6@30.0+22.0)				No. of Lane Lane Width	6 3.00m	
Sup	erstructure Type		PC I Girder Bridge (11-Span)		Substructure Type	Abutment: Wall T	ype ((RC pile)), Pier: Colu	nn Type ((RC	
		Members	Location of Damaged Parks	Damage Assessment *1		Reason for a	Assessment		
			Span 1 at Bay 7: Bottom flange of Girder 8	м	A = 0 15m2 honeycomb				
			Span 2 at Bay 7: Top flange of Girder 7	м	A = 0.15m2 spalling with exposed r	ebar			
			Span 2 at Bay 8: Face of Girder 8	м	A= 0.16m2 honeycomb				
			Span 3 at Bay 5: Top flange of Girder 6	м	A = 0.30m2 spaling with exposed r	ebar			
		RDER	Span 5 at Bay 2 at Pier 5: Top flange of Girder 3	м	A = 0.12m2 spalling with exposed r	ebar			
		PCI GIRDER	Span 5 at Bay 11 at Pler 4: Bottom flange of Girder 9	м	A = 0.15m2 spaling with exposed rebar				
			Span 6 at Bay 7 at Pier 6: Bottom of Girder 8	м	A = 0.12m2 spaling with exposed rebar				
	Superstructure		Span 7 at Bay 10 at Pier 6: Bottom flange of Girder 11	м					
			Span 8 at Bay 10 at Pier 7: Bottom of Girder 10	м	A = 0.16m2 spalling with exposed n	eber			
			Span 10 : Outside face of Girder 12	M	A = 0.16m2 spalling with exposed n	ebar			
2			Span 4 at Bay 11 at Pier 3: Bottom of slab	м	A = 0.40m2 spalling				
dness			Span 4 at all bays: Bottom of Slab	н	A > 3.0m2 thin concrete cove	н			
nnos		DECK SLAB	Span 5 at Bay 2 at Pier 5: Bottom of Slab	м	A = 0.30m2 spatling				
structural soundness		DECI	Span 5 at Bay 3 at Pier 5: Bottom of Slab	м	t = 0.381mm random cracks a				
Str			Span 6 at Bay 11 at Pier 6: Bottom of Slab	н	A = 1.320m2 spalling with ex	S. Martin C. S. Ma			
			Span 9 at Bay 1: Bottom of Slab	н	A = 0.72m2 spalling with exp	osed repar			
		ABUTMENT							
	Substructure		Spans 1, 2, 3 & 4: Coping of Piers 1, 2, 3, & 4	н	t = 0.30mm to t = 5.00mm random c	racks are caused by lack	of reinforcing bars. 4 locations		
		œ	Spans 1, 2, 3, 4 & 5: Coping of Piers 1, 2, 3, 4 & 5	м	1 = 0.10mm to t = 0.30mm random c				
		PIER	Spans 1, 2, 4, 5 & 6: Coping of Piers 1, 2, 4, 5 & 6	н	t = 0.30mm to t = 10.00mm vertical/			5 locations	
			Spans 1, 2, 3, 4, 5 & 7: Coping of Piers 1, 2, 3, 4, 5 & 7	M	t = 0.10mm to t = 0.30mm vertical/h				
	Foundation			s	Maximum inclination is 0.57 d				
	Accessory		Bearing plate and prevention devices	s	Minimum rust				
	Diagnosis Evaluation *2	Category "C"	Repair of concrete cracks needed In-depth study not necessary						
	Seismic Resistance	* No as-built plan	I ns. Pier sufficient under present seismic design requiremer	nts. Moderate vuin	erability				
	Wind Resistance	Not critical to wir	nd action. Low vulnerability						
	Flood Resistance	2.5.789.895.777.090T	od overtapping. Low vulnerability						
	Evaluation	• Not critical to	wind and flood action						
8			elsmic action under assumed reinforcement						
-	Traffic Limit		HS20) Semi-Trailer Truck (32.7 tons)						
Function	Volume/ Capacity Smooth Driving		Lanes Level of service : E (V/C Ratio = 0.88)	_					
n, n	Condition		, corrugation and curvature						
_	Evaluation		nality is limited by level of service						
	River Navigation Utilities	Vertical clearance Right : 4 - 6 100	e > Regulated; Horizontal clearance > preferred	_					
	- 36.14° 1.10/24	No identified info							
1	Evaluation	 Minimal social 	and environmental impact						

H : Heavy M : Medium S : Small 2. Diagnosis Evaluation
 "A" : Urgent measures shall be applied; Conduct In-depth Survey
 "B" : Urgent measures not required; Conduct In-depth Survey
 "C" : In-depth survey not required

Appendix 8.6.1-1 (19/20) OVERALL EVALUATION OF BRIDGE CONDITION

Loca	tion/Name of Road	A. Bonifacio Marikina Cit	o Avenue / E. Rodriguez Avenue ly				Year Constructed	1980	
			24200 30200		BIDGE LENGTH)	30200	24000		
	¥1								
		1		n .	n N		EI.		
								1	
				/		Commence.			
		REAL S	REAL PROPERTY OF THE REAL PROP	The second second		A DESCRIPTION		a an	
	Elevation	and the	AT AT A CONTRACT OF A	A. Steel			A/P3	-	
		EX CONT		1. 1.		1		the second	
		- CAN	1	Maio					
		1 STA			2 Additional Property	den sta			
		5	12/18/202	A Defension			1. Hallowed ?		
		1	/ /	A COLUMN TWO IS NOT	Charles Port Control Inc.			-	
		Vertical Cr.	ack @ Face of Abut Wall, t = 12.00 mm	Honeycomb @ Bot. c	f deck stab, A = 0.18 m2	Rano:	om Cracks @ Front Face , I = 0.50	mm	
Le	ngth of Bridge	138.200 m. (24	.2 + 3 @ 30.0 + 24.0)				No. of Lane Lane Width	4 3.40m	
Supe	erstructure Type		PC I Girder Bridge (5-Span)		Substructure Type	Abutment: Wall Ty	pe ((RC pile)), Pier: Colum	n Type ((RC	
-		Members	Location of Damaged Parks	Damage		Reason for A			
-		memoura	Span 1: End of Girder 4	Assessment *1	0.025mm2 area of spall	Reason for A	ssessment		
				1					
			Span 1 : Web of Girder 11 near end block at Bay 11	5	D 15mm wide of diagonal crack				
		DER	Span 2: Web of Girder 12	S	0 15mm wide of random cracks				
		PCI GIRDER	Span 4: Top flange of Girder 4 at Bay 4	S	0.04mm2 area of honeycomb				
		đ.	Span 4: Bottom of Girder 6	S	0.03mm2 area of exposed rebar				
			Span 5: Bottom of Girder 2 near Abutment B	S	0.01mm2 area of exposed rebar				
		· · · · · · · · · · · · · · · · · · ·	Span 5: End block of Girder 2 at PRT 4	S	0.15mm wide of random cracks				
	Superstructure		Span 2: Deck slab at Bay 2	м	0.35mm wide of crack				
			Span 2: Bottom of Deck slab at Bay 2	м	0.35mm wide of transverse crack				
			Span 2: Bottom of Deck slab at Bay 3	м	0.18mm2 area of honeycomb				
655		ELAB	Span 3: Bottom of Deck stab at Bay 2	м	0.20mm2 area of spall				
upun		DECK SLAB	Span 3: Bottom of Cantilever Slab	м	0.30mm2 area of spall				
Structural Soundness		ā	Span 4: Bottom of Deck slab at Bay 9	M	0.20mm2 area of exposed ret	bar due to thin concre	te cover		
ructu			Span 4: Bottom of Cantilever Slab	M	0.14mm2 area of spall	10			
55			Span 4: Bottom of Deck slab at Bay 9	M	0.35mm wide of horizontal cra	ack			
		-	Span 5: Bottom of Cantilever stab near Pier 4 Face of Abutment A, Wingwall	M	0.20mm2 area of spall				
		MEN	Pace of Adument A, Walgwai	н	12.5mm wide of vertical crack				
		ABUTMENT							
	Substructure	A	Span 2: End of Pier 1 Coping along upstream	м	0.60mm wide of vertical crack				
		PIER	Span 2: Pler/body near end at downstream						
		đ	AND REAL CONTRACT OF	M	0.40mm wide of random cracks			_	
	P		Span 4: Face of Pier 3 coping	м	0.50mm wide of random cracks				
	Foundation			S	Maximum inclination is 0.52 d	egree transverse at P	2.		
	Accessory		* Repair of concrete cracks necessary						
	Diagnosis Evaluation *2	Category "C"	* In-depth study not necessary						
	Seismic Resistance	* Pier and found	ation sufficient under seismic action. Moderate vulnerabilit	N/ 1					
Le l	Wind Resistance			<i>,</i>					
Disaster	Flood Resistance	Contraction of the state	nd action. Low vulnerability od overtapping. Moderate vulnerability						
-	Evaluation		wind, flood and seismic action						
	Traffic Limit	100000000000000000000000000000000000000	HS20) Semi-Trailer Truck (32.7 tons)						
Function	Volume/ Capacity	100000000000000000000000000000000000000	lanes Level of Service: D (V/C Ratio = 0.77)						
inctic	Smooth Driving								
ĩ.	Condition		, corrugation and curvature						
	Evaluation	and the second se	m traffic functionality requirements						
2	River Navigation	in an other than the second	e > regulated; horizontal clearance > preferred						
	Utilities	Left:1-Ф300 Stee	el Waterline; Right: 4-Φ100 Steel Waterline; 1-Φ150						
	Section 2	No identified late	rmal settlers						
	Informal Dwellers Evaluation	No identified info	rmal settlers and environmental impact						

H : Heavy M : Medium S : Small Diagnosis Evaluation "A": Undert measures shall be applied; Conduct In-depth Survey "B": Urgent measures not required; Conduct In-depth Survey "C": In-depth survey not required

Appendix 8.6.1-1 (20/20) **OVERALL EVALUATION OF BRIDGE CONDITION**

	erence/Bridge Name	1		Mag 3	SAN JOSE BRID	GE			
Loca	ation/Name of Road	Pasig City					Year Constructed	1	
		0	6	0		6	0	0	
		(C)	E E	(3)	() ()	CO		(42)	
		Cook to ROD	5042	1++72		140/3	24942 2491	1. (20) Cim 111	
		- to	\	THX .			·~~		
			All and the		reares			NDOOR .	
							11 17 17 17 17 17 17 17 17 17 17 17 17 1		
		-		/		_		C 10.01.000	
	Elevation		the second second second second	F	h				
			the second second from	Carry Carry					
		17	2 2		1				
		a) file a				A	1	antes	
		Longitudir	al craks @ lop of flange of girder, 1+ 0.102mm	Deformed & corroded s	steel bearing of girder 6 @ Pier 3	Ver	tical crack on face of coping below gird	ier 3 @ Pier 4	
Le	ength of Bridge	199.67 m. (24.90	+ 24.97 + 24.97 + 24.95 + 25.00 + 24.97 + 24.96 + 24.95)				No. of Lane		
Sup	perstructure Type		PC I Girder Bridge (8-Span)		Substructure Type	Abutmen	Lane Width	3. mn Type (Rc	
		Members	Location of Damaged Parks	Damage Assessment *1		Reaso	on for Assessment		
		8	Span 4: Top flange of G1	м	0.35mm longitudinal and random crac	ks due to shrikage			
		PC I GIRDER	Span 3: End face of girder 1 &3	s	0.15 to 0.178mm vertical craks on 2 lo	cations.			
	Superstructure	PC							
	Superstructure	9	Span 2: Bottom of skab at bay 4	s	0.002m2 honeycomb on one location				
	Superstructure	Superstructure	DECK SLAB	Span 3: Bottom of stab , 5m from Pier 3	s	0.01m2 exposed rebar on one location	5		
		DE							
		IN	Span 1: Downstream side of backwall	s	0.10mm vertical craks on one location	N-			
Structural Soundness		ABUTMENT							
I Sour	Substructure	N.							
uctura	000000000		Span 1,2,3,4 & 6; Pier 1,2,3,4 &6 Diaphram wall	н	0.61 to 2.0mm vertical cracks near cer	nter of Pier, 5 locations			
Stru		PIER	Span 5: Pier 4 coping below G3	н	1.63mm flexure cracks on one location	a caused by increase of load			
			Span 5. Pler 5 coping below G1	м	0.40mm cracks cause by negative ben	ding moment.			
	Foundation			s	Maximum inclination is 0.34 degree tra				
	Accessory		All Expansion Joints	н	Open joints causes leakage on :	and the second second second			
			All Steel Bearing Shoes • Repair/maintenance work necessary to seal concrete of	H H	Remarkable reduction of cross a	section que lo corrosion	or all steel bearing shoes.		
	Diagnosis Evaluation	Category "C"	* Replacement of water tight expansion joint necessary		orrosion/deterioration of bearin	g support			
			* In-depth investigation not necessary	12		NC.MCC			
ě	Seismic Resistance	*Pier insufficient to	present seismic design requirements. High vulnerability						
Disas	Wind Resistance	Not critical to wind	action. Low vulnerability						
ility to			overtapping. Low vulnerability						
Vulnerability to Disaster	Evaluation	* Not critical to w	ind and flood action						
No.		*in-depth study n	ecessary to determine selsmic stability/resistance						
- 25	232 23 2		HS20) Semi-Trailer Truck (32.7 tons)						
	Volume/ Capacity	6,211 (2002) 4 lan	es Level of Service: A (V/C Ratio = 0.06)						
		Non-steep slope, d	corrugation and curvature						
	Smooth Driving								
	Smooth Driving Condition Evaluation	Traffic function	in very good condition.						
Traffic Capacity & Function	Smooth Driving Condition Evaluation River Navigation	• Traffic function Vertical clearance > re	gulated; horizontal > preferred						
Traffic Capacity & Function	Smooth Driving Condition Evaluation River Navigation Utilities	Traffic function Vertical clearance > re Right: 4 Cable Line	gulated; horizontal > preferred						
	Smooth Driving Condition Evaluation River Navigation Utilities	* Traffic function Vertical clearance > re Right: 4 Cable Line Medium	gulated; horizontal > preferred						

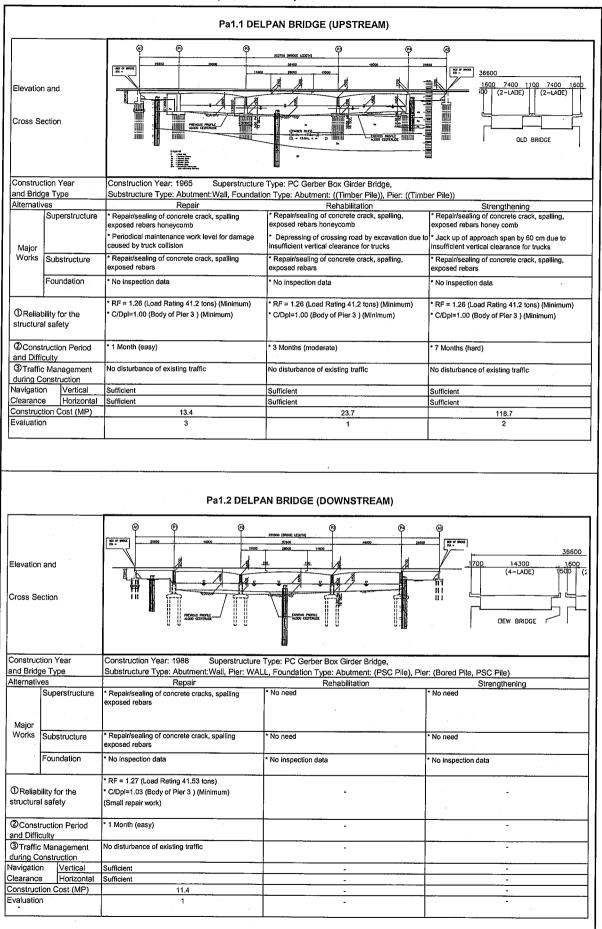
2. Diagnosis Evaluation
 A = Urgent measures shall be applied; Conduct In-depth Survey
 B = Urgent measures not required; Conduct In-depth Survey
 C = In-depth survey not required

H : Heavy M : Medium S : Small

CHAPTER 9

COMPARATIVE STUDY ON IMPROVEMENT MEASURES

Appendix 9.2.1-1 (1/10)



Appendix 9.2.1-1 (2/10)

Comparison of Improvement Measures

		······································	Pa2 JONES BRIDGE	
	····			
Elevatior Cross Se				21400 2400 7700 1200 7700 2400 (2-LADE) (2-LADE) (2-LADE) (2-LADE)
Construct	tion Year	Construction Year: 1948 Superstructure		
and Bridg			Type: 3-Span Continuous Steel Plate Girder Brid Foundation Type: Abutment: Spread, Pier: (Ca	
Alternativ Major Works	ves Superstructure	Repair * Cleaning/Painting of corroded steel members * Repair of ruptured sway bracings * Repair of ruptured exterior girder by plate patching * Repair of sole plate and girder section at bearing	 Repair & retain existing exterior girder to function as vessel collision protection Remove and reconstruct deck slab, sldewalk, 	Strengthening e Cleaning/Painting of steel structure for whole bridge * Replacement of ruptured sway bracings * Provide additional girder w/ new bearing shoes * Repair & retain existing exterior girder to function as vessel collision protection * Remove and reconstruct deck slab, sidewalk,
WUINS	Substructure	-	railing and expansion joint. * Sealing of concrete crack, spalling & exposed rebars	railing and expansion joint. * Retrofitting of pier wall by full concrete jacket
	Foundation	-		* Enlargement of footing / pile cap and addition of
①Reliat structura	l bility for the Il safety	* RF = 0.00 (Load Rating 0 tons for ruptured girder) * C/DpI=0.37 (Body of Pier 1) * C/DpI=0.86 (Foundation of Pier 1) (Less resistance to latest seismic code)	* RF > 1.00 (Load Rating 32.7 tons) * C/DpI=0.37 (Body of Pier 1) * C/DpI=0.86 (Foundation of Pier 1) (Less resistance to latest seismic code)	bored piles * RF > 1.00 (Load Rating 32.7 tons) * C/Dpl > 1.00 (Body of Pier 1) * C/Dpl > 1.00 (Foundation of Pier 1)
@Const and Diffic	ruction Period	* 4 Month (easy)	* 18 Months (moderate)	* 24 Months (Hard)
③Traffic	Management	No disturbance of existing traffic	No disturbance of existing traffic	Provision of temporary detour bridge
		1 and by different bases and all the states of the states	I con by 15 cm then a convictory electrone of 2 75 cm	0(5
-		Less by 15cm than a regulatory clearance of 3.75cm		
Clearance	e Horizontal	Less than preferable space of 43m	Less than peferable space of 43m	Less than preferable space of 43m
Clearance Construct	e Horizontal tion Cost (MP)		Less than peferable space of 43m 161.8	
Clearance Construct	e Horizontal tion Cost (MP)	Less than preferable space of 43m 32	Less than peferable space of 43m	Less than preferable space of 43m 227.2
Navigatio Clearance Construct Evaluation	e Horizontal tion Cost (MP)	Less than preferable space of 43m 32 3	Less than peferable space of 43m 161.8	Less than preferable space of 43m 227.2
Clearance Construct Evaluation	e Horizontal tion Cost (MP) n	Less than preferable space of 43m 32 3	Less than peferable space of 43m 161.8 1	Less than preferable space of 43m 227.2
Clearance Construct Evaluation Elevation Cross Sec	e Horizontal tion Cost (MP) n and ction	Less than preferable space of 43m 32 3 Pa3 Pa3 Construction Year: 1988 Superstructure T	Less than peferable space of 43m 161.8 1 Mc ARTHUR BRIDGE	Less than preferable space of 43m 227.2 2 2 2 2 2 2 2 2 2 2 2 2 2
Clearance Construct Evaluation Clevation Cross Sec Construction d Bridge	e Horizontal tion Cost (MP) n and ction ion Year e Type	Less than preferable space of 43m 32 3 Pa3 Pa3 Construction Year: 1988 Superstructure T Substructure Type: Abutment:Wall, Pier: WALL	Less than peferable space of 43m 161.8 1 Mc ARTHUR BRIDGE	Less than preferable space of 43m 227.2 2 2 2 2 2 2 2 2 2 2 2 2 2
Elevation Elevation Cross Sec Construction	e Horizontal tion Cost (MP) n and ction ion Year e Type	Less than preferable space of 43m 32 3 Pa3 Construction Year: 1988 Superstructure T Substructure Type: Abutment: Wall, Pier: WALL Repair * Cleaning/Painting of corncete cracks, honeycomb,	Less than peferable space of 43m 161.8 1 Mc ARTHUR BRIDGE	Less than preferable space of 43m 227.2 2 2 2 2 2 2 2 2 2 2 2 2 2
Clearance Construct Evaluation Cross Sec Construction Cross Sec Construction Major	e Horizontal tion Cost (MP) n and ction tion Year e Type es	Less than preferable space of 43m 32 3 Pa3 Construction Year: 1988 Superstructure T Substructure Type: Abutment: Wall, Pier: WALL Repair * Cleaning/Painting of corncete cracks, honeycomb,	Less than peferable space of 43m 161.8 1 Mc ARTHUR BRIDGE Mc ARTHUR BRIDGE	Less than preferable space of 43m 227.2 2 2 (Bored Pile, PSC Pile) Strengthening * Cleaning/Paining of concrete cracks, honeycomb, exposed rebars
Elevation Cross Sec Construct Cross Sec Construct Uternative Major Works	e Horizontal tion Cost (MP) n and ction ton Year e Type ss Superstructure	Less than preferable space of 43m 32 3 Pa3 Pa3 Construction Year: 1988 Superstructure T Substructure Type: Abutment:Wall, Pier: WALL Repair * Cleaning/Painting of concrete cracks, honeycomb, exposed rebars * Repair/sealing of concrete spalling, exposed	Less than peferable space of 43m 161.8 1 MC ARTHUR BRIDGE MC ARTHUR BRIDGE MC ARTHUR BRIDGE Provide the state of the space of	Less than preferable space of 43m 227.2 2 2 (Bored Pile, PSC Pile) Strengthening * Cleaning/Painting of corroted steel members * Repair/sealing of concrete cracks, honeycomb, exposed rebars * Adding rivets to missing rivet portions * Retrofitting of pier wall by full concrete jacket * Enlargement of footing / pile cap and addition of
Elevation Cross Sec Construction Cross Sec Construction Major Works	e Horizontal tion Cost (MP) n and ction ction ction Superstructure Foundation lity for the safety	Less than preferable space of 43m 32 3 Pa3 Pa3 Construction Year: 1988 Superstructure T Substructure Type: Abutment:Wall, Pier: WALL Repair * Cleaning/Painting of concrete cracks, honeycomb, exposed rebars * Repair/sealing of concrete spalling, exposed rebars * Repair/sealing of concrete spalling, exposed rebars * No inspection data * RF = 1.33 (Load Rating 43.49 tons) * C/DpI=0.26 (Body of Pier 1) * C/DpI=0.85 (Foundations of Pier 1)	Less than peferable space of 43m 161.8 1 MC ARTHUR BRIDGE MC A	Less than preferable space of 43m 227.2 2 2 2 2 2 2 2 2 2 2 2 2 2
Elevation Elevation Cross Sec Construction Cross Sec Construction Major Works	e Horizontal tion Cost (MP) n and ction ction ction ction superstructure Foundation lity for the safety uction Period ulty	Less than preferable space of 43m 32 3 Pa3 Pa3 Construction Year: 1988 Superstructure T Substructure Type: Abutment:Wall, Pier: WALL Repair * Cleaning/Painting of concrete cracks, honeycomb, exposed rebars * Repair/sealing of concrete spalling, exposed rebars * Repair/sealing of concrete spalling, exposed rebars * No inspection data * RF = 1.33 (Load Rating 43.49 tons) * (C/DpI=0.26 (Body of Pier 1) * C/DpI=0.85 (Foundations of Pier 1) * 1 Month (easy)	Less than peferable space of 43m 161.8 1 MC ARTHUR BRIDGE MC A	17700 2
Elevation Cross Sec Construction Cross Sec Construction Major Works DReliabi structural DConstru- and Diffic DTraffic Juring Co	e Horizontal tion Cost (MP) n and ction ction ction ss Superstructure Foundation lity for the safety uction Period ulty Management instruction	Less than preferable space of 43m 32 3 Pa3 Pa3 Construction Year: 1988 Superstructure T Substructure Type: Abutment:Wall, Pier: WALL Repair * Cleaning/Painting of concrete cracks, honeycomb, exposed rebars * Repair/sealing of concrete spalling, exposed rebars * Repair/sealing of concrete spalling, exposed rebars * No inspection data * RF = 1.33 (Load Rating 43.49 tons) * (C/DpI=0.26 (Body of Pier 1) * C/DpI=0.85 (Foundations of Pier 1) * 1 Month (easy)	Less than peferable space of 43m 161.8 1 MC ARTHUR BRIDGE MC A	Less than preferable space of 43m 227.2 2 2 2 2 2 2 2 2 2 2 2 2 2
Elevation Elevation Cross Sec Construction Cross Sec Construction Major Works Major Works URENIABI Structural DReliabi structural Construction Major Works	e Horizontal tion Cost (MP) n and ction ct	Less than preferable space of 43m 32 3 Pa3 Pa3 Construction Year: 1988 Superstructure T Substructure Type: Abutment:Wall, Pier: WALL Repair Construction Year: 1988 Superstructure T Substructure Type: Abutment:Wall, Pier: WALL Repair Cleaning/Painting of concrete cracks, honeycomb, exposed rebars Repair/sealing of concrete cracks, honeycomb, exposed rebars Repair/sealing of concrete spalling, exposed rebars Repair/sealing of concrete spalling, exposed rebars No inspection data * RF = 1.33 (Load Rating 43.49 tons) * C/DpI=0.26 (Body of Pier 1) * C/DpI=0.85 (Foundations of Pier 1) * 1 Month (easy) No disturbance	Less than peferable space of 43m 161.8 1 MC ARTHUR BRIDGE MC A	Less than preferable space of 43m 227.2 2 2 2 2 2 2 2 2 2 2 2 2 2
Clearance Construct Evaluation Cross Sec Construction Cross Sec Construction Cross Sec Construction Major Works DReliabi structural DReliabi structural DConstructural DConstructural DConstructural	e Horizontal tion Cost (MP) n and ction ction ction e Type es Superstructure Foundation lity for the safety uction Period ulty Management instruction o Vertical Horizontal	Less than preferable space of 43m 32 3 Pa3 Pa3 Pa3 Construction Year: 1988 Superstructure T Substructure Type: Abutment:Wall, Pier: WALL Repair * Cleaning/Painting of concrete spalling, exposed rebars * Repair/sealing of concrete spalling, exposed rebars * Repair/sealing of concrete spalling, exposed rebars * No inspection data * RF = 1.33 (Load Rating 43.49 tons) * C/DpI=0.26 (Body of Pier 1) * C/DpI=0.25 (Foundations of Pier 1) * C/DpI=0.85 (Foundations of Pier 1) * 1 Month (easy) No disturbance Sufficient Less than preferable space of 43m	Less than peferable space of 43m 161.8 1 MC ARTHUR BRIDGE MC A	Less than preferable space of 43m 227.2 2 <td< td=""></td<>
Clearance Construct Evaluation Evaluation Cross Sec Construction Cross Sec Construction Major Works Unemative Works Taffic Juring Co lavigation Construction	e Horizontal tion Cost (MP) n and ction ction ction e Type ss Superstructure Foundation lity for the safety uction Period ulty Management instruction Management instruction Management instruction Management instruction	Less than preferable space of 43m 32 3 Pa3 Pa3 Pa3 Pa3 Pa3 Pa3 Pa3	Less than peferable space of 43m 161.8 1 MC ARTHUR BRIDGE MC A	Less than preferable space of 43m 227.2 2 <td< td=""></td<>
Clearance Construct Evaluation Cross Sec Construction Cross Sec Construction Cross Sec Construction Major Works DReliabi structural DReliabi structural DConstructural DConstructural DConstructural	e Horizontal tion Cost (MP) n and ction ction ction e Type ss Superstructure Foundation lity for the safety uction Period ulty Management instruction Management instruction Management instruction Management instruction	Less than preferable space of 43m 32 3 Pa3 Pa3 Pa3 Construction Year: 1988 Superstructure T Substructure Type: Abutment:Wall, Pier: WALL Repair * Cleaning/Painting of concrete spalling, exposed rebars * Repair/sealing of concrete spalling, exposed rebars * Repair/sealing of concrete spalling, exposed rebars * No inspection data * RF = 1.33 (Load Rating 43.49 tons) * C/DpI=0.26 (Body of Pier 1) * C/DpI=0.25 (Foundations of Pier 1) * C/DpI=0.85 (Foundations of Pier 1) * 1 Month (easy) No disturbance Sufficient Less than preferable space of 43m	Less than peferable space of 43m 161.8 1 MC ARTHUR BRIDGE MC A	Less than preferable space of 43m 227.2 2 <td< td=""></td<>

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Appendix 9.2.1-1 (3/10)

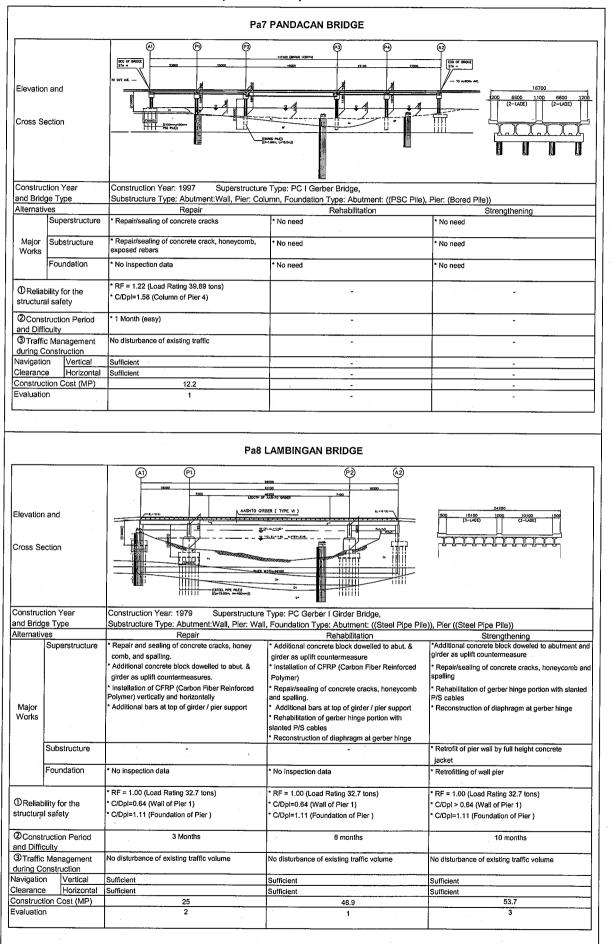
Comparison of Improvement Measures

		Pa	4 QUEZON BRIDGE	
Elevation Cross Se				3000 17700 17700 10000 (7+040) 57 7700 1000000000000000000000000000000
Construct	tion Year	Construction Year: 1946 Superstructure	J Type: Single Steel Type Arch Bridge,	
and Bridg	је Туре	Substructure Type: Abutment:Wall, Foundation		
Alternativ Major Works	es Superstructure	Repair * Cleaning/Painting of corroded sections of floor * Repair of expansion joint to seal water leakage * Cleaning and painting of corroded gusset plates and replacement of corroded gusset plate	Rehabilitation Cleaning/Painting of corroded steel members Replacement of expansion joint to seal water leakage Replacement of gusset plates Replacement of corroded sections of floor beam longitudinal tie beam & vertical members Sealing gap between vertical hanger and sidewall Remove and reconstruct deck slab near abutmen	t * Remove and reconstruct deck slab near abutment
	Substructure	* No damage	* Replace corroded stringers	* Replace corroded stringers
		TV VORIDAR	* No damage	*No damage
	Foundation	* No inspection data	* No inspection data	* No inspection data
①Reliab structura	ility for the I safety	* RF = 0.92 (Load Rating 30.10 tons; for stringer)	* RF = 1.00 (Load Rating 32.7 tons; for stringer)	* RF = 1.00 (Load Rating 32.7 tons; for stringer)
	ruction Period	* 1.5 Months (easy)	* 2 Months (moderate)	* 4 Months (hard)
and Diffic ③Traffic	Management	* Temporary disturbance of existing traffic	* Temporary disturbance of existing traffic	* Temporary disturbance of existing traffic
lurino Co	onstruction			
		Duff-t	0.001	A 18 1 1
lavigation	n Vertical	Sufficient	Sufficient	Sufficient
Vavigation Clearance Construct	n Vertical Horizontal ion Cost (MP)	Sufficient Sufficient 29 3	Sufficient Sufficient 119.3 1	Sufficient Sufficient 155.2 2
Navigation Clearance	n Vertical Horizontal ion Cost (MP)	Sufficient 29 3	Sufficient 119.3	Sufficient 155.2
Navigation Clearance Construct Evaluation Evaluation	n <u>Vertical</u> Horizontal ion Cost (MP) n	Sufficient 29 3 Pa6	Sufficient 119.3 1 NAGTAHAN BRIDGE	Sufficient 155.2 2 2 2 2 2 2 2 2 2 2 2 2 2
lavigation learance construct ivaluation levation : ross Sec	n <u>Vertical</u> Horizontal ion Cost (MP)	Sufficient 29 3 Pa6 Pa6 Construction Year: 1966 Superstructure	Sufficient 119.3 1 NAGTAHAN BRIDGE	Sufficient 155.2 2
lavigation learance construct valuation levation : ross Sec onstructi nd Bridge ternative	n Vertical Horizontal ion Cost (MP) n and ction on Year a Type	Sufficient 29 3 Pa6	Sufficient 119.3 1 NAGTAHAN BRIDGE	Sufficient 155.2 2 2 100 1100 100 100 1100 100 100 1100 1
lavigation learance construct valuation levation a cross Sec onstruction d Bridge lternative	n <u>Vertical</u> Horizontal ion Cost (MP) n and stion	Sufficient 29 3 Pa6 Pa6 Construction Year: 1966 Superstructure Type: Abutment: Wall, Pier: Colur Repair * Cleaning/Painting of corroded steel members	Sufficient	Sufficient
lavigation learance construction levation ross Sec onstruction d Bridge lternative Major	n Vertical Horizontal ion Cost (MP)	Sufficient 29 3 Pa6 Pa6 Construction Year: 1966 Substructure Type: Abutment: Wall, Pier: Colur Repair	Sufficient	Sufficient 155.2 2 2 155.2 2 155.2 2 155.2 2 100 1100 100 1100 100 1100 10
Avigation Construct valuation ilevation iross Sec onstructi nd Bridge Iternative Major Works	n Vertical Horizontal ion Cost (MP)	Sufficient 29 3 Pa6 Pa6 Construction Year: 1966 Superstructure Substructure Type: Abutment:Wall, Pier: Colur Repair * Cleaning/Painting of corroded steel members * Repair/sealing of concrete crack, honeycomb,	Sufficient	Sufficient 155.2 2 2 100 1100 50 1100 100 1100 50 1100 1000 100 100 1000 100 100 1000 100 100 1000 100 1000 10000 100 1000 100 10000
Vavigation Clearance Construct Evaluation Cross Sec Construction Cross Sec Construction Major Works	n Vertical Horizontal ion Cost (MP)	Sufficient 29 3 Pa6 Pa6 Construction Year: 1966 Superstructure Substructure Type: Abutment:Wall, Pier: Colur Repair * Cleaning/Painting of corroded steel members * Repair/sealing of concrete crack, honeycomb, spalling exposed rebars	Sufficient	Sufficient
Navigation Clearance Construction Elevation Cross Sec Construction Major Wajor Major PReliabilistructural DReliabilistructural DConstruction DTraffic	n Vertical Horizontal ion Cost (MP)	Sufficient 29 3 Pa6 Pa6 Pa6 Pa6 Pa6 Pa6 Pa6	Sufficient	Sufficient 155.2 2 2 2 100 1100 100 100 100 10
Vavigation Clearance Construct Evaluation Cross Sec Construction Cross Sec Construction Major Works Major Works T DReliabili structural DReliabili structural DReliabili Structural DReliabili	n Vertical Horizontal Ion Cost (MP) n and and and on Year a Type ss Superstructure Foundation lity for the safety uction Period ulty Management nstruction	Sufficient 29 3 Pa6 Pa6 Pa6 Pa6 Pa6 Pa6 Pa6	Sufficient	Sufficient 155.2 2 2 2 17 russ Bridge read, ((Timber Pile)) Strengthening * Cleaning/Painting of corroded steel members * Repair
Navigation Clearance Construction Elevation Cross Sec Construction Construction Major Works Iternative Major Vorks Iternative DReliabilit Structural DConstruction DTraffic I Wring Conavigation avigation	n Vertical Horizontal ion Cost (MP)	Sufficient 29 3 Pa6 Pa6 Pa6 * Repair/sealing of concrete crack, honeycomb, spalling exposed rebars * No inspection data * RF = 1.03 (Load Rating 33.68 tons) * C/DpI=0.56 (Column of Pier9, 10) (Less resistance to the latest seismic code) * 2 Months (easy) No disturbance of existing traffic Sufficient	Sufficient	Sufficient
Avigation Construction Const	n Vertical Horizontal ion Cost (MP)	Sufficient 29 3 Pa6 Pa6 Pa6 * Repair/sealing of concrete crack, honeycomb, spalling exposed rebars * No inspection data * RF = 1.03 (Load Rating 33.68 tons) * C/DpI=0.56 (Column of Pier9, 10) (Less resistance to the latest seismic code) * 2 Months (easy) No disturbance of existing traffic Sufficient	Sufficient	Sufficient 155.2 2 2 2 17 russ Bridge read, ((Timber Pile)) Strengthening * Cleaning/Painting of corroded steel members * Repair

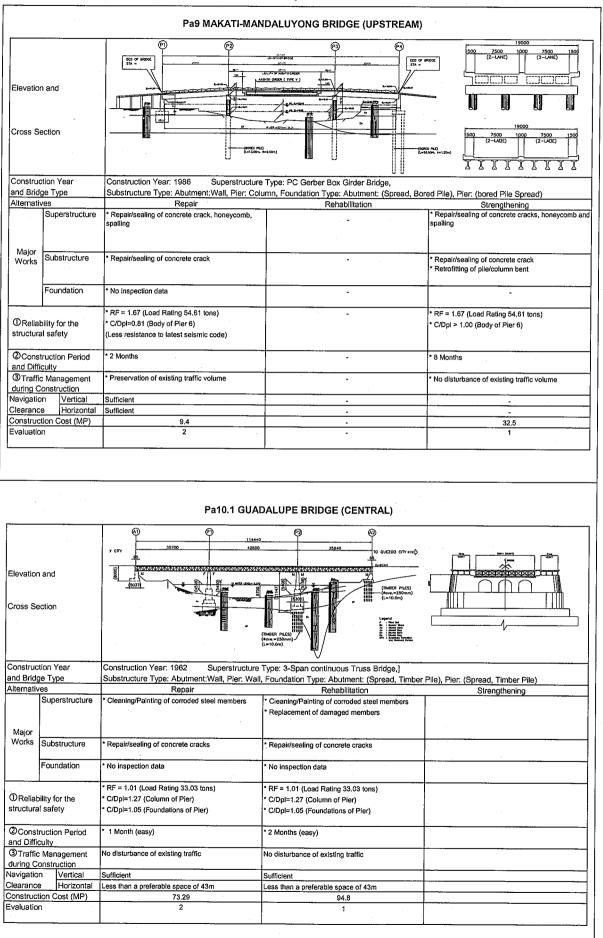
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Appendix 9.2.1-1 (4/10)

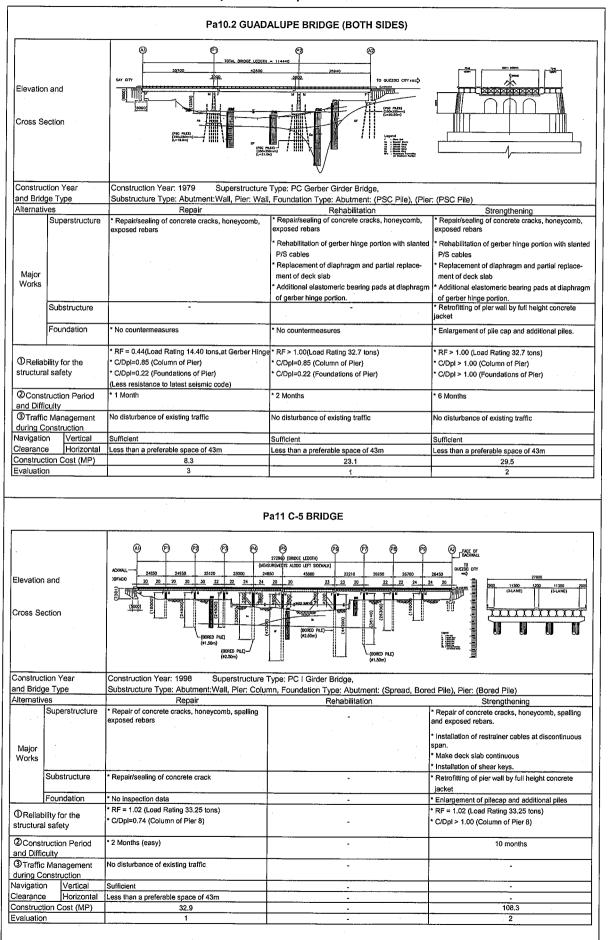
Comparison of Improvement Measures



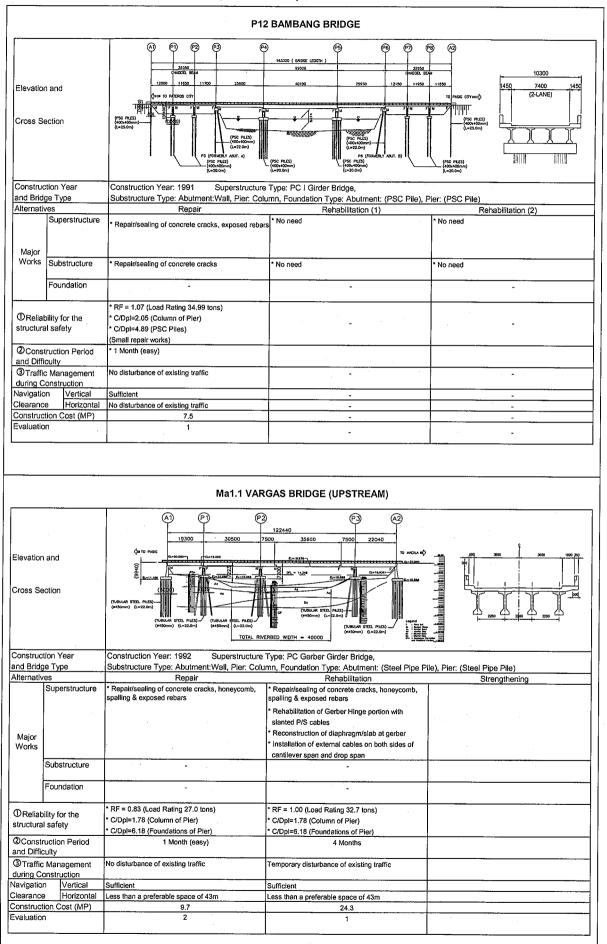
Appendix 9.2.1-1 (5/10)



Appendix 9.2.1-1 (6/10)



Appendix 9.2.1-1 (7/10)



Appendix 9.2.1-1 (8/10)

Comparison of Improvement Measures

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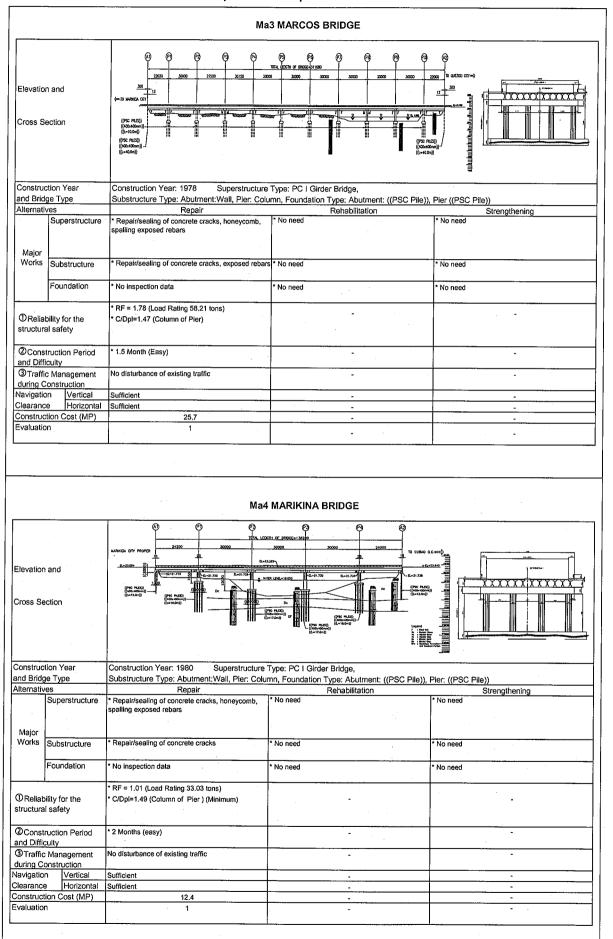
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		Ma1.2 VARG		
Elevatio	n and	(m to Pulse 400 (m to		
cross S	ection		01. = 11.328 11.328 01. = 11.328 11.328	
	ction Year ge Type		Type: PC Gerber Box Girder Bridge, on Type: Abutment: ((Timber Pile)), Pier: ((Timb	
Alternati	a second s	Repair	Rehabilitation	Strengthening
	Superstructure	* Cleaning, Painting/maintenance work of corroded		
Major		steel member * Repairs/sealing of concrete cracks, honeycomb, exposed rebars	steel member * Repairs/sealing of concrete cracks, honeycomb, exposed rebars * Rehabilitation of corroded steel members	
Works	Substructure	* Repair/sealing of concrete cracks	* Repair/sealing of concrete cracks	* No need
	Foundation	* No inspection data	* No inspection data	* No need
	bility for the al safety	RF = 1.00 (Load Rating 32.73 tons) C/Dpl=1.19 (Column of Pier) (minimum) C/Dpl=3.59 (Foundation) (Minimum)	* RF = 1.00 (Load Rating 32.73 tons) * C/Dpl=1.19 (Column of Pier) (minimum) * C/Dpl=3.59 (Foundation) (Minimum)	-
@Cons and Diff	truction Period	* 2 Months (easy)	* 6 Months	-
③Traffi	c Management	No disturbance of existing traffic	Preservation of existing traffic volume	-
Navigatio	on Vertical	Sufficient	Sufficient	-
Clearanc			-	-
	tion Cost (MP)	9.69	18.64	-
Evaluatio	n	2	1	· · ·
		I		-
		Ma	2 ROSARIO BRIDGE	
Elevation		(A) (P) (P)		
Elevation Cross Se	iction tion Year	(1) (2) <td>2 ROSARIO BRIDGE</td> <td></td>	2 ROSARIO BRIDGE	
Elevation Cross Se Construc	iction tion Year le Type	Construction Year: 1952 Superstructure Substructure Type: Abutment:Wall, Pier: Column	2 ROSARIO BRIDGE	New York Control of the strength of the streng
Elevation Cross Se Construc	iction tion Year le Type es	A) P) P2 25500 31200 31190 P 100 P 100 P2 P	2 ROSARIO BRIDGE	
Elevation Cross Se	iction tion Year le Type	Construction Year: 1952 Superstructure Substructure Type: Abutment:Wall, Pier: Column	2 ROSARIO BRIDGE	Pile). Pier: (PSC Pile, Timber Pile, STEEL Pipe F Strengthening
Elevation Cross Se Construc Ind Bridg Iternativ Major	iction tion Year le Type es	A) P) P2 25500 31200 31190 25500 31200 31190 Construction Year: 1952 Superstructure Substructure Type: Abutment:Wall, Pier: Column Repair * Repair/sealing of concreto cracks,	2 ROSARIO BRIDGE	Pile), Pier: (PSC Pile, Timber Pile, STEEL Pipe F Strengthening * Repair/sealing of concrete cracks, honeycomb.spalling exposed rebars
Elevation Cross Se Construc Ind Bridg Iternativ Major	tion Year le Type es Superstructure	Construction Year: 1952 Superstructure Substructure Type: Abutment: Wall, Pier: Column Repair	2 ROSARIO BRIDGE	Pile), Pier: (PSC Pile, Timber Pile, STEEL Pipe F Strengthening * Repair/sealing of concrete cracks, honeycomb,spalling exposed rebars * Rehabilitation of concrete deck slab
Elevation Cross Se Construc and Bridg Alternativ Major Works	tion Year le Type es Superstructure Substructure Foundation	A) P)	2 ROSARIO BRIDGE	Pile). Pier: (PSC Pile, Timber Pile, STEEL Pipe F Strengthening * Repair/sealing of concrete cracks, honeycomb.spalling exposed rebars * Rehabilitation of concrete deck slab * Retrofitting of pier wall by full concrete jacket
Elevation Cross Se Construc und Bridg Alternativ Works DReliab structura	tion Year le Type es Superstructure Substructure Foundation illity for the I safety ruction Period	(A) (P) (P) 25500 31200 31190 (A) (P) (P) (B) (P) <	2 ROSARIO BRIDGE (3) (4) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	Pile), Pier: (PSC Pile, Timber Pile, STEEL Pipe F Strengthening * Repair/sealing of concrete cracks, honeycomb, spalling exposed rebars * Rehabilitation of concrete deck slab * Retrofitting of pier wall by full concrete jacket * Enlargement of pilecap and additional piles * RF = 1.03 (Load Rating 33.68 tons) * C/Dpl > 1.00 (Column of Pier)
Elevation Cross Se Construc and Bridg Uternativ Works DReliab structura 2 Const and Diffi 3 Traffic	tion Year te Type es Superstructure Substructure Foundation illity for the I safety ruction Period culty Management	(A) (P) (P) 225500 31200 31190 (A) (P) (P) (A) (P)	2 ROSARIO BRIDGE	Pile), Pier: (PSC Pile, Timber Pile, STEEL Pipe F Strengthening * Repair/sealing of concrete cracks, honeycomb.spalling exposed rebars * Rehabilitation of concrete deck slab * Retrofitting of pier wall by full concrete jacket * Enlargement of pilecap and additional piles * RF = 1.03 (Load Rating 33.68 tons) * C/Dpl > 1.00 (Column of Pier) * C/Dpl > 1.00 (Foundations of Pier)
Elevation Cross Se Construc and Bridg Uternativ Major Works D Reliab structura 2 Const and Diffic 3 Traffic during Co	tion Year le Type es Superstructure Foundation illity for the I safety ruction Period culty Management onstruction	(A) (P) (P) (P) (P) (2 ROSARIO BRIDGE	Pile), Pier: (PSC Pile, Timber Pile, STEEL Pipe F Strengthening * Repair/sealing of concrete cracks, honeycomb, spalling exposed rebars * Rehabilitation of concrete deck slab * Retrofitting of pier wall by full concrete jacket * Enlargement of pilecap and additional piles * RF = 1.03 (Load Rating 33.68 tons) * C/Dpl > 1.00 (Column of Pier) * 10 Months (hard)
Elevation Cross Se Construc and Bridg Iternativ Works D Reliab structura @Const and Diffic @Traffic during C lavigatio	tion Year le Type es Substructure Foundation flillty for the I safety ruction Period culty Management onstruction n	(A) (P) (P) 25500 31200 31190 (A) (P) (P) (A) (P) <	2 ROSARIO BRIDGE	Pile), Pier: (PSC Pile, Timber Pile, STEEL Pipe F Strengthening * Repair/sealing of concrete cracks, honeycomb,spalling exposed rebars * Rehabilitation of concrete deck slab * Retrofitting of pier wall by full concrete jacket * Enlargement of pilecap and additional piles * RF = 1.03 (Load Rating 33.68 tons) * C/Dpl > 1.00 (Column of Pier) * C/Dpl > 1.00 (Foundations of Pier) * 10 Months (hard) Temporary disturbance of existing traffic
Elevation Cross Se Construc and Bridg Alternativ Works D Reliab structura @ Const and Diffic 3 Traffic during Co lavigatio clearance	tion Year te Type es Superstructure Foundation Substructure Foundation illity for the I safety ruction Period culty Management onstruction Merical a Horizontal	(A) (P) (P) (P) (P) (2 ROSARIO BRIDGE	Alley, Pler: (PSC Pile, Timber Pile, STEEL Pipe F Strengthening * Repair/sealing of concrete cracks, honeycomb, spalling exposed rebars * Rehabilitation of concrete deck slab * Rehabilitation of concrete deck slab * Retrofitting of pier wall by full concrete jacket * Enlargement of pilecap and additional piles * RF = 1.03 (Load Rating 33.68 tons) * C/Dpl > 1.00 (Column of Pier) * 10 Months (hard) Temporary disturbance of existing traffic
Elevation Cross Se Construc and Bridg Alternativ Works D Reliab structura @ Const and Diffic 3 Traffic during Co lavigatio clearance	tion Year te Type es Substructure Foundation Substructure Foundation illity for the I safety ruction Period culty Management onstruction Vertical a Horizontal ion Cost (MP)	(A) (P) (P) 25500 31200 31190 (A) (P) (P) (A) (P) <	2 ROSARIO BRIDGE	Pile), Pier: (PSC Pile, Timber Pile, STEEL Pipe F Strengthening * Repair/sealing of concrete cracks, honeycomb,spalling exposed rebars * Rehabilitation of concrete deck slab * Retrofitting of pier wall by full concrete jacket * Enlargement of pilecap and additional piles * RF = 1.03 (Load Rating 33.68 tons) * C/Dpl > 1.00 (Column of Pier) * C/Dpl > 1.00 (Foundations of Pier) * 10 Months (hard) Temporary disturbance of existing traffic

Appendix 9.2.1-1 (9/10)

Comparison of Improvement Measures



Appendix 9.2.1-1 (10/10)

		· · · · · · · · · · · · · · · · · · ·	5 SAN JOSE BRIDGE	
Elevatior Cross Se		50 (2104 TO RODROLEZ		Trec∳
	tion Year		Type: PC I Girder Bridge,	
	де Туре		mn, Foundation Type: Abutment: ((RC Pile)), F	Pier: RC Pile
Iternativ		Repair	Rehabilitation	Strengthening
Major Works	Superstructure	 Repair/sealing of concrete crack, honeycomb, spalling & exposed rebars 		 Repair/sealing of concrete crack, honeycomb, exposed rebars Rehabilitation of water tight expansion joint Repair/Rehabilitation of corroded bearing shoe
	Substructure	* Repair/sealing of concrete cracks	·	* Retrofitting of pier wall by full height concrete jacket
	Foundation	-		* Enlargement of pile cap and additional piles
OReliat structura	pility for the It safety	 RF = 1.22 (Load Rating 39,89 tons) C/DpI=0.68 (Column of Pier) C/DpI=0.33 (Foundations of Pier) (Less resistance to latest seismic code) 	-	KF = 1.22 (Load Rating 39.89 tons) C/Dpl > 1.00 (Column of Pier) C/Dpl > 1.00 (Foundations of Pier)
Const and Diffi	ruction Period	* 1.5 Month	-	* 12 Months
	Management	No disturbance of existing traffic	-	Temporary disturbance of existing traffic
avigatio	n Vertical	Sufficient	-	Sufficient
learance		Sufficient	•	Sufficient
	tion Cost (MP)	17.1		103