1.5.5 Phra Pinklao

Span No.1

Inspecton result

		Span No.	1

		Damages of steel members				Damages of concrete members						Others						
		Corrosion	Cracking	Missing bolts	Fracture	Cracking, Water leakage, Free lime	No.	Rebar exposure	Pop-outs	Deck cracking	Damages at anchorage of PC tender	Level difference of road surface	Functional damage of bearings	Damages in substructures	Damages in pavemnents	Damages in expansion joints	Damages in cable	Remarks
Girder	01					a		a			a							
	02					c		a			a							
Deck	01							a	a	c								
	02							a	a	a								
	03							a	a	a								
	04							a	a	a								
	05							a	a	c								
Pier	01					c		a										
	02					a		a										
Bearings	101												c					
	102												c					
	103												c					
	104												c					
Road surface												a						
Pavement															e			
Barriers Railings	01															c		
	02															c		
	03															c		
	04															a		
Expansion joints	01																c	
Others																		

Span No.1

Countermeasure classification of members

Bridge name	005Phra Pinklao	Span No.	1

Member	No.	Damage	Damage classification		Countermeasure classification	No.	Damage	Damage classification		Countermeasure classification
			Classification	Judge				Classification	Judge	
Girder	01	Cracking, Water leakage, Free lime	a	-	5	02	Cracking, Water leakage, Free lime	c	3	3
		Rebar exposure	a	-	5		Rebar exposure	a	-	5
		Damages at anchorage of PC tendon	a	-	5		Damages at anchorage of PC tendon	a	-	5
Deck	01	Rebar exposure	a		5	05	Rebar exposure	a		5
		Pop-outs	a		5		Pop-outs	a		5
		Deck cracking	c	-	3		Deck cracking	c	-	3
	03	Rebar exposure	a		5					
		Pop-outs	a		5					
		Deck cracking	a	N	5					
Pier	01	Cracking, Water leakage, Free lime	c	3	3	02	Cracking, Water leakage, Free lime	a	-	5
		Rebar exposure	a	-	5		Rebar exposure	a	-	5
		Damages in substructures	a	-	5		Damages in substructures	a	-	5
Bearings	101	Functional damage of bearings	c		3	103	Functional damage of bearings	c		3
	102	Functional damage of bearings	c		3	104	Functional damage of bearings	c		3
Road surface	01	Level difference of road surface	a		5	01	Damages in pavemnents	e		2
Barriers Railing	01	Damages in barriers	c		2	03	Damages in barriers	c		2
	02	Damages in barriers	c		2	04	Damages in barriers	a		5
Expansion joints	01	Damages in expansion joints	c		2	-	-	-	-	-

Estimation of repair quantity

Bridge name	005Phra Pinklao			Span No.	1
	Subject		Quantity	Remarks	
1	Span length		82.50 m	Length of 1 span	
2	Road width for pavement		21.00 m	Width for pavement area (Vehicle lane)	
3	Total road width		26.80 m	Deck width	
4	Area of bridge surface		2,211.0 m^2	Span length x Total width	
5	Area of pavement		1,732.5 m^2	Span length x Width for pavement	
6	Barriers & railings	01	steel	Type of barriers & railings	
		02	concrete	Same as above	
		03	concrete	Same as above	
		04	steel	Same as above	
7	Expansion joints	01	steel	Type of expansion joint	
		-	-	Same as above	
8	Crack length		Quantity	Remarks	
	Total crack length L		88.4 m	A of bridge surf. x 0.040	
	Girder		44.2 m	L × 1/2 (per girder)	
9	Area of rebarb exposure		Quantity	Remarks	
	Total area A		17.7 m^2	A of bridge surf. x 0.008	
	Girder		8.8 m^2	L × 1/2 (per girder)	
10	Repaired area of deck		Quantity	Remarks	
	01,05 A		239.3 m^2	Deck width = 2.90 m	
	Area of rebarb exposure		2.4 m^2	A × 0.010	
	Area of deck cracking		12.0 m^2	A × 0.050	
	03 A		495.0 m^2	Deck width = 6.00 m	
	Area of rebarb exposure		5.0 m^2	A × 0.010	
	Area of deck cracking		24.8 m^2	A × 0.050	
11	Repair quanity of substructure		Quantity	Remarks	
	Cracking, Water leakage, Free lime		5.54 m	per substructure	
	Rebar exposure		2.24 m^2	per substructure	
12	Concrete barrier		Quantity	Remarks	
	Rebar exposure		8.84 m^2	A of bridge surf. x 0.004	

Approximate repair price for countermeasure

Bridge name	005Phra Pinklao				Span No.		1									
Member	No.	Damage	Damage classification	Countermeasure classification	Repair method	Repair quantity	Unit	Approximate unit price (B)	Approximate repair price (B)	Approximate repair price for countermeasure classification 1 & 2 (B)	countermeasure classification 3		countermeasure classification 4		Planned repair & reconstruction	
											Repair price (B)	Remaining years up to counter measure cl. 2	Repair price (B)	Remaining years up to counter measure cl. 2	Repair price (B)	Life cycle
Girder	01	Cracking/Water leakage/Free lime	a	5	Resin injection	44.2	m	5,000	221,000	-	-	7	-	15	-	30
		Rebar exposure	a	5	Patching	8.8	m^2	17,500	154,000	-	-	7	-	15	154,000	30
		Damages at anchorage of PC tendon	a	5	Reinforcement with external PC tendon	-	Pos.	1,000,000	-	-	-	-	-	-	-	-
	02	Cracking/Water leakage/Free lime	c	3	Resin injection	44.2	m	5,000	221,000	-	221,000	7	-	15	-	30
		Rebar exposure	a	5	Patching	8.8	m^2	17,500	154,000	-	-	7	-	15	154,000	30
		Damages at anchorage of PC tendon	a	5	Reinforcement with external PC tendon	-	Pos.	1,000,000	-	-	-	-	-	-	-	-
Deck	01	Rebar exposure	a	5	Patching	2.4	m^2	17,500	42,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	12.0	m^2	22,500	270,000	-	270,000	12	-	25	270,000	50
	03	Rebar exposure	a	5	Patching	5.0	m^2	17,500	87,500	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	24.8	m^2	22,500	558,000	-	-	12	-	25	558,000	50
	05	Rebar exposure	a	5	Patching	2.4	m^2	17,500	42,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	12.0	m^2	22,500	270,000	-	270,000	12	-	25	270,000	50
Pier	01	Cracking/Water leakage/Free lime	c	3	Resin injection	5.54	m	5,000	27,700	-	27,700	7	-	15	-	30
		Rebar exposure	a	5	Patching	2.24	m^2	17,500	39,200	-	-	7	-	15	39,200	30
		Damages in substructures	a	5	Foot protection	-	Pier	1,750,000	-	-	-	-	-	-	-	-
	02	Cracking/Water leakage/Free lime	a	5	Resin injection	5.54	m	5,000	27,700	-	-	7	-	15	-	30
		Rebar exposure	a	5	Patching	2.24	m^2	17,500	39,200	-	-	7	-	15	39,200	30
		Damages in substructures	a	5	Foot protection	-	Pier	1,750,000	-	-	-	-	-	-	-	-
Bearings	101	Functional damage of bearings	c	3	Metal spraying	1.0	Pier	120,000	120,000	-	120,000	7	-	15	120,000	30
	102	Functional damage of bearings	c	3	Metal spraying	1.0	//	120,000	120,000	-	120,000	7	-	15	120,000	30
	103	Functional damage of bearings	c	3	Metal spraying	1.0	//	120,000	120,000	-	120,000	7	-	15	120,000	30
	104	Functional damage of bearings	c	3	Metal spraying	1.0	//	120,000	120,000	-	120,000	7	-	15	120,000	30
Road surface	01	Level difference of road surface	a	5	Pavement replacement	-	m^2	5,000	-	-	-	5	-	10	-	20
		Damages in pavements	e	2	same as above	1,732.5	//	5,000	8,662,500	8,662,500	-	5	-	10	8,662,500	20
Barriers Railings	01	Damages in barriers	c	2	change of steel exp.	8.84	m^2	17,500	154,700	154,700	-	7	-	15	154,700	30
	02	Damages in barriers	c	2	Patching	8.84	m^2	17,500	154,700	154,700	-	7	-	15	154,700	30
	03	Damages in barriers	c	2	Patching	8.84	m^2	17,500	154,700	154,700	-	7	-	15	154,700	30
	04	Damages in barriers	a	5	change of steel exp.	8.84	m^2	17,500	154,700	-	-	7	-	15	154,700	30
Expansion joints	01	Damages in expansion joints	c	2	change of steel exp.	26.8	m	133,400	3,575,200	3,575,200	-	7	-	15	3,575,200	30

Span No.2

Inspecton result

		Span No.	2

		Damages of steel members				Damages of concrete members						Others						
		Corrosion	Cracking	Missing bolts	Fracture	Cracking, Water leakage, Free lime	No.	Rebar exposure	Pop-outs	Deck cracking	Damages at anchorage of PC tender	Level difference of road surface	Functional damage of bearings	Damages in substructures	Damages in pavemments	Damages in expansion joints	Damages in cable	Remarks
Girder	01					c		a			a							
	02					c		a			a							
Deck	01							a	a	c								
	02							a	a	a								
	03							a	a	a								
	04							a	a	a								
	05							a	a	c								
Pier	01					c		a										
	02					a		a										
Road surface												a						
Pavement															a			
Barriers Railings	01															c		
	02															c		
	03															c		
	04															a		
Expansion joints	01																c	
Others																		

Span No.2

Countermeasure classification of members

Bridge name	005Phra Pinklao	Span No.	2

Member	No.	Damage	Damage classification		Countermeasure classification	No.	Damage	Damage classification		Countermeasure classification
			Classification	Judge				Classification	Judge	
Girder	01	Cracking, Water leakage, Free lime	c	3	3	02	Cracking, Water leakage, Free lime	c	3	3
		Rebar exposure	a	-	5		Rebar exposure	a	-	5
		Damages at anchorage of PC tendon	a	-	5		Damages at anchorage of PC tendon	a	-	5
Deck	01	Rebar exposure	a		5	05	Rebar exposure	a		5
		Pop-outs	a		5		Pop-outs	a		5
		Deck cracking	c	-	3		Deck cracking	c	-	3
	03	Rebar exposure	a		5					
		Pop-outs	a		5					
		Deck cracking	a	N	5					
Pier	01	Cracking, Water leakage, Free lime	c	3	3	02	Cracking, Water leakage, Free lime	a	-	5
		Rebar exposure	a	-	5		Rebar exposure	a	-	5
		Damages in substructures	a	-	5		Damages in substructures	a	-	5
Road surface	01	Level difference of road surface	a		5	01	Damages in pavemnents	a		5
Barriers Railing	01	Damages in barriers	c		2	03	Damages in barriers	c		2
	02	Damages in barriers	c		2	04	Damages in barriers	a		5
Expansion joints	01	Damages in expansion joints	c		2	-	-	-	-	-

Estimation of repair quantity

Bridge name	005Phra Pinklao			Span No.	2
	Subject		Quantity	Remarks	
1	Span length		114.00 m	Length of 1 span	
2	Road width for pavement		21.00 m	Width for pavement area (Vehicle lane)	
3	Total road width		26.80 m	Deck width	
4	Area of bridge surface		3,055.2 m^2	Span length x Total width	
5	Area of pavement		2,394.0 m^2	Span length x Width for pavement	
6	Barriers & railings	01	steel	Type of barriers & railings	
		02	concrete	Same as above	
		03	concrete	Same as above	
		04	steel	Same as above	
7	Expansion joints	01	steel	Type of expansion joint	
		-	-	Same as above	
8	Crack length		Quantity	Remarks	
	Total crack length L		122.2 m	A of bridge surf. x 0.040	
	Girder		61.1 m	L × 1/2 (per girder)	
9	Area of rebarb exposure		Quantity	Remarks	
	Total area A		24.4 m^2	A of bridge surf. x 0.008	
	Girder		12.2 m^2	L × 1/2 (per girder)	
10	Repaired area of deck		Quantity	Remarks	
	01,05 A		330.6 m^2	Deck width = 2.90 m	
	Area of rebarb exposure		3.3 m^2	A × 0.010	
	Area of deck cracking		16.5 m^2	A × 0.050	
	03 A		684.0 m^2	Deck width = 6.00 m	
	Area of rebarb exposure		6.8 m^2	A × 0.010	
	Area of deck cracking		34.2 m^2	A × 0.050	
11	Repair quanity of substructure		Quantity	Remarks	
	Cracking, Water leakage, Free lime		5.54 m	per substructure	
	Rebar exposure		2.24 m^2	per substructure	
12	Concrete barrier		Quantity	Remarks	
	Rebar exposure		12.22 m^2	A of bridge surf. x 0.004	

Approximate repair price for countermeasure

Bridge name	005Phra Pinklao					Span No.		2								
Member	No.	Damage	Damage classification	Countermeasure classification	Repair method	Repair quantity	Unit	Approximate unit price (B)	Approximate repair price (B)	Approximate repair price for countermeasure classification 1 & 2 (B)	countermeasure classification 3		countermeasure classification 4		Planned repair & reconstruction	
											Repair price (B)	Remaining years up to counter measure cl. 2	Repair price (B)	Remaining years up to counter measure cl. 2	Repair price (B)	Life cycle
Girder	01	Cracking/Water leakage/Free lime	c	3	Resin injection	61.1	m	5,000	305,500	-	305,500	7	-	15	-	30
		Rebar exposure	a	5	Patching	12.2	m^2	17,500	213,500	-	-	7	-	15	213,500	30
		Damages at anchorage of PC tendon	a	5	Reinforcement with external PC tendon	-	Pos.	1,000,000	-	-	-	-	-	-	-	-
	02	Cracking/Water leakage/Free lime	c	3	Resin injection	61.1	m	5,000	305,500	-	305,500	7	-	15	-	30
		Rebar exposure	a	5	Patching	12.2	m^2	17,500	213,500	-	-	7	-	15	213,500	30
		Damages at anchorage of PC tendon	a	5	Reinforcement with external PC tendon	-	Pos.	1,000,000	-	-	-	-	-	-	-	-
Deck	01	Rebar exposure	a	5	Patching	3.3	m^2	17,500	57,800	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	16.5	m^2	22,500	371,300	-	371,300	12	-	25	371,300	50
	03	Rebar exposure	a	5	Patching	6.8	m^2	17,500	119,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	34.2	m^2	22,500	769,500	-	-	12	-	25	769,500	50
	05	Rebar exposure	a	5	Patching	3.3	m^2	17,500	57,800	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	16.5	m^2	22,500	371,300	-	371,300	12	-	25	371,300	50
Pier	01	Cracking/Water leakage/Free lime	c	3	Resin injection	5.54	m	5,000	27,700	-	27,700	7	-	15	-	30
		Rebar exposure	a	5	Patching	2.24	m^2	17,500	39,200	-	-	7	-	15	39,200	30
		Damages in substructures	a	5	Foot protection	-	Pier	1,750,000	-	-	-	-	-	-	-	-
	02	Cracking/Water leakage/Free lime	a	5	Resin injection	5.54	m	5,000	27,700	-	-	7	-	15	-	30
		Rebar exposure	a	5	Patching	2.24	m^2	17,500	39,200	-	-	7	-	15	39,200	30
		Damages in substructures	a	5	Foot protection	-	Pier	1,750,000	-	-	-	-	-	-	-	-
Road surface	01	Level difference of road surface	a	5	Pavement replacement	-	m^2	5,000	-	-	-	5	-	10	-	20
		Damages in pavemments	a	5	same as above	2,394.0	//	5,000	11,970,000	-	-	5	-	10	11,970,000	20
Barriers Railings	01	Damages in barriers	c	2	change of steel exp.	12.22	m^2	17,500	213,900	213,900	-	7	-	15	213,900	30
	02	Damages in barriers	c	2	Patching	12.22	m^2	17,500	213,900	213,900	-	7	-	15	213,900	30
	03	Damages in barriers	c	2	Patching	12.22	m^2	17,500	213,900	213,900	-	7	-	15	213,900	30
	04	Damages in barriers	a	5	change of steel exp.	12.22	m^2	17,500	213,900	-	-	7	-	15	213,900	30
Expansion joints	01	Damages in expansion joints	c	2	change of steel exp.	26.8	m	133,400	3,575,200	3,575,200	-	7	-	15	3,575,200	30

Span No.3

Inspecton result

Span No.	3

		Damages of steel members				Damages of concrete members						Others							
		Corrosion	Cracking	Missing bolts	Fracture	Cracking, Water leakage, Free lime	No.	Rebar exposure	Pop-outs	Deck cracking	Damages at anchorage of PC tender	Level difference of road surface	Functional damage of bearings	Damages in substructures	Damages in pavemnents	Damages in expansion joints	Damages in cable	Remarks
Girder	01					a		a			a							
	02					c		a			a							
Deck	01							a	a	c								
	02							a	a	a								
	03							a	a	a								
	04							a	a	a								
	05							a	a	c								
Pier	01					a		a										
	02					a		a										
Bearings	101												c					
	102												c					
	103												c					
	104												c					
Road surface												a						
Pavement															a			
Barriers Railings	01															c		
	02															c		
	03															c		
	04															a		
Expansion joints	01																c	
Others																		

Span No.3

Countermeasure classification of members

Bridge name	006Phra Pinklao	Span No.	3

Member	No.	Damage	Damage classification		Countermeasure classification	No.	Damage	Damage classification		Countermeasure classification
			Classification	Judge				Classification	Judge	
Girder	01	Cracking, Water leakage, Free lime	a	-	5	02	Cracking, Water leakage, Free lime	c	3	3
		Rebar exposure	a	-	5		Rebar exposure	a	-	5
		Damages at anchorage of PC tendon	a	-	5		Damages at anchorage of PC tendon	a	-	5
Deck	01	Rebar exposure	a		5	05	Rebar exposure	a		5
		Pop-outs	a		5		Pop-outs	a		5
		Deck cracking	c	-	3		Deck cracking	c	-	3
	03	Rebar exposure	a		5					
		Pop-outs	a		5					
		Deck cracking	a	N	5					
Pier	01	Cracking, Water leakage, Free lime	a	-	5	02	Cracking, Water leakage, Free lime	a	-	5
		Rebar exposure	a	-	5		Rebar exposure	a	-	5
		Damages in substructures	a	-	5		Damages in substructures	a	-	5
Bearings	101	Functional damage of bearings	c		3	103	Functional damage of bearings	c		3
	102	Functional damage of bearings	c		3	104	Functional damage of bearings	c		3
Road surface	01	Level difference of road surface	a		5	01	Damages in pavemnents	a		5
Barriers Railing	01	Damages in barriers	c		2	03	Damages in barriers	c		2
	02	Damages in barriers	c		2	04	Damages in barriers	a		5
Expansion joints	01	Damages in expansion joints	c		2	-	-	-	-	-

Estimation of repair quantity

Bridge name	006Phra Pinklao			Span No.	3
	Subject		Quantity	Remarks	
1	Span length		82.50 m	Length of 1 span	
2	Road width for pavement		21.00 m	Width for pavement area (Vehicle lane)	
3	Total road width		26.80 m	Deck width	
4	Area of bridge surface		2,211.0 m^2	Span length x Total width	
5	Area of pavement		1,732.5 m^2	Span length x Width for pavement	
6	Barriers & railings	01	steel	Type of barriers & railings	
		02	concrete	Same as above	
		03	concrete	Same as above	
		04	steel	Same as above	
7	Expansion joints	01	steel	Type of expansion joint	
		-	-	Same as above	
8	Crack length		Quantity	Remarks	
	Total crack length L		88.4 m	A of bridge surf. x 0.040	
	Girder		44.2 m	L × 1/2 (per girder)	
9	Area of rebarb exposure		Quantity	Remarks	
	Total area A		17.7 m^2	A of bridge surf. x 0.008	
	Girder		8.8 m^2	L × 1/2 (per girder)	
10	Repaired area of deck		Quantity	Remarks	
	01,05 A		239.3 m^2	Deck width = 2.90 m	
	Area of rebarb exposure		2.4 m^2	A × 0.010	
	Area of deck cracking		12.0 m^2	A × 0.050	
	03 A		495.0 m^2	Deck width = 6.00 m	
	Area of rebarb exposure		5.0 m^2	A × 0.010	
	Area of deck cracking		24.8 m^2	A × 0.050	
11	Repair quanity of substructure		Quantity	Remarks	
	Cracking, Water leakage, Free lime		5.54 m	per substructure	
	Rebar exposure		2.24 m^2	per substructure	
12	Concrete barrier		Quantity	Remarks	
	Rebar exposure		8.84 m^2	A of bridge surf. x 0.004	

Approximate repair price for countermeasure

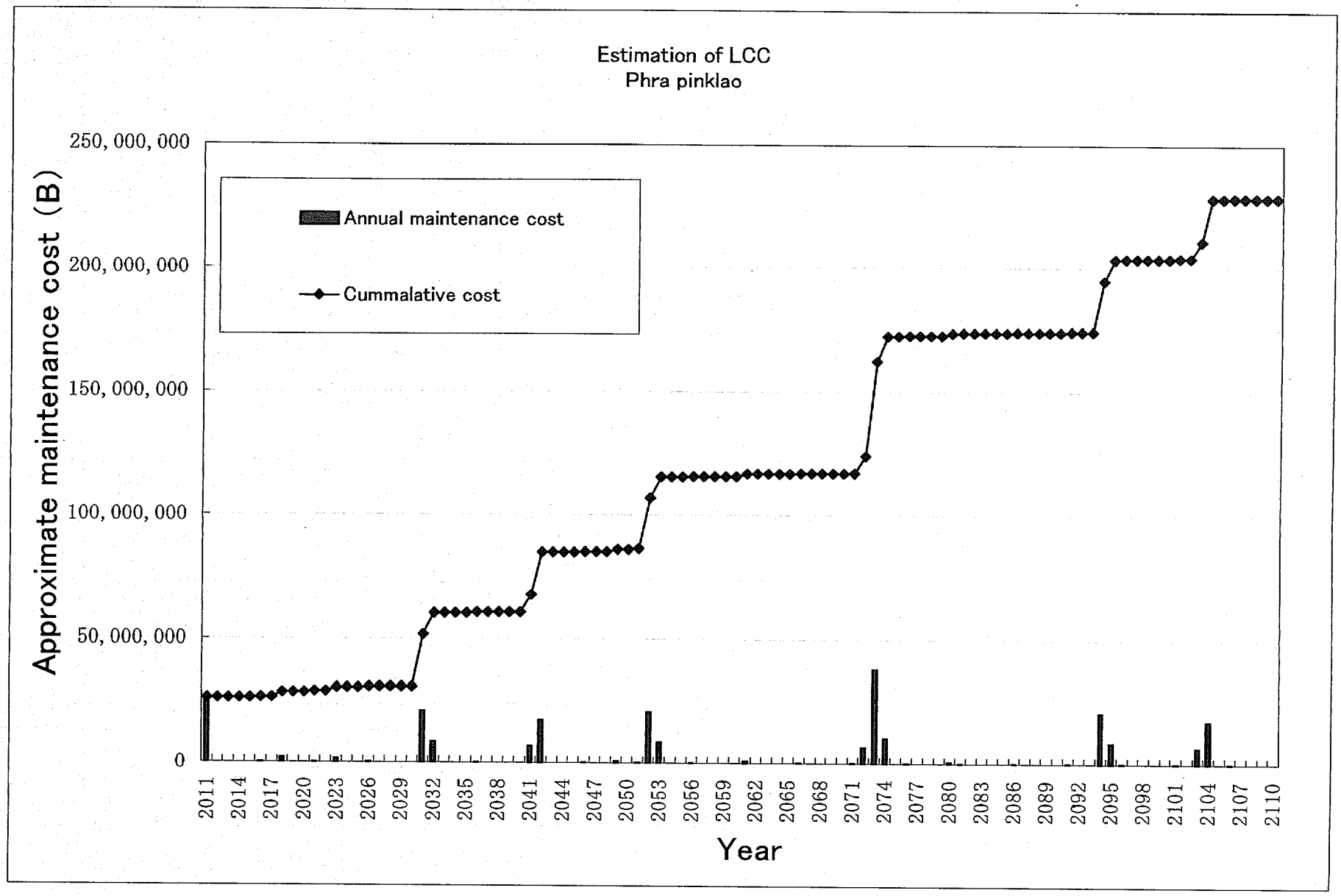
Bridge name	006Phra Pinklao				Span No.		3									
Member	No.	Damage	Damage classification	Countermeasure classification	Repair method	Repair quantity	Unit	Approximate unit price (B)	Approximate repair price (B)	Approximate repair price for countermeasure classification 1 & 2 (B)	countermeasure classification 3		countermeasure classification 4		Planned repair & reconstruction	
											Repair price (B)	Remaining years up to counter measure cl. 2	Repair price (B)	Remaining years up to counter measure cl. 2	Repair price (B)	Life cycle
Girder	01	Cracking/Water leakage/Free lime	a	5	Resin injection	44.2	m	5,000	221,000	-	-	7	-	15	-	30
		Rebar exposure	a	5	Patching	8.8	m^2	17,500	154,000	-	-	7	-	15	154,000	30
		Damages at anchorage of PC tendon	a	5	Reinforcement with external PC tendon	-	Pos.	1,000,000	-	-	-	-	-	-	-	-
	02	Cracking/Water leakage/Free lime	c	3	Resin injection	44.2	m	5,000	221,000	-	221,000	7	-	15	-	30
		Rebar exposure	a	5	Patching	8.8	m^2	17,500	154,000	-	-	7	-	15	154,000	30
		Damages at anchorage of PC tendon	a	5	Reinforcement with external PC tendon	-	Pos.	1,000,000	-	-	-	-	-	-	-	-
Deck	01	Rebar exposure	a	5	Patching	2.4	m^2	17,500	42,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	12.0	m^2	22,500	270,000	-	270,000	12	-	25	270,000	50
	03	Rebar exposure	a	5	Patching	5.0	m^2	17,500	87,500	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	24.8	m^2	22,500	558,000	-	-	12	-	25	558,000	50
	05	Rebar exposure	a	5	Patching	2.4	m^2	17,500	42,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	12.0	m^2	22,500	270,000	-	270,000	12	-	25	270,000	50
Pier	01	Cracking/Water leakage/Free lime	a	5	Resin injection	5.54	m	5,000	27,700	-	-	7	-	15	-	30
		Rebar exposure	a	5	Patching	2.24	m^2	17,500	39,200	-	-	7	-	15	39,200	30
		Damages in substructures	a	5	Foot protection	-	Pier	1,750,000	-	-	-	-	-	-	-	-
	02	Cracking/Water leakage/Free lime	a	5	Resin injection	5.54	m	5,000	27,700	-	-	7	-	15	-	30
		Rebar exposure	a	5	Patching	2.24	m^2	17,500	39,200	-	-	7	-	15	39,200	30
		Damages in substructures	a	5	Foot protection	-	Pier	1,750,000	-	-	-	-	-	-	-	-
Bearings	101	Functional damage of bearings	c	3	Metal spraying	1.0	Pier	120,000	120,000	-	120,000	7	-	15	120,000	30
	102	Functional damage of bearings	c	3	Metal spraying	1.0	//	120,000	120,000	-	120,000	7	-	15	120,000	30
	103	Functional damage of bearings	c	3	Metal spraying	1.0	//	120,000	120,000	-	120,000	7	-	15	120,000	30
	104	Functional damage of bearings	c	3	Metal spraying	1.0	//	120,000	120,000	-	120,000	7	-	15	120,000	30
Road surface	01	Level difference of road surface	a	5	Pavement replacement	-	m^2	5,000	-	-	-	5	-	10	-	20
		Damages in pavements	a	5	same as above	1,732.5	//	5,000	8,662,500	-	-	5	-	10	8,662,500	20
Barriers Railings	01	Damages in barriers	c	2	change of steel exp.	8.84	m^2	17,500	154,700	154,700	-	7	-	15	154,700	30
	02	Damages in barriers	c	2	Patching	8.84	m^2	17,500	154,700	154,700	-	7	-	15	154,700	30
	03	Damages in barriers	c	2	Patching	8.84	m^2	17,500	154,700	154,700	-	7	-	15	154,700	30
	04	Damages in barriers	a	5	change of steel exp.	8.84	m^2	17,500	154,700	-	-	7	-	15	154,700	30
Expansion joints	01	Damages in expansion joints	c	2	change of steel exp.	26.8	m	133,400	3,575,200	3,575,200	-	7	-	15	3,575,200	30

Approximate total repair cost

Year	Annual repair cost (B)					Cummalative cost (B
	Span No.1	Span No.2	Span No.3	Periodic inspection + reserve for unexpected matters	Bridge total	
2011	14,197,100	6,283,000	5,534,600	233,400	26,248,100	26,248,100
2012	-	-	-	-	-	26,248,100
2013	-	-	-	-	-	26,248,100
2014	-	-	-	-	-	26,248,100
2015	-	-	-	-	-	26,248,100
2016	-	-	-	233,400	233,400	26,481,500
2017	-	-	-	-	-	26,481,500
2018	728,700	638,700	701,000	-	2,068,400	28,549,900
2019	-	-	-	-	-	28,549,900
2020	-	-	-	-	-	28,549,900
2021	-	-	-	233,400	233,400	28,783,300
2022	-	-	-	-	-	28,783,300
2023	540,000	540,000	540,000	-	1,620,000	30,403,300
2024	-	-	-	-	-	30,403,300
2025	-	-	-	-	-	30,403,300
2026	-	-	-	233,400	233,400	30,636,700
2027	-	-	-	-	-	30,636,700
2028	-	-	-	-	-	30,636,700
2029	-	-	-	-	-	30,636,700
2030	-	-	-	-	-	30,636,700
2031	-	11,970,000	8,662,500	233,400	20,865,900	51,502,600
2032	8,662,500	-	-	-	8,662,500	60,165,100
2033	-	-	-	-	-	60,165,100
2034	-	-	-	-	-	60,165,100
2035	-	-	-	-	-	60,165,100
2036	-	-	-	233,400	233,400	60,398,500
2037	-	-	-	-	-	60,398,500
2038	-	-	-	-	-	60,398,500
2039	-	-	-	-	-	60,398,500
2040	-	-	-	-	-	60,398,500
2041	2,036,400	2,785,400	2,036,400	233,400	7,091,600	67,490,100
2042	5,534,600	6,283,000	5,534,600	-	17,352,200	84,842,300
2043	-	-	-	-	-	84,842,300
2044	-	-	-	-	-	84,842,300
2045	-	-	-	-	-	84,842,300
2046	-	-	-	233,400	233,400	85,075,700
2047	-	-	-	-	-	85,075,700
2048	-	-	-	-	-	85,075,700
2049	480,000	-	480,000	-	960,000	86,035,700
2050	-	-	-	-	-	86,035,700
2051	-	-	-	233,400	233,400	86,269,100
2052	-	11,970,000	8,662,500	-	20,632,500	106,901,600
2053	8,662,500	-	-	-	8,662,500	115,564,100
2054	-	-	-	-	-	115,564,100
2055	-	-	-	-	-	115,564,100
2056	-	-	-	233,400	233,400	115,797,500
2057	-	-	-	-	-	115,797,500
2058	-	-	-	-	-	115,797,500
2059	-	-	-	-	-	115,797,500
2060	-	-	-	-	-	115,797,500

Year	Annual repair cost (B)					Cummalative cost (B
	Span No.1	Span No.2	Span No.3	Periodic inspection + reserve for unexpected matters	Bridge total	
2061	270,000	270,000	270,000	233,400	1,043,400	116,840,900
2062	-	-	-	-	-	116,840,900
2063	-	-	-	-	-	116,840,900
2064	-	-	-	-	-	116,840,900
2065	-	-	-	-	-	116,840,900
2066	-	-	-	233,400	233,400	117,074,300
2067	-	-	-	-	-	117,074,300
2068	-	-	-	-	-	117,074,300
2069	-	-	-	-	-	117,074,300
2070	-	-	-	-	-	117,074,300
2071	-	-	-	233,400	233,400	117,307,700
2072	2,036,400	2,785,400	2,036,400	-	6,858,200	124,165,900
2073	5,534,600	18,253,000	14,197,100	-	37,984,700	162,150,600
2074	9,202,500	540,000	540,000	-	10,282,500	172,433,100
2075	-	-	-	-	-	172,433,100
2076	-	-	-	233,400	233,400	172,666,500
2077	-	-	-	-	-	172,666,500
2078	-	-	-	-	-	172,666,500
2079	-	-	-	-	-	172,666,500
2080	480,000	-	480,000	-	960,000	173,626,500
2081	-	-	-	233,400	233,400	173,859,900
2082	-	-	-	-	-	173,859,900
2083	-	-	-	-	-	173,859,900
2084	-	-	-	-	-	173,859,900
2085	-	-	-	-	-	173,859,900
2086	-	-	-	233,400	233,400	174,093,300
2087	-	-	-	-	-	174,093,300
2088	-	-	-	-	-	174,093,300
2089	-	-	-	-	-	174,093,300
2090	-	-	-	-	-	174,093,300
2091	-	-	-	233,400	233,400	174,326,700
2092	-	-	-	-	-	174,326,700
2093	-	-	-	-	-	174,326,700
2094	-	11,970,000	8,662,500	-	20,632,500	194,959,200
2095	8,662,500	-	-	-	8,662,500	203,621,700
2096	-	-	-	233,400	233,400	203,855,100
2097	-	-	-	-	-	203,855,100
2098	-	-	-	-	-	203,855,100
2099	-	-	-	-	-	203,855,100
2100	-	-	-	-	-	203,855,100
2101	-	-	-	233,400	233,400	204,088,500
2102	-	-	-	-	-	204,088,500
2103	2,036,400	2,785,400	2,036,400	-	6,858,200	210,946,700
2104	5,534,600	6,283,000	5,534,600	-	17,352,200	228,298,900
2105	-	-	-	-	-	228,298,900
2106	-	-	-	233,400	233,400	228,532,300
2107	-	-	-	-	-	228,532,300
2108	-	-	-	-	-	228,532,300
2109	-	-	-	-	-	228,532,300
2110	-	-	-	-	-	228,532,300

Eestimation of LCC



1.5.6 Memorial

Damage classification of members

Bridge name		006Memorial												Span No.						1
		Damages of steel members				Damages of concrete members						Others								
		Corrosion	Cracking	Missing bolts	Fracture	Cracking, Water leakage, Free lime	No.	Rebar exposure	Pop-outs	Deck cracking	Damages at anchorage of PC tender	Level difference of road surface	Functional damage of bearings	Damages in substructures	Damages in pavemments	Damages in expansion joints	Damages in cable	Remarks
Upper chord member	01	a	a	a	a													
	02	a	a	a	a													
Bottom chord member	01	a	a	a	a													
	02	b	a	a	a													
Diagonal	01	a	a	a	a													
	02	a	a	a	a													
Vertical member	01	a	a	a	c													
	02	a	a	a	a													
Lateral bracing (Upper)	01	a	a	a	a													
	02	a	a	a	a													
Lateral bracing (Lower)	01	a	a	a	a													
	02	a	a	a	a													
Sway bracing	01	a	a	a	a													
Stringer	01	a	a	a	a													
	02	a	a	a	a													
	03	a	a	a	a													
	04	a	a	a	a													
	05	a	a	a	a													
	06	a	a	a	a													
	07	a	a	a	a													
	08	a	a	a	a													
	09	a	a	a	a													
	10	a	a	a	a													
Floor beam	01	a	a	a	a													
	02	a	a	a	a													
	03	a	a	a	a													
Sway bracing	01	b	a	a	a													
Sway bracing (Lower)	01							a	a	c	a							
	02							a	a	a	a							
	03							a	a	a	a							
	04							a	a	a	a							
	05							a	a	a	a							
	06							a	a	a	a							
	07							a	a	a	a							
	08							a	a	a	a							
	09							a	a	a	a							
	10							a	a	a	a							
	11							a	a	a	a							
	12							a	a	a	a							
	13							a	a	c	a							
Pier	01					a	-	a						a				
	02					c	-	a						a				
Bearings	101												a					
	102												a					
	201												a					
	202												a					
Road surface												a			e			
Barriers Railings	01															a		
	02															a		
Expansion joints	01																a	
	02																a	

Estimation of repair quantity

Bridge name	006Memorial	Span No.	1

	Subject		Quantity	Remarks
1	Span length		80.054 m	Length of 1 span
2	Road width for pavement		10.6 m	Width for pavement area (Vehicle lane)
3	Total road width		17.8 m	Deck width
4	Area of bridge surface		1,425.0 m^2	Span length x Total width
5	Area of pavement		848.6 m^2	Span length x Width for pavement
6	Barriers & railings	01	concrete	Type of barriers & railings
		02	concrete	Same as above
		03	-	Same as above
		04	-	Same as above
7	Expansion joints	01	steel	Type of expansion joint
		02	steel	Same as above

	Painting area			Total %	Number of members	Member %	Painting area	Remarks
8	Total painting area			100.0%	1	-	6,300.0 m^2	
	Main structure	52.0%	Upper chord 65.0%	33.8%	2	16.9%	1,070.0 m^2	Experience value
			Bottom chord 35.0%	18.2%	2	9.1%	580.0 m^2	Experience value
	Sway bracing Lateral bracing Portal frame	18.0%	Diagonal 20.0%	3.6%	2	1.8%	120.0 m^2	Experience value
			Vertical member 15.0%	2.7%	2	1.4%	90.0 m^2	Experience value
			Lateral bracing (Upper) 20.0%	3.6%	2	1.8%	120.0 m^2	Experience value
			Lateral bracing (Lower) 15.0%	2.7%	2	1.4%	90.0 m^2	Experience value
			Sway bracing (Upper) 15.0%	2.7%	1	2.7%	180.0 m^2	Experience value
			Sway bracing (Upper) 15.0%	2.7%	1	2.7%	180.0 m^2	Experience value
	Floor system	32.0%	Stringer 60.0%	19.2%	10	1.9%	130.0 m^2	Experience value
			Floor beam 40.0%	12.8%	15%	1.9%	130.0 m^2	End floor beam(15% pos.)
					70%	9.0%	570.0 m^2	Interm. floor beam(70% for all)

	Repaired area of deck	Quantity	Remarks
9	Divided area A	109.6 m^2	13 div. Area of bridge surface / number of division
	Area of rebarb exposure	13.2 m^2	A × 0.120
	Area of deck cracking	68.0 m^3	A × 0.620

	Repair quanity of substructure	Quantity	Remarks
10	Cracking, Water leakage, Free lime	5.54 m	per substructure
	Rebar exposure	2.24 m^2	per substructure

	Concrete barrier	Quantity	Remarks
11	Rebar exposure	5.70 m^2	A of bridge surf. x 0.004

Countermeasure classification of members

Bridge name			006Memorial				Span No.			1
Member	No.	Damage	Damage classification		Countermeasure classification	Member	No.	Damage	Damage classification		Countermeasure classification
			Classification	Judge					Classification	Judge	
Upper chord	01	Corrosion	a	-	5	Sway bracing (Upper)	01	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
	02	Corrosion	a	-	5	Stringer	01	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
Bottom chord	01	Corrosion	a	-	5		02	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
	02	Corrosion	b	-	4		03	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
Diagonal	01	Corrosion	a	-	5		04	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
	02	Corrosion	a	-	5		05	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
Vertical member	01	Corrosion	a	-	5		06	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	e	-	1			Fracture	a	-	5
	02	Corrosion	a	-	5		07	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
Lateral bracing (Upper)	01	Corrosion	a	-	5		08	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
	02	Corrosion	a	-	5		09	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
Lateral bracing (Lower)	01	Corrosion	a	-	5		10	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
	02	Corrosion	a	-	5						
		Cracking	a	-	5						
		Missing bolts	a	-	5						
		Fracture	a	-	5						

Bridge name			006Memorial			Span No.				1
Member	No.	Damage	Damage classification		Countermeasure classification	Member	No.	Damage	Damage classification		Countermeasure classification
			Classification	Judge					Classification	Judge	
Floor beam	01	Corrosion	a	-	5	Deck	08	Rebar exposure	a	-	5
		Cracking	a	-	5			Pop-outs	a	-	5
		Missing bolts	a	-	5			Deck cracking	a	-	5
		Fracture	a	-	5			Damages at anchorage of PC tendon	a	-	5
	02	Corrosion	a	-	5		09	Rebar exposure	a	-	5
		Cracking	a	-	5			Pop-outs	a	-	5
		Missing bolts	a	-	5			Deck cracking	a	-	5
		Fracture	a	-	5			Damages at anchorage of PC tendon	a	-	5
	03	Corrosion	a	-	5		10	Rebar exposure	a	-	5
		Cracking	a	-	5			Pop-outs	a	-	5
		Missing bolts	a	-	5			Deck cracking	a	-	5
		Fracture	a	-	5			Damages at anchorage of PC tendon	a	-	5
Sway bracing (Lower)	01	Corrosion	b	-	4		11	Rebar exposure	a	-	5
		Cracking	a	-	5			Pop-outs	a	-	5
		Missing bolts	a	-	5			Deck cracking	a	-	5
		Fracture	a	-	5			Damages at anchorage of PC tendon	a	-	5
Deck	01	Rebar exposure	a	-	5		12	Rebar exposure	a	-	5
		Pop-outs	a	-	5			Pop-outs	a	-	5
		Deck cracking	c	-	3			Deck cracking	a	-	5
		Damages at anchorage of PC tendon	a	-	5			Damages at anchorage of PC tendon	a	-	5
	02	Rebar exposure	a	-	5		13	Rebar exposure	a	-	5
		Pop-outs	a	-	5			Pop-outs	a	-	5
		Deck cracking	a	-	5			Deck cracking	c	-	3
		Damages at anchorage of PC tendon	a	-	5			Damages at anchorage of PC tendon	a	-	5
	03	Rebar exposure	a	-	5	Substructure	01	Cracking etc.	a	-	5
		Pop-outs	a	-	5			Rebar exposure	a	-	5
		Deck cracking	a	-	5			Damages in substructures	a	-	5
		Damages at anchorage of PC tendon	a	-	5		02	Cracking etc.	c	-	3
	04	Rebar exposure	a	-	5			Rebar exposure	a	-	5
		Pop-outs	a	-	5			Damages in substructures	a	-	5
		Deck cracking	a	-	5	Bearings	101	Functional damage of bearings	a	-	5
		Damages at anchorage of PC tendon	a	-	5		102	Functional damage of bearings	a	-	5
	05	Rebar exposure	a	-	5		201	Functional damage of bearings	a	-	5
		Pop-outs	a	-	5		202	Functional damage of bearings	a	-	5
		Deck cracking	a	-	5	Road surface	01	Level difference of road surface	a	-	5
		Damages at anchorage of PC tendon	a	-	5			Damages in pavemnents	e	-	2
	06	Rebar exposure	a	-	5	Barriers Railings	01	Damages in barriers	a	-	5
		Pop-outs	a	-	5		02	Damages in barriers	a	-	5
		Deck cracking	a	-	5		03	Damages in barriers	-	-	-
		Damages at anchorage of PC tendon	a	-	5		04	Damages in barriers	-	-	-
	07	Rebar exposure	a	-	5	Expansion joints	01	Damages in expansion joints	a	-	5
		Pop-outs	a	-	5		02	Damages in expansion joints	a	-	5
		Deck cracking	a	-	5						
		Damages at anchorage of PC tendon	a	-	5						

Approximate repair price for countermeasures

Bridge name	006Memorial					Span No.	1									
Member	No.	Damage	Damage classification	Countermeasure classification	Repair method	Repair quantity	Unit	Approximate unit price (B)	Approximate repair price (B)	Approximate repair price for countermeasure classification 1 & 2 (B)	countermeasure classification 3		countermeasure classification 4		Planned repair & reconstruction	
											Repair price (B)	Remaining years up to countermeasure cl 2	Repair price (B)	Remaining years up to countermeasure cl 2	Repair price (B)	Life cycle
Upper chord	01	Corrosion	a	5	Repainting	1,070.0	m^2	3,500	3,745,000	-	-	5	-	10	3,745,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	02	Corrosion	a	5	Repainting	1,070.0	m^2	3,500	3,745,000	-	-	5	-	10	3,745,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Bottom chord	01	Corrosion	a	5	Repainting	580.0	m^2	3,500	2,030,000	-	-	5	-	10	2,030,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	02	Corrosion	b	4	Repainting	580.0	m^2	3,500	2,030,000	-	-	5	2,030,000	10	2,030,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Diagonal	01	Corrosion	a	5	Repainting	120.0	m^2	3,500	420,000	-	-	5	-	10	420,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	02	Corrosion	a	5	Repainting	120.0	m^2	3,500	420,000	-	-	5	-	10	420,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Vertical member	01	Corrosion	a	5	Repainting	90.0	m^2	3,500	315,000	-	-	5	-	10	315,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	c	1	Reinf. for fracture	1.0	Pos.	166,700	166,700	166,700	-	-	-	-	-	-
	02	Corrosion	a	5	Repainting	90.0	m^2	3,500	315,000	-	-	5	-	10	315,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Lateral bracing	01	Corrosion	a	5	Repainting	120.0	m^2	3,500	420,000	-	-	5	-	10	420,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	02	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Lateral bracing (Lower)	01	Corrosion	a	5	Repainting	120.0	m^2	3,500	420,000	-	-	5	-	10	420,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	02	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Sway bracing (Upper)	01	Corrosion	a	5	Repainting	180.0	m^2	3,500	630,000	-	-	5	-	10	630,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Stringer	01	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	02	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	03	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	04	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Stringer	05	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	06	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	07	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	08	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	09	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	10	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Floor beam	01	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Floor beam	02	Corrosion	a	5	Repainting	570.0	m^2	3,500	1,995,000	-	-	5	-	10	1,995,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
	03	Corrosion	a	5	Repainting	130.0	m^2	3,500	455,000	-	-	5	-	10	455,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-
Sway bracing (Lower)	01	Corrosion	b	4	Repainting	180.0	m^2	3,500	630,000	-	-	5	630,000	10	630,000	20
		Cracking	a	5	Reinf. with steel pl.	-	Pos.	166,700	-	-	-	-	-	-	-	-
		Missing bolts	a	5	Bolt change for splice pl.	-	Pos.	133,400	-	-	-	-	-	-	-	-
		Fracture	a	5	Reinf. for fracture	-	Pos.	166,700	-	-	-	-	-	-	-	-

Member	No.	Damage	Damage classification	Countermeasure classification	Repair method	Repair quantity	Unit	Approximate unit price (B)	Approximate repair price (B)	Approximate repair price for countermeasure classification 1 & 2 (B)	countermeasure classification 3		countermeasure classification 4		Planned repair & reconstruction	
											Repair price (B)	Remaining years up to counter measure cl 2	Repair price (B)	Remaining years up to counter measure cl 2	Repair price (B)	Life cycle
Deck	01	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	68.0	m^2	22,500	1,530,000	-	1,530,000	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	02	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	m^2	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	03	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	Pos.	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	04	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	Pos.	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	05	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	Pos.	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	06	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	Pos.	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	07	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	Pos.	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	08	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	Pos.	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	09	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	Pos.	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	10	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	Pos.	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	11	Rebar exposure	a	5	Patching	13.2	m^2	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	Pos.	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	12	Rebar exposure	a	5	Patching	13.2	m	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	m	10,000	-	-	-	-	-	-	-	-
		Deck cracking	a	5	CFR	68.0	m	22,500	1,530,000	-	-	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	m	45,000	-	-	-	-	-	-	-	-
	13	Rebar exposure	a	5	Patching	13.2	m	17,500	231,000	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	m	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	68.0	m	22,500	1,530,000	-	1,530,000	7	-	15	1,530,000	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	m	45,000	-	-	-	-	-	-	-	-
Substructure	01	Cracking etc.	a	5	Resin injection	5.54	m	5,000	27,700	-	-	7	-	15	-	30
		Rebar exposure	a	5	Patching	2.24	m	17,500	39,200	-	-	7	-	15	39,200	30
		Damages in substructures	a	5	Foot protection	-	m	1,750,000	-	-	-	-	-	-	-	-
	02	Cracking etc.	c	3	Resin injection	5.54	m	5,000	27,700	-	27,700	7	-	15	-	30
		Rebar exposure	a	5	Patching	2.24	m	17,500	39,200	-	-	7	-	15	39,200	30
		Damages in substructures	a	5	Foot protection	-	m	1,750,000	-	-	-	-	-	-	-	-
Bearings	101	Functional damage of bearings	a	5	Metal spraying	1.0	Pos.	120,000	120,000	-	-	7	-	15	120,000	30
	102	Functional damage of bearings	a	5	Metal spraying	1.0	Pos.	120,000	120,000	-	-	7	-	15	120,000	30
	201	Functional damage of bearings	a	5	Metal spraying	1.0	Pos.	120,000	120,000	-	-	7	-	15	120,000	30
	202	Functional damage of bearings	a	5	Metal spraying	1.0	Pos.	120,000	120,000	-	-	7	-	15	120,000	30
Road surface	01	Level difference of road surface	a	5	Pavement replacement	848.6	m^2	5,000	4,242,900	-	-	5	-	10	-	20
		Damages in pavements	c	2	same as above	848.6	m^2	5,000	4,242,900	4,242,900	-	5	-	10	4,242,900	20
Barriers Railings	01	Damages in barriers	a	5	Patching.	5.70	m^2	17,500	99,800	-	-	7	-	15	99,800	30
	02	Damages in barriers	a	5	Patching.	5.70	m^2	17,500	99,800	-	-	7	-	15	99,800	30
	03	-	-	-	Patching.	5.70	m^2	17,500	99,800	-	-	7	-	15	99,800	30
	04	-	-	-	Patching.	5.70	m^2	17,500	99,800	-	-	7	-	15	99,800	30
Expansion joints	01	Damages in expansion joints	a	5	change of steel exp.	17.8	m	133,400	2,374,600	-	-	7	-	15	2,374,600	30
	02	Damages in expansion joints	a	5	change of steel exp.	17.8	m	133,400	2,374,600	-	-	7	-	15	2,374,600	30