Estimation of repair quantity

Bridge name	010Krung Thep	Span No.	3

	Subject		Quantity	Remarks
1	Span length		80.000 m	Length of 1 span
2	Road width for pavement		12.00 m	Width for pavement area (Vehicle lane)
3	Total road width		17.48 m	Deck width
4	Area of bridge surface		1,398.4 m^2	Span length x Total width
5	Area of pavement		960.0 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	-	6,200.0 m^2	
	Main structure	52.0%	Upper chord 65.0%	33.8%	2	16.9%	1,050.0 m^2	Experience value
			Bottom chord 35.0%	18.2%	2	9.1%	570.0 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%	1	3.6%	230.0 m^2	Experience value
			Lateral bracing (Lower) 15.0%	2.7%	1	2.7%	170.0 m^2	Experience value
			Sway bracing (Upper) 15.0%	2.7%	1	2.7%	170.0 m^2	Experience value
			Sway bracing (Upper) 15.0%	2.7%	1	2.7%	170.0 m^2	Experience value
	Floor system	32.0%	Stringer 60.0%	19.2%	10	1.9%	120.0 m^2	Experience value
			Floor beam 40.0%	12.8%	15%	1.9%	120.0 m^2	End floor beam(15% pos.)
					70%	9.0%	560.0 m^2	Interm. floor beam(70% for all)

	Painting area of deck	Quantity	Remarks
9	Divided area A	107.6 m^2	13 div. Area of bridge surface / number of division
	Painting area	107.6 m^2	

	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	5.59 m^2	A of bridge surf. x 0.004

Countermeasure classification of members

Bridge name			010Krung Thep					Span No.			3
Member	No.	Damage	Damage classification		Countermeasure classification	Member	No.	Damage	Damage classification		Countermeasure classification
			Classification	Judge					Classification	Judge	
Upper chord	01	Corrosion	-	-	-	Stringer	01	Corrosion	b	-	4
		Cracking	-	-	-			Cracking	a	-	5
		Missing bolts	-	-	-			Missing bolts	a	-	5
		Fracture	-	-	-			Fracture	a	-	5
	02	Corrosion	-	-	-		02	Corrosion	a	-	5
		Cracking	-	-	-			Cracking	a	-	5
		Missing bolts	-	-	-			Missing bolts	a	-	5
		Fracture	-	-	-			Fracture	a	-	5
Bottom chord	01	Corrosion	-	-	-		03	Corrosion	a	-	5
		Cracking	-	-	-			Cracking	a	-	5
		Missing bolts	-	-	-			Missing bolts	a	-	5
		Fracture	-	-	-			Fracture	a	-	5
	02	Corrosion	-	-	-		04	Corrosion	a	-	5
		Cracking	-	-	-			Cracking	a	-	5
		Missing bolts	-	-	-			Missing bolts	a	-	5
		Fracture	-	-	-			Fracture	a	-	5
Diagonal	01	Corrosion	-	-	-		05	Corrosion	a	-	5
		Cracking	-	-	-			Cracking	a	-	5
		Missing bolts	-	-	-			Missing bolts	a	-	5
		Fracture	-	-	-			Fracture	a	-	5
	02	Corrosion	-	-	-		06	Corrosion	a	-	5
		Cracking	-	-	-			Cracking	a	-	5
		Missing bolts	-	-	-			Missing bolts	a	-	5
		Fracture	-	-	-			Fracture	a	-	5
Vertical member	01	Corrosion	-	-	-		07	Corrosion	a	-	5
		Cracking	-	-	-			Cracking	a	-	5
		Missing bolts	-	-	-			Missing bolts	a	-	5
		Fracture	-	-	-			Fracture	a	-	5
	02	Corrosion	-	-	-		08	Corrosion	a	-	5
		Cracking	-	-	-			Cracking	a	-	5
		Missing bolts	-	-	-			Missing bolts	a	-	5
		Fracture	-	-	-			Fracture	a	-	5
Lateral bracing (Upper)	01	Corrosion	-	-	-		09	Corrosion	b	-	4
		Cracking	-	-	-			Cracking	a	-	5
		Missing bolts	-	-	-			Missing bolts	a	-	5
		Fracture	-	-	-			Fracture	a	-	5
Lateral bracing (Lower)	01	Corrosion	-	-	-						
		Cracking	-	-	-						
		Missing bolts	-	-	-						
		Fracture	-	-	-						
Sway bracing (Upper)	01	Corrosion	-	-	-						
		Cracking	-	-	-						
		Missing bolts	-	-	-						
		Fracture	-	-	-						

Bridge name			010Krung Thep				Span No.			3
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	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
	03	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
Sway bracing (Lower)	01	Corrosion	a	-	5		11	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
Deck	01	Corrosion	a	-	5		12	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		13	Corrosion	a	-	5
		Cracking	a	-	5			Cracking	a	-	5
		Missing bolts	a	-	5			Missing bolts	a	-	5
		Fracture	a	-	5			Fracture	a	-	5
	03	Corrosion	a	-	5	Substructure	01	Cracking etc.	a	-	5
		Cracking	c	-	2			Rebar exposure	a	-	5
		Missing bolts	a	-	5			Damages in substructures	a	-	5
		Fracture	a	-	5		02	Cracking etc.	a	-	5
	04	Corrosion	a	-	5			Rebar exposure	a	-	5
		Cracking	a	-	5			Damages in substructures	a	-	5
		Missing bolts	a	-	5	Bearings	101	Functional damage of bearings	a	-	5
		Fracture	a	-	5		102	Functional damage of bearings	a	-	5
	05	Corrosion	a	-	5		201	Functional damage of bearings	a	-	5
		Cracking	a	-	5		202	Functional damage of bearings	a	-	5
		Missing bolts	a	-	5	Road surface	01	Level difference of road surface	a	-	5
		Fracture	a	-	5			Damages in pavements	a	-	5
	06	Corrosion	a	-	5	Barriers Railings	01	Damages in barriers	c	-	2
		Cracking	a	-	5		02	Damages in barriers	c	-	2
		Missing bolts	a	-	5		03	Damages in barriers	-	-	-
		Fracture	a	-	5		04	Damages in barriers	-	-	-
	07	Corrosion	a	-	5	Expansion joints	01	Damages in expansion joints	c	-	2
		Cracking	a	-	5						
		Missing bolts	a	-	5						
		Fracture	a	-	5						

Approximate repair price for countermeasures

Bridge name	010Krung Thep					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		countermeasure classification		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	
Stringer	01	Corrosion	b	4	Repainting	120.0	m^2	3,500	420,000	-	-	5	420,000	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	-	-	-	-	-	-	-	-	
	03	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	-	-	-	-	-	-	-	-	
	04	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	-	-	-	-	-	-	-	-	
	05	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	-	-	-	-	-	-	-	-	
	06	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	-	-	-	-	-	-	-	-	
	07	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	-	-	-	-	-	-	-	-	
	08	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	-	-	-	-	-	-	-	-	
	09	Corrosion	b	4	Repainting	120.0	m^2	3,500	420,000	-	-	5	420,000	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	-	-	-	-	-	-	-	-	
Floor beam	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	-	-	-	-	-	-	-	-	
Floor beam	02	Corrosion	a	5	Repainting	560.0	m^2	3,500	1,960,000	-	-	5	-	10	1,960,000	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	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	-	-	-	-	-	-	-	-	
Sway bracing (Lower)	01	Corrosion	a	5	Repainting	170.0	m^2	3,500	595,000	-	-	5	-	10	595,000	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 (¥)	Approximate repair price (¥)	Approximate repair price for countermeasure classification 1 & 2 (¥)	countermeasure classification		countermeasure classification		Planned repair & reconstruction	
											Repair price (¥)	Remaining years up to counter measure cl. 2	Repair price (¥)	Remaining years up to counter measure cl. 2	Repair price (¥)	Life cycle
Deck	01	Corrosion	a	5	Repainting	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	20
		Cracking	c	2	Reinf. with steel pl.	1.0	Pos.	166,700	166,700	166,700	-	-	-	-	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	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	-	-	-	-	-	-	-	-
	05	Corrosion	a	5	Repainting	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	-	-	-	-	-	-	-	-
	11	Corrosion	a	5	Repainting	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	-	-	-	-	-	-	-	-
	12	Corrosion	a	5	Repainting	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	-	-	-	-	-	-	-	-
	13	Corrosion	a	5	Repainting	107.6	m^2	3,500	376,600	-	-	5	-	10	376,600	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	-	-	-	-	-	-	-	-
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.	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	-	-	-	-	-	-	-	-
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	960.0	m^2	5,000	4,800,000	-	-	5	-	10	-	20
		Damages in pavements	a	5	same as above	960.0	m^2	5,000	4,800,000	-	-	5	-	10	4,800,000	20
Barriers Railings	01	Damages in barriers	c	2	Patching	5.59	m^2	17,500	97,900	97,900	-	7	-	15	97,900	30
	02	Damages in barriers	c	2	Patching	5.59	m^2	17,500	97,900	97,900	-	7	-	15	97,900	30
	03	-	-	-	Patching	5.59	m^2	17,500	97,900	-	-	7	-	15	97,900	30
	04	-	-	-	Patching	5.59	m^2	17,500	97,900	-	-	7	-	15	97,900	30
Expansion joints	01	Damages in expansion joints	c	2	change of steel exp.	17.5	m	133,400	2,331,900	2,331,900	-	7	-	15	2,331,900	30

Damage classification of members

Bridge name		010Krung Thep											Span No.						4
		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	b	a	a	a													
	02	b	a	a	a													
Diagonal	01	b	a	a	a													
	02	b	a	a	a													
Vertical member	01	b	a	a	a													
	02	a	a	a	a													
Lateral bracing (Upper)	01	b	a	a	a													
Lateral bracing (Lower)	01	a	a	a	a													
Sway bracing (Upper)	01	b	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 (Lower)	01	b	a	a	a													
Sway bracing (Lower)	01							a	a	c	a							
	02							a	a	c	a							
	03							a	a	c	a							
	04							a	a	c	a							
	05							a	a	c	a							
	06							a	a	c	a							
	07							a	a	c	a							
	08							a	a	c	a							
	09							a	a	c	a							
	10							a	a	c	a							
	11							a	a	c	a							
	12							a	a	c	a							
	13							a	a	c	a							
Pier	01					c	-	a						a				
	02					c	-	a						a				
Bearings	101												a					
	102												a					
	201												a					
	202												a					
Road surface												a			a			
Barriers Railings	01															c		
	02															c		
Expansion joints	01																a	

Estimation of repair quantity

Bridge name	010Krung Thep	Span No.	4

	Subject		Quantity	Remarks
1	Span length		64.000 m	Length of 1 span
2	Road width for pavement		12.00 m	Width for pavement area (Vehicle lane)
3	Total road width		17.48 m	Deck width
4	Area of bridge surface		1,118.7 m^2	Span length x Total width
5	Area of pavement		768.0 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	-	5,000.0 m^2	
	Main structure	52.0%	Upper chord 65.0%	33.8%	2	16.9%	850.0 m^2	Experience value
			Bottom chord 35.0%	18.2%	2	9.1%	460.0 m^2	Experience value
	Sway bracing Lateral bracing Portal frame	18.0%	Diagonal 20.0%	3.6%	2	1.8%	90.0 m^2	Experience value
			Vertical member 15.0%	2.7%	2	1.4%	70.0 m^2	Experience value
			Lateralbracing (Upper) 20.0%	3.6%	1	3.6%	180.0 m^2	Experience value
			Lateralbracing (Lower) 15.0%	2.7%	1	2.7%	140.0 m^2	Experience value
			Sway bracing (Upper) 15.0%	2.7%	1	2.7%	140.0 m^2	Experience value
			Sway bracing (Upper) 15.0%	2.7%	1	2.7%	140.0 m^2	Experience value
	Floor system	32.0%	Stringer 60.0%	19.2%	10	1.9%	100.0 m^2	Experience value
			Floor beam 40.0%	12.8%	15%	1.9%	100.0 m^2	End floor beam(15% pos.)
					70%	9.0%	450.0 m^2	Interm. floor beam(70% for all)

	Repaired area of deck	Quantity	Remarks
9	Divided area A	86.1 m^2	13 div. Area of bridge surface / number of division
	Area of rebarb exposure	10.3 m^2	A × 0.120
	Area of deck cracking	53.4 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	4.47 m^2	A of bridge surf. x 0.004

Countermeasure classification of members

Bridge name			010Krung Thep				Span No.			4
Member	No.	Damage	Damage classification: Classification	Damage classification: Judge	Countermeasure classification	Member	No.	Damage	Damage classification: Classification	Damage classification: Judge	Countermeasure classification
Upper chord	01	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
	02	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
Bottom chord	01	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
	02	Corrosion	b	-	4		04	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	b	-	4		05	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		06	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	b	-	4		07	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		08	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	b	-	4		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
Sway bracing (Upper)	01	Corrosion	b	-	4						
		Cracking	a	-	5						
		Missing bolts	a	-	5						
		Fracture	a	-	5						

Bridge name			010Krung Thep					Span No.				4
Member	No.	Damage	Damage classification: Classification	Damage classification: Judge	Countermeasure classification	Member	No.	Damage	Damage classification: Classification	Damage classification: Judge	Countermeasure classification
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	c	-	3
		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	c	-	3
		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	c	-	3
		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	c	-	3
		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	c	-	3
		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	c	-	3			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.	c	-	3
		Pop-outs	a	-	5			Rebar exposure	a	-	5
		Deck cracking	c	-	3			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	c	-	3	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	c	-	3	Road surface	01	Level difference of road surface	a	-	5
		Damages at anchorage of PC tendon	a	-	5			Damages in pavemnents	a	-	5
	06	Rebar exposure	a	-	5	Barriers Railings	01	Damages in barriers	c	-	2
		Pop-outs	a	-	5		02	Damages in barriers	c	-	2
		Deck cracking	c	-	3		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						
		Deck cracking	c	-	3						
		Damages at anchorage of PC tendon	a	-	5						

Approximate repair price for countermeasures

Bridge name	010Krung Thep					Span No.		4									
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	850.0	m^2	3,500	2,975,000	-	-	-	5	-	10	2,975,000	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	850.0	m^2	3,500	2,975,000	-	-	-	5	-	10	2,975,000	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	b	4	Repainting	460.0	m^2	3,500	1,610,000	-	-	-	5	1,610,000	10	1,610,000	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	460.0	m^2	3,500	1,610,000	-	-	-	5	1,610,000	10	1,610,000	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	b	4	Repainting	90.0	m^2	3,500	315,000	-	-	-	5	315,000	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	-	-	-	-	-	-	-	-	-
	02	Corrosion	b	4	Repainting	90.0	m^2	3,500	315,000	-	-	-	5	315,000	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	-	-	-	-	-	-	-	-	-
Vertical member	01	Corrosion	b	4	Repainting	70.0	m^2	3,500	245,000	-	-	-	5	245,000	10	245,000	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	1.0	Pos.	166,700	166,700	-	-	-	-	-	-	-	-
	02	Corrosion	a	5	Repainting	70.0	m^2	3,500	245,000	-	-	-	5	-	10	245,000	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 (Upper)	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	1.0	Pos.	166,700	166,700	-	-	-	-	-	-	-	-
Lateral bracing (Lower)	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	-	-	-	-	-	-	-	-	-
Sway bracing (Upper)	01	Corrosion	b	4	Repainting	140.0	m^2	3,500	490,000	-	-	-	5	490,000	10	490,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	450.0	m^2	3,500	1,575,000	-	-	-	5	-	10	1,575,000	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	100.0	m^2	3,500	350,000	-	-	-	5	-	10	350,000	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	140.0	m^2	3,500	490,000	-	-	-	5	490,000	10	490,000	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 1		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
Deck	01	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	m^2	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	02	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	m^2	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	03	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	Pos.	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	04	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	Pos.	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	05	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	Pos.	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	06	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	Pos.	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	07	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	Pos.	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	08	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	Pos.	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	09	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	Pos.	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	10	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	Pos.	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	11	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	Pos.	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-	-	-	-	-	-
	12	Rebar exposure	a	5	Patching	10.3	m	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	m	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	m	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	m	45,000	-	-	-	-	-	-	-	-
	13	Rebar exposure	a	5	Patching	10.3	m	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	m	10,000	-	-	-	-	-	-	-	-
		Deck cracking	c	3	CFR	53.4	m	22,500	1,201,500	-	1,201,500	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	m	45,000	-	-	-	-	-	-	-	-
Substructure	01	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	-	-	-	-	-	-	-	-
	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	768.0	m^2	5,000	3,840,000	-	-	5	-	10	-	20
		Damages in pavements	a	5	same as above	768.0	m^2	5,000	3,840,000	-	-	5	-	10	3840,000	20
Barriers Railings	01	Damages in barriers	c	2	Patching.	4.47	m^2	17,500	78,300	78,300	-	7	-	15	78,300	30
	02	Damages in barriers	c	2	Patching.	4.47	m^2	17,500	78,300	78,300	-	7	-	15	78,300	30
	03	-	-	-	Patching.	4.47	m^2	17,500	78,300	-	-	7	-	15	78,300	30
	04	-	-	-	Patching.	4.47	m^2	17,500	78,300	-	-	7	-	15	78,300	30
Expansion joints	01	Damages in expansion joints	a	5	change of steel exp.	17.5	m	133,400	2,331,900	-	-	7	-	15	2,331,900	30

Damage classification of members

Bridge name		010Krung Thep											Span No.					5
		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
Upper chord member	01	a	a	a	a													
	02	a	a	a	a													
Bottom chord member	01	a	a	a	a													
	02	a	a	a	a													
Diagonal	01	b	a	a	a													
	02	b	a	a	a													
Vertical member	01	b	a	a	a													
	02	b	a	a	a													
Lateral bracing (Upper)	01	b	a	a	a													
Lateral bracing (Lower)	01	a	a	a	a													
Sway bracing (Upper)	01	b	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 (Lower)	01	a	a	a	a													
Sway bracing (Lower)	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							
	11							a	a	a	a							
	12							a	a	a	a							
	13							a	a	a	a							
Pier	01					a	-	a						a				
	02					a	-	a						a				
Bearings	101												a					
	102												a					
	201												a					
	202												a					
Road surface												a			a			
Barriers	01															c		
Railings	02															c		
Expansion joints	01																a	
	02																a	

Estimation of repair quantity

Bridge name	010Krung Thep	Span No.	5

	Subject		Quantity	Remarks
1	Span length		64.000 m	Length of 1 span
2	Road width for pavement		12.00 m	Width for pavement area (Vehicle lane)
3	Total road width		17.48 m	Deck width
4	Area of bridge surface		1,118.7 m^2	Span length x Total width
5	Area of pavement		768.0 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	-	5,000.0 m^2	
	Main structure	52.0%	Upper chord 65.0%	33.8%	2	16.9%	850.0 m^2	Experience value
			Bottom chord 35.0%	18.2%	2	9.1%	460.0 m^2	Experience value
	Sway bracing Lateral bracing Portal frame	18.0%	Diagonal 20.0%	3.6%	2	1.8%	90.0 m^2	Experience value
			Vertical member 15.0%	2.7%	2	1.4%	70.0 m^2	Experience value
			Lateral bracing (Upper) 20.0%	3.6%	1	3.6%	180.0 m^2	Experience value
			Lateral bracing (Lower) 15.0%	2.7%	1	2.7%	140.0 m^2	Experience value
			Sway bracing (Upper) 15.0%	2.7%	1	2.7%	140.0 m^2	Experience value
			Sway bracing (Upper) 15.0%	2.7%	1	2.7%	140.0 m^2	Experience value
	Floor system	32.0%	Stringer 60.0%	19.2%	10	1.9%	100.0 m^2	Experience value
			Floor beam 40.0%	12.8%	15%	1.9%	100.0 m^2	End floor beam(15% pos.)
					70%	9.0%	450.0 m^2	Interm. floor beam(70% for all)

	Repaired area of deck	Quantity	Remarks
9	Divided area A	86.1 m^2	13 div. Area of bridge surface / number of division
	Area of rebarb exposure	10.3 m^2	A × 0.120
	Area of deck cracking	53.4 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	4.47 m^2	A of bridge surf. x 0.004

Countermeasure classification of members

Bridge name			010Krung Thep				Span No.			5
Member	No.	Damage	Damage classification: Classification	Damage classification: Judge	Countermeasure classification	Member	No.	Damage	Damage classification: Classification	Damage classification: Judge	Countermeasure classification
Upper chord	01	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
	02	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
Bottom chord	01	Corrosion	a	-	5		03	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		04	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	b	-	4		05	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		06	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	b	-	4		07	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		08	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	b	-	4		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
Sway bracing (Upper)	01	Corrosion	b	-	4						
		Cracking	a	-	5						
		Missing bolts	a	-	5						
		Fracture	a	-	5						

Bridge name			010Krung Thep			Span No.					5
Member	No.	Damage	Damage classification: Classification	Damage classification: Judge	Countermeasure classification	Member	No.	Damage	Damage classification: Classification	Damage classification: Judge	Countermeasure classification
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	a	-	5		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	a	-	5			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	a	-	5
		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.	a	-	5
	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	a	-	5
	06	Rebar exposure	a	-	5	Barriers Railings	01	Damages in barriers	c	-	2
		Pop-outs	a	-	5		02	Damages in barriers	c	-	2
		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	010Krung Thep				Span No.		5								
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	850.0	m^2	3,500	2,975,000	-	-	5	-	10	2,975,000	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	850.0	m^2	3,500	2,975,000	-	-	5	-	10	2,975,000	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	460.0	m^2	3,500	1,610,000	-	-	5	-	10	1,610,000	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	460.0	m^2	3,500	1,610,000	-	-	5	-	10	1,610,000	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	b	4	Repainting	90.0	m^2	3,500	315,000	-	-	5	315,000	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	-	-	-	-	-	-	-	-
	02	Corrosion	b	4	Repainting	90.0	m^2	3,500	315,000	-	-	5	315,000	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	-	-	-	-	-	-	-	-
Vertical member	01	Corrosion	b	4	Repainting	70.0	m^2	3,500	245,000	-	-	5	245,000	10	245,000	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	70.0	m^2	3,500	245,000	-	-	5	245,000	10	245,000	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 (Upper)	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	-	-	-	-	-	-	-	-
Lateral bracing (Lower)	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	-	-	-	-	-	-	-	-
Sway bracing (Upper)	01	Corrosion	b	4	Repainting	140.0	m^2	3,500	490,000	-	-	5	490,000	10	490,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	450.0	m^2	3,500	1,575,000	-	-	5	-	10	1,575,000	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	100.0	m^2	3,500	350,000	-	-	5	-	10	350,000	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	a	5	Repainting	140.0	m^2	3,500	490,000	-	-	5	-	10	490,000	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	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	m^2	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	02	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	m^2	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	03	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	Pos.	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	04	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	Pos.	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	05	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	Pos.	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	06	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	Pos.	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	07	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	Pos.	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	08	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	Pos.	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	09	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	Pos.	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	10	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	Pos.	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	11	Rebar exposure	a	5	Patching	10.3	m^2	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	Pos.	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	Pos.	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	Pos.	45,000	-	-	-		-		-	-
	12	Rebar exposure	a	5	Patching	10.3	m	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	m	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	m	22,500	1,201,500	-	-	7	-	15	1,201,500	30
		Damages at anchorage of PC tendon	a	5	CFR (upper & bottom)	-	m	45,000	-	-	-		-		-	-
	13	Rebar exposure	a	5	Patching	10.3	m	17,500	180,300	-	-	7	-	15	-	30
		Pop-outs	a	5	Patching & CFR	-	m	10,000	-	-	-		-		-	-
		Deck cracking	a	5	CFR	53.4	m	22,500	1,201,500	-	-	7	-	15	1,201,500	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.	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	-	-	-		-		-	-
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	768.0	m^2	5,000	3,840,000	-	-	5	-	10	-	20
		Damages in pevements	a	5	same as above	768.0	m^2	5,000	3,840,000	-	-	5	-	10	3,840,000	20
Barriers Railings	01	Damage in barriers	c	2	Patching.	4.47	m^2	17,500	78,300	78,300	-	7	-	15	78,300	30
	02	Damages in barriers	c	2	Patching.	4.47	m^2	17,500	78,300	78,300	-	7	-	15	78,300	30
	03	-	-	-	Patching.	4.47	m^2	17,500	78,300	-	-	7	-	15	78,300	30
	04	-	-	-	Patching.	4.47	m^2	17,500	78,300	-	-	7	-	15	78,300	30
Expansion joints	01	Damages in expansion joints	a	5	change of steel exp.	17.5	m	133,400	2,331,900	-	-	7	-	15	2,331,900	30
	02	Damages in expansion joints	a	5	change of steel exp.	17.5	m	133,400	2,331,900	-	-	7	-	15	2,331,900	30

Approximate total repair cost

Year	Annual repair cost (B)							Cummalative cost (B)
	Span No.1	Span No.2	Span No.3	Span No.4	Span No.5	Periodic inspection + reserve for unexpected matters	Bridge total	
2011	3,996,600	156,600	2,694,400	156,600	156,600	233,400	7,394,200	7,394,200
2012	-	-	-	-	-	-	-	7,394,200
2013	-	-	-	-	-	-	-	7,394,200
2014	-	-	-	-	-	-	-	7,394,200
2015	-	-	-	-	-	-	-	7,394,200
2016	-	-	-	-	-	233,400	233,400	7,627,600
2017	-	-	-	-	-	-	-	7,627,600
2018	-	15,619,500	-	15,674,900	-	-	31,294,400	38,922,000
2019	-	-	-	-	-	-	-	38,922,000
2020	-	-	-	-	-	-	-	38,922,000
2021	5,036,160	8,326,160	5,035,200	9,061,160	5,596,160	233,400	33,288,240	72,210,240
2022	-	-	-	-	-	-	-	72,210,240
2023	-	-	-	-	-	-	-	72,210,240
2024	-	-	-	-	-	-	-	72,210,240
2025	-	-	-	-	-	-	-	72,210,240
2026	-	-	-	-	-	233,400	233,400	72,443,640
2027	-	-	-	-	-	-	-	72,443,640
2028	-	-	-	-	-	-	-	72,443,640
2029	-	-	-	-	-	-	-	72,443,640
2030	-	-	-	-	-	-	-	72,443,640
2031	18,371,160	20,531,160	20,226,000	19,551,160	23,261,160	233,400	102,174,040	174,617,680
2032	3,840,000	-	-	-	-	-	3,840,000	178,457,680
2033	-	-	-	-	-	-	-	178,457,680
2034	-	-	-	-	-	-	-	178,457,680
2035	-	-	-	-	-	-	-	178,457,680
2036	-	-	-	-	-	233,400	233,400	178,691,080
2037	-	-	-	-	-	-	-	178,691,080
2038	-	-	-	-	-	-	-	178,691,080
2039	-	-	-	-	-	-	-	178,691,080
2040	-	-	-	-	-	-	-	178,691,080
2041	20,841,700	2,890,300	558,400	2,890,300	20,841,700	233,400	48,255,800	226,946,880
2042	5,192,760	8,482,760	7,562,900	9,217,760	5,752,760	-	36,208,940	263,155,820
2043	-	-	-	-	-	-	-	263,155,820
2044	-	-	-	-	-	-	-	263,155,820
2045	-	-	-	-	-	-	-	263,155,820
2046	-	-	-	-	-	233,400	233,400	263,389,220
2047	-	-	-	-	-	-	-	263,389,220
2048	-	-	-	-	-	-	-	263,389,220
2049	-	15,619,500	-	15,619,500	-	-	31,239,000	294,628,220
2050	-	-	-	-	-	-	-	294,628,220
2051	-	-	-	-	-	233,400	233,400	294,861,620
2052	18,371,160	20,531,160	20,226,000	19,551,160	23,261,160	-	101,940,640	396,802,260
2053	3,840,000	-	-	-	-	-	3,840,000	400,642,260
2054	-	-	-	-	-	-	-	400,642,260
2055	-	-	-	-	-	-	-	400,642,260
2056	-	-	-	-	-	233,400	233,400	400,875,660
2057	-	-	-	-	-	-	-	400,875,660
2058	-	-	-	-	-	-	-	400,875,660
2059	-	-	-	-	-	-	-	400,875,660
2060	-	-	-	-	-	-	-	400,875,660
2061	-	-	-	-	-	233,400	233,400	401,109,060
2062	-	-	-	-	-	-	-	401,109,060
2063	5,036,160	8,326,160	5,035,200	9,061,160	5,596,160	-	33,054,840	434,163,900
2064	-	-	-	-	-	-	-	434,163,900
2065	-	-	-	-	-	-	-	434,163,900
2066	-	-	-	-	-	233,400	233,400	434,397,300
2067	-	-	-	-	-	-	-	434,397,300
2068	-	-	-	-	-	-	-	434,397,300
2069	-	-	-	-	-	-	-	434,397,300
2070	-	-	-	-	-	-	-	434,397,300
2071	-	-	-	-	-	233,400	233,400	434,630,700
2072	20,841,700	2,890,300	558,400	2,890,300	20,841,700	-	48,022,400	482,653,100
2073	18,527,760	20,687,760	22,753,700	19,707,760	23,417,760	-	105,094,740	587,747,840
2074	3,840,000	-	-	-	-	-	3,840,000	591,587,840
2075	-	-	-	-	-	-	-	591,587,840
2076	-	-	-	-	-	233,400	233,400	591,821,240
2077	-	-	-	-	-	-	-	591,821,240
2078	-	-	-	-	-	-	-	591,821,240
2079	-	-	-	-	-	-	-	591,821,240
2080	-	15,619,500	-	15,619,500	-	-	31,239,000	623,060,240
2081	-	-	-	-	-	233,400	233,400	623,293,640
2082	-	-	-	-	-	-	-	623,293,640
2083	-	-	-	-	-	-	-	623,293,640
2084	5,036,160	8,326,160	5,035,200	9,061,160	5,596,160	-	33,054,840	656,348,480
2085	-	-	-	-	-	-	-	656,348,480
2086	-	-	-	-	-	233,400	233,400	656,581,880
2087	-	-	-	-	-	-	-	656,581,880
2088	-	-	-	-	-	-	-	656,581,880
2089	-	-	-	-	-	-	-	656,581,880
2090	-	-	-	-	-	-	-	656,581,880
2091	-	-	-	-	-	233,400	233,400	656,815,280
2092	-	-	-	-	-	-	-	656,815,280
2093	-	-	-	-	-	-	-	656,815,280
2094	18,371,160	20,531,160	20,226,000	19,551,160	23,261,160	-	101,940,640	758,755,920
2095	3,840,000	-	-	-	-	-	3,840,000	762,595,920
2096	-	-	-	-	-	233,400	233,400	762,829,320
2097	-	-	-	-	-	-	-	762,829,320
2098	-	-	-	-	-	-	-	762,829,320
2099	-	-	-	-	-	-	-	762,829,320
2100	-	-	-	-	-	-	-	762,829,320
2101	-	-	-	-	-	233,400	233,400	763,062,720
2102	-	-	-	-	-	-	-	763,062,720
2103	20,841,700	2,890,300	558,400	2,890,300	20,841,700	-	48,022,400	811,085,120
2104	156,600	156,600	2,527,700	156,600	156,600	-	3,154,100	814,239,220
2105	5,036,160	8,326,160	5,035,200	9,061,160	5,596,160	-	33,054,840	847,294,060
2106	-	-	-	-	-	233,400	233,400	847,527,460
2107	-	-	-	-	-	-	-	847,527,460
2108	-	-	-	-	-	-	-	847,527,460
2109	-	-	-	-	-	-	-	847,527,460
2110	-	-	-	-	-	-	-	847,527,460

Eestimation of LCC