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# 付録-1 2009 年 10 月時点のバンコク首都圏に おけるチャオプラヤ架橋群(完成分)

#### APPENDIX-1: 2009年10月時点のバンコク首都圏におけるチャオプラヤ架橋群(完成分)

	橋名	所在地区	宇施機関	施工	期間		諸元		円借款他		施工		事後評価			
				開始	開通	橋長	車線数	構造形式	年次	承諾年月	金額	,		実施年	レオ	パート
1	Pathum Thani	パトムタニ県	рон	1981	1984	239	2 片歩道	PC箱桁	8次	1981.4	56	住友建設			和文	英文
2	2nd Phatum Thani	パトムタニ県	рон		2009		6 歩道	PC箱桁	全額タイ資	<del>ک</del>		イタリアンタイ				
3	Nonthaburi-Pathum Thani(ノンタフ゛リ橋)	ノンタブリ県とパトムタ 二県境	рон		1959	260	2	鋼トラス	賠償							
4	Pak Kret(ラマ4世橋)	ノンタブリ県	DRR	2003	2006	278 (高架を含 む全長 = 6.1km)	6 歩道	PC箱桁	22次	1997	55	第1工区(橋梁・東西 道路:大成・シノタイ JV) 第2工区(ラチャブルッ ク道路):				
5	New Phra Nangklao	ノンタブリ県	DOH	2005	2008	489	6 步道	PC箱桁	全額タイ資	金		Unique Engineering				
6	Phra Nangklao(新ノン タブリ橋)	ノンタブリ県	рон	1983	1985	329	4 歩道	PC箱桁	8次	1981.4	58			1985	和文	
7	Wat Nakorn-in (ラマ5世橋)	ノンタブリ県とバンコク 特別区境	DRR	1999	2002	320	6 歩道	PC箱桁	20次「ワッ トナコンイ ン橋帯道 建 業」	1995.9	72	三井住友・イタリアンタ イJV	他21次と併せ てナコンイン 道路・ラチャ ブルック道路 整備	2006	和文	英文
8	ラマ7世橋	バンコク特別区	DRR	1990	1992	290	6 步道	PC箱桁	13次「新 ラマ6世橋 建設事	1987.9	56	大林組・住友建設・タ イ大林JV		1998	和文	
9	ラマ6世橋(鉄道橋)	バンコク特別区	SRT		1926	445	2	鋼トラス	仏・英支援							
10	Krungthon	バンコク特別区	DRR	1954	1958	366	4	鋼トラス	賠償			富士車両・サファウイ サワ・カン・ヨタ				
11	ラマ8世橋	バンコク特別区	ВМА	1997	2002	475	4 歩道	PC斜張橋	全額タイ資	金		BBRシステムズ・China State Construction & Engineering・PPD Construction				
12	Phra PinkLao (ターチャン橋)	バンコク特別区	DRR	1971	1973	280	6 歩道	PC箱桁	1次	1971	13	大林組・住友建設JV				
13	Memorial (Phra Phutta Yodf)	バンコク特別区	DRR	1929	1932	234	6 歩道	鋼トラス・ 跳開橋	7次(補 修)	1980	42	Dorman Long & Co., Ltd•住友建設				
14	Phra Pok Klao	バンコク特別区	DRR	1981	1984	212	6 歩道	PC箱桁	7次	1980	42	住友建設				
15	Taksin(サートン橋) 2009年にBTS Sky Trainが上下車線の中 央にある空間に橋梁 を建設し、道路鉄道併 用橋となっている	バンコク特別区	DRR	1979	1982	224	6 歩道	PC箱桁・ V橋脚	2次(DD) 3次(エ 事)	1974 1977	357	イタリアンタイ・ Dragages of Travauz Publica Impress Generation Dj Construction		1985	和文	

	橋名	所在地区	宇施機関	施工	期間		諸元			円借款他		施工			事後評価	
				開始	開通	橋長	車線数	構造形式	年次	承諾年月	金額	,		実施年	レポ	( <u>-</u>
1(	Krung Thep	バンコク特別区	DRR	1954	1959	350	4 步道	鋼トラス・ 跳開橋	賠償 (補修を 17次)			建設 : 富士車両 補修 : ED.Zublin AG,Wayss Freytag, Stecon				
1	, New Krung Thep (ラマ 3世橋)	バンコク特別区	DRR	1996	2000	476	6	PC箱桁	17次 「新クルン テープ橋 建設事 業」	1993	75	ED.Zublin AG, Wayss Freytag, Stecom				
18	3 ラマ9世	バンコク特別区	EXAT	1984	1987	761	2	鋼斜張橋	9次	1982	259	日立造船・東急建設・ チョーカンチャン・神戸 製鋼・日商岩井		2002	和文	
10	産業環状道路北橋梁	++ /、ットプニカン個		2001	2006	582	6	鋼斜張橋	00 <sup>v</sup> /m	1007	140	大成建設·西松建設·	東西高架接 続道路:鹿 島-東刍建			
19	産業環状道路南橋梁	ッムシャンフルーン宗		2001	2006	702	6	鋼斜張橋	22次	1997	140	NKK・シノタイ	岡・宋 志座 設・Unique Engineering			
20	Kanchanapisek	サムットプラカーン県	DOH, EXAT		2007	941		鋼斜張橋	民活事業			チョーカンチャン				

## 付録-2 建設費の内訳

No.	Description	Base Cost	Factor F	Construction Cost
1	General Requirements	131,834,000	1	131,834,000
2	Nonthaburi Road Interchange	777,021,000	1.0713	832,423,000
3	Main Bridge	703,627,000	1.0713	753,796,000
4	Main Line Viaduct and Land Minor Bridge	538,322,000	1.0713	576,704,000
5	Ratcha Phruk Road Interchange	226,919,000	1.0713	243,098,000
6	Bridge Accessories	96,761,000	1.0713	103,660,000
7	Roads and Landscaping	717,001,000	1.0677	765,542,000
8	Mechanical and Electrical Services	116,018,000	1.0677	123,872,000
9	Utility and Miscellaneous Relocation	182,196,000	1	182,196,000
10	Force Account Work	8,653,000	1	8,653,000
	Total	3,498,352,000		3,721,778,000

Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 1. GENERAL REQUIREMENT

Itom No	Description	Unit	Estimated	Materi	al Cost	Labou	r Cost	Material & I	Labour Cost
nem No.	Description	Unit	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
1.	General Requirement								
1.01	Central and Site Office for the Representative of the Engineer and	LS	1			39,500,000	39,500,000	39,500,000	39,500,000
	the Employer								
1.02	Provide and Maintenance and Running Cost for Central Office	month	30			100,000	3,000,000	100,000	3,000,000
1.03	Site office for representative of the Engineer and The Enployer	LS	1			17,100,000	17,100,000	17,100,000	17,100,000
1.04	Provide for Maintenance and Running Cost for Site Office	month	30			71,500	2,145,000	71,500	2,145,000
1.05	Laboratory Building and Facilities	Ls	1			1,703,000	1,703,000	1,703,000	1,703,000
1.06	Provide for Maintenance and Running Cost for Laboratory	month	30			33,000	990,000	33,000	990,000
	Building and Facilities								
1.07	Special Test and other tests (Provisional)	PS	1			-		7,000,000	7,000,000
1.08	Maintenance and Protection of Traffic	PS	1			-		9,600,000	9,600,000
1.09	Monthly progress photographs and video Compact Disc.	month	30			13,200	396,000	13,200	396,000
1.1	Completed photograohs and Video Compact Disc.	set	6			60,000	360,000	60,000	360,000
1.11	Environmental mitigation of Construction	PS	1			-		5,000,000	5,000,000
1.12	Sport Utility Vehicle	ea	2			1,220,000	2,440,000	1,220,000	2,440,000
1.13	Sedan Car	ea	6			980,000	5,880,000	980,000	5,880,000
1.14	Double Cab Pick-up	ea	4			930,000	3,720,000	930,000	3,720,000
1.15	Microbus	ea	10			60,000	600,000	60,000	600,000
1.16	11-Seat Van	ea	1			3,100,000	3,100,000	3,100,000	3,100,000
1.17	Boat	month	30			30,000	900,000	30,000	900,000
1.18	Provide for maintenance and running costs for all transport	month	30			180,000	5,400,000	180,000	5,400,000
1.19	Provision of safety measures, Accident Prevension and	PS	1			-		11,400,000	11,400,000
	Insurance								
1.20	Provision of Public Relation and Public Participation of	PS	1			-		7,600,000	7,600,000
	Project								
1.21	HIV programe	PS						4,000,000	4,000,000
1	Total of General Requirements								131,834,000
	Four of General Requirements			1	1 .	1 1			1

Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 2. NONTHBURI ROAD INTERCHANGE

Item No	Description	Unit	Estimated	Materia	al Cost	Labour Cost		Material & Labour Cost	
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
2. 2.1	Nonthaburi Road Intechange Abutments and Transition Structures								
2.1.1 2.1.2	Earth Works Structural Excavation Embankment Fill in Transition Structure Pavement Works	m3 m3	7,130 7,810	461.10	3,601,191	220.00 35.09	1,568,600 274,053	220.00 496.19	1,568,600 3,875,244
2.1.3	Subbase for Transition Structure	m3	3,040	512.00	1,556,480	42.11	128,014	554.11	1,684,494
2.1.4 2.1.5	Bored Piles d=0.6m	m m	8,010 11,870	1,125.00 1,406.00	9,011,250 16,689,220	570.00 1,002.00	4,565,700 11,893,740	1,695.00 2,408.00	13,576,950 28,582,960
2.1.6 2.1.7 2.1.8 2.1.9 2.1.10 2.1.11	Structures Lean Concrete Concrete Grade 30A in wall for abutment and transition structure Concrete Grade 30A in deck slabl for abutment and cap beam Concrete Grade 30A in apron slab and bottom slab for transition structure Concrete Grade 30A in pile cap Reinforcement Grade SD40	m3 m3 m3 m3 t	4,320 1,930 1,650 1,840 1,190 810	226.50 4,240.00 3,950.00 3,200.00 2,950.00 22,530.00	978,480 8,183,200 6,517,500 5,888,000 3,510,500 18,249,300	25.00 1,150.00 1,020.00 830.00 770.00 3,000.00	108,000 2,219,500 1,683,000 1,527,200 916,300 2,430,000	251.50 5,390.00 4,970.00 4,030.00 3,720.00 25,530.00	1,086,480 $10,402,700$ $8,200,500$ $7,415,200$ $4,426,800$ $20,679,300$
2	CF								101,499,228

### Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 2. NONTHBURI ROAD INTERCHANGE

Itom No	n No. Description		Estimated	Materi	al Cost	Labou	r Cost	Material &	Labour Cost
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
2.	B/F								
2.2	Land Pier								
	Earth Works								
2.2.1	Structural Excavation including backfill	m3	3,280			530.00	1,738,400	530.00	1,738,400
	Foundation Works								
2.2.2	Bored Piles d=0.80 m	m	9,310	2,652.00	24,690,120	1,357.00	12,633,670	4,009.00	37,323,790
2.2.3	Bored Piles d=1.20 m	m	9,070	5,047.00	45,776,290	1,978.00	17,940,460	7,025.00	63,716,750
2.2.4	Bored Test d=0.80 m	ea	2			190,000.00	380,000	190,000.00	380,000
2.2.5	Bored Test d=1.20 m	ea	2			270,000.00	540,000	270,000.00	540,000
2.2.6	Pilot Piles d=0.80 m	ea	2			821,845.00	1,643,690	821,845.00	1,643,690
2.2.7	Pilot Piles d=1.20 m	ea	2			1,826,500.00	3,653,000	1,826,500.00	3,653,000
	Structures								
2.2.8	Lean Concrete	m2	1,750	226.50	396,375	25.00	43,750	251.50	440,125
2.2.9	Concrete Grade 30A in column	m3	2,530	5,140.00	13,004,200	1,970.00	4,984,100	7,110.00	17,988,300
2.2.10	Concrete Grade 30A in pile cap	m3	3,130	2,950.00	9,233,500	870.00	2,723,100	3,820.00	11,956,600
2.2.11	Reinforcement Grade SD40 in pile cap	t	357	22,530.00	8,043,210	3,000.00	1,071,000	25,530.00	9,114,210
2.2.12	Reinforcement Grade SD40 in column	t	825	22,530.00	18,587,250	3,000.00	2,475,000	25,530.00	21,062,250
2.3	SUPERSTRUCTURE Structure Congrete Grade 40A1	m <sup>2</sup>	25.240	0 350 00	236 020 000	2 700 00	68 418 000	12 050 00	305 347 000
2.3.1	Concrete Grade 40A1	m3	23,340	9,350.00 8 150 00	230,929,000	2,700.00	6 237 000	10,250,00	30,347,000
2.3.2	Reinforcement Grade SD40	1115 +	2,970	22 530 00	112 100 400	2,100.00	14 940 000	25 530 00	127 139 400
2.3.3	Prestressing Tebdons	1 t	457	69 170 00	31 610 690	25,000.00	11 425 000	94 170 00	43 035 690
2.3.7			-137	0),170.00	51,010,070	25,000.00	11,425,000	94,170.00	+3,033,070
2	Total of Nonthaburi 1 Road Interchange								777,020,933

Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 3. MAIN BRIDGE

Item No	Description	Unit	Estimated	Materi	al Cost	Labou	r Cost	Material & L	abour Cost
	Description	Om	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
3.	Main Bridge								
3.1	Pylons and Land Piers								
	Earth Works								
3.1.1	Structural Excavation including backfii	m3	2,300			530.00	1,219,000	530.00	1,219,000
	Foundation Works								
3.1.2	Bored Piles d=1.50m	m	4,540	6,030.00	27,376,200	11,330.00	51,438,200	17,360.00	78,814,400
3.1.3	Bored Piles d=1.20m	m	1,520	5,047.00	7,671,440	1,978.00	3,006,560	7,025.00	10,678,000
3.1.4	Permanent steel casing for bored piles d=1.50m	m	550	14,300.00	7,865,000		0	14,300.00	7,865,000
3.1.5	Pile test d=1.50m	ea	2			400,000.00	800,000	400,000.00	800,000
3.1.6	Pile test d=1.20m	ea	2			270,000.00	540,000	270,000.00	540,000
3.1.7	Pilot pile d=1.50m	ea	2			3,667,070.00	7,334,140	3,667,070.00	7,334,140
3.1.8	Pilot pile d=1.20m	ea	2			1,826,500.00	3,653,000	1,826,500.00	3,653,000
	Structures								
3.1.9	Lean Concrete	m3	710	226.50	160,815	25.00	17,750	251.50	178,565
3.1.10	Concrete Grade 30A in footing	m3	4,100	5,205.00	21,340,500	1,040.00	4,264,000	6,245.00	25,604,500
3.1.11	Concrete Grade 30A in column	m3	860	5,745.00	4,940,700	2,170.00	1,866,200	7,915.00	6,806,900
3.1.12	Concrete Grade 30A in pylon	m3	870	13,470.00	11,718,900	3,900.00	3,393,000	17,370.00	15,111,900
3.1.13	Reinforcement Grade SD40 in footing	t	415	22,530.00	9,349,950	3,000.00	1,245,000	25,530.00	10,594,950
3.1.14	Reinforcement Grade SD40 in column	t	106	22,530.00	2,388,180	3,000.00	318,000	25,530.00	2,706,180
3.1.15	Reinforcement Grade SD40 in pylon	t	245	22,530.00	5,519,850	3,000.00	735,000	25,530.00	6,254,850
3.1.16	Reinforcement Grade SD50 in pylon	t		24,180.00	0	3,000.00	0	27,180.00	0
3.1.17	Prestressed tendons in footing	t	50	69,170.00	3,458,500	25,000.00	1,250,000	94,170.00	4,708,500
3	CE								182,869,885
5	Cr (								

Project Location :	The	Chao	Phraya	River	Crossing	Bridge	at	Nonthaburi 1 Road	Construction	Project
3. MAIN BRIDGE										

Item No	No. Description		Estimated	Materi	al Cost	Labou	r Cost	Material & L	abour Cost
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
Item No 3. 3.2.1 3.2.2 3.2.3 3.2.6 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5	Description           B/F           Superstructure <u>Concrete Post-tensitoned Deck</u> Concrete Grade 45A           Reinforcement Grade SD 40           Prestressing Tendons           Prestressed bars, in inner webs           Stay Cable           Prototype stay cable           Prototype saddle           Cables with anchorage in deck and saddle in pylon           Outer HDPE sheath for cable stay           Damper HDPE sheath for stay cable	Unit m3 t t t t ea ea t m ea	Estimated Quantity 16,070 3,820 815 22 2 2 2 2 2 2 2 2 70 5,850 48	Materi Unit Rate 10,470.00 22,530.00 74,170.00 74,170.00 1,650,000.00 1,650,000.00 1,500.00 1,500.00	al Cost Amount 168,252,900 86,064,600 60,448,550 1,631,740 3,300,000 67,500,000 8,775,000 7,200,000	Labou Unit Rate 2,100.00 3,000.00 30,000.00 30,000.00 2,200,000.00 112,500.00 450.00 450.00	r Cost Amount 33,747,000 11,460,000 24,450,000 660,000 4,400,000 30,375,000 2,632,500 2,160,000	Material & L Unit Rate 12,570.00 25,530.00 104,170.00 104,170.00 3,850,000.00 3,850,000.00 3,850,000.00 1,950.00 195,000,00	abour Cost <u>Amount</u> 182,869,885 201,999,900 97,524,600 84,898,550 2,291,740 7,700,000 7,700,000 97,875,000 11,407,500 9 360,000
3.3.3 3.3.4 3.3.5	Cables with anchorage in deck and saddle in pylon Outer HDPE sheath for cable stay Damper HDPE sheath for stay cable	t m ea	270 5,850 48	250,000.00 1,500.00 150,000.00	67,500,000 8,775,000 7,200,000	112,500.00 450.00 45,000.00	30,375,000 2,632,500 2,160,000	362,500.00 1,950.00 195,000.00	97,875,000 11,407,500 9,360,000
3	Total of Main Bridge								703,627,175

### Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 4. MAIN LINE VIADUCT AND MINOR BRIDGE

Itom No	No. Description		Estimated	d Material Cost		Labour Cost		Material & Labour Cost	
nem no.	Description	Unit	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
4.	Main Line Viaduct and Minor Bridge								
	Main Line Viaduct								
4.1	Abutment and Transition Structure								
4 1 1	Earth Works		4 1 1 0			220.00	004 200	220.00	004 200
4.1.1	Structural Excavation including backfil	m3	4,110	461 10	1 200 202	220.00	904,200	220.00	904,200
4.1.2	Emoankment nil in transition	ms	2,820	461.10	1,300,302	35.09	98,954	496.19	1,399,236
412	Pavement works Subbase for transition structure	m2	220	512.00	117 760	42-11	0.685	554 11	127 445
4.1.5	Subbase for transition structure	ms	230	512.00	117,700	42.11	9,085	554.11	127,445
	Foundation Works								
414	Bored niles d=0.50m	m	3 780	1 125 00	4 252 500	570.00	2 154 600	1 695 00	6 407 100
4.1.5	Bored piles d=0.60m	m	5,510	1,406.00	7,747,060	1.002.00	5.521.020	2,408,00	13,268,080
			0,010	1,100100	,,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1,002.00	0,021,020	2,100.00	10,200,000
	Structures								
4.1.6	Lean Concrete	m2	1,870	226.50	423,555	25.00	46,750	251.50	470,305
4.1.7	Concrete Grade 30A in wall of abutment and transition structure	m3	914	4,240.00	3,875,360	1,150.00	1,051,100	5,390.00	4,926,460
4.1.8	Concrete Grade 30A in deck slab and abutment and cap beam	m3	893	3,950.00	3,527,350	1,020.00	910,860	4,970.00	4,438,210
4.1.9	Concrete Grade 30A in apron slab and bottom slab for	m3	893	3,200.00	2,857,600	830.00	741,190	4,030.00	3,598,790
	transition structure								
4.1.10	Concrete Grade 30A in pile cap	m3	599	2,950.00	1,767,050	770.00	461,230	3,720.00	2,228,280
4.1.11	Reinforcement Grade SD40	t	380	22,530.00	8,561,400	3,000.00	1,140,000	25,530.00	9,701,400
4	CF								47,469,526

### Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 4. MAIN LINE VIADUCT AND MINOR BRIDGE

Item No	Description	Unit	Estimated	Materi	al Cost	Labou	r Cost	Material & I	Labour Cost
	Description	Om	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
4.	B/F								47,469,526
4.2	Land Pier								
	Earth Works								
4.2.1	Structural excavation including backfill	m3	1,900			530.00	1,007,000	530.00	1,007,000
	Foundation Works								
4.2.2	Bored Piles d=0.80 m	m	1,320	2,652.00	3,500,640	1,357.00	1,791,240	4,009.00	5,291,880
4.2.3	Bored Piles d=1.20 m	m	7,940	5,047.00	40,073,180	1,978.00	15,705,320	7,025.00	55,778,500
4.2.4	Bored Test d=0.80 m	ea	1			190,000.00	190,000	190,000.00	190,000
4.2.5	Bored Test d=1.20 m	ea	1			270,000.00	270,000	270,000.00	270,000
4.2.6	Pilot Piles d=0.80 m	ea	1			821,800.00	821,800	821,800.00	821,800
4.2.7	Pilot Piles d=1.20 m	ea	1			1,826,500.00	1,826,500	1,826,500.00	1,826,500
	Structures								
4.2.8	lean concrete	m2	930	226.50	210,645	25.00	23,250	251.50	233,895
4.2.9	Concrete Grade 30A in column	m3	1,440	5,140.00	7,401,600	1,970.00	2,836,800	7,110.00	10,238,400
4.2.10	Concrete Grade 30A in pile cap	m3	1,810	2,950.00	5,339,500	870.00	1,574,700	3,820.00	6,914,200
4.2.11	Reinforcement Grade SD40 in pile cap	t	200	22,530.00	4,506,000	3,000.00	600,000	25,530.00	5,106,000
4.2.12	Reinforcement Grade SD40 in column	t	394	22,530.00	8,876,820	3,000.00	1,182,000	25,530.00	10,058,820
4.3	Superstructure								
4.3.1	Concrete Grade 40A2	m3	16,160	9,350.00	151,096,000	2,700.00	43,632,000	12,050.00	194,728,000
4.3.2	Concrete Grade 40A3	m3	2,640	8,150.00	21,516,000	2,100.00	5,544,000	10,250.00	27,060,000
4.3.3	Reinforcement Grade SD40	t	3,220	22,530.00	72,546,600	3,000.00	9,660,000	25,530.00	82,206,600
4.3.4	Prestressing tendons	t	291	69,170.00	20,128,470	25,000.00	7,275,000	94,170.00	27,403,470
4	C/F								476,604,591
1	U/1								

### Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 4. MAIN LINE VIADUCT AND MINOR BRIDGE

Itom No	Description	Unit	Estimated	Materi	al Cost	Labou	r Cost	Material & Labour Cost	
Item No	Description	Unit	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
4.	B/F								476,604,591
4.4	Minor Bridge								
	Earth Works								
4.4.1	Structural excavation including backfill	m3	12.600			220.00	2,772,000	220.00	2,772,000
4.4.2	Embankment fill in transition structure	m3	20,500	461.10	9,452,550	35.09	719,345	496.19	10,171,895
	Pavement Works	_	- ,		- , - ,				- , - ,
4.4.3	Subbase for transition structure	m3	0	512.00	0	0.00	0	512.00	0
	Foundation Works	_							
4.4.4	Prestressed concrete piles 0.26x0.26 m	m	29,600	440.00	13,024,000	110.00	3,256,000	550.00	16,280,000
4.4.5	Prestressed concrete piles 0.40x0.40 m	m	2,160	915.00	1,976,400	210.00	453,600	1,125.00	2,430,000
	Structures						ŕ		, ,
4.4.6	Lean concrete	m2	7,620	226.50	1,725,930	25.00	190,500	251.50	1,916,430
4.4.7	Concrete Grade 30A in column and concrete topping	m3	120	3,950.00	474,000	1,020.00	122,400	4,970.00	596,400
	for precast slab			,	ŕ		ŕ		,
4.4.8	Concrete Grade 30A in wall for abutment and transition structure	m3	560	4,240.00	2,374,400	1,150.00	644,000	5,390.00	3,018,400
4.4.9	Concrete Grade 30A in deck slab for abutment and cap beam	m3	30	3,950.00	118,500	1,020.00	30,600	4,970.00	149,100
4.4.10	Concrete Grade 30A in apron slab and bottom slab for	m3	2,680	3,200.00	8,576,000	830.00	2,224,400	4,030.00	10,800,400
	transition structure								
4.4.11	Concrete Grade 30A in pile cap	m3	0	2,950.00	0	770.00	0	3,720.00	0
4.4.12	Reinforcement Grade SD40	t	340	22,530.00	7,660,200	3,000.00	1,020,000	25,530.00	8,680,200
4.4.13	Plank girder 0.35 x 1.00 x 5.00 m	ea	48	7,708.58	370,012	6,424.00	308,352	14,132.58	678,364
4.4.14	Plank girder 0.35 x 1.00 x 10.00 m	ea	24	16,133.17	387,196	11,566.00	277,584	27,699.17	664,780
4.4.15	Plank girder 0.35 x 1.00 x 12.00 m	ea	20	21,868.00	437,360	15,334.00	306,680	37,202.00	744,040
4.4.16	Plank girder 0.35 x 1.00 x 15.00 m	ea	24	43,960.00	1,055,040	23,162.00	555,888	67,122.00	1,610,928
4.4.17	Strip bearing and side walk 1.5 m	ea	262	1,600.00	419,200	320.00	83,840	1,920.00	503,040
4.4.18	Concrete railing and side walk 1.5m	m	94	4,110.00	386,340	680.00	63,920	4,790.00	450,260
4.4.19	Concrete barrier	m	94	2,241.40	210,692	430.00	40,420	2,671.40	251,112
4	Total of Main Line Vieduat								538,321,940
4	Total of Mani Line Viaduci								

### Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 5. RATCHA PHRUK ROAD INTERCHANGE

Item No	Description	Unit	Estimated	Materi	al Cost	Labou	r Cost	Material & I	Labour Cost
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
5. 5.1	Ratcha Phruk Road Intechange Abutments and Transition Structures								
5.1.1 5.1.2 5.1.3	Earth Works Structural Excavation Embankment Fill in Transition Structure <u>Pavement Works</u> Subbase for Transition Structure <u>Foundation Works</u> Bored Piles d=0 5m	m3 m3 m3 m	2,595 1,550 200 6,160	461.10 512.00 1.125.00	714,705 102,400 6 930 000	220.00 35.09 42.11 570.00	570,900 54,390 8,422 3 511 200	220.00 496.19 554.11	570,900 769,095 110,822 10 441 200
515	Bored Piles d=0.6m	m	8 820	1,125.00	12 400 920	1 002 00	8 837 640	2 408 00	21 238 560
5.1.6 5.1.7 5.1.8 5.1.9 5.1.10 5.1.11	Structures Lean Concrete Concrete Grade 30A in wall for abutment and transition structure Concrete Grade 30A in deck slabl for abutment and cap beam Concrete Grade 30A in apron slab and bottom slab for transition structure Concrete Grade 30A in pile cap Reinforcement Grade SD40	m3 m3 m3 m3 t	1,730 908 1,160 677 588 443	226.50 4,240.00 3,950.00 3,200.00 2,950.00 22,530.00	391,845 3,849,920 4,582,000 2,166,400 1,734,600 9,980,790	25.00 1,150.00 1,020.00 830.00 770.00 3,000.00	43,250 1,044,200 1,183,200 561,910 452,760 1,329,000	251.50 5,390.00 4,970.00 4,030.00 3,720.00 25,530.00	435,095 4,894,120 5,765,200 2,728,310 2,187,360 11,309,790
2	CF								60,450,452

### Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 5. RATCHA PHRUK ROAD INTERCHANGE

Item No	Description	Unit	Estimated	Materi	al Cost	Labou	ır Cost	Material & Labour Cost	
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
5.	B/F								60,450,452
ſ									
5.2	Land Pier								
ſ									
ſ	Earth Works								
5.2.1	Structural Excavation including backfill	m3	1,000			530.00	530,000	530.00	530,000
ſ	Foundation Works								
5.2.2	Bored Piles d=0.80 m	m	5,950	2,652.00	15,779,400	1,357.00	8,074,150	4,009.00	23,853,550
5.2.4	Bored Test d=0.80 m	ea	1			190,000.00	190,000	190,000.00	190,000
5.2.6	Pilot Piles d=0.80 m	ea	1			821,800.00	821,800	821,800.00	821,800
ſ	Structures								
5.2.8	Lean Concrete	m2	620	226.50	140,430	25.00	15,500	251.50	155,930
5.2.9	Concrete Grade 30A in column	m3	500	5,140.00	2,570,000	1,970.00	985,000	7,110.00	3,555,000
5.2.10	Concrete Grade 30A in pile cap	m3	820	2,950.00	2,419,000	870.00	713,400	3,820.00	3,132,400
5.2.11	Reinforcement Grade SD40 in pile cap	t	74	22,530.00	1,667,220	3,000.00	222,000	25,530.00	1,889,220
5.2.12	Reinforcement Grade SD40 in column	t	170	22,530.00	3,830,100	3,000.00	510,000	25,530.00	4,340,100
ſ									
2.3	SUPERSTRUCTURE								
ſ	Structure								
5.3.1	Concrete Grade 40A1	m3	7,170	9,350.00	67,039,500	2,700.00	19,359,000	12,050.00	86,398,500
5.3.3	Reinforcement Grade SD40	t	1,150	22,530.00	25,909,500	3,000.00	3,450,000	25,530.00	29,359,500
5.3.4	Prestressing Tebdons	t	130	69,170.00	8,992,100	25,000.00	3,250,000	94,170.00	12,242,100
ſ									
ſ									
ſ									
ſ									
ſ									
ſ									
ſ									
5	Total of Ratcha Phruk Road Interchange								226,918,552

Itom No	Description	Unit	Estimated	Materi	al Cost	Labou	ır Cost	Material & Labour Cost	
Item No	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
6.	BRIDGE ACCESSORIES								
6.1	JOINTS								
	Expansion joint scal in bridge decks								
6.1.1	Expansion joint EJ 1 (Movement +/- 55 mm.)	m	835	23,000.00	19,205,000	2,500.00	2,087,500	25,500.00	21,292,500
6.1.2	Epansion joint EJ 2 (Movement +/- 80 mm.)	m	200	30,000.00	6,000,000	3,000.00	600,000	33,000.00	6,600,000
6.1.3	Epansion joint EJ 4 (Movement +/- 115 mm.)	m	45	86,000.00	3,870,000	9,000.00	405,000	95,000.00	4,275,000
6.1.4	Sealed joint between abutment and transition structure	m	200	300.00	60,000	80.00	16,000	380.00	76,000
6.1.5	Sealed joint in barriers	m	2,200	300.00	660,000	80.00	176,000	380.00	836,000
6.1.6	Sealed joint in walls, between abutment and transition	m	265	300.00	79,500	80.00	21,200	380.00	100,700
6.2	BRIDGE BEARINGS								
6.2.1	Pot bearing type 1A (200 ton, 55 mm.)	ea	62	47,000.00	2,914,000	7,400.00	458,800	54,400.00	3,372,800
6.2.2	Pot bearing type 1B (200 ton, 55 mm.)	ea	74	30,000.00	2,220,000	4,300.00	318,200	34,300.00	2,538,200
6.2.3	Pot bearing type 2A (200 ton, 90 mm.)	ea	28	47,000.00	1,316,000	7,400.00	207,200	54,400.00	1,523,200
6.2.4	Pot bearing type 2B (200 ton, 90 mm.)	ea	30	30,000.00	900,000	4,300.00	129,000	34,300.00	1,029,000
6.2.5	Pot bearing type 3A ( 300 ton , 55 mm. )	ea	4	66,000.00	264,000	10,800.00	43,200	76,800.00	307,200
6.2.6	Pot bearing type 3B ( 300 ton , 55 mm. )	ea	4	40,000.00	160,000	6,000.00	24,000	46,000.00	184,000
6.2.7	Pot bearing type 5A (500 ton, 90 mm.)	ea		89,000.00	· · · · ·	15,100.00	0	104,100.00	0
6.2.8	Pot bearing type 5B ( 500 ton , 90 mm. )	ea		63,000.00		10,000.00	0	73,000.00	0
6.2.9	Pot bearing type 6A (800 ton, 160 mm.)	ea	4	162,000.00	648,000	29,700.00	118,800	191,700.00	766,800
6.2.10	Pot bearing type 6B (800 ton, 160 mm.)	ea	4	115,000.00	460,000	20,400.00	81,600	135,400.00	541,600
				- ,		.,	- )	,	
6.3	LADDERS, HANDRAIL, LOUVER, DOOR, ETC								
6.3.1	Steel ladders in pylon	m	105	1,500.00	157,500	1.000.00	105,000	2,500.00	262,500
6.3.2	Steel handrail in pylon	m	16	1,500.00	24,000	1.000.00	16,000	2,500.00	40,000
6.3.3	Louver ventilator w/aluminium insect	ea	8	2.000.00	16.000	1.000.00	8,000	3,000.00	24,000
6.3.4	Steel doors with ventilation in pylons	ea	2	8,000,00	16,000	2.000.00	4.000	10,000,00	20,000
6.3.5	Preast concrete skirt	m	99	10.120.00	1.001.880	2,460.00	243,540	12,580.00	1.245,420
				,	-,,500	_,	,5 10	, 10 0	-,,
6.4	PYLON PINNACLE	ea	2	2,500,000.00	5,000,000	2,000,000.00	4,000,000	4,500,000.00	9,000,000
				, ,	- , ,	, ,	,,	,,	54,034,920
6.	C/F								2 <u>2-</u>

Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi l Road Construction Project 6. BRIDGE ACCESSORIES

Itom No	Description		Estimated	Materi	al Cost	Labou	r Cost	Material & Labour Cost	
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
6.	B/F								54,034,920
6.5	BRIDGE DRAINS								
6.5.1	Inlet Gully	ea	1,675	2,600.00	4,355,000	800.00	1,340,000	3,400.00	5,695,000
6.5.2	GMS. Pipe d=150 mm. with fitting	m	6,985	1,148.33	8,021,085	150.00	1,047,750	1,298.33	9,068,835
6.5.3	PVC. Pipe d=150 mm. with fitting	m	3,330	400.00	1,332,000	120.00	399,600	520.00	1,731,600
6.5.4	PVC. Pipe d=250 mm. with fitting	m	390	1,120.00	436,800	450.00	175,500	1,570.00	612,300
6.6	BRIDGE PAVEMENTS								
	Polymer modified Bitumen (PmB) Asphait Pavement								
6.6.1	PmB tack coat	lit	21,000	28.13	590,625	16.69	350,490	44.82	941,115
6.6.2	PmB asphaltic concrete on bridges, thickness 50 mm.	m2	90,050	219.71	19,784,795	54.33	4,892,480	274.04	24,677,275
6	SUBTOTAL BRIDGE ACCESSORIES								96,761,045
0.	(Transfer to Summary)								

Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 7. ROAD AND LANDSCAPING

Itom Mc	No. Description		Estimated	Material Cost		Labour Cost		Material & Labour Cost	
nem no	Description	Ullit	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
7.	ROADS AND LANDSCAPING								1
									1
7.1	EARTHWORKS								1
7.1.1	Clearing and grubbing	LS	1	-	-	1,080,000.00	1,080,000	1,080,000.00	1,080,000
7.1.2	Roadway excavation : classified suitable material	m3	4,400	-	-	51.49	226,556	51.49	226,556
7.1.3	Roadway excavation : classified unsuitable material	m3	2,000	-	-	66.18	132,360	66.18	132,360
7.1.4	Channel execavation	m3	500	-	-	66.18	33,090	66.18	33,090
7.1.5	Embankment fill in roadway	m3	90,260	461.10	41,618,886	35.09	3,167,223	496.19	44,786,109
7.1.6	Geotextile fabrie sheet	m2	5,300	53.00	280,900	12.00	63,600	65.00	344,500
7.2	PAVEMENT WORKS								
7.2.1	Crushed rock subbase (0.15 m thickness)	m3	8 900	620.00	5 518 000	42 11	374 779	662 11	5 892 779
7 2 2	Soil aggregate subbase (0.30 m, thickness)	m3	42,000	512.00	21 504 000	42.11	1 768 620	554.11	23 272 620
7 2 3	Crushed rock hase (0.25 m thickness)	m3	31,000	581.25	18 018 750	66 57	2 063 670	647.82	20,082,420
724	Crushed rock for walkway (0.10 m thickness)	m3	8 000	542 50	4 340 000	42.11	336 880	584.61	4 676 880
/.2.1	erusieu roek for wurkwug (0.10 m.,unekness)	1115	0,000	512.50	1,5 10,000	12.11	550,000	501.01	1,070,000
	Reinforeed concrete Pavement								
7.2.5	Removal of existing Reinforeed concrete Pavement	m2	1,200	-		150.28	180,336	150.28	180,336
7.2.6	Reinforced concrete pavement of 0.27 m. thickness	m2	39,050	768.01	29,990,791	34.99	1,366,262	803.00	31,357,052
7.2.7	Reinforeed concrete pavement of varies thickness	m2	50	2,844.47	142,224	129.60	6,480	2,974.07	148,704
7.2.8	Plastic sheet	m2	5,930	13.00	77,090	3.00	17,790	16.00	94,880
	A sphalt Daysmant								
7 2 0	Asplian Favenien	m2	1 000			54.26	54 360	54.26	54 360
7.2.9	Prime cost	1112	08 300	25.50	2 506 650	5 56	54,500	31.06	2 052 108
7.2.10	Task cont	111	20,500	25.50	2,300,030	16.60	402 355	31.00 42.10	1 244 605
7 2 12	A sphaltia concrete hinder course on reads, thickness 50 mm	m2	29,300	168.02	16 516 266	57.10	5 612 030	42.19	1,244,005
7 2 12	Asphaltic concrete binder course on roads, thickness 50 mm.	m2	98,300	168.02	16,516,300	54.22	5 340 344	223.12	22,129,290
7 2 14	Asphaltic concrete varies thickness	m3	135	3 360 36	10,510,445	1 142 00	154 170	4 502 36	607.819
/.2.14	Asphanic concrete varies unekness	1115	155	5,500.50	455,049	1,142.00	134,170	4,502.50	007,819
7.	C/F								181,254,353

Itom No	Description	Unit	Estimated	Materia	l Cost	Labour	Cost	Material & L	abour Cost
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
7.	B/F								181,254,353
7.3	INCIDENTALS								
	Reinforced concrete pipes								
7.3.1	RC pipe $d=400$ mm.	m		456.60		195.00			
7.3.2	RC pipe $d=600$ mm.	m	2,387	771.00	1,840,377	498.00	1,188,726	1,269.00	3,029,103
7.3.3	RC pipe $d=800$ mm.	m	340	1,422.40	483,616	600.00	204,000	2,022.40	687,616
7.3.4	RC pipe d= 1,200 mm.	m	14,847	2,486.00	36,909,642	896.00	13,302,912	3,382.00	50,212,554
	Manholes								
7.3.5	Manhole type A for RC pipe $d=600$ mm.	ea	146	11.481.47	1.676.295	2.878.47	420.257	14.359.94	2.096.551
7.3.6	Manhole type A for RC pipe $d = 1.200$ mm.	ea	1.034	19.951.64	20.629.996	6.332.20	6.547,495	26.283.84	27.177.491
7.3.7	Manhole type B for RC pipe d= 1.200 mm.	ea	10	20,401,24	204.012	6.575.20	65.752	26,976,44	269.764
7.3.8	Manhole type V for RC pipe d= 600 mm.	ea	104	12.348.67	1.284.262	3.097.47	322,137	15,446,14	1,606,399
7.3.9	Manhole type D	ea	22	18.361.12	403.945	5,917.68	130,189	24.278.80	534.134
7.3.10	Modified existing manhole	ea	7	7,612.00	53,284	3,350.00	23,450	10,962.00	76,734
				ŕ	,	,	,	ŕ	ŕ
	Box culverts								
7.3.11	Relocate of exising water gate at Khlong Makham Plong	PS	1	-		-		5,000,000.00	5,000,000
7.3.12	Box culvert 1-2.1 $\times$ 2.1 m.	m	46	10,251.94	471,589	3,730.83	171,618	13,982.77	643,207
7.3.13	Box culvert $1-3.0 \times 3.0$ m.	m	20	17,974.69	359,494	6,601.54	132,031	24,576.23	491,525
7.3.14	Box culvert 1-3.6 × 3.6 m.	m	70	23,537.81	1,647,647	7,454.28	521,800	30,992.09	2,169,446
7.3.15	Head wall for box culvert	ea	6	31,076.27	186,458	8,321.86	49,931	39,398.13	236,389
7 2 1 (	Catch basin and Outlets		252	0.075.92	2 522 992	2 1 ( ( 10	801 022	12 141 02	2 224 000
7.3.10	Catch basin w / rc. Cover	ea	253	9,975.82	2,523,882	3,100.10	801,023	13,141.92	3,324,906
7.2.10	Curb Intel	ea	1,390	807.00 1 697.41	1,579,484	230.00	407,040	1,123.00	1,780,324
7.2.10	RC. Lining ditch	m	125	1,087.41	210,926	393.04	49,130	2,080.45	260,056
7.3.19	RC. U-ditch	m	5,025	2,141.43	1,702,730	424.38	1,539,105	2,300.03	9,301,839
7.3.20	RC. U-ditch w=0.20 m at Transition Structure	m	360	2,000.00	1,489,600	1,140.00	038,400	3,800.00	2,128,000
1.3.21	Concrete neuring blocks	а	19	10,850.00	206,150	4,650.00	88,330	15,500.00	294,500
7 2 22	Concrete paving blocks		104 200	220.00	24 286 000	60.00	6 252 000	200.00	10 628 000
1.3.22	Concrete paying blocks for sidewalks and traffic islands	IIIZ	104,200	550.00	54,580,000	60.00	6,232,000	390.00	40,038,000
7.	C/F								555,219,110

Item No	Description	Unit	Estimated	Material Cost		Labour Cost	Mat	Material & Labour Co		
			Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount	
7.	B/F								333,219,110	
	Concrete curb									
7.3.23	Conerete curb and gutter	m	32,850	451.67	14,837,360	92.80	3,048,480	544.47	17,885,840	
7.3.24	Retaining wall type 1	m	4,425	493.60	2,184,180	148.50	657,113	642.10	2,841,293	
7.3.25	Retaining wall type 2	m	4,105	1,079.64	4,431,922	256.00	1,050,880	1,335.64	5,482,802	
7.3.26	Retaining wall type 3	m	4,650	7,829.07	36,405,176	1,701.70	7,912,905	9,530.77	44,318,081	
7.3.27	Retaining wall type 4	m	2,685	10,625.42	28,529,253	2,268.50	6,090,928	12,893.92	34,620,181	
7.3.28	Retaining wall type 5	m	500	14,786.46	7,393,230	2,773.00	1,386,500	17,559.46	8,779,730	
	Guardrail									
7.3.29	W-stell beam guardrail	m	1,420	1,127.78	1,601,448	197.78	280,848	1,325.56	1,882,295	
	Barriers									
7.3.30	Main bridge traffic railing	m	920	7,270.00	6,688,400	2,283.00	2,100,360	9,553.00	8,788,760	
7.3.31	Handrail on main bridge	m	920	5,500.00	5,060,000	1,000.00	920,000	6,500.00	5,980,000	
7.3.32	Edge barriers on viaduct	m	12,204	4,407.75	53,792,230	874.72	10,675,132	5,282.48	64,467,362	
7.3.33	Median barriers (Barrier type II)	m	8,125	2,398.79	19,490,169	445.80	3,622,125	2,844.59	23,112,294	
7.3.34	Concrete barriers ( Barrer type I)	m	9,085	2,241.40	20,363,119	430.00	3,906,550	2,671.40	24,269,669	
7.3.35	Termination concrete barriers	m	755	1,448.00	1,093,240	268.00	202,340	1,716.00	1,295,580	
	Miscellancous works									
7.3.36	East River front stair structure and finishing	LS	1	7,850,163.98	7,850,164	1,123,173.60	1,123,174	8,973,337.58	8,973,338	
7.3.37	West River front stair structure and finishing	LS	1	7,240,919.32	7,240,919	1,068,982.50	1,068,983	8,309,901.82	8,309,902	
7.3.38	East River front area structure and finishing	LS	1	2,886,000.00	2,886,000	1,110,000.00	1,110,000	3,996,000.00	3,996,000	
7.3.39	West River front stair structure and finishing	LS	1	10,198,000.00	10,198,000	3,830,000.00	3,830,000	14,028,000.00	14,028,000	
7.3.40	Stair tower structure and finishing	ea	4	1,640,412.40	6,561,650	640,245.00	2,560,980	2,280,657.40	9,122,630	
7.3.41	Bridge Sign Board (Provisional Sum)	LS	1	-		-		5,000,000.00	5,000,000	
7.3.42	Information Board at Rccreation area	ea	2	40,000.00	80,000	20,000.00	40,000	60,000.00	120,000	
7.3.43	Pedestrain Bridge at Ramp NB-01 sta 0+270	LS	1	2,171,490.00	2,171,490	850,820.00	850,820	3,022,310.00	3,022,310	
7.3.44	Pedestrain Bridge at Nonthaburi interchange	LS	1	2,171,490.00	2,171,490	850,820.00	850,820	3,022,310.00	3,022,310	
7.3.45	Pedestrain Bridge at Main line sta. 2+900	LS	1	2,171,490.00	2,171,490	850,820.00	850,820	3,022,310.00	3,022,310	
7.3.46	Pedestrain Bridge at Ratcha Phruk Road Interchange	LS	1	4,009,090.00	4,009,090	1,814,160.00	1,814,160	5,823,250.00	5,823,250	
7.3.47	Reiocated Existing Pedestrain Bridge	ea	4	800,000.00	3,200,000	150,000.00	600,000	950,000.00	3,800,000	
7.3.48	Differential settlement reduction structure	ea	17	120,047.20	2,040,802	23,320.00	396,440	143,367.20	2,437,242	
7.	C/F								647,620,286	

Itom No	No		Estimated	Materia	ıl Cost	Labou	r Cost	Material & Labour Cost	
nem No	Description	Unit	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
7.	B/F								647,620,286
7.4	ROAD MARKING, TRAFFIC SIGNS AND SIGNALS								
	Road marking								
7.4.1	Removal of existing road markings	m2	200	-		65.00	13,000	65.00	13,000
7.4.2	Thermoplastic road marking	m2	5,850	240.00	1,404,000	50.00	292,500	290.00	1,696,500
7.4.3	Paint markings on cubs	m2	3,090	180.00	556,200	40.00	123,600	220.00	679,800
7.4.4	Color pavement	m2	1,200	1,300.00	1,560,000	400.00	480,000	1,700.00	2,040,000
7.4.5	Crush cusion	ea	2	320,000.00	640,000	30,000.00	60,000	350,000.00	700,000
7.4.6	Stud	ea	625	300.00	187,500	90.00	56,250	390.00	243,750
7.4.7	Flexible guide post	ea	172	1,500.00	258,000	200.00	34,400	1,700.00	292,400
	Traffic signs.								
7.4.8	Dismounting and removal of existing signs	ea	4			1,100.00	4,400	1,100.00	4,400
7.4.9	Sign post M1	ea	299	1,350.00	403,650	400.00	119,600	1,750.00	523,250
7.4.10	Sign post M2	ea	35	1,000.00	35,000	350.00	12,250	1,350.00	47,250
7.4.11	Sign post M3	ea	160	1,150.00	184,000	400.00	64,000	1,550.00	248,000
7.4.12	Regulatory signs	m2	27	3,850.00	103,950	500.00	13,500	4,350.00	117,450
7.4.13	Sign post M5	ea	24	200,000.00	4,800,000	74,000.00	1,776,000	274,000.00	6,576,000
7.4.14	Sign post M8	ea	2	25,000.00	50,000	9,000.00	18,000	34,000.00	68,000
7.4.15	Sign post M9	ea	19	48,000.00	912,000	12,000.00	228,000	60,000.00	1,140,000
7.4.16	Warning signs	m2	363	3,600.00	1,306,800	750.00	272,250	4,350.00	1,579,050
7.4.17	Guide signs	m2	28	3,600.00	100,800	750.00	21,000	4,350.00	121,800
7.4.18	Overhead signs	m2	1,541	5,000.00	7,705,000	1,000.00	1,541,000	6,000.00	9,246,000
	Traffic signals								
7.4.19	Traffic signal, type S5	ea	2	39,200.00	78,400	1,500.00	3,000	40,700.00	81,400
7.4.20	Traffic signal, type S6	ea	6	29,400.00	176,400	1,500.00	9,000	30,900.00	185,400
7.4.21	Traffic signal, type S7	ea	10	39,200.00	392,000	1,500.00	15,000	40,700.00	407,000
7.4.22	Traffic signal, type S8	ea	45	19,600.00	882,000	1,000.00	45,000	20,600.00	927,000
7.4.23	Traffic signal, type S9	ea	6	29,400.00	176,400	1,500.00	9,000	30,900.00	185,400
7.4.24	Counter Timer	ea	21	58,500.00	1,228,500	2,500.00	52,500	61,000.00	1,281,000
7.4.25	Standard pole, type P1	ea	48	4,388.00	210,624	1,130.00	54,240	5,518.00	264,864
7.4.26	Pole with arm mast, type P2	ea	21	25,588.00	537,348	2,630.00	55,230	28,218.00	592,578
7.4.27	Controller foundations ,cablc pits.cable ducts and all related road	LS	1	3,745,700.00	3,745,700	1,260,200.00	1,260,200	5,005,900.00	5,005,900
	works necessary for a traffic signal system for one one intersection.								
7	C/F								681,887,478
/.									

Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 7. ROAD AND LANDSCAPING

Item No	Description	Unit	Estimated	Material Cost		Labour Cost		Material & Labour Cost	
	Description	Omt	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
7. 1	B/F								681,887,478
7.5	LANDSCAPING								
	Earthworks		10.000			10.11	-		
7.5.1	Earthfill in landscape area : new material	m3	18,260	320.00	5,843,200	42.11	768,929	362.11	6,612,129
7.5.2	Earthfill in median area : new material	m3	10,680	320.00	3,417,600	42.11	449,735	362.11	3,867,335
	Top soil and Grassing		10.000		125 000		100.000		
7.5.3	l'op soil	m2	19,900	22.00	437,800	7.00	139,300	29.00	577,100
7.5.4	Grass turf	m2	19,900	16.00	318,400	9.00	179,100	25.00	497,500
	Planting Trees, Shrub and Group covering plants								
7.5.5	Planting Trees	PS	1					800,000.00	800,000
7.5.6	Shrub and Ground Covering Plants	PS	1					900,000.00	900,000
	Miscellancous works			(0.000.00	100.000	20.000.00	00.000		270.000
7.5.7	Relocate of existing Bus stop	ea	3	60,000.00	180,000	30,000.00	90,000	90,000.00	270,000
7.5.8	Pavilion type A	ea	4	468,010.00	1,872,040	141,270.00	565,080	609,280.00	2,437,120
7.5.9	Pavilion type B	ea	2	297,250.00	594,500	89,920.00	179,840	387,170.00	774,340
7.5.10	Guard House	ea	4	98,470.00	393,880	37,550.00	150,200	136,020.00	544,080
7.5.11	I offet Building	ea	2	720,000.00	1,440,000	252,000.00	504,000	972,000.00	1,944,000
7.5.12	Landscpape for Nonthaburi Interchange			5,278,000.00	5,278,000	2,262,000.00	2,262,000	7,540,000.00	7,540,000
7.5.13	Landscpape for Ratcha Ohruk Interchange	LS	1	5,845,000.00	5,845,000	2,505,000.00	2,505,000	8,350,000.00	8,350,000
	CUDTOTAL DOADS AND LANDSCADING								717.001.001
7.	(Transfor to Summary)								/1/,001,081

## Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 8. MECHANICAL AND ELECTRICAL SERVICES

Itom No	Description	Unit	Estimated	Materi	al Cost	Labou	r Cost	Material & Labour Cost	
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
8. 8.1	MECHANICAL AND ELECTRICAL SERVICES ELECTRICAL SUPPLY AND ARCHITECTURAL LIGHTING F MAIN BRIDGE, IN PYLON, RIVER FRONT & RECREATION	PS	1	-		-		32,000,000.00	32,000,000
8.2	AREA, STAIR TOWER AND PAVILION BUILDING LIGHTNING PROTECTION SYSTEM	PS	1	-		-		500,000.00	500,000
8.3	STREET LIGHTING AND LANDSCAPE								
8.3.1	Lighting fixture complete with lamp, ballast, ignitor capacitor,								
	dimming system (street lighting) and accessaries								
	- 250 HPS Street lighting	ea	589	9,800.00	5,772,200	500.00	294,500	10,300.00	6,066,700
	- 400 HPS Street lighting	ea	114	11,000.00	1,254,000	500.00	57,000	11,500.00	1,311,000
	- 250 HPS Street lighting (Architectural lighting)	ea	36	31,000.00	1,116,000	1,000.00	36,000	32,000.00	1,152,000
	- 400 HPS Street lighting (Architectural lighting)	ea	128	33,000.00	4,224,000	1,000.00	128,000	34,000.00	4,352,000
	- 150 HPS Soffit lighting	ea	73	9,000.00	657,000	800.00	58,400	9,800.00	715,400
	- 75 HDS Landscape lighting on 3 m. Architecture Pole	ea	73	12,000.00	876,000	500.00	36,500	12,500.00	912,500
8.3.2	Lighting poles complete with, mounting bracket and anchor bolt Cables, grounding and accessaries								
	- 10 m Mouting height, single arm	ea	541	12,500.00	6,762,500	2,680.00	1,449,880	15,180.00	8,212,380
	- 10 m Mouting height, double arm	ea	24	14,000.00	336,000	2,680.00	64,320	16,680.00	400,320
	- 11 m Mouting height, single arm (Architectural pole)	ea	36	140,000.00	5,040,000	4,000.00	144,000	144,000.00	5,184,000
	- 11 m Mouting height, double arm (Architectural pole)	ea	64	150,000.00	9,600,000	4,000.00	256,000	154,000.00	9,856,000
	- 12 m Mouting height, double arm	ea	57	16,000.00	912,000	3,000.00	171,000	19,000.00	1,083,000
	- 3 m Mouting height ( Architectural pole)	ea	73	8,000.00	584,000	500.00	36,500	8,500.00	620,500
8.3.3	Foundation of lighting poles								
	- 10 m Mouting height, single arm and double arm	ea	411	2,600.00	1,068,600	600.00	246,600	3,200.00	1,315,200
	- 12 m Mouting height, single arm and double arm	ea	60	3,000.00	180,000	600.00	36,000	3,600.00	216,000
	- 3 m Mouting height (Architectural pole)	ea	73	1,500.00	109,500	600.00	43,800	2,100.00	153,300
8.	C/F								74,050,300

### Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 8. MECHANICAL AND ELECTRICAL SERVICES

Itom No.	Decovirtion	I Ini4	Estimated	Materi	al Cost	Labou	r Cost	Material & L	abour Cost
	Description	Unit	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
8.	B/F								74,050,300
8.3.4	Power supply and control - Fused sefety switch at MEA's pole -3P,60A.600V	ea	11	13,000.00	143,000	600.00	6,600	13,600.00	149,600
	-3P,100A.600V	ea	6	19,800.00	118,800	600.00	3,600	20,400.00	122,400
	- Supply pilar, complete ,including photo switch and pillar foundation, ground and accessaries	ea	17	69,200.00	1,176,400	5,630.00	95,710	74,830.00	1,272,110
	- MEA power supply and metering	PS	1	-				700,000.00	700,000
8.3.5	Cables - 2/C.PVC Insulated , 10 sa.mm, (NYY)	m	860	147.00	126.420	20.00	17.200	167.00	143.620
	- 2/C.PVC Insulated, 16 sq.mm. (NYY)	m	440	170.00	74,800	28.00	12,320	198.00	87,120
	- 4/C.PVC Insulated, 10 sq.mm. (NYY)	m	23,500	195.00	4,582,500	32.00	752,000	227.00	5,334,500
	- 4/C.PVC Insulated, 16 sq.mm. (NYY)	m	8,200	294.00	2,410,800	36.00	295,200	330.00	2,706,000
	- 1/C.PVC Insulated, 25 sq.mm. (THW)	m	12,840	108.00	1,386,720	26.00	333,840	134.00	1,720,560
	- 1/C.PVC Insulated, 35 sq.mm. (THW)	m	2,300	147.00	338,100	30.00	69,000	177.00	407,100
	- 1/C.PVC Insulated, 50 sq.mm. (THW)	m	2,000	195.00	390,000	45.00	90,000	240.00	480,000
	- 1/C.PVC Insulated, 16 sq.mm. (THW)	m	13,400	57.00	763,800	16.00	214,400	73.00	978,200
8.3.6	Conduits								
	- HDPE conduit 50 mm. Dia. (PN-6)	m	22,320	42.00	937,440	19.00	424,080	61.00	1,361,520
	- HDPE conduit 63 mm. Dia. (PN-6)	m	5,300	66.00	349,800	22.00	116,600	88.00	466,400
	- HDPE conduit /5 mm. Dia. (PN-6)	m	2,300	92.00	211,600	24.00	55,200	116.00	266,800
	- IMC conduit 40 IIIII Dia. IMC conduit 50 mm Dia	m	200	140.00	258,000	33.00	39,300	220.00	297,300
	- IMC conduit 50 mm Dia	m	200 40	330.00	13 200	40.00	1 840	220.00	15 040
	- Galvanized rigid steel conduit 65mm dia	m	1 200	380.00	456 000	57.00	68 400	437.00	524 400
	- Galvanized rigid steel conduit 100mm dia.	m	1,200	710.00	923.000	120.00	156.000	830.00	1.079.000
									, ,
8.	C/F								92,206,170

### Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi 1 Road Construction Project 8. MECHANICAL AND ELECTRICAL SERVICES

Itom No	Description Unit Estimated Material Cost		al Cost	Labou	r Cost	Material & L	Material & Labour Cost		
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
8.	B/F								92,206,170
8.3.7 8.3.8	Drawpit and handhote Miscellaneous - Pull boxes, junction boxes, expansion fitting and ect.	ea LS	58	7,000.00	406,000 1,500,000	3,200.00 300,000.00	185,600 300,000	10,200.00 1,800,000.00	591,600 1,800,000
8.3.9 8.4 8.5	Spare part for Road lighting fixture with accessories - 250 HPS Street lighting - 400 HPS Street lighting - 250 HPS Flood lighting (Architectural lighting) - 400 W. HPS Soffit lighting (Architectural lighting) - 150 HPS Soffit lighting - 70 HPS Landscape lighting on 3 m. Pole EM sensor system package CCTV & Health monitoring system	ea ea ea ea PS PS	59 11 4 13 7 7 1 1	9,800.00 11,000.00 31,000.00 9,000.00 15,000.00	578,200 121,000 124,000 429,000 63,000 105,000			9,800.00 11,000.00 31,000.00 33,000.00 9,000.00 10,000,000.00	578,200 121,000 124,000 429,000 63,000 105,000 10,000,000
8	SUBTOTAL MECHANICAL AND ELECTRICAL SERVICES (Transfer to Summary)								116,017,970

Project	Location	• The	Chao	Phrava	River	Crossing	Bridge	at	Nonthaburi 1	Road	Construction	Project
9. UTII	LITY ANI	) MISC	CELLA	NEOUS	RELO	CATION	Dridge	aı	Nonunaourri	Road	construction	Tiojeet
						0						

Itom No	Description Linit Estimated Material Cost		al Cost	Labour	r Cost	Material & Labour Cost			
	Description	Unit	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
9. 9.1.1	UTILITY AND MISCELLANEOUS RELOCATION Net cost of removal and relocation of existing utility works (Provisional Sum)	PS		-		-		167,000,000.00	167,000,000
9.1.2	Add 5% to the net cost of work under item 8.1.1 in respect of all contractor's charges and profit (Provisional Sum)	PS		-		-		8,200,000.00	8,200,000
9.1.3	Net cost of Relocation and Improvement of Exiting Public Facilities and Other Structures (Provisional Sum)	PS		-		-		6,996,261.00	6,996,261
9	SUBTOTAL UTILITY								182,196,261
,	(Transfer to Summary)								

Project Location : 7	The Chao	Phraya	River	Crossing	Bridge	at	Nonthaburi	1 Road	Construction	Project
10. FORCE ACCOU	NT WOR	K								

Item No	Description	Unit	Estimated	Materi	al Cost	Labou	r Cost	Material &	Labour Cost
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
10.	FORCE ACCOUNT WORK								
10.1	LABOUR								
10.1.1	Driver	h	1,800	-		50.00	90,000	50.00	90,000
10.1.2	Unskilled labourer	h	18,000	-		35.00	630,000	35.00	630,000
10.1.3	Skilled labourer	h	1,800	-		65.00	117,000	65.00	117,000
10.2	EOUIPMENT								
10.2.1	Dump truck 5 to 7 m <sup>3</sup>	h	150	_		360.00	54.000	360.00	54.000
10.2.2	Flat bed truck. 3 to 5 t	h	150	-		280.00	42.000	280.00	42.000
10.2.3	Tank truck, 5.000 1	h	150	-		350.00	52.500	350.00	52.500
10.2.4	Bulldozer, type D8 or equal	h	150	-		1,250.00	187,500	1,250.00	187,500
	Type D7% of D8 rate					,	,	,	,
	Type D6% of D8 rate								
109.2.5	Front-end loader, 1.5 m <sup>3</sup> to 2.5 m <sup>3</sup>	h	150	-		950.00	142,500	950.00	142,500
10.2.6	Front-end loader, 3/4 m <sup>3</sup> to 1.5 m <sup>3</sup>	h	150	-		750.00	112,500	750.00	112,500
10.2.7	Prower shovel or drag-line 1.5 m <sup>3</sup> to 2.5 m <sup>3</sup>	h	150	-		950.00	142,500	950.00	142,500
10.2.8	Prower shovel or drag-line 3/4 m <sup>3</sup> to 12.5 m <sup>3</sup>	h	150	-		750.00	112,500	750.00	112,500
10.2.9	Backhoe, $0.5 \text{ m}^3$ to $1 \text{ m}^3$	h	150	-		700.00	105,000	700.00	105,000
10.2.10	Motor grader w/12 ft blade, min. rating 100 Hp	h	150	-		750.00	112,500	750.00	112,500
10.2.11	Vibratory roller, self-propelled, min. weight 5 t	h	150	-		470.00	70,500	470.00	70,500
10.2.12	Vibratory compactor, hand operated	h	150	-		110.00	16,500	110.00	16,500
10.2.13	Pnenmatic-tyred roller, self-propelied, min. wight 12 t	h	150	-		980.00	147,000	980.00	147,000
10.2.14	Three-wheel steel wheel roller, min. weight 12 t	h	150	-		900.00	135,000	900.00	135,000
10.2.15	Compressor,600 cfm	h	700	-		650.00	455,000	650.00	455,000
	300 cfm,% hereof 600 cfm rate								
	150 cfm,% hereof 600 cfm rate								
	60 cfm,% hereof 600 cfm rate								
10.2.16	Water pump, 6" dia.	h	900	-		320.00	288,000	320.00	288,000
	5" ,% hereof 6" dia rate								
	$4^{"},\ldots,\%$ hereof 6" dia rate								
	3",% hereof 6" dia rate								2.012.500
10.	C/F								3,012,500

Project Location : The Chao Phraya River Crossing Bridge at Nonthaburi l Road Construction Project 10. FORCE ACCOUNT WORK

Item No	Description	Description Luit Estimated Material Cost		Labou	r Cost	Material &	Material & Labour Cost		
	Description	Oint	Quantity	Unit Rate	Amount	Unit Rate	Amount	Unit Rate	Amount
10	B/F								3,012,500
10.2.17	Mobile crane 25 t capacity 10 t% of 25 t crane		400			1,400.00	560,000	1,400.00	560,000
10.2.18	Crane crawler 50 t capacity 25 t% of 50 t capacity	h	200			1,700.00	340,000	1,700.00	340,000
10.2.19	Bar bending machine, power driven	h	1,500			55.00	82,500	55.00	82,500
10.2.20	Bar shearing machine, power driven	h	1,500			55.00	82,500	55.00	82,500
10.2.21	Pile driven hammer	h	300			1,250.00	375,000	1,250.00	375,000
10.2.22	Pile boring equipment for bored piles d=1.2 - 1.5 m	h	100			2,000.00	200,000	2,000.00	200,000
10.3	Material	DC	1					2 000 000 00	2 000 000
10.3.1	Various construction materials (Provisional sum)	PS	1					2,000,000.00	2,000,000
10.4	MAINTENANCE FACILITY Various construction and outfiting of office and storage space for maintenance personnel and equipment (Provisonal sum)	PS	1					2,000,000.00	2,000,000
10	SUBTOTAL FORCE ACCOUNT WORKS (Transfer to Summary)								8,652,500

# 付録-3 環境チェックリストおよび環境モニタ リングフォーム案

#### Environmental Checklist: 15. Roads and Railways (1)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
	(1) EIA and Environmental Permits	<ol> <li>Have EIA reports been officially completed?</li> <li>Have EIA reports been approved by authorities of the Thai government?</li> <li>Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied?</li> <li>In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of Thai government?</li> </ol>	<ul> <li>①EIA Report have completed. However, some modifications are required due to changing the project design.</li> <li>②EIA was authrised by DRR because the Project is not required EIA based on the law.</li> <li>③EIA report have unconditionally approved.</li> <li>④Not necessary.</li> </ul>
1 Permits and Explanation	(2) Explanation to the Public	<ol> <li>Did implementing agency explain contents of the project and the potential impacts adequately to the public based on appropriate procedures concerning information disclosure? Did participants understand what to be explained?</li> <li>Are proper responses made to comments from the public and regulatory authorities?</li> </ol>	①5 Forcus Groupe Meetings, Seminars(2times), and 1 project orientation were held. Focus Group Meeting is for People, especially affected people, in the Project area. Seminar is for all stakeholders. The purpose of meeting and seminer were to inform stakeholders the project implementation, route alternatives, receive comments, route selection process, design results and land expropriation procedurt. Suggestions that have been received from attendees were on the traffic problem, land acquisition issue and environmental mitigation measures. Information disclosure has been followed by the Cabinet resolution. ②DRR has responded to all the inquiry.
	(1) Air Quality	<ul> <li>① Is there any possibility that air pollutants emitted from various sources, such as vehicle traffic, may affect ambient air quality? Does ambient air quality comply with the country's ambient air quality standards?</li> <li>② Where industrial areas already exist near the route, is there a possibility that the project make air pollution worse?</li> </ul>	<ol> <li>Emission of air pollutants from vehicles or machinery during construction and operation period may effect ambient, but they will be within Thailand ambient air quality standards.</li> <li>No industrial area exists along the Project alignment</li> </ol>
2 Mitigation Measures	(2) Water Quality	<ul> <li>① Is there any possibility that soil runoff from the bare lands resulting from landslide, such as cutting and filling works, may cause water quality degradation in downstream water areas?</li> <li>② Is there a possibility that surface runoff from roads may contaminate water sources such as groundwater?</li> <li>③ Do effluents from various facilities, such as stations and parking areas/service areas, comply with the country's effluent standards and ambient water quality standards? Is there a possibility that the effluents may cause areas that do not satisfy with the country's ambient water quality standards?</li> </ul>	<ul> <li>①There are 3 canals to be crossed by the connecting road namely Klong Bang krang, Klong Wat phut and Khlong Bang Sri Muang .In case of cutting and filling work, existing canal will be closed or bypassed, so influence of earth work to the canal such as food and runoff is little.</li> <li>②Surface runoff water from roads during operation period will be designed to drain public water, and periodical cleaning on road is on menu. Influence of surface runoff water is little. Contamination of groundwater is negligible as the upper soil is clay. Contamination of Chao Phraya river is also neglible due to significant different between volume of runoff from bridge surface and that of the river.</li> <li>③There is no facilities along the road.</li> </ul>

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#### Environmental Checklist: 15. Roads and Railways (2)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
	(3) Noise and Vibration	① Do noise and vibrations from vehicle traffic satisfy with the country's standards?	①During construction period, especially land preparation and structural works (with the full use of heavy equipments), noise level at a distance of 100 m from road alignment, will exceed national standards. During operation period, noise level in the area immediate to the road will be the same as present condition i.e exceed the standards. According to need with installation of Noise Barrier, noise level might be within standards. The project may cause insignificant impact of vibration to community or structures compares to Richter and Meister scale and DIN4150.
3 Natural Environment	(1) Protected Areas	① Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project may affect the protected areas?	①No. The Project site is not in protected area.
3 Natural Environment	(2) Ecosystem	<ol> <li>Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?</li> <li>Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?</li> <li>If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem?</li> <li>Are adequate protection measures taken to prevent impacts, such as disruption of migration routes, habitat fragmentation, and traffic accident of wildlife and livestock?</li> <li>Is there a possibility that installation of roads will cause impacts such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystems due to introduction of exotic (non-native invasive) species and pests? Are adequate measures taken in order to prevent such impacts considered?</li> <li>In cases where the project site is located at undeveloped areas, is there a possibility that the new development will result in extensive loss of natural environments?</li> </ol>	<ul> <li>①There is no primeval, tropical forest, nor ecological valuable habitat in the project area or nearby.</li> <li>②In around project site 19 protected species based on Law in Thai Land and 5 species of Red List fishes based on IUCN 2008 were found in literature research. DRR committed to take protection measures such as strict prohibition of hunting by construction workers during construction stage, so that protected species will be keeping.</li> <li>③No significant ecological impacts are anticipated.</li> <li>④Disruption of migration routes, habitat fragmentation and so on are not anticipated. The project area is mostly agricultural area.</li> <li>⑤They are not anticipated.</li> <li>⑥New development is likely to be along the road alignment, but extensive loss to natural environment is not anticipated</li> </ul>
	(3) Hydrology	① Is there a possibility that change of topographic features and installation of structures such as tunnels may adversely affect surface water and groundwater flows?	①There might be no impact to suface hydrology and underground hydrology due to the road design considered drainage structures.

#### Environmental Checklist: 15. Roads and Railways (3)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
	(4) Topography and Geology	<ol> <li>Is there a soft ground on the route that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides if needed?</li> <li>Is there any possibility that civil works such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides?</li> <li>Is there any possibility that soil runoff will result from cuting and filling areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?</li> </ol>	<ol> <li>Topographic and geological conditions may very slightly be affected because the project site is a river terrain. The land might be leveled slightly therefore the topographic conditions might not be affected.</li> <li>Cast in place pile will be employed in the bridge foundation work. Such activities may not significantly affect topographic conditions and geological structure.</li> <li>Adequate measures will be taken to prevent soil runoff during construction. The earthwork will be carried out in dry season in principal.</li> </ol>
	(1) Resettlement	<ul> <li>① Is involuntary resettlement caused by project implementation? If yes, are adequate efforts made to minimize the impacts?</li> <li>② Is adequate explanation on relocation and compensation given to affected persons prior to resettlement by responsible agency?</li> <li>③ Is the resettlement plan, including proper compensation, restoration of livelihoods and living standards developed based on socioeconomic studies?</li> <li>④ Does the resettlement plan pay particular attention to vulnerable groups or persons, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples?</li> <li>⑤ Are agreements with the affected persons obtained prior to resettlement?</li> <li>⑥ Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?</li> <li>⑦ Is a plan developed to monitor the impacts of resettlement?</li> </ul>	<ul> <li>①Yes, but adequate efforts have been taken by DRR.</li> <li>②Yes. Adequate explanation was given to affected persons by DRR by holding the consultation meeting with project affected people.</li> <li>③Proper compensation has been paid which was calculated based on the market price of land.</li> <li>④No specific consideration to vulnerable persons have been taken because it is not necessary.</li> <li>⑤Yes. DRR has gotten agreement with all the households to be affected by the Project for resettlement and land acquisiton, although still 57 cases file objection or law suit regarding the level and detailed measure of compensation.</li> <li>⑥Yes. JICA received Resettlement Action Plan (RAP) prepared by executing agency.</li> <li>⑦No. However, regarding the progress of (a)resettlement of remaining 8 households/structures, and (b)solution of objections and/or law suit cases, executing agency will monitor the progress and report to JICA.</li> </ul>

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#### **Environmental Checklist: 15. Roads and Railways** (4)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
4 Social Environment	(2) Living and Livelihood	<ul> <li>① In a place where roads are newly installed, is there any possibility that the project may affect the existing means of transportation and the associated workers? Is there any possibility that the project may cause significant impacts, such as extensive alteration of existing land uses, changes in sources of livelihood, or unemployment? Are adequate measures considered for preventing these impacts?</li> <li>② Is there any possibility that the project may adversely affect the living conditions of inhabitants other than the affected inhabitants? Are adequate measures considered to reduce the impacts if necessary?</li> <li>③ Is there any possibility that diseases, including communicable diseases, such as HIV may be introduced due to immigration of workers associated with the project? Are adequate considerations given to public health if necessary?</li> <li>④ Is there any possibility that the project may adversely affect road traffic in the surrounding areas (e.g., by causing increases in traffic congestion and traffic accidents)?</li> <li>⑤ Is there any possibility that roads and may cause impede the movement of inhabitants?</li> <li>⑥ Is there any possibility that structures associated with bridge may cause a sun shading and radio interference?</li> </ul>	<ol> <li>The Project may affect agricultural activities. However, the Project cosider these impact adequately.</li> <li>The Project may bring some adverse environmental impacts such as noise, air quality, to residents near the Project site. So these impacts may affect adversely to residents, but these are not significant. Soundproof wall will be set up when noise level will exceed the standard and/or DRR will receive complaints from the neighboring people during construction and operation stage.</li> <li>Yes. There is a possibility to be brought communicable diseases.</li> <li>No. The Project will bring about positive impacts to traffic around Project site, however, there might have certain negative impact to traffic during the construction period.</li> <li>Same as above.</li> <li>Not significant impact by the bridge construction.</li> </ol>
	(3) Heritage	① Is there a possibility that the project may damage the local archeological, historical, cultural, and religious heritage sites? Are adequate measures considered to protect these sites in accordance with the country's laws and JICA Guidelines for Environmental and Social Considerations?	①No. There is a temple with park nearby the project site, however, adequate mitigation measures will be taken.
	(4) Landscape	① Is there a possibility that the project may adversely affect the local landscape? Are necessary measures taken?	①There might be minimum impact, but adequate measures have been taken in the project design.
4 Social Environment	(5) Ethnic Minorities and Indigenous Peoples	<ol> <li>Where ethnic minorities and indigenous peoples are living in the rights-of-way, are considerations given to reduce the impacts on culture and lifestyle of ethnic minorities and indigenous peoples?</li> <li>Does the project comply with the country's laws for rights of ethnic minorities and indigenous peoples?</li> </ol>	①There is no minorities and indigenous people in the area.

#### Environmental Checklist: 15. Roads and Railways (5)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
5 Others	(1) Impacts during Construction	<ul> <li>① Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?</li> <li>② If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?</li> <li>③ If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?</li> <li>④ If necessary, is health and safety education (e.g., traffic safety, public health) provided for project personnel, including workers?</li> </ul>	<ul> <li>①Yes.Adequate measures such as casting boring with steel casing will be employed, and excavation water will be drained to public water after treatment to public water, are considered.</li> <li>②No significant impact might be anticipated.</li> <li>Aquatic ecosystem : Once surface water sources may be affected and then affecting aquatic ecosystem in Chao Phraya River. It may not affect aquatic ecosystem in Khlong Bang Sri Muang, Khlong Wat Phut and Khlong Bang Krang.</li> <li>Terrestrial ecosystem : 8,926trees could be cutdown.</li> <li>Wildlife : There might be no impact to wildlife because most wildlife found in the project area are birds which are small size and can move fast and live in any kind of habitats or have good adaptation to the project area and even migrate to new places. Therefore it is expected that impacts to wildlife may be insignificant.</li> <li>③Adequate measures have been contsidered to reduce impact on social environment.</li> <li>④The construction contractor will establish sanitary system in the construction site, construction office and construction camp.</li> </ul>
	(2) Monitoring	<ol> <li>Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?</li> <li>Are the items, methods and frequencies included in the monitoring program, judged to be appropriate?</li> <li>Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?</li> <li>Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?</li> </ol>	<ul> <li>①Yes.Environmental monitoring programs consist of air quality, noise level vibration, water quality, traffic and Socio-economic condition.</li> <li>②Yes. JICA and executing agency agreed the monitoring format, including the appropriate assignment/recruitment of the necessary staff/personnel.</li> <li>③Yes. Adequate framework will be established.</li> <li>④Yes. Concrete measures are described in monitoring format.</li> </ul>
6 Note	Reference to Checklist of Other Sectors	<ol> <li>Where necessary, pertinent items described in the Forestry Projects checklist should also be checked (e.g., projects including large areas of deforestation).</li> <li>Where necessary, pertinent items described in the Power Transmission and Distribution Lines checklist should also be checked (e.g., projects including installation of power transmission lines and/or electric distribution facilities).</li> </ol>	No Relation with Forestry, Power transmission project.
	Note on Using Environmental Checklist	① If necessary, the impacts to transboundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	No concern.

1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are made, if necessary.

In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan' experience).

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which it is located.

#### **MONITORING FORM**

1. Responses/Actions to Comments and Guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during Report Period				

#### 2. Mitigation Measures

#### - Air Quality (Emission Gas / Ambient Air Quality)

		Measured	Measured	National	WHO	Standards	Remarks				
Item	Unit	Value (Max.)	Value (Max.)	Standards	Standards	for monitoring	Detail of location	No. of monitoring points	Frequency	duration	
Construction											
TSP (24 hr)	$\mu \text{ g/m}^3$			330	-	330	Sri Boonyanont School, Wat Chalerm Pha Kiat Community, Wai Sai Kindergarden	3	Every three month	Each monitoring will be conducted for 5 consecutive days During construction (30 months)	
PM <sub>10</sub> (24 hr)	$\mu$ g/m <sup>3</sup>			120	50	120					
CO (1 hr)	ppm			30	-	30					
NO <sub>2</sub> (1 hr)	$\mu$ g/m <sup>3</sup>			320	200	320					
Operation											
TSP (24 hr)	$\mu$ g/m <sup>3</sup>			330	-	330	Sri Boonyanont School, Wat Chalerm Pha Kiat Community, Wai Sai Kindergarten	3	Two times a year, once during the dry season and once during the rainy season	For two years. Each monitoring will be conducted for 5 consecutive days.	
PM <sub>10</sub> (24 hr)	$\mu$ g/m <sup>3</sup>			120	50	120					
CO (1 hr)	ppm			30	-	30					
NO <sub>2</sub> (1 hr)	$\mu$ g/m <sup>3</sup>			320	200	320					
		Measured	Measured	National	Standards		R	lemarks			
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Item	Unit	Value (Mean)	Value (Max.)	Standards For class 3	for monitoring	Detail of location	No. of monitoring	Frequency	duration		
							points				
Construction/De	sign				T				1		
Temperature	C			-	-	-					
pH	-			5.0-9.0	5.0-9.0	-					
Conductivity	S/cm			-	-*	-					
Suspended solids (SS)	mg/l			-	_*						
Grease and oil	mg/l			-	_*	At 1 km upstream of	3				
Dissolved oxygen(DO)	mg/l			≧4.0	≧4.0	the construction site At the construction site		3	Every three months.		
BOD	mg/l			≦2.0	≦2.0	of the construction site					
Total	MPN/			≦20,000	≦20,000						
coliform	100ml										
bacteria						_					
Fecal	MPN/			≦4,000	≦4,000						
coliform	100ml										
bacteria											
During boring co	onstruction in Ch	ao Phyara Rive	er	•		•	•	•	•		
Suspended	mg/l			-	-*	Near excavation point	Two locations				
solids (SS)						About 100m upstream	near	Every month	During excavation work		
Grease and	mg/l			-	-*	and downstream of	excavation	Every monu	in the river		
oil						excavation point	point				
During Construct	tion for effluent	water from exc	avation	•		•	•	•	•		
Suspended	mg/l			≦50**	≦5.0**		one location of				
solids (SS)						Effluent water from a	sedimentation	Constantly	During excavation work		
Grease and	mg/l			≦5.0**	≦5.0**	sedimentation basin	basin	(at least once a day)	in the river		
oil											

## - Water Quality (Effluent/Wastewater/Ambient Water Quality)

\*In case downstream water quality is extremely poor compared with upstream, necessary mitigation measures would be examined and taken, based on the main factor of such contamination.

**\*\*Industrial effluent standard will be applied because of there is no standard for construction effluent.** 

- Noi	se / Vibra	ation								
		Measured	Measured	National	WHO	Standards		R	emarks	
Item	Unit	Value (Mean)	Value (Max.)	Standards	Standards	for monitoring	Detail of location	No. of monitoring points	Frequency	duration
Construct	tion	-		•	•	•		·	•	•
Noise Levels (L <sub>eq</sub> , L <sub>max</sub> , L <sub>90</sub> )	dB(A) (24 hr)			70	70(comme rcial area) 55(residen ce)	70	Sri Boonyanont School, Wat Chalerm Pha Kiat Community, Wai Sai Kindergarden	3	Every three months.	Each monitoring will be conducted for 5 consecutive days During construction (30 months)
Vibratio (PPV) For each Traverse Vertical Longitud Directio	n 1 2 dinal ns			-	-	*Frequency <10 Hz 5mm/s 10-50Hz 5-10mm/s 50-100Hz 15-20mm/s	Sri Boonyanont School, and Nearest building of the construction work such as piling and foundations.	At least 3	As needed when the construction is carried out near the particular Location especially during pilling and foundation work.	During construction (30 months)
Operation	1					•		•	•	
Noise Levels	dB(A) (24hr)			70	70(comme rcial area) 55(residen ce)	70	Sri Boonyanont School, Wat Chalerm Pha Kiat Community, Wai Sai Kindergarden	3	Twice a year	For two years, For 5 consecutive days (covering work days and holidays)

Source: DIN4150

#### 3. Social Environment Transportation Construction location parameter 1) Nonthaburi 1 Road at the interchange at the For 30 months, Transportation Traffic volume (24 hr) 2 Every three months beginning of the project layout For 1 day condition Number of traffic accidents 2) Ratchaphruk Road at the interchange at the end of (covering work days) the project layout

#### - Socio-Economic

Monitoring parameter	Monitoring Results during Report Period
Construction Period Major parameters : consisting of - Acknowledgement of project procedure - Impacts such as unemployment ratio, living standard during the construction period	Every 6 months for 30 months The number of sampling is preferable over 100.

4. Reporting period to JICA

(1) During construction, Contractor will implement Environmental Monitoring and will submit the result to DRR, and DRR will submit it with project status report to JICA every three months.

(2) During operation period, DRR will implement Environmental Monitoring and will submit Monitoring Form to JICA biannually for two years.

添付資料

# 付録 - 4

# **BMR** における現況および実施中の 道路プロジェクト



Expressway Authority of Thailand (EXAT) 1.1 Sri Nakarin - Bangna - Samut Prakarn Tollway (preparation for construction) 1.2 Ramindra - Outer Ring Road Expressway (under construction) 1.3 Srirach Expressway (Chan Road) – Dao Kanong (preparation for construction) 1.4 Ratchadapisek – Outer Ring Road Expressway (preparation for construction) 1.5 The Third Stage Expressway, Northern Route (F/S) Department of Highways (DOH) 2.1 Eastern Outer Ring Road, Bang Phli – Thanyaburi Section (completed) 2.2 Rehabilitation and Expansion of Changwattana - Ramindra Road (completed) 2.3 Rehabilitation and Expansion of Rattanathibeth – Ngam Wong Wan – Nawamin Road (Bangyai – Kasetsart - Outer Ring Road Section) (under construction) 2.4 Flyover at Sri Nakarin Road (Lasal Junction) (completed) 2.5 Flyover at Sri Nakarin Road (Theparak Junction) (completed) 2.6 Flyover at Sri Nakarin Road (Sukhumvit Junction) (completed) 2.7 Rangsit Interchange, 2nd Phase (completed) 2.8 Flyover at Intersection of Highway No. 1 (Phaholyothin) and Highway No. 3312 (Lamlukka) (completed) 2.9 Theparak Road, Bang Phli – Bang Bo Section (under construction) 2.10 Connecting Road for Highway No. 34 (Bang Na - Trad) and Highway No. 3268 (Theparak) (under construction) 2.11 Phra Pradaeng – Bang Plakod District Road (under construction) 2.12 Connecting Road for Bang Bua Thong Road and Highway No. 307 (Bang Khu Wat) (under construction) 2.13 Highway No. 345 (Bang Khu Wat) - Pathumthani Connecting Road (under construction) 2.14 Highway No. 345 (Bang Khu Wat) - Highway No. 3100 (Rangsit Canal Parallel Road) Connecting Road (completed) 2.15 Highway No. 346 (Rangsit – Lad Lum Kaew) – Rangsit Canal Parallel Road (ending at Chao Phraya River) Connecting Road (completed) 2.16 Connecting Road for Industrial Ring Road and Southern Kanchanapisek Outer Ring Road (completed, transferred to EXAT) 2.17 Rehabilitation of ICD Road (Lad Krabang) (completed) 2.18 Pakkret Intersection Underground Pass (completed) 2.19 Kae Lai Intersection Underground Pass (postponed) 2.20 Kaset Intersection Underground Pass (completed) 2.21 Connecting Road for Sukhapiban 1 Road and Eastern Ring Road (under construction) 2.22 Flyover at Muang Thong Thani 3 (completed) 2.23 Flyover at Muang Thong Thani 1 (construction relocated to Changwattana/Klong Prapa Intersection completed) 2.24 Flyover at Laksi Intersection (preparation for construction) 2.25 Flyover at Lad Pla Kao Intersection (completed) 2.26 Flyover at Ramindra Road, KM8 Intersection (completed) 2.27 Flyover at Seri Thai Road Junction (under construction) Department of Rural Roads (DRR) 3.1 Rehabilitation of Old Railway Road (part of Industrial Ring Road) (completed) 3.2 Chao Phraya River Crossing Bridge at Nonthaburi 1 Road (preparation for construction) 3.3 Flyover at Taksin - Petch Kasem Road (completed) 3.4 Pakkret – Kanchanapisek Ring Road Connecting Road (East – West Route) (land acquisition, under construction) 3.5 Highway No. 345 - Kanchanapisek Ring Road Connecting Road (North - South Route) (land acquisition, under construction) 3.6 Chao Phraya River Crossing Bridge at Pakkret Intersection (Completed/Japan ODA Loan) 3.7 Rehabilitation of Highway No. 34 - Highway No. 7 Connecting Road (completed) Bangkok Metropolitan Administration (BMA) 4.1 Flyover crossing Sri Ayuthaya – Phayathai Road Intersection (completed) 4.2 Flyover crossing Sri Ayuthaya - Rama 6 Road (construction relocated to Chao Khun Taharn Road / Ladkrabang ICD Road - completed) 4.3 Flyover crossing Rama 3 – Sathupradit Road Intersection (completed)
4.4 Flyover crossing Rama 3 – Ratchadapisek Road Intersection (completed) 4.5 Flyover crossing Rama 3 - Narathiwat Ratchanakarin Road Intersection (completed) 4.6 Flyover crossing Rama 3 – Industrial Ring Road Intersection (completed) 4.7 Flyover crossing Rama 3 – Charoen Rath Road Intersection (completed) 4.8 Flyover crossing Bang Khun Tien - Rama 2 Road Intersection (completed)

4.9 Flyover crossing Boromratchonnanee Road – Buddhamontol 2 Road Intersection (completed)

- 4.10 Flyover crossing Din Daeng Prachasongkhroh Intersection (completed)
- 4.11 Flyover crossing Suksawat Rama 2 Road Intersection (completed)

4.12 Flyover crossing Rama 4 – Sukhumvit 42 Intersection (<u>canceled</u> – construction relocated to Suthisan Inbound Intersection)

4.13 Flyover crossing Rama 4 – Sukhumvit 26 Intersection (<u>canceled</u> – construction relocated to Suthisan Outbound Intersection – completed)

4.14 Flyover crossing Ekachai/Bang Ban Road/Bang Khun Tien Road Intersection (canceled – construction relocated to Buddhamontol 2 Intersection – completed)

4.15 Flyover crossing Chalongkrung – Suwinthawong Intersection (completed)

4.16 Flyover crossing Ratchawithi Road – Rama 6 Intersection (completed)

4.17 Suwinthawong Elevated Road (<u>completed</u>)

4.18 Mahaisawan Intersection Underground Pass (preparation for construction)

4.19 Charansanitwong – Boromratchonnanee Intersection Underground Pass (preparation for construction)

4.20 Fai Chai Junction (Charansanitwong Road) Underground Pass (preparation for construction)

4.21 Petchkasem Road, Lieb Klong Thawee Wattana - Buddhamontol 4 Section (under construction)

4.22 Buddhamontol 2 Road, Petchkasem – Lieb Tang Rotfai Sai Tai Section (under construction)

4.23 Thawee Wattana Road, Uttayan Raod – Petchkasem Road Section (under construction)

4.24 Elevated Road on Petchkasem Road, Outer Ring Road – Bang Bon 5 Section (cancelled)

4.25 Elevated Road on Ladprao Road (cancelled)

4.26 Chao Phraya River Crossing Bridge at Kiek Kai (D/D)

4.27 Chao Phraya River Crossing Bridge at Ratchawong Road – Tha Din Daeng Road (<u>F/S</u>)

4.28 Chao Phraya River Crossing Bridge at Lad Ya Road - Mahaprutharam Road (F/S)

4.29 Chao Phraya River Crossing Bridge at Chan Road – Charoen Nakorn Road (F/S)

4.30 Connecting Road for Suksawat – Rama 2 – Taksin Junction – Petchkasem – Southern Ring Road (F/S, D/D)

4.31 Ratchadapisek Road Expansion (Petchburi Road – Sukhumwit Road Section) (preparation for construction)

4.32 Connecting Road for Sarasin Road – Ratchadapisek Road (preparation for construction)

4.33 Phaholyothin Road – Ratanakosin Sompoch Road (under construction)

4.34 Krungthep Kreetha Road Construction (under construction)

4.35 Prannok – Buddhamontol 4 Road (under construction)

4.36 Underground Pass (Srinakarin Road – Sukhumwit 103 Road) (D/D)

下線部は更新箇所。

# 付録-5 Annual Fund Requirement

Annual Fund Requirement																					
Base Year for Cost Estimation:	Oct,	2009				FC & Tota	I: million	JPY													
Exchange Rates	Baht	= Yen	2.75			LC :	million B	aht													
Price Escalation:	FC:	3.1%	LC:	8.6%																	
Physical Contingency	5%																				
Physical Contingency for Consultant	5%																				
Item	- / *	Total			2010			2011			2012			2013			2014			2015	
	FC	1 C	Total	FC	10	Total	FC	LC	Total	FC	I.C.	Total	FC	IC	Total	FC	LC	Total	FC		Total
A. ELIGIBLE PORTION		20	- otai			10101			. otai			. otai	<u> </u>		10101			10101			10101
I) Procurement / Construction	776	3,309	9,875	0	0	0	200	806	2,418	310	1,314	3,922	266	1,189	3,535	0	0	0	0	0	0
Base cost	673	2,442	7,388	0	0	0	179	651	1,970	269	977	2,955	224	814	2,463	0	0	0	0	0	0
Base cost for JICA financing	673	2,442	7,388	0	0	0	179	651	1,970	269	977	2,955	224	814	2,463	0	0	0	0	0	0
Price escalation	66	709	2,017	0	0	0	11	117	333	26	274	780	29	318	904	0	0	0	0	0	0
Physical contingency	37	158	470	0	0	0	10	38	115	15	63	187	13	57	168	0	0	0	0	0	0
I Consulting services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Price escalation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical contingency	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total (I + II)	776	3,309	9,875	0	0	0	200	806	2,418	310	1,314	3,922	266	1,189	3,535	0	0	0	0	0	0
B. NON ELIGIBLE PORTION																					
a Procurement / Construction	0	1,594	4,385	0	0	0	0	389	1,069	0	633	1,741	0	573	1,575	0	0	0	0	0	0
Base cost	0	1,046	2,878	0	0	0	0	279	767	0	419	1,151	0	349	959	0	0	0	0	0	0
Consulting Service	0	130	358	0	0	0	0	35	95	0	52	143	0	43	119	0	0	0	0	0	0
Base cost for JICA financing	0	1,177	3,236	0	0	0	0	314	863	0	471	1,294	0	392	1,079	0	0	0	0	0	0
Price escalation	0	342	940	0	0	0	0	56	155	0	132	363	0	153	422	0	0	0	0	0	0
Physical contingency	0	76	209	0	0	0	0	19	51	0	30	83	0	27	75	0	0	0	0	0	0
b Land Acquisition	0	2,200	6,050	0	2,200	6,050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base cost	0	2,200	6,050	0	2,200	6,050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Price escalation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical contingency	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
c Administration cost	0	148	406	0	44	121	0	25	70	0	41	113	0	37	102	0	0	0	0	0	0
d VAT	0	266	730	0	154	424	0	27	75	0	44	122	0	40	110	0	0	0	0	0	0
e Import Tax	0	12	34	0	0	0	0	12	34	0	0	0	0	0	0	0	0	0	0	0	0
Total (a+b+c+d+e)	0	4,220	11,605	0	2,398	6,595	0	453	1,247	0	718	1,976	0	650	1,788	0	0	0	0	0	0
TOTAL (A+B)	776	7,529	21,480	0	2,398	6,595	200	1,260	3,665	310	2,032	5,898	266	1,839	5,323	0	0	0	0	0	0
																				لـــــــــــــــــــــــــــــــــــــ	
C. Interest during Construction	370	0	370	0	0	0	23	0	23	60	0	60	95	0	95	96	0	96	96	0	96
Interest during Construction(Const.)	370	0	370	0	0	0	23	0	23	60	0	60	95	0	95	96	0	96	96	0	96
Interest during Construction (Consul.)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D. Commitment Charge	61	0	61	10	0	10	10	0	10	10	0	10	10	0	10	10	0	10	10	0	10
GRAND TOTAL (A+B+C+D)	1,208	7,529	21,911	10	2,398	6,605	234	1,260	3,698	380	2,032	5,968	371	1,839	5,428	106	0	106	107	0	107
E. JICA finance portion incl. IDC (A + C + D)	1,208	3,309	10,306	10	0	10	234	806	2,451	380	1,314	3,993	371	1,189	3,640	106	0	106	107	0	107

Administration Cost = VAT= Import Tax=

2% 7% of the expenditure in local currency of the eligible portion 5%

# 付録-6 事業者へのインタビュー調査結果

# 事業者へのインタビュー調査結果

## 調査実施概要

#### ■目的

これまでに建設された架橋によるインパクトを把握するとともに、今回の検討対象で ある新ノンタブリ橋の予想されるインパクト、あるいは期待・懸念などについて概観す るために、事業者へのインタビュー調査を実施した。

#### ■実施期間

2009年10月13日~23日

#### ■実施場所

調査は複数の架橋によって市街化が促進されたと想定される以下の 4 地区を対象に実

施した。

	地区名	対象となる橋	サンプル数
Area A	今回の調査対象地区	New Bridge	65
	(ノンタブリ県)	Phra Nangklao (New Phra Nangklao)	(+日本企業 12)
		Rama 5	
		(Rama 4 についても回答あり)	
Area B	バンコクノイ地区	Rama 7	66
	(バンコク都)	Krung Thon	
		Rama 8	
		Pinklao	
Area C	トンブリ地区	Memorial	72
	(バンコク都)	Phra Pokklao	
		Taksin	
		Rama3	
		Krung Thep	
Area D	トンブリ地区南方	Rama 9	10
	(バンコク都)		

#### ■実施方法

調査は簡単な質問票(Annex)を用意し、現地企業については調査員が現地で対象事業 者を訪問しながら面談方式で回答を得た。日系企業については、事前にアポイントをと った上で日本人調査団員が行った。調査対象事業者を下記に示す。

日本企業の企業名	対象者	実施日
Thai Toshiba Electric Industries Co., Ltd.	Mr. Okamoto	13 <sup>th</sup> October 2009
Kyoritsu Electric (Thailand) Co., Ltd.	Mr. Yoshida	13 <sup>th</sup> October 2009
Shoei Kankyo (Thailand) Co., Ltd.	Mr. Nakamura	19 <sup>th</sup> October 2009

《調査対象地》



# 《質問票》

		効果が大いに期待	効果が期待できる	変わらない	悪影響が懸念される	悪影響が大いに懸
事業	効果					
	事業コストの低減 (燃料・所要時間)					
	集客・売上等の向上					
	社員・取引先の利便性の向上					
アク	セス性					
	移動時間(通勤・通学・買物等)の低減					
	主要施設へのアクセス性向上					
	緊急時(病院等)へのアクセス性向上					
資産	価値					
	土地価格の向上					
	生活環境(騒音・大気)の向上					
	交通事故、危険性の低減					

# 調査結果

# 1) 全ての調査対象橋に対する調査結果



#### 《全ての調査対象橋に対する調査結果》

All Answers	For Bus	or Bussiness Value			essibilit	У	For Land Value			
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide	
		gs	nience	ort	es	ency	Prices	nment	nts	
Much Better Benefits	56%	37%	56%	66%	58%	61%	52%	12%	7%	
Better Benefits	33%	24%	25%	20%	35%	22%	36%	16%	26%	
No/Little Change	11%	36%	15%	14%	5%	16%	12%	47%	39%	
Worth Impacts	0%	2%	2%	0%	2%	0%	0%	12%	12%	
Much Worth Impacts	0%	1%	2%	0%	0%	0%	0%	14%	17%	
S.A. (total 225)	100%	100%	100%	100%	100%	100%	100%	100%	100%	

#### 2) 本事業及びその他の橋の調査結果



#### 《本事業に対する調査結果》

New Bridge	For Bus	siness \	∕alue	For Acc	essibilit	У	For Land Value			
	Costs	osts Earnin		Transp	Faciliti	Emerg	Land	Enviro	Accide	
		gs	nience	ort	es	ency	Prices	nment	nts	
			s							
Much Better Benefits	57%	40%	53%	72%	60%	55%	57%	9%	6%	
Better Benefits	26%	11%	26%	19%	28%	30%	23%	15%	19%	
No/Little Change	17%	45%	15%	6%	11%	15%	19%	36%	30%	
Worth Impacts	0%	2%	4%	2%	2%	0%	0%	23%	23%	
Much Worth Impacts	0%	2%	2%	0%	0%	0%	0%	17%	21%	
S.A. (total 47)	100%	100%	100%	100%	100%	100%	100%	100%	100%	

	C	9% 20	0% 40	0% 6	60%	80%	100%
For	Costs				-	L.	::
Bussine Value	ss Earnings				1.1.		<b>.</b>
	Conveniences				-	1.1.1	
For	Transport					100	::
Accessibili ty	Facilities	-				-	:
	Emergency	-				100	
_	Land Prices						::
For Land	Environment	-	1949	:::::		1	
Value	Accidents	_	1		<u> </u>	<u>–</u>	
	Much Better	Benefits 🗖	Better Bene	fits 🗆	No/Little (	Change	1
	Worth Impac	ts 📕	Much Worth	Impacts			

#### 《本事業以外の橋に対する調査結果》

The Other Bridges	For Bus	siness \	/alue	For Acc	essibilit	У	For Land Value			
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide	
		gs	nience	ort	es	ency	Prices	nment	nts	
			s							
Much Better Benefits	56%	37%	57%	64%	57%	63%	50%	13%	7%	
Better Benefits	35%	28%	25%	20%	37%	20%	40%	16%	28%	
No/Little Change	9%	33%	15%	16%	4%	17%	10%	49%	42%	
Worth Impacts	0%	2%	2%	0%	2%	0%	0%	9%	8%	
Much Worth Impacts	0%	1%	2%	0%	0%	0%	0%	13%	16%	
S.A. (total 178)	100%	100%	100%	100%	100%	100%	100%	100%	100%	

# 3) 地区別の調査結果

	C	0% 2	20%	40%	60%	80%	100%
For	Costs		1				
Bussiness Value	Earnings	_					3
C	onveniences	_				<u></u>	
For	Transport	_	1				1
Accessibili ty	Facilities	_					1
	Emergency					: - :	
For	Land Prices	_				1.11	
Land Value	Environment	_	19191		- 1		
	Accidents						
	Much Bette	er Benefits	Better B	enefits	□ No/Littl	e Change	
	UWorth Impa	ots	Much Wo	rth Impacts			

#### ≪in area A≫

Area A	For Bussiness Value			For Acc	essibilit	У	For Lar	nd Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort es ency F		Prices	nment	nts	
			s						
Much Better Benefits	63%	43%	55%	74%	58%	57%	58%	11%	8%
Better Benefits	23%	12%	22%	18%	29%	28%	25%	11%	23%
No/Little Change	14%	42%	17%	6%	9%	15%	17%	40%	25%
Worth Impacts	0%	2%	3%	2%	3%	0%	0%	17%	22%
Much Worth Impacts	0%	2%	3%	0%	0%	0%	0%	22%	23%
S.A. (total 65)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	C	% 2	0% 4	0%	60%	80%	100%			
For	Costs	_					:::			
Bussine: Value	Earnings	-			1		11			
	Conveniences	_				111	1			
For	Transport					141	11			
Accessil ty	Facilities						E			
	Emergency					1111	11			
	Land Prices					:	:::			
For Land Value	Environment		144	::::		ं।				
value	Accidents		1		::::::	-				
	Much Better Benefits      Mo/Little Change     Worth Impacts									

#### ≪in area B≫

Area B	For Bu	ssiness '	Value	For Acc	cessibilit	y	For Lar	nd Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	53%	36%	59%	61%	59%	62%	47%	12%	6%
Better Benefits	39%	33%	26%	23%	39%	18%	42%	14%	27%
No/Little Change	8%	29%	14%	17%	2%	20%	11%	58%	47%
Worth Impacts	0%	2%	2%	0%	0%	0%	0%	6%	6%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	11%	14%
S.A. (total 66)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	C	0% 2	0% 4	0%	60%	80%	100%
For	Costs						÷
Bussine Value	ss Earnings				1.1.1		3
	Conveniences	-				1.1	1
For	Transport	_				1.1.1	
Accessi ty	Facilities	-					1
	Emergency						
For	Land Prices	-			-		
Land	Environment		E	:::::			
vaiüe	Accidents				4.1.1		
	Much Better	Benefits 🗖	Better Bene	fits C	□ No/Little	Change	1
	Uwerth Impact	ts 🗖	Much Worth	Impacts			

#### ≪in area C≫

Area C	For Bus	siness \	√alue	For Acc	essibilit	y	For Lar	d Value	
	Costs	Earnin	Conve	Transp Faciliti Emerg		Land	Enviro	Accide	
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	60%	44%	65%	71%	60%	74%	53%	17%	7%
Better Benefits	32%	19%	19%	11%	35%	18%	38%	18%	25%
No/Little Change	8%	33%	11%	18%	3%	8%	10%	43%	39%
Worth Impacts	0%	1%	1%	0%	3%	0%	0%	8%	10%
Much Worth Impacts	0%	1%	3%	0%	0%	0%	0%	14%	19%
SA (total 72)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	C	1% 21	0% 40	D% 6	0%	80%	100%
For	Costs			1	1	1111	: : :
Bussine Value	Earnings		I		:::::		
	Conveniences				:		
For	Transport				1	:	111
Accessi ty	bili Facilities	-					
-	Emergency	-		:::			
	Land Prices				1	:	:1:
Land	Environment	1993	::::::			100	
Value	Accidents			:4:			:
	Much Better	Benefits 🖬 E	Better Benef	its 🛛	No/Little	Change	]
	Worth Impact	s 🗖 N	Auch Worth I	mpacts			

#### ≪in area D≫

Area D	For Bu	siness \	∕alue	For Acc	essibilit	y	For Land Value			
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide	
		gs	nience	ort	es	ency	Prices	nment	nts	
			s							
Much Better Benefits	30%	0%	20%	40%	50%	20%	40%	0%	10%	
Better Benefits	50%	60%	50%	50%	50%	30%	50%	10%	40%	
No/Little Change	20%	30%	20%	10%	0%	50%	10%	80%	50%	
Worth Impacts	0% 10		10%	0%	0%	0%	0%	10%	0%	
Much Worth Impacts	s 0% 0% 0%			0%	0%	0%	0%	0%	0%	
SA (total 10)	100%	100%	100%	100%	100%	100%	100%	100%	100%	

# 4) 日本企業に対する調査結果

	(	0% 20	0% 40	0%	60%	80%	100%
For	Costs					191	
Bussines: Value	Earnings	_		:::::			
c	Conveniences				-		
For	Transport	_				100	
Accessibi ty	Facilities					444	1
	Emergency				-		
-	Land Prices				-		
Land	Environment	_			Ļ	-	
Value	Accidents		1111	11111	<u></u>	승규는	
	Much Better	Benefits 🗖 B	Better Benef	its C	No/Little (	Change	]
	Worth Impac	ts 🔳	Nuch Worth	Impacts			

#### $\langle\!\!\! \langle {\rm from \ Japanese \ Companies \ about \ all \ bridge} \rangle\!\!\!\! \rangle$

Japanese Companies	For Bus	siness \	/alue	For Acc	essibilit	у	For Land Value			
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide	
		gs	nience	ort	es	ency	Prices	nment	nts	
			s							
Much Better Benefits	42%	0%	25%	42%	42%	42%	42%	0%	0%	
Better Benefits	42%	42%	50%	42%	33%	33%	50%	42%	25%	
No/Little Change	17%	58%	25%	17%	25%	25%	8%	17%	67%	
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	42%	8%	
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	0%	0%	
S.A. (total 12)	100%	100%	100%	100%	100%	100%	100%	100%	100%	

	C	% 20	0%	40%	60%	80%	100%
For	Costs	-					:•
Bussiness Value	Earnings		1.11				• :
C	onveniences						
For	Transport					1000	:-
Accessibili ty	Facilities					: : : : :	::
	Emergency				_	1.111	::
	Land Prices				_	::::::	
For Land	Environment		100	100		_	
Value	Accidents		111	11111			
	Much Better Worth Impact	Benefits 🖬 E s 📑 N	Better Bei Nuch Wort	nefits h Impacts	□ No/Little	Change	

#### $\langle\!\!\! \langle {\rm from \ Japanese \ Companies \ only \ about \ New \ Bridge} \rangle\!\!\! \rangle$

Japanese Companies	For Bus	ssiness \	/alue	For Acc	essibilit	У	For Land Value				
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide		
(New Bridge)		gs	nience	ort	es	ency	Prices	nment	nts		
			s								
Much Better Benefits	25%	0%	0%	25%	25%	25%	25%	0%	0%		
Better Benefits	50%	25%	75%	50%	50%	50%	50%	25%	25%		
No/Little Change	25%	75%	25%	25%	25%	25%	25%	25%	50%		
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	50%	25%		
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	0%	0%		
S.A. (total 4)	100%	100%	100%	100%	100%	100%	100%	100%	100%		

#### 5) 個別橋梁別の調査結果

			0%	20	196	40%		60	%		80	%		10	0%
For		Costs						::	:::		:	::	: -	:::	
Value	ess	Earnings		_			1			: - :	-	1	1	- : -	
	Co	nveniences						: :	: - :		:	1	1	: - :	
For		Transport									_				
Acces: ty	sibili	Facilities	_				1	: :	: - :	:::	:	: -	:-	: : :	
		Emergency	_				÷	::		: : :	:	1	1		
		Land Prices													
For Land	E	invironment	-								_				
Value		Accidents						:	: : :	. : -	:			: : :	
	M I	luch Better Be	nefits 🗖 E	Bette	er Benefi	ts	ΒN	o/l	ittle	Cha	nge	-	1		
	n 🗆	orth Impacts	<b>•</b> N	Auch	n Worth In	npacts									

#### ≪about Rama 4 Bridge

Rama 4	For Bus	siness \	√alue	For Acc	essibilit	.y	For Lar	id Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
	1 '	gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	0%	0%	0%	0%	0%	0%	0%	0%	0%
Better Benefits	50%	50%	50%	100%	50%	50%	100%	50%	50%
No/Little Change	50%	50%	50%	0%	50%	50%	0%	0%	50%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	50%	0%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	0%	0%
S.A. (total 2)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	(	0% 2	:0%	40%	60%	80%	100%
For	Costs		1	1	1		
Bussines	Earnings	-			:		-:-:-
	Conveniences	_				12	: - : - :
For	Transport						1111
Accessibi ty	li Facilities	_				:	: - : - :
	Emergency					1	1111
	Land Prices					1	: - : - :
Land	Environment						
Value	Accidents				1		
	Much Better	Benefits 🗖	Better Ben	efits	□ No/Lit	tle Change	,
	UWorth Impac	ts 📕	Much Wort	h Impacts			

#### «about Phra Nak<br/>gklao Bridge»

Phra Nangklao	For Bus	ssiness \	∕alue	For Acc	essibilit	У	For Lan	nd Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	75%	44%	63%	75%	63%	63%	63%	6%	6%
Better Benefits	19%	25%	19%	13%	19%	19%	19%	13%	31%
No/Little Change	6%	31%	19%	13%	19%	19%	19%	44%	25%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	13%	19%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	25%	19%
S.A. (total 16)	100%	100%	100%	100%	100%	100%	100%	100%	100%

Г

	C	% 20	0% 40	0% 6	0% 8	0% 100%
For	Costs					11111
Bussiness Value	Earnings	_			::::::	
Co	nveniences					
For	Transport	_				
Accessibili ty	Facilities	_				11 H I
	Emergency					81 A 1 A 1
E	Land Prices					11111
Land E	Invironment	_	:-:-:-			
- auto	Accidents		: • : • :	:-:-:		
	Much Better Worth Impact	Benefits 🗖 E .s 🗖 N	Better Benei Auch Worth	ìts ⊡ Impacts	No/Little Ch	lange

#### «about New Bridge»

New Bridge	For Bus	siness \	/alue	For Acc	essibilit	У	For Lar	d Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	57%	40%	53%	72%	60%	55%	57%	9%	6%
Better Benefits	26%	11%	26%	19%	28%	30%	23%	15%	19%
No/Little Change	17%	45%	15%	6%	11%	15%	19%	36%	30%
Worth Impacts	0%	2%	4%	2%	2%	0%	0%	23%	23%
Much Worth Impacts	0%	2%	2%	0%	0%	0%	0%	17%	21%
S.A. (total 47)	100%	100%	100%	100%	100%	100%	100%	100%	100%

# «about Rama 5 Bridge»

	C	9% 2	0% 4	10%	60%	80%	100%
For	Costs						111
Bussines: Value	<sup>8</sup> Earnings		I	1	::::::		: - :
C	Conveniences				1		
For	Transport					_	: : :
Accessibi ty	li Facilities	_				_	
	Emergency	_				100	: - :
For	Land Prices	_					
Land	Environment	-	:-	11111	10		
	Accidents						
	Much Better	Benefits 🗖 B	Better Bene	fits	□ No/Little	Change	

Rama 5	For Bus	ssiness \	/alue	For Acc	essibilit	У	For Lar	id Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	58%	17%	33%	58%	42%	50%	50%	17%	8%
Better Benefits	33%	25%	33%	33%	50%	33%	50%	17%	25%
No/Little Change	8%	58%	25%	8%	0%	17%	0%	33%	42%
Worth Impacts	0%	0%	0%	0%	8%	0%	0%	17%	8%
Much Worth Impacts	0%	0%	8%	0%	0%	0%	0%	17%	17%
SA (total 12)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	(	0% 2	20%	40%	60%	80%	100%
For	Costs					1	
Bussiness Value	Earnings		1			C	1
C	onveniences	_			1		
For	Transport						11:
Accessibili ty	Facilities	_					
	Emergency			1.1.1	::::::		: • :
	Land Prices						1.5
Land	Environment	:4:4		1,1,1,1	: : : : : :		
value	Accidents			P : P :	111111	::::::	- : -
	Much Bette	r Benefits 🗖	Better Be	enefits	□ No/Litt	e Change	
	Worth Impac	sts 🗖	Much Wo	rth Impacts			

# «about Rama 7 Bridge»

Rama 7	For Bus	siness \	Value	For Acc	cessibilit	У	For Lar	nd Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	31%	0%	25%	38%	56%	25%	38%	0%	6%
Better Benefits	56%	75%	44%	56%	44%	19%	56%	6%	38%
No/Little Change	13%	19%	25%	6%	0%	56%	6%	88%	56%
Worth Impacts	0%	6%	6%	0%	0%	0%	0%	6%	0%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	0%	0%
S.A. (total 16)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	C	n 2	20%	40%	60%	80%	100%
For	Costs						
Bussiness Value	Earnings	-			ti i i i i i i i i i i i i i i i i i i		:•:
C	onveniences						11
For	Transport					12.23	111
Accessibili ty	Facilities	_					
	Emergency	-					11:
_	Land Prices	-					111
For Land	Environment	-			:::::	::::	
Value	Accidents	_		100	:::::	1	
	Much Better	Benefits 🗖	Better Ber	nefits	□ No/Litt	le Change	1

#### $\langle\!\!\!\! \left\langle about \; \mathrm{Krung} \; \mathrm{Thon} \; \mathrm{Bridge} \right\rangle\!\!\!\!\!\right\rangle$

Krung Thon	For Bus	ssiness \	√alue	For Acc	essibilit	у	For Lar	nd Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	44%	44%	63%	69%	56%	75%	56%	13%	13%
Better Benefits	50%	13%	31%	13%	44%	19%	31%	19%	31%
No/Little Change	6%	44%	6%	19%	0%	6%	13%	50%	31%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	13%	6%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	6%	19%
SA (total 16)	100%	100%	100%	100%	100%	100%	100%	100%	100%

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	C	0% 20	0% 40	0% 6	i0%	80%	100%
For	Costs						
Bussiness Value	Earnings					0.00	: : :
Co	nveniences	_					E
For	Transport	_					:::
ty	Facilities	_					
	Emergency						:::
For	Land Prices	_					
Land E	Invironment	-		:4:4:		: i :	
Value	Accidents			:::::			
	Much Bette Worth Impac	er Benefits 🗖 ots 🛛 🗖	Better Ben Much Worth	efits I n Impacts	□ No/Little	Change	

#### ≪about Rama 8 Bridge»

Rama 8	For Bus	ssiness \	∕alue	For Acc	essibilit	У	For Land Value		
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	76%	52%	76%	76%	68%	80%	56%	24%	4%
Better Benefits	24%	24%	20%	12%	32%	12%	36%	20%	20%
No/Little Change	0%	24%	4%	12%	0%	8%	8%	40%	52%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	4%	4%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	12%	20%
S.A. (total 25)	100%	100%	100%	100%	100%	100%	100%	100%	100%

#### «about Pinklao Bridge»

	(	0% 2	0%	40%	60%	80%	100%
For	Costs				_		:::
Bussines Value	s Earnings	_			100		: - :
0	Conveniences				1.1		
For	Transport						: - :
Accessib ty	li Facilities					:	:::
	Emergency					:	: - :
	Land Prices					100	:::
Land	Environment				::::		
value	Accidents		1111				
	<ul> <li>Much Better</li> <li>Worth Impact</li> </ul>	Benefits 🗖 E s 🗖 N	Better Bene Auch Worth	efits [ Impacts	⊐ No/Little	Change	

Pinklao	For Bus	siness \	Value	For Acc	essibilit	y	For Lar	id Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	44%	44%	67%	44%	44%	56%	22%	0%	0%
Better Benefits	33%	22%	0%	11%	44%	33%	56%	0%	22%
No/Little Change	22%	33%	33%	44%	11%	11%	22%	67%	44%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	0%	22%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	33%	11%
S.A. (total 9)	100%	100%	100%	100%	100%	100%	100%	100%	100%

		0%	20%	40%	60%	80%	1009
For	Costs						111
Bussines Value	s Earnings					1993	
	Conveniences	-					: - : -
For	Transport	-					
Accessib	Accessibili ty Facilities	-					1:1
cy	Emergency	-					
	Land Prices	-					
For	Environment	-		1.1	• : • : • : • :		
Value	Accidente	-		1			
	Much Bett	er Benet	fits 🗖 Bette	er Benefits		ittle Change	
	Worth Imp	acts	Much	n Worth Impa	cts		

#### «about Memorial Bridge»

Memorial	For Bus	siness \	√alue	For Acc	essibilit	У	For Lar	d Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	75%	44%	75%	75%	69%	81%	50%	25%	6%
Better Benefits	19%	31%	13%	13%	25%	6%	38%	19%	25%
No/Little Change	6%	25%	13%	13%	6%	13%	13%	38%	44%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	6%	13%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	13%	13%
S.A. (total 16)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	(	0%	20%	40%	60%	80%	100%
For	Costs						111
Bussines Value	Earnings	-			i i		: - :
	Conveniences					1	:::
For	Transport				Ē		:::
Accessit ty	sibili Facilities	-			-		1.5
	Emergency	_				1919	: - :
For	Land Prices	-			-	1.1	111
Land	Environment	-	11111				
	Accidents						
	Much Better	Benefits 🗖	Better Ber Much Wort	nefits ( h.Impacts	⊐ No/Little	Change	

#### «about Phra Pokklao Bridge»

Phra Pokklao	For Bus	ssiness \	/alue	For Acc	essibilit	у	For Lar	id Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	44%	50%	69%	56%	44%	63%	38%	13%	6%
Better Benefits	44%	19%	19%	13%	50%	19%	44%	6%	31%
No/Little Change	13%	31%	13%	31%	6%	19%	19%	63%	38%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	6%	13%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	13%	13%
S.A. (total 16)	100%	100%	100%	100%	100%	100%	100%	100%	100%

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	(	0% 2	0% 4	0%	60%	80%	100%
For	Costs	-					:-
Bussiness Value	Earnings	-	81818	1111	:-:::		
с	Conveniences	_					
For	Transport						
Accessibili ty Facilities	_			_			
	Emergency					_	
-	Land Prices						
For Land Value	Environment	-		111			
Accidents					1		
Much Better Benefits      Better Benefits      No/Little Change     Worth Impacts     Much Worth Impacts							

#### «about Taksin Bridge»

Taksin	For Bus	siness \	∕alue	For Acc	essibilit	У	For Land Value		
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	63%	13%	25%	88%	50%	63%	63%	25%	13%
Better Benefits	13%	13%	13%	13%	25%	38%	38%	13%	38%
No/Little Change	25%	50%	25%	0%	0%	0%	0%	13%	0%
Worth Impacts	0%	13%	13%	0%	25%	0%	0%	25%	25%
Much Worth Impacts	0%	13%	25%	0%	0%	0%	0%	25%	25%
S.A. (total 8)	100%	100%	100%	100%	100%	100%	100%	100%	100%

## ≪about Rama 3 Bridge»

	C	9% 20	0% 40	0% 60	0% 8	0% 100%
For	Costs					
Bussiness Value	Earnings	-			:	
с	onveniences					
For	Transport					: - : - :
Accessibil ty	i Facilities					
	Emergency					
_	Land Prices					
For Land	Environment			1	::::::	
Value	Accidents	-	:4:4:	::::::	1111	
[	Much Better	Benefits 🗖 E	Better Benef	its 🗆 M	No/Little Ch	ange
	Worth Impact	s 🗖 N	Auch Worth I	mpacts		

Rama 3	For Bus	ssiness \	Value	For Acc	essibilit	у	For Land Value		
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	69%	56%	75%	81%	81%	88%	69%	25%	6%
Better Benefits	31%	19%	19%	6%	19%	13%	31%	31%	19%
No/Little Change	0%	25%	6%	13%	0%	0%	0%	25%	50%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	6%	0%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	13%	25%
S.A. (total 16)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	(	0% 2	20%	40%	60%	80%	100%
For	Costs				_		1
Bussiness Value	Earnings	-			1		$\square$
Co	onveniences						
For	Transport					ci co	<u> </u>
Accessibili ty	Facilities		-		_		
	Emergency						• :
F	Land Prices				-		
Land E	Environment	_		11111	::::::	- <b>-</b>	
value	Accidents		1919	:::::	1111		
	Much Bette	er Benefits cts	Better B	enefits orth Impacts	■ No/Litt	e Change	T

# «about Krung Thep Bridge»

Krung Thep	For Bus	siness \	∕alue	For Acc	essibilit	у	For Lar	nd Value		
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide	
		gs	nience	ort	es	ency	Prices	nment	nts	
			s							
Much Better Benefits	50%	44%	63%	63%	50%	69%	50%	0%	6%	
Better Benefits	44%	13%	31%	13%	50%	25%	38%	19%	19%	
No/Little Change	6%	44%	6%	25%	0%	6%	13%	63%	44%	
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	6%	6%	
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	13%	25%	
S.A. (total 16)	100%	100%	100%	100%	100%	100%	100%	100%	100%	

		(	0% 2	0%	40%	60%	80%	100%
Ì	For	Costs						
	Bussiness Value	Earnings	_		-	: - : - :		
	с	onveniences				1		
	For	Transport						
	Accessibili ty	Facilities						
		Emergency			1			
Ì	-	Land Prices	-					
	Land	Environment				444		
	value	Accidents		1	- F:			
		Much Better	Benefits 🗖	Better Ber	efits	🛙 No/Little	Change	
I		Worth Impact	s 🗖	Much Wort	h Impacts			

#### «about Rama 9 Bridge»

Rama 9	For Bussiness Value For Accessibility For Land				id Value				
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	30%	0%	20%	40%	50%	20%	40%	0%	10%
Better Benefits	50%	60%	50%	50%	50%	30%	50%	10%	40%
No/Little Change	20%	30%	20%	10%	0%	50%	10%	80%	50%
Worth Impacts	0%	10%	10%	0%	0%	0%	0%	10%	0%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	0%	0%
S.A. (total 10)	100%	100%	100%	100%	100%	100%	100%	100%	100%

# 6) 事業者の職種別の調査結果

		0%	20%	40%	60%	80%	100%
For	Costs						1:1:
Bussines Value	Earning	s			1.000		:
	Conveniences					1.1.1.1	1
For	Transpor	t					
Accessib ty	Facilitie	s					
	Emergency						
Err	Land Price	s					::::
Land	Environment						
value	Accident	s					
	Much Be	tter Ben	efits 🗖 Bette	er Benefits	⊡ No/L	ittle Change	
	Uw Worth Im	pacts	Much	Worth Imp	acts		

#### $\langle\!\!\! \left< \mathrm{from \, Apartments} \right>\!\!\!\! \right>$

Apartment	For Bus	ssiness	/alue	For Acc	essibilit	У	For Land Value		
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	75%	44%	56%	88%	88%	81%	81%	6%	0%
Better Benefits	13%	6%	19%	6%	13%	13%	6%	19%	25%
No/Little Change	13%	44%	19%	6%	0%	6%	13%	44%	25%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	6%	13%
Much Worth Impacts	0%	6%	6%	0%	0%	0%	0%	25%	38%
S.A. (total 16)	100%	100%	100%	100%	100%	100%	100%	100%	100%

		0% 20	0% 40	0%	60%	80%	100%
For	Costs						:::
Bussines Value	s Earnings						:
(	Conveniences					1.1	:
For	Transport						1
Accessib ty	Facilities	_					÷
	Emergency						: : :
r	Land Prices				-		
For Land Value	Environment		19		<u>¦eee</u>	ф <b>н</b>	
V did C	Accidents				<u></u>	de la	
	Much Better	r Benefits 🗖 E	Better Benef	its 🕻	No/Little	Change	1
	Worth Impac	ts 🗖 N	Much Worth I	mpacts			

#### 

Automobile	For Bus	siness \	/alue	For Acc	essibilit	у	For Lar	nd Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	67%	33%	71%	75%	50%	63%	42%	21%	8%
Better Benefits	25%	42%	13%	21%	46%	29%	58%	13%	29%
No/Little Change	8%	21%	13%	4%	4%	8%	0%	50%	50%
Worth Impacts	0%	4%	4%	0%	0%	0%	0%	8%	4%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	8%	8%
S.A. (total 24)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	(	1%	20%	40%	60%	80%	100%
For	Costs			_		1.1.1.1	
Bussines Value	Earnings	-					
	Conveniences					1222	
For	Transport					1444	
Accessib ty	Facilities						
	Emergency					1444	
For	Land Prices	_		_		1920	
Land	Environment			::::			
value	Accidents			111			
	Much Bette	er Benefits sts	Better E	Benefits orth Impac	□ No/Lit	tle Change	

#### 《from normal Companies》

Company	For Bus	ssiness \	∕alue	For Acc	essibilit	У	For Lan	id Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	32%	27%	46%	43%	43%	57%	30%	19%	11%
Better Benefits	43%	24%	30%	32%	46%	19%	46%	16%	30%
No/Little Change	24%	49%	24%	24%	8%	24%	24%	49%	46%
Worth Impacts	0%	0%	0%	0%	3%	0%	0%	8%	14%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	8%	0%
S.A. (total 37)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	C	% 20	0% 40	0% θ	i <b>0</b> %	80%	100%
For	Costs						
Bussiness Value	Earnings	_			1:1:	444	
c	onveniences					1.1	::::
For	Transport					1:	
Accessibili ty	Facilities	-					
L	Emergency					1999	1
-	Land Prices						1
Land	Environment		:::::::	:::::			
value	Accidents			P: P: P:			
	Much Better Worth Impact	Benefits 🗖 E s 📕 N	Better Benef Auch Worth I	īts 🛛 Impacts	No/Little (	Change	

#### 《from Condominiums》

Condominium	For Bussiness Value			For Acc	essibilit	у	For Lar	ind Value		
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide	
		gs	nience	ort	es	ency	Prices	nment	nts	
			s							
Much Better Benefits	59%	41%	47%	65%	59%	59%	65%	6%	6%	
Better Benefits	41%	24%	35%	24%	29%	24%	29%	6%	35%	
No/Little Change	0%	35%	18%	12%	6%	18%	6%	47%	35%	
Worth Impacts	0%	0%	0%	0%	6%	0%	0%	18%	0%	
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	24%	24%	
S.A. (total 17)	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Г

	C	% 20	0% 40	0% 6	0% 8	0% 100%
For	Costs				1	E
Bussiness Value	Earnings	_			::::::	
C	onveniences	_				1.1
For	Transport	_				
Accessibili ty	Facilities	_				1.1
	Emergency					[ · : · : · :
For	Land Prices					1919
Land	Environment	-	1919			
	Accidents		: - : - :			:
	Much Bette	r Benefits 🗖	Better Ben	efits C	No/Little C	hange
	UWorth Impac	sts 🗖	Much Worth	n Impacts		

#### 《from Factories》

Factory	For Bus	or Bussiness Value			essibilit	У	For Land Value		
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	57%	25%	54%	71%	57%	54%	54%	7%	4%
Better Benefits	39%	29%	39%	25%	36%	29%	36%	21%	21%
No/Little Change	4%	46%	7%	4%	7%	18%	11%	43%	57%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	21%	4%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	7%	14%
S.A. (total 28)	100%	100%	100%	100%	100%	100%	100%	100%	100%

#### 《from Gas Stations》

	(	0% 2	0% 40	0% 6	0%	80%	100%
For	Costs					1.1.1	
Bussiness Value	Earnings	_			:::::		
c	onveniences					1910 - E	
For	Transport				E	400	
Accessibi ty	i Facilities						E
	Emergency					1.1.1	
-	Land Prices					100	
Land	Environment			11111		:	
Value	Accidents		1111	111			
	<ul> <li>Much Better</li> <li>Worth Impact</li> </ul>	Benefits 🗖 E	Better Benef Auch Worth I	its 🗆 mpacts	No/Little (	Change	

Gas Station	For Bus	siness \	/alue	For Acc	essibilit	У	For Land Value		
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	60%	32%	44%	56%	76%	64%	64%	12%	12%
Better Benefits	24%	28%	32%	16%	20%	16%	20%	28%	12%
No/Little Change	16%	36%	12%	28%	4%	20%	16%	44%	28%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	4%	24%
Much Worth Impacts	0%	4%	12%	0%	0%	0%	0%	12%	24%
S.A. (total 25)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	(	0%	20%	40%	60%	80%	100%
For	Costs						
Bussines Value	s Earnings	-				13	: - :
	Conveniences	-					
For	Transport	-				1222	
Accessib ty	ili Facilities	-					
	Emergency	-				1.1	
	Land Prices						
For Land	Environment	-			1		_
Value	Accidents	-		1111			
	Much Bette	er Benefit:	s 🗖 Better E	Benefits	No/L	ittle Change	7
	UWorth Impa	cts	Much W	orth Impacts	5		

#### 《from Hotels》

Ī E

For Bus	ssiness \	/alue	For Acc	essibilit	у	For Land Value			
Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide	
	gs	nience	ort	es	ency	Prices	nment	nts	
		s							
43%	29%	43%	57%	29%	57%	43%	14%	14%	
29%	57%	29%	14%	57%	29%	57%	43%	29%	
29%	14%	14%	14%	14%	14%	0%	29%	43%	
0%	0%	14%	14%	0%	0%	0%	14%	0%	
0%	0%	0%	0%	0%	0%	0%	0%	14%	
100%	100%	100%	100%	100%	100%	100%	100%	100%	
	For Bus Costs 43% 29% 0% 0% 100%	For Bussiness V           Costs         Earnin gs           43%         29%           29%         57%           29%         14%           0%         0%           0%         0%           100%         100%	For Bussiness Value           Costs         Earnin         Conve           gs         100%         43%           29%         57%         29%           43%         29%         14%           29%         14%         14%           0%         0%         0%           100%         100%         100%	For Bussiness Value         For Acc           Costs         Earnin         Conve         Transport           43%         29%         43%         57%           29%         57%         29%         14%           29%         14%         14%         14%           0%         0%         0%         0%         0%           100%         100%         100%         100%         100%	For Bussiness Value         For Accessibilit           Costs         Earnin         Conve         Transp         Faciliti           43%         29%         43%         57%         29%           29%         57%         29%         14%         57%           29%         14%         14%         14%         57%           0%         0%         14%         14%         0%           0%         0%         0%         0%         0%         0%           0%         0%         0%         0%         0%         0%         0%           0%         0%         0%         0%         0%         0%         0%         0%	For Bussiness Value         For Accessibility           Costs         Earnin         Conve         Transp         Faciliti         Emergency           43%         29%         43%         57%         29%         57%           29%         57%         29%         14%         57%         29%           29%         14%         14%         14%         14%         14%           0%         0%         14%         14%         14%         0%         0%           0%         0%         0%         0%         0%         0%         0%         0%           0%         0%         0%         0%         0%         0%         0%         0%           100%         <	For Bussiness Value         For Accessibility         For Lar           Costs         Earnin         Conve         Transp         Faciliti         Emerged         Land           43%         29%         43%         57%         29%         57%         43%           29%         57%         29%         14%         57%         29%         57%         43%           29%         14%         14%         14%         14%         6%         0%<	For Bussiness Value         For Accessibility         For Land Value           Costs         Earnin         Conve         Transp         Faciliti         Emerges         Land         Environ           43%         29%         43%         57%         29%         57%         43%         14%           29%         14%         57%         29%         57%         43%         14%           29%         14%         14%         14%         0%         0%         29%         29%         57%         43%         14%         14%         14%         14%         14%         0%         0%         0%         14%         14%         14%         0%         0%         0%         14%         14%         14%         0%         <	

	C	1%	20%	40%	60%	80%	100
For	Costs					1:20	:::
Bussines: Value	B Earnings				n de la		: - :
Conveniences		_					÷ ; ;
For	Transport	_				100	: : :
Accessibi ty	Accessibili ty Facilities					133	:::
	Emergency	_					: : :
For	Land Prices	_					· : ·
Land	Environment	_	:-:-:-	:::::	:::::		
vaiue	Accidents						
	Much Better	Benefits	Better Be	enefits eth Impact	□ No/L	ittle Change	

#### 《from Museums》

Museum	For Bus	siness \	√alue	For Acc	essibilit	у	For Land Value		
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	50%	33%	50%	50%	67%	67%	50%	0%	17%
Better Benefits	33%	17%	17%	33%	17%	0%	17%	17%	33%
No/Little Change	17%	50%	33%	17%	17%	33%	33%	50%	0%
Worth Impacts	0%	0%	0%	0%	0%	0%	0%	0%	17%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	33%	33%
S.A. (total 6)	100%	100%	100%	100%	100%	100%	100%	100%	100%

	(	0% 20	0% 40	0% 6	i0%	30%	100%
For	Costs					-	÷
Bussiness Value	Earnings	_			1919		
с	onveniences					111	
For	Transport	_				-	2
Accessibil ty	i Facilities	_					6
	Emergency				F		
	Land Prices				1		
For Land	Environment	- E E					
value	Accidents			: • : • :			
	Much Bette	er Benefits 🗖 cts	Better Ben Much Worth	efits I n Impacts	□ No/Little	Change	

#### 《from Restaurants》

Restaurant	For Bus	siness \	∕alue	For Acc	essibilit	У	For Land Value		
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	60%	60%	65%	70%	65%	50%	55%	0%	0%
Better Benefits	35%	5%	15%	25%	30%	25%	40%	10%	40%
No/Little Change	5%	25%	10%	5%	5%	25%	5%	50%	15%
Worth Impacts	0%	10%	10%	0%	0%	0%	0%	20%	20%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	20%	25%
S.A. (total 20)	100%	100%	100%	100%	100%	100%	100%	100%	100%

#### 20% 40% 60% 80% 100% 0% Costs Earnings Cor reniences Transport Facilities Ac ty Emergency Land Prices For Land Value Environment 1.1.1.1 ..... Accidents : Much Better B its 🗖 B etter Be efits 🗆 No /Litt Worth Impacts Much Worth Im

#### $\langle\!\!\!\! \left< {\rm from \ Shops} \right>\!\!\!\!\! \right>$

Shop	For Bus	ssiness \	√alue	For Acc	cessibilit	y	For Lar	nd Value	
	Costs	Earnin	Conve	Transp	Faciliti	Emerg	Land	Enviro	Accide
		gs	nience	ort	es	ency	Prices	nment	nts
			s						
Much Better Benefits	62%	47%	69%	76%	53%	67%	51%	16%	4%
Better Benefits	33%	22%	18%	9%	40%	24%	38%	7%	20%
No/Little Change	4%	29%	11%	16%	2%	9%	11%	49%	44%
Worth Impacts	0%	2%	2%	0%	4%	0%	0%	13%	13%
Much Worth Impacts	0%	0%	0%	0%	0%	0%	0%	16%	18%
S.A. (total 45)	100%	100%	100%	100%	100%	100%	100%	100%	100%

# 7) 個別橋梁別の調査結果《各設問毎》

	0%	20%	40%	60%	80%	100
Rama	8					-
Memoria	a 🗖					1.1
New Phra Nangkla						
Phra Nangkla						1.1
Rama	3					
Taksi	n 🗖				1.1.1.1	111
Rama	5					1.1
New Bridg					1.1	· : · :
Krung The	p					1.1
Pinkla					1.1.1	· . · .
Krung Tho	n .					1.1
Phra Pokkla	。				ť	
Rama	7					- [ - ]
Rama	9				. * .	· . · .
Rama	4	_				1.1.
Much E	etter Ben	efits 🗖 Bet	ter Benefits	D No/	Little Chang	ge .
U Worth I	mpacts	🗖 Muc	h Worth Imp	acts		

#### $\langle\!\!\!\langle about \ Reduce \ Costs \ (fuel, time, etc) \rangle\!\!\!\rangle$

0	Much	Better	No/Little	Worth	Much Worth	Tabal
Costs	Better	Benefits	Change	Impacts	Impacts	Total
Rama 8	76%	24%	0%	0%	0%	100%
Memorial	75%	19%	6%	0%	0%	100%
New Phra Nangklao	75%	25%	0%	0%	0%	100%
Phra Nangklao	75%	17%	8%	0%	0%	100%
Rama 3	69%	31%	0%	0%	0%	100%
Taksin	63%	13%	25%	0%	0%	100%
Rama 5	58%	33%	8%	0%	0%	100%
New Bridge	57%	26%	17%	0%	0%	100%
Krung Thep	50%	44%	6%	0%	0%	100%
Pinklao	44%	33%	22%	0%	0%	100%
Krung Thon	44%	50%	6%	0%	0%	100%
Phra Pokklao	44%	44%	13%	0%	0%	100%
Rama 7	31%	56%	13%	0%	0%	100%
Rama 9	30%	50%	20%	0%	0%	100%
Rama 4	0%	50%	50%	0%	0%	100%

	0%	20%	40%	60%	80%	1005
Phra Nanekia		-				
Rama	3					
Rama	3				L	
Phra Pokkla						• . •
Pinkla						• • •
Krung The	P _					
Krung Tho	n _					· : ·
Memoria	al					
New Bridg	-					· .
Rama	5					· · ·
laksi	۱ -					
New Phra Nangkia	<u>}</u>	- 1				
Rama	; -	1				
Rama						
Much E	etter Be	nefits 🗖 Bet	ter Benefits	□ No/	Little Change	•
Worth I	mpacts	Muc	h Worth Imp	acts		

#### **«**about Increase Earnings, Sales and/or A Number of Customers**»**

E	Much	Better	No/Little	Worth	Much Worth	Tetel
Earnings	Better	Benefits	Change	Impacts	Impacts	Iotai
Phra Nangklao	58%	17%	25%	0%	0%	100%
Rama 3	56%	19%	25%	0%	0%	100%
Rama 8	52%	24%	24%	0%	0%	100%
Phra Pokklao	50%	19%	31%	0%	0%	100%
Pinklao	44%	22%	33%	0%	0%	100%
Krung Thep	44%	13%	44%	0%	0%	100%
Krung Thon	44%	13%	44%	0%	0%	100%
Memorial	44%	31%	25%	0%	0%	100%
New Bridge	40%	11%	45%	2%	2%	100%
Rama 5	17%	25%	58%	0%	0%	100%
Taksin	13%	13%	50%	13%	13%	100%
New Phra Nangklao	0%	50%	50%	0%	0%	100%
Rama 4	0%	50%	50%	0%	0%	100%
Rama 7	0%	75%	19%	6%	0%	100%
Rama 9	0%	60%	30%	10%	0%	100%

	0%	20%	40%	60%	80%	100%
Rama 8						
Memorial						• . •
Rama 3						E
Phra Pokklao						
Phra Nangklao						
Pinklao				· ·		· : ·
Krung Thep						1 ° 1
Krung Thon					_	۴.,
New Bridge						•
New Phra Nangklao					12223	111
Rama 5				-		
Rama 7						
Taksin			1			
Rama 9				_		
Rama 4						· . ·
Much B	atter Bene	fits 🗖 Bet	ter Benefits	O No/	l ittle Chane	'e
🛛 Worth In	npacts	Muc	h Worth Imp	acts		-

#### «about Improve Conveniences for Employees and/or Business Customers»

Comunication	Much	Better	No/Little	Worth	Much Worth	Tatal
Conveniences	Better	Benefits	Change	Impacts	Impacts	Totai
Rama 8	76%	20%	4%	0%	0%	100%
Memorial	75%	13%	13%	0%	0%	100%
Rama 3	75%	19%	6%	0%	0%	100%
Phra Pokklao	69%	19%	13%	0%	0%	100%
Phra Nangklao	67%	17%	17%	0%	0%	100%
Pinklao	67%	0%	33%	0%	0%	100%
Krung Thep	63%	31%	6%	0%	0%	100%
Krung Thon	63%	31%	6%	0%	0%	100%
New Bridge	53%	26%	15%	4%	2%	100%
New Phra Nangklao	50%	25%	25%	0%	0%	100%
Rama 5	33%	33%	25%	0%	8%	100%
Rama 7	25%	44%	25%	6%	0%	100%
Taksin	25%	13%	25%	13%	25%	100%
Rama 9	20%	50%	20%	10%	0%	100%
Rama 4	0%	50%	50%	0%	0%	100%

«about Reduce Times for Transport»

	0%	20%	40%	60%	80%	100%		
Taksin								
Rama 3					- P.1			
Rama 8	-				1 I.			
Memorial	_					· · ·		
New Phra Nangklao	-							
Phra Nangklao	-							
New Bridge	-				- I	• .		
Krung Thon	-				1.1.1	· .		
Krung Then	-							
Rama 5	-							
Phra Bakklas	-				• . • . • . •			
Pinklao	-							
Prinkao Dama 0	-					1		
Rama 9						-		
Rama /	-							
Rama 4		- 1						
Much Be	Much Better Benefits Better Benefits							
Uwerth Im	pacts	Much \	Vorth Impact	8	-			

Transport	Much	Better	No/Little	Worth	Much Worth	Total
Transport	Better	Benefits	Change	Impacts	Impacts	. o tui
Taksin	88%	13%	0%	0%	0%	100%
Rama 3	81%	6%	13%	0%	0%	100%
Rama 8	76%	12%	12%	0%	0%	100%
Memorial	75%	13%	13%	0%	0%	100%
New Phra Nangklao	75%	0%	25%	0%	0%	100%
Phra Nangklao	75%	17%	8%	0%	0%	100%
New Bridge	72%	19%	6%	2%	0%	100%
Krung Thon	69%	13%	19%	0%	0%	100%
Krung Thep	63%	13%	25%	0%	0%	100%
Rama 5	58%	33%	8%	0%	0%	100%
Phra Pokklao	56%	13%	31%	0%	0%	100%
Pinklao	44%	11%	44%	0%	0%	100%
Rama 9	40%	50%	10%	0%	0%	100%
Rama 7	38%	56%	6%	0%	0%	100%
Rama 4	0%	100%	0%	0%	0%	100%

	0%	20%	40%	60%	80%	100%
Rama 3						
New Phra Nangklao						
Memorial	-					1.1
Rama 8	-					-
New Bridge	-					1.1
Phra Nangklao	-				1.1	1.11
Krung Thon	_					_
Rama 7	_					
Krung Thep	-					
Rama 9	_					
Taksin	-					_
Pinklao	-					1.1.1
Phra Pokklao	-					
Rama 5	-					
Rama 4			_			
Much Bet	tter Ber	nefits 🗖 Beti	ter Benefits	No/	Little Chang	e
U Worth Imp	pacts	🗖 Muc	h Worth Imp	acts		

#### $\langle\!\!\!\!\langle about\ Improve\ Access\ to\ Useful\ Facilities \rangle\!\!\!\!\rangle$

	Much	Better	No/Little	Worth	Much Worth	-
Facilities	Better	Benefits	Change	Impacts	Impacts	l otal
Rama 3	81%	19%	0%	0%	0%	100%
New Phra Nangklao	75%	0%	25%	0%	0%	100%
Memorial	69%	25%	6%	0%	0%	100%
Rama 8	68%	32%	0%	0%	0%	100%
New Bridge	60%	28%	11%	2%	0%	100%
Phra Nangklao	58%	25%	17%	0%	0%	100%
Krung Thon	56%	44%	0%	0%	0%	100%
Rama 7	56%	44%	0%	0%	0%	100%
Krung Thep	50%	50%	0%	0%	0%	100%
Rama 9	50%	50%	0%	0%	0%	100%
Taksin	50%	25%	0%	25%	0%	100%
Pinklao	44%	44%	11%	0%	0%	100%
Phra Pokklao	44%	50%	6%	0%	0%	100%
Rama 5	42%	50%	0%	8%	0%	100%
Rama 4	0%	50%	50%	0%	0%	100%



#### $\langle\!\!\!\! ( about \ Improve \ Access \ in \ Emergency \ (hospital) \rangle\!\!\!\!\! \rangle$

Emorronov	Much	Better	No/Little	Worth	Much Worth	Total
Littergency	Better	Benefits	Change	Impacts	Impacts	TOLAI
Rama 3	88%	13%	0%	0%	0%	100%
Memorial	81%	6%	13%	0%	0%	100%
Rama 8	80%	12%	8%	0%	0%	100%
Krung Thon	75%	19%	6%	0%	0%	100%
New Phra Nangklao	75%	0%	25%	0%	0%	100%
Krung Thep	69%	25%	6%	0%	0%	100%
Phra Pokklao	63%	19%	19%	0%	0%	100%
Taksin	63%	38%	0%	0%	0%	100%
Phra Nangklao	58%	25%	17%	0%	0%	100%
Pinklao	56%	33%	11%	0%	0%	100%
New Bridge	55%	30%	15%	0%	0%	100%
Rama 5	50%	33%	17%	0%	0%	100%
Rama 7	25%	19%	56%	0%	0%	100%
Rama 9	20%	30%	50%	0%	0%	100%
Rama 4	0%	50%	50%	0%	0%	100%



#### «about Increase Land Prices»

Land Prices	Much	Better	No/Little	Worth	Much Worth	Total
Luna i noco	Better	Benefits	Change	Impacts	Impacts	Total
New Phra Nangklao	75%	25%	0%	0%	0%	100%
Rama 3	69%	31%	0%	0%	0%	100%
Taksin	63%	38%	0%	0%	0%	100%
Phra Nangklao	58%	17%	25%	0%	0%	100%
New Bridge	57%	23%	19%	0%	0%	100%
Krung Thon	56%	31%	13%	0%	0%	100%
Rama 8	56%	36%	8%	0%	0%	100%
Krung Thep	50%	38%	13%	0%	0%	100%
Memorial	50%	38%	13%	0%	0%	100%
Rama 5	50%	50%	0%	0%	0%	100%
Rama 9	40%	50%	10%	0%	0%	100%
Phra Pokklao	38%	44%	19%	0%	0%	100%
Rama 7	38%	56%	6%	0%	0%	100%
Pinklao	22%	56%	22%	0%	0%	100%
Rama 4	0%	100%	0%	0%	0%	100%



#### (about Improve Life Environment (Noise, Atmosphere, etc))

Environment	Much Better	Better Benefits	No/Little Change	Worth Impacts	Much Worth	Total
Memorial	25%	19%	38%	6%	13%	100%
Rama 3	25%	31%	25%	6%	13%	100%
Taksin	25%	13%	13%	25%	25%	100%
Rama 8	24%	20%	40%	4%	12%	100%
Rama 5	17%	17%	33%	17%	17%	100%
Krung Thon	13%	19%	50%	13%	6%	100%
Phra Pokklao	13%	6%	63%	6%	13%	100%
New Bridge	9%	15%	36%	23%	17%	100%
Phra Nangklao	8%	0%	50%	8%	33%	100%
Krung Thep	0%	19%	63%	6%	13%	100%
New Phra Nangklao	0%	50%	25%	25%	0%	100%
Pinklao	0%	0%	67%	0%	33%	100%
Rama 4	0%	50%	0%	50%	0%	100%
Rama 7	0%	6%	88%	6%	0%	100%
Rama 9	0%	10%	80%	10%	0%	100%



#### «about Reduce Traffic Accidents»

	Much	Better	No/Little	Worth	Much Worth	
Accidents	Better	Benefits	Change	Impacts	Impacts	l otal
Krung Thon	13%	31%	31%	6%	19%	100%
Taksin	13%	38%	0%	25%	25%	100%
Rama 9	10%	40%	50%	0%	0%	100%
Phra Nangklao	8%	33%	8%	25%	25%	100%
Rama 5	8%	25%	42%	8%	17%	100%
New Bridge	6%	19%	30%	23%	21%	100%
Krung Thep	6%	19%	44%	6%	25%	100%
Memorial	6%	25%	44%	13%	13%	100%
Phra Pokklao	6%	31%	38%	13%	13%	100%
Rama 3	6%	19%	50%	0%	25%	100%
Rama 7	6%	38%	56%	0%	0%	100%
Rama 8	4%	20%	52%	4%	20%	100%
New Phra Nangklao	0%	25%	75%	0%	0%	100%
Pinklao	0%	22%	44%	22%	11%	100%
Rama 4	0%	50%	50%	0%	0%	100%

# 8) 事業者の職種別の調査結果《各設問毎》



#### (about Reduce Costs (fuel, time, etc))

0	Much	Better	No/Little	Worth	Much Worth	Tatal
Costs	Better	Benefits	Change	Impacts	Impacts	Iotai
Apartment	75%	13%	13%	0%	0%	100%
Automobile	67%	25%	8%	0%	0%	100%
Shop	62%	33%	4%	0%	0%	100%
Factory	61%	33%	6%	0%	0%	100%
Gas Station	60%	24%	16%	0%	0%	100%
Restaurant	60%	35%	5%	0%	0%	100%
Condominium	59%	41%	0%	0%	0%	100%
Electric	50%	50%	0%	0%	0%	100%
Museum	50%	33%	17%	0%	0%	100%
Hotel	43%	29%	29%	0%	0%	100%
Company	34%	46%	20%	0%	0%	100%
Environment	0%	0%	100%	0%	0%	100%

C	% 20	0% 4	0% 60	0% 80	0% 100%			
Restaurant				• . • . • .	· . · .			
Shop				1.1.1.4	2 - 2 - 2 - 3			
Apartment								
Condominium								
Factory			E	• : • : • : • :				
Automobile					1.1.1.1.			
Museum			1.1.1		1 - 1 - 1 - 1 -			
Gas Station				1.1.1.1.1.1	-1-1-1			
Company			• :					
Hotel					1.1.1.1			
Electric			1.1.1		1			
Environment		*.*.*.*	*.*.*.*					
Much Better Benefits  Better Benefits No/Little Change Worth Impacts Much Worth Impacts								
	-puo co		n imposto					

#### $\langle\!\!\!\! ( about \ Increase \ Earnings, \ Sales \ and/or \ A \ Number \ of \ Customers \ \!\!\!\! \rangle$

E ann in an	Much	Better	No/Little	Worth	Much Worth	Tatal
Earnings	Better	Benefits	Change	Impacts	Impacts	Iotai
Restaurant	60%	5%	25%	10%	0%	100%
Shop	47%	22%	29%	2%	0%	100%
Apartment	44%	6%	44%	0%	6%	100%
Condominium	41%	24%	35%	0%	0%	100%
Factory	39%	17%	44%	0%	0%	100%
Automobile	33%	42%	21%	4%	0%	100%
Museum	33%	17%	50%	0%	0%	100%
Gas Station	32%	28%	36%	0%	4%	100%
Company	29%	26%	46%	0%	0%	100%
Hotel	29%	57%	14%	0%	0%	100%
Electric	0%	50%	50%	0%	0%	100%
Environment	0%	0%	100%	0%	0%	100%

# 0% 20% 40% 60% 80% 100% Automobile 500 100% 100% 100% Factory 100% 100% 100% 100% Restaurant 100% 100% 100% 100% Apartment 100% 100% 100% 100% Company 100% 100% 100% 100% Condenium 100% 100% 100% 100% Betrie 100% 100% 100% 100% 100% Work Brater Benefits 8 Bater Benefits INo/Little Change 100% 100% 100%

#### «about Improve Conveniences for Employees and/or Business Customers»

0	Much	Better	No/Little	Worth	Much Worth	Tatal
Conveniences	Better	Benefits	Change	Impacts	Impacts	Total
Automobile	71%	13%	13%	4%	0%	100%
Shop	69%	18%	11%	2%	0%	100%
Factory	67%	28%	6%	0%	0%	100%
Restaurant	65%	15%	10%	10%	0%	100%
Apartment	56%	19%	19%	0%	6%	100%
Museum	50%	17%	33%	0%	0%	100%
Company	49%	31%	20%	0%	0%	100%
Condominium	47%	35%	18%	0%	0%	100%
Gas Station	44%	32%	12%	0%	12%	100%
Hotel	43%	29%	14%	14%	0%	100%
Electric	30%	60%	10%	0%	0%	100%
Environment	0%	0%	100%	0%	0%	100%

	0%	20%	40%	60%	80%	100		
Apartment						l. • .		
Factory						-		
Shop	-				- 1. · ·			
Automobile	-					· .		
Restaurant	-					1.1		
Condominium	-							
Hatal	-							
0 01 1								
Gas Station	-							
Electric	-							
Museum	-							
Company	-				1	· · ·		
Environment		-						
Much F	letter Rene	fite 🗖 Retter	Renefite	D No/Little	Change	1		
Worth Impacts Much Worth Impacts								

#### $\langle\!\!\!\! \left\langle about \ Reduce \ Times \ for \ Transport \!\!\!\right\rangle$

Tuananaut	Much	Better	No/Little	Worth	Much Worth	Tatal
Transport	Better	Benefits	Change	Impacts	Impacts	Total
Apartment	88%	6%	6%	0%	0%	100%
Factory	83%	17%	0%	0%	0%	100%
Shop	76%	9%	16%	0%	0%	100%
Automobile	75%	21%	4%	0%	0%	100%
Restaurant	70%	25%	5%	0%	0%	100%
Condominium	65%	24%	12%	0%	0%	100%
Hotel	57%	14%	14%	14%	0%	100%
Gas Station	56%	16%	28%	0%	0%	100%
Electric	50%	40%	10%	0%	0%	100%
Museum	50%	33%	17%	0%	0%	100%
Company	46%	31%	23%	0%	0%	100%
Environment	0%	50%	50%	0%	0%	100%



#### $\langle\!\!\! ( about \ Improve \ Access to \ Useful \ Facilities \ \!\!\! \rangle$

F (194)	Much	Better	No/Little	Worth	Much Worth	Tetel
Facilities	Better	Benefits	Change	Impacts	Impacts	Iotai
Apartment	88%	13%	0%	0%	0%	100%
Gas Station	76%	20%	4%	0%	0%	100%
Museum	67%	17%	17%	0%	0%	100%
Restaurant	65%	30%	5%	0%	0%	100%
Factory	61%	33%	6%	0%	0%	100%
Condominium	59%	29%	6%	6%	0%	100%
Shop	53%	40%	2%	4%	0%	100%
Automobile	50%	46%	4%	0%	0%	100%
Electric	50%	40%	10%	0%	0%	100%
Company	46%	49%	3%	3%	0%	100%
Hotel	29%	57%	14%	0%	0%	100%
Emilianment	0%	0%	100%	0%	0%	100%

	0% 2	0%	40%	60%	80%	100%			
Apartment			1			• .			
Museum				1.1.1		1.1			
Shop						. 1			
Gas Station									
Automobile						• ;			
Company									
Condominium	-				10000	1.1			
Hotel									
Factory	-								
Flectric	-								
Destaurant	-					-			
Restaurant						÷.			
Environment			1			÷			
Much E	Much Better Benefits Better Benefits No/Little Change								
UWorth 1	Worth Impacts Much Worth Impacts								

#### $\langle\!\!\!\!\langle about\ Improve\ Access\ in\ Emergency\ (hospital)\rangle\!\!\!\!\rangle$

Emergency	Much Better	Better Benefits	No/Little Change	Worth Impacts	Much Worth Impacts	Total
Apartment	81%	13%	6%	0%	0%	100%
Museum	67%	0%	33%	0%	0%	100%
Shop	67%	24%	9%	0%	0%	100%
Gas Station	64%	16%	20%	0%	0%	100%
Automobile	63%	29%	8%	0%	0%	100%
Company	60%	20%	20%	0%	0%	100%
Condominium	59%	24%	18%	0%	0%	100%
Hotel	57%	29%	14%	0%	0%	100%
Factory	56%	22%	22%	0%	0%	100%
Electric	50%	40%	10%	0%	0%	100%
Restaurant	50%	25%	25%	0%	0%	100%
Environment	0%	0%	100%	0%	0%	100%

(	0%	20%	40%	60%	80%	100		
Apartment					1.1.1	۰.		
Condominium					- E	1		
Gas Station					1.1.1	. '		
Factory	-				1			
Restaurant	-					• ;		
Shop	_				1.1.1	۰.		
Electric	_			_				
Museum				1.11		. 1		
Hotel	-							
Automobile	_				_			
Company	-				1.1.1.1.1.1	1		
Environment	-							
	<u>ــــــــــــــــــــــــــــــــــــ</u>					_		
Much Better Benefits Better Benefits No/Little Change								
Worth I	mnacts	Much W	orth Impacts					

#### $\langle\!\!\!\! \left\langle about\ Increase\ Land\ Prices \right\rangle\!\!\!\!\right\rangle$

Loud Dates	Much	Better	No/Little	Worth	Much Worth	Tetel
Land Prices	Better	Benefits	Change	Impacts	Impacts	I otal
Apartment	81%	6%	13%	0%	0%	100%
Condominium	65%	29%	6%	0%	0%	100%
Gas Station	64%	20%	16%	0%	0%	100%
Factory	56%	28%	17%	0%	0%	100%
Restaurant	55%	40%	5%	0%	0%	100%
Shop	51%	38%	11%	0%	0%	100%
Electric	50%	50%	0%	0%	0%	100%
Museum	50%	17%	33%	0%	0%	100%
Hotel	43%	57%	0%	0%	0%	100%
Automobile	42%	58%	0%	0%	0%	100%
Company	31%	46%	23%	0%	0%	100%
Environment	0%	50%	50%	0%	0%	100%

	0% 2	0%	40%	60%	80%	100
Automobile		1		•••••••	·.·	
Company			10100	140-1414	1.1	
Shop		1				
Hotel				1		
Gas Station	-					
Factory	-	1.1.1.1			1.1	
Apartment		1.1.1.				
Condominium	· · ·			· 1		
Electric			1.1.1	-	_	
Environment		1	1.	• • • • • • • •	• . • . • . • .	۰.
Museum				: - : - : I		
Restaurant	· · · ·		******			
Much E	Better Benefit	s 🖬 Better 📕 Much V	Benefits Vorth Impacts	© No/Little	Change	

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Environment	Much	Better	No/Little	Worth	Much Worth	Total	
	Better	Benefits	Change	Impacts	Impacts		
Automobile	21%	13%	50%	8%	8%	100%	
Company	20%	14%	49%	9%	9%	100%	
Shop	16%	7%	49%	13%	16%	100%	
Hotel	14%	43%	29%	14%	0%	100%	
Gas Station	12%	28%	44%	4%	12%	100%	
Factory	11%	11%	61%	6%	11%	100%	
Apartment	6%	19%	44%	6%	25%	100%	
Condominium	6%	6%	47%	18%	24%	100%	
Electric	0%	40%	10%	50%	0%	100%	
Environment	0%	50%	50%	0%	0%	100%	
Museum	0%	17%	50%	0%	33%	100%	
Restaurant	0%	10%	50%	20%	20%	100%	

	0%	20%	40%	60%	80%	100
Museum				_		
Hotel			1.1		11111	
Gas Station		12.42				
Company			1.1.1		· : • : • : •	
Automobile			1		1.1.1.1.1	
Condominium		-	1.1.1		1.1	
Factory		1.1				
Shop		12.42				
Apartment		1.1.1		_		
Electric					1.1.1.1.1.1	
Environment	-					
Restaurant						
Much Better Benefits Better Benefits No/Little Change						
Worth Impacts Much Worth Impacts						

#### $\langle\!\!\! ( about \ Reduce \ Traffic \ Accidents \rangle\!\!\!\! \rangle$

Accidents	Much	Better	No/Little	Worth	Much Worth	Total
	Better	Benefits	Change	Impacts	Impacts	
Museum	17%	33%	0%	17%	33%	100%
Hotel	14%	29%	43%	0%	14%	100%
Gas Station	12%	12%	28%	24%	24%	100%
Company	11%	29%	46%	14%	0%	100%
Automobile	8%	29%	50%	4%	8%	100%
Condominium	6%	35%	35%	0%	24%	100%
Factory	6%	22%	50%	0%	22%	100%
Shop	4%	20%	44%	13%	18%	100%
Apartment	0%	25%	25%	13%	38%	100%
Electric	0%	20%	70%	10%	0%	100%
Environment	0%	50%	50%	0%	0%	100%
Restaurant	0%	40%	15%	20%	25%	100%

付録-7 橋梁補修·補強調查現地調查活動報告

Data-1: Bridge Preliminary Survey Activity Report

#### October 20 (Tue), 2009

At 10:00, visit DRR.

Person present: DRR Construction Dept. Dr. Kiti M.

Survey Team Magario, Chujo, Kudo, Poramin

Purpose: Request of cooperation for JICA survey on bridges over Chao Phraya River

Discussions:

- Survey Team requested cooperation for the JICA's bridge condition survey on the bridges constructed over the Chao Phraya River with the Japanese government finances in the past.
- The DRR personnel explained that only the Industrial Ring Road (IRR) Bridge was under control of the construction dept. but other bridges were under the maintenance dept. He said he could arrange for the team to visit the IRR Bridge maintenance office after approval of his director.

Afternoon, two department engineers guided the team to the Rama IV, Rama V and Rama VII bridge sites.

Rama IV Bridge:

- A PC box girder bridge built in 2006 with Japan government finance and currently maintained under DRR control.
- The bridge is new to find no noticeable damage.

Rama V Bridge:

- A PC box girder bridge built in 2002 with Japan government finance and currently maintained under DRR control.
- The bridge looks still clean to find no noticeable damage except theft loss of guardrails.

Rama VII Bridge:

- A PC box girder bridge built in 1992 with Japan government finance and currently maintained under DRR control.
- The bridge looks still clean to find no noticeable damage suggesting structural defect.
- A big water pipe about 100 cm in diameter installed inside the box girder was at maintenance work.

#### October 21 (Wed), 2009

At 10:00, visit DRR.

Person present: DRR Maintenance Dept. Chawalit T.

Survey Team Magario, Chujo, Kudo, Poramin

Purpose: Request of cooperation for JICA survey on bridges over Chao Phraya River

Discussions:

- Survey Team requested cooperation for the bridge condition survey on the bridges constructed across the Chao Phraya River with the Japanese government finance in the past.
- The DRR personnel said that he understood the aim of the team but needed a request letter from JICA to report to his director.

Afternoon, JICA team submitted a letter by the name of the team leader to the DRR construction and maintenance departments respectively.

#### October 22 (Thu), 2009

At 10:00, visit IRR Bridge Site Maintenance Office.

Person present: Site Maintenance Office Nawapon (Chief Inspector)

Survey Team

Chujo, Kudo, Poramin

Purpose: Bridge survey and hearing of maintenance on IRR Bridges.

Explanation by Chief Inspector:

- Two major cable-stayed bridges and PC box girder viaducts built in 2006 with Japanese government finance and having being maintained under DRR control.
- Under a main site office with 3 technical staff, two maintenance bases for the north and south bridges each with 3 technical staff and 10 workers for daily inspection, small repairs, cleaning and monitoring.
- Traffic watching on the bridge with CCTV.
- A staying cable tension monitoring system is equipped with but currently under repairing.
- Annual inspection of staying cables by the cable supplier.
- The expansion joint (steel finger type) of the south bridge has been repeatedly damaged so far four times replaced part by part since the traffic opening in 2006.
- Also, damage of electric wire branch boxes by rain water.

After explanation, a maintenance office staff guided the team to the traffic monitoring room and then onto the bridge deck. The team found the following evidences on the bridge deck:

- Cracks on the main tower concrete, a vertical crack on inner face and diagonal crack-like lines on outer face.
- Impact sound and movement from broken expansion joint when vehicle running on.
- Sags of the bridge surface profile at main span.
- A crack on the concrete deck initiated from a staying cable anchoring device and water collecting on the deck surface in contact with the anchoring device.

#### October 23 (Fri), 2009

All day, bridge survey by Survey Team alone: Magario, Chujo, Kudo, and Poramin.

Rama VIII Bridge:

- A cable-stay bridge built in 2002 by BMA. The team visited this bridge additionally for better understanding of the bridges over the Chao Phraya River although it was not scheduled for survey.

- The bridge looks maintained clean. The street planting under the approach viaduct was impressive. Phra Pinklao Bridge:

- A PC box girder bridge built in 1973 with Japanese government finance and currently maintained under DRR control.
- No significant problem was found. The bridge generally looks well maintained for its years.

Memorial Bridge:

- A steel truss bridge with a bascule girder span first built in 1932 and repaired in 1984 by Japanese government finance, currently maintained under DRR control.
- The bridge generally looks well maintained for its years after the 1984 repair. However, several evidences of concern were noted such as:
  - a. Underside of the bridge, many small vessel collision damages are seen and from where painting deterioration began.
  - b. Also, corroded reinforcement bars exposed underside of footpath concrete deck slab in several location.
  - c. Probably at repairing of 1984, the bascule span girders were connected each other by adding steel plates but deck slabs were not connected leaving a joint gap, which becomes a cause of traffic impact on the joint.

These evidences do not mean immediate danger of the bridge structure but will require a repair again in the not so long future. Concerning the problem b above, DRR explained later in meeting, the upstream side footpath was already replaced a few years back and the downstream side reported being damaged is scheduled for replacement in the near future.

Phra Pokklao Bridge:

- Three PC box girder bridges built on a common pier foundation in 1984 with Japanese government finance and currently maintained under DRR control. Out of three box girders, the center girder is left incomplete.
- No significant problem was found. The bridge generally looks well maintained for its years.
- Small damages by vessel collision are noted on the box girder at near the piers in water where clearance is low.

Krungthep Bridge:

- A steel truss bridge with a bascule girder span first built in 1959 by Japanese war reparation and a large repair carried out in 2002 by Japanese government finance, and currently maintained under DRR control.
- The bridge generally looks well maintained and sound after the 2002 repair. No significant damage to need immediate repair was found.
- The bascule girder is still movable according to hearing from DRR later. No wonder the traffic impact on the bascule span joint is significant.
- However, on the underside of the bridge, some steel corrosion is already seen on the lower flange at the bascule girder tip where steels are usually wet with leaking rain water.

Rama III Bridge:

- A PC box girder bridge built in 2000 with Japanese government finance to alleviate traffic congestion on the adjacent Krungthep Bridge, and currently maintained under DRR control.
- The bridge looks still new and no visible damage was found in appearance.

#### October 24 (Sat), 2009

All day, bridge survey by Survey Team alone: Chujo, Kudo, and Poramin.

Phra Nangklao Bridge:

- Twin PC box girder on a common pier foundation was built in 1985 with Japanese government finance and currently maintained under DOH control.
- The bridge generally looks still sound for its years except the following cantilever joint problem.
- That is, the cantilever girders were shaking independently on either side by vehicle running. It is suspected that hinge connection is not provided with or damaged if provided, although the problem does not directly affect the bridge loading capability.
- While a water main pipe is installed each inside of the box girder, water is continuously running from the bottom hole of the box girder. The water leakage of main pipe might be caused by this cantilever joint shaking.
- Besides, small vessel collision damages on the box girders and loss damage of a pile-cap fender are noted.

New Phra Nangklao Bridge:

- A PC box girder bridge was just built in 2008 to alleviate traffic congestion on the adjacent Phra Nangklao Bridge, and currently maintained under DOH control. This bridge is not scheduled for survey.
- The bridge slightly curves in the river to share the approach road space with the old Phra Nangklao Bridge by grade separation.

Krungthon Bridge:

- A six span steel truss bridge was first built in 1958 by Japanese war reparation and has been repeatedly repaired, and currently maintained under DRR control.
- The bridge generally looks well maintained and no significant damage was found to need immediate repair.
- Many evidences of past repairs and re-paintings on truss members are seen and pavement looks clean on the bridge surface.
- However, on underside of the bridge, many small vessel collision damages are seen on lower truss chords and lateral bracings without repairs. Besides, deterioration of slab concrete is widely seen with traces of free limes in particular on the underside of footpath.
- According to hearing from DRR later, DRR has finished an inspection of the bridge this year and will start the repair work next year.

October 25 (Sun), 2009 Off work.

October 26 (Mon), 2009

At 10:00, visit DOH Bridge Construction Bureau.

Person present: DOH Bridge Construction Bureau Survey Team Jitpong K. (Director), Thongchai W. Matsuzawa, Chujo, Kudo, Poramin Purpose: Request of cooperation for JICA survey on the bridges Chao Phraya River Discussions:

- Survey Team requested cooperation for the JICA's bridge condition survey on the bridges constructed across the Chao Phraya River with the Japanese government finances in the past.
- The DOH personnel responded they could cooperate with the JICA survey after approval of the Director General of DOH.

At 14:30, visit EXTA.

Person present: EXTA Maintenance Dept. Pittaya T. and other staff

Survey Team Matsuzawa, Chujo, Kudo, Poramin

Purpose: Request of cooperation for JICA bridge survey for Rama IX Bridge on Chao Phraya River Site Inspection:

- The EXTA staff immediately took the team to the Rama IX Bridge site. At the site, he and his site staff showed the team around the bridge deck and then inside of the steel girder to explain their maintenance activities.
- On the bridge, the team learned the following maintenance activities engaged by EXTA:
  - a. The bridge tower and staying cables had been just newly re-painted.
  - b. The expansion joint (rolling leaf type) will have been renewed this month for the first time in 20 years.
  - c. In two years after traffic opening, a vibration control technology (German technology) was introduced to install damping devices on underside of the steel deck both on in-bound and out-bound lanes with eight numbers along each lane to suppress traffic vibration.
  - d. Some of the steel rib plates on top and floor decks were being reinforced with CFRP (carbon fiber reinforced plastic) because where deformation was found allegedly due to buckling.

## Discussions:

Same day after the bridge inspection, the team had a discussion with EXTA.

- EXTA outlined the history of the maintenance of Rama IX Bridge. The maintenance program for the bridge actually started with a maintenance manual given in 1994 by JICA technical assistance. After that, the bridge was given the 10th year inspection in 2001. The bridge is currently under repair works based on the 20th year inspection entrusting to the Chulalongkorn University. Major repair works by this time inspection include replacement of pavement with an asphalt mix using slug aggregate, replacement of expansion joints (rolling leaf type), repainting of tower, cables and girders, and reinforcement of girder rib plates with CFRP (Carbon Fiber Reinforced Plastic).
- EXAT answered the team, saying EXAT is now in the midst of doing repair works following the 20th year inspection so that it is in no situation to request the bridge inspection to JICA. Instead, EXAT requested assistance for their staff training in Japan, not of lecture and study tour but of on-the-job training at actual bridge maintenance site in Japan.

#### October 27 (Tue), 2009

In the morning, arrangement of a motorboat for bridge inspection from water scheduled on Saturday.

Afternoon, bridge survey by Survey Team alone: Chujo, Kudo, and Poramin.

Taksin Bridge:

- Three PC box girder bridges lying close in parallel with individual foundations connected each other at their tops, was built in 1982 with Japanese government finance and currently maintained under DRR control. Out of three box girders, the center girder is used for LRT (Light Rail Transit).
- The bridge generally looks still durable for its years although there found some signs of aging such as deterioration of girder concrete with free lime visible at expansion and construction joints, a crack-like line on girder side face, and diminishing bearing width at the end support of box girder. On the bridge deck, the expansion joint (steel finger type) is maintained smooth but small damages on concrete barriers are noticeable.

#### October 28 (Wed), 2009

All day, bridge survey by Survey Team alone: Chujo, Kudo, and Poramin.

Pathum Thani Bridge:

- The bridge was first built in 1984 as a two lane PC box girder bridge with Japanese government finance and later widened to six lanes by constructing another four lane PC box girder bridge abutting on the existing, and currently maintained under DOH control.
- The bridge generally looks still sound for its years. There is a small level difference (max. 10 mm) along the longitudinal joint gap between the old and new bridge decks, that might be disturbing traveling performance but does not become a structural problem. In addition, some pre-cast concrete fenders are observed seriously damaged possibly by vessel collision but no significant damage on the foundation body.

Pathum Thani-2 Bridge

- The twin PC box girder bridge, having three lanes each direction, is brand new just constructed in 2009.

Nonthaburi Bridge:

- A four span steel truss bridge was first built in 1959 by Japanese war reparation and currently maintained under DOH control. The bridge was aged showing lots of corrosions and damages. The bridge seems to have been left not repaired for a long period.
- Many corrosions and deformations are found on truss members at eye level on the bridge deck. Regarding the vertical member, web plates are corroded severer than flanges reducing steel thickness enough to become thin down into a hole. Corrosion is also visible on the lower flanges and gusset plates at bearing shoes and on the cross beams below expansion joints.
- Furthermore, by inspection of the bridge underside from water conducted another day, corrosion was found also on lower flanges and gusset plates where dust and rainwater were easily collected. Some gusset plates were severely rusted with not a little deficiency of steel section.
- Also, on the bridge underside, many vessel collision scars were seen such as lower chords were slightly bended, edges of gusset plates turned, and a lateral brace was removed.
- Moreover, the underside of the reinforced concrete deck slab was seen tanned by aging, locally

delaminated and soiled with free lime leakage. In particular, the underside of the footpath was seen severely damaged; delamination of concrete occurred widely and rusted reinforcement bars were visible locally by spalling of cover concrete.

- One side of a pier foundation at water level was severely worn down to expose reinforcement bars. It is suspected abrasion was caused because of mooring boats over the years.

October 29 (Thu), 2009

#### At 09:00, visit DOH.

Person present: DOH Bridge Construction Bureau Thongchai W.

Survey Team Matsuzawa, Chujo, Kudo, Poramin

Purpose: Hearing of bridge maintenance activity for the bridges on Chao Phraya River. Discussions:

- The personnel of DOH Bridge Construction Bureau explained the measures currently taken by DOH for maintenance of the bridges over the Chao Phraya River as follows. DOH had once set up a bridge inspection team of the DOH technical staff when introducing BMMS (Bridge Maintenance Management System) with assistance of the Danish government nearly two decades ago. However, the bridge inspection team could not be well maintained through to the present and no activity today. Consequently, DOH now needs to contract out the bridge inspection jobs for large bridges like the bridges over the Chao Phraya River. However, DOH maintains four regional logistic bases across the country and there holds equipment and work forces to carry out small scale and emergency bridge repairs. In this way, DOH keeps bridge maintenance capabilities to a certain level.
- DOH also explained that DOH does not have any rehabilitation or reconstruction plan at present for the bridges over the Chao Phraya River. DOH wants to maintain these bridges as they stand now for as long as possible.
- The Survey Team reported the conditions of Patum Tani (PC box girder in 1984), Nonthaburi (steel truss in 1959) and Phra Nangklao (PC box girder in 1985) Bridges. Among the three bridges, the team informed DOH of the problems of Nonthaburi and Phra Nangklao Bridges. DOH had already recognized the damages of these two bridges but the department seemed to be considering they had not become serious yet.

Afternoon, gathering of survey data.

October 30 (Fri), 2009

At 10:00, visit DRR.

Person present: DRR Maintenance Dept. Chawalit T.

Survey Team

Magario, Chujo, Kudo, Poramin

Purpose: Hearing of bridge maintenance activity for the bridges over Chao Phraya River and reporting of bridge inspection results.

Discussions:

- The DRR personnel explained the current maintenance system for the bridges over the Chao Phraya River as follows. DRR Maintenance Department keeps site offices and staff exclusive for maintenance of the bridges over the Chao Phraya River at respective bridge site utilizing under-bridge spaces, for daily check, cleaning, small repair and event preparing and clearing.
- The department has been carrying out a decent inspection for the bridges over the Chao Phraya River periodically in two to five years interval on contract base. The latest example of the contract-base inspection was of the Krung Thon Bridge (steel truss bridge built in 1958). The bridge inspection has been completed this year in detail including concrete sample coring and vehicle loading test, and the department will carry out a full-scale repair work next year with a budget of 2.0 million bahts. The repair work will include pavement overlay, strengthening of steel truss members, repainting and stone placing on scoured riverbed.
- According to the department, for Phra Pinklao, Memorial, Phra Pokklao and Taksin Bridges, the department is recently monitoring the bridge behavior remotely from the head office by installing strain gages and accelerometers inside of box girders.
- Concerning the steel truss bridges, the team reported the corrosions observed at edges and corners of steel truss members and made advices for rain-proofing measures on the deck slab in contact with steel truss members. The team also reported the sign of deterioration seen on the underside of deck slab where concrete cover dropped off to expose rusted reinforcing bars in spots.
- Concerning the Taksin Bridge, the team called attention to de-centering of the bearing shoes on the end support of continuous PC box girders and advised to inspect it periodically.
- In answer to the team, the DRR staff indicated that the department would maintain the present maintenance system for the bridges over the Chao Phraya River for some time in the future and accordingly the department seemed have no intention at present to request JICA bridge inspection.

Afternoon, preparation for boat inspection next day.

Evening, attend meeting with JICA.

#### October 31 (Sat), 2009

All day, bridge inspection by boat by Survey Team alone: Chujo, Kudo, and Poramin.

- The bridge survey was conducted by boat to inspect all the bridges from upstream to downstream along the Chao Phraya River taking photos of bridge undersides. Major damages found from water include:
- Corrosions and vessel collision deformations of truss members as well as deterioration of concrete deck slabs on the old steel truss bridges. The underside of Nonthaburi Bridge was the most severely damaged.
- Lots of vessel collision scars on PC box girder bridges.
- Damages of the fenders attached to pier foundation top, caused by vessel collision.

November 01 (Sun), 2009 Off work. November 02 (Mon), 2009

All day, gathering of survey data and preparation for meeting with DOH next day.

#### November 03 (Tue), 2009

#### At 09:00, visit DOH.

Person present: DOH Bridge Construction Bureau Jitpong K., Thongchai W., Dr. Tanasap JICA Kawano Survey Team Matsuzawa, Magario, Chujo, Kudo, Poramin

Purpose: Reporting of bridge inspection results and hearing of BMMS for rural bridges.

Discussions:

- Appointment for the meeting next day for the Survey Team to report the bridge survey results especially of Nonthaburi Bridge.
- In reference to the Nonthaburi Bridge, Mr. Kawano JICA indicated that the technical assistance to the bridge would be less likely for the bridge was built by war reparation that was a grant while the scheme of this time bridge inspection by JICA is intended for the bridges built with Japanese government loan.
- Instead, Mr. Kawano expressed interest in the inventory survey and maintenance management for rural bridges.
- DOH personnel explained the current initiatives taken by DOH for the inventory and maintenance of rural bridges. Some 16,000 bridges nationwide are currently under DOH control. In 1985, DOH once developed a bridge inventory system called BMMS (Bridge Maintenance Management System) with assistance from the Danish government. Since then, the system had become obsolete through years, and two years before the Word Bank made a study for updating the system to estimate a cost of 16 million baths. However, the cost has not been approved yet by the government.

Afternoon, preparation for reporting to DOH next day.

#### November 04 (Wed), 2009

At 10:00, visit DRR.

Person present: DRR Construction Dept. Dr. Kiti M., IRR Bridge Project Officer

Survey Team Chujo, Kudo, Poramin

Purpose: Reporting of IRR Bridge inspection results.

Discussions:

- The Survey Team reported about the cracks of main tower and the damage of expansion joints which the team inspected on the IRR Bridge. The team suggested cracks occurred not only on the inner face but also on the outer face of main tower. Crack-like lines were observed diagonally at the corner of main tower and cross beam, but the team could not confirm whether they were real cracks or not for distant inspection.
- DRR explained such cracks had been known by DRR, saying that the bridge designer, before construction, had predicted such cracks had to occur within a year of traffic opening because of the dogleg shape of main tower. DRR suggested another cause that is the cracks might have occurred when pre-stressing the cross beam.
- The team advised DRR to keep watching the crack width to check it is progressing or dormant. Through discussions about the cracks, the department made an inquiry to the team about the possibility for DRR to request JICA a technical assistance for detailed inspection and analysis of such cracks.
- For the water ponding on the deck in contact with the staying cable anchoring device, the team advised to create a gap between the deck and the anchoring device as a corrosion prevention measure.
- The team also advised DRR to replace the damageable finger joints with another type suitable for long span bridges such as a modular joint (used in Rama VIII Bridge) or a rolling leaf joint (used in Rama IX Bridge).
- The team handed the survey data to DRR.

#### At 13:30, visit DOH.

Person present:	DOH Bridge Construction Bureau	Dr. Tanasap, Sunan
	DOH Design Bureau	Rajwanlop
	Survey Team	Chujo, Kudo, Poramin

Purpose: Final report of bridge inspection results and advice of rehabilitation.

Discussions:

- Following inspection of the bridge undersides by boat last Saturday, Survey Team reported about Nonthaburi (steel truss in 1959) and Phra Nangklao (PC box girder in 1985) Bridges in detail.
- Taking up the Nonthaburi Bridge, the team explained that the deterioration of the bridge, such as steel corrosion of truss members and deterioration of reinforced concrete deck slabs, has become in alarming stage showing the damage photos taken on the deck and on the underside of the bridge. The team warned the bridge might have entered a dangerous situation and become unusable possibly in five years if leaving it unrepaired. Considering the severity of deterioration of the bridge available in vicinity when the bridge becomes unusable, the team advised it was time for DOH to take action for planning the new Nonthaburi Bridge and for rehabilitation of the existing Nonthaburi Bridge.
- Answering the team, the DOH personnel stated his intension to request JICA a technical assistance for detailed inspection and rehabilitation design for the Nonthaburi Bridge after reporting the team's advice to the director general. Furthermore, concerning the problem of Phra Nangklao Bridge i.e. shaking of the cantilever girder and leakage of the water main pipe inside girder, the team suggested the water leakage might be caused by this cantilever shaking. The DOH personnel indicated a willingness to request a JICA technical assistance for detailed inspection of this bridge.
- The team handed the survey data to DOH.

November 05 (Thu), 2009 All day, gathering of survey data.

November 06 (Fri), 2009

Morning, preparation for reporting to DRR afternoon.

At 14:30, visit DRR.

Person present: DRR Maintenance Dept. Chawalit T.

Survey Team Magario, Chujo, Kudo, Poramin

Purpose: Final report of bridge inspection results.

Discussions:

- The Survey Team made the final report and handed the survey data to DRR. The team again called attention to corrosion of the steel truss members, deterioration on the underside of deck slab of truss bridges and de-centering of the bearing shoes of Taksin Bridge.

November 07 (Sat), 2009

All day, gathering of survey data.

# 付録-8 橋梁目視調査票

Bridge name	Opening	Authority	Туре	定期点検、日常的な補修の継続 で対応可能(損傷少ない)	定期点検、日常的な補修の継続 で対応可能(損傷有り)	定期点検までに落橋の危険性は ないが詳細な点検が望ましい	全面改修が必要	補修履歴	補修計画
01_Patum Tani	1984	DOH	PC-Box	概ね健全である					
02_Patom Tani2	2009	DOH	PC-Box	概ね健全である					
03_Nonthaburi	1959	DOH	Truss				全面的に腐食、ひび割れがある	高欄追加	なし
04_Rama 4	2006	DRR	PC-Box	概ね健全である					
05_New Phra Nangklao	2008	DOH	PC-Box	概ね健全である					
06_Phra Nangklao	1985	DOH	PC-Box		ヒンジの抜け、支承の移動、漏水				
07_Rama 5	2002	DRR	PC-Box	概ね健全である					
08_Rama 7	1992	DRR	PC-Box	概ね健全である					
10_Krung Thon	1958	DRR	Truss			断面減少、ひび割れが多い			来年度全 面補修
11_Rama 8	2002	BMA	Cable-stayed	概ね健全である					
12_Pinklao	1973	DRR	PC-Box		伸縮排水の劣化、取付橋ひび割れ				
13_Memorial	1932	DRR	Truss			歩道床版の橋軸ひび割れ、車両 衝突、船舶衝突による部材変形		大規模補修	歩道床版 打ち替え
14_Phra Pokklao	1984	DRR	PC-Box	概ね健全である					
15_Taksin	1982	DRR	PC-Box		斜めひびわれの可能性				
16_Rama 3	2000	DRR	PC-Box	概ね健全である					
17_Krung Thep	1959	DRR	Truss		中央支間の一部断面減少			塗装が新し	い
18_Rama 9	1987	EXAT	Cable-stayed	大規模点検が行われ補修中				20年点検済	
19_IRR North	2006	DRR	Cable-stayed			塔柱のひび割れの可能性			
20_IRR_South	2006	DRR	Cable-stayed			塔柱のひび割れの可能性			
21_Kanchanapisek	2007	DOH	Cable-stayed						

Bridge name	Completior	Authority	Туре	Superstru	cture			Slab		Pavement	Pier,pylon	Bearing	Expansion	joint	Drainage		Barrier	Handrail	Others
				Main girder, chord	Other member	Ship collision	Vehicle collision	Main road	Walkway			_	Spacing, Structure	Drain	Blocked	Others			
01_Patum Tani	1984	DOH	PC-Box	lime, crack under medium								set error of side block, rust		partly			chipped		difference of grade of longitudinal joint
02_Patom Tani2	2009	DOH	PC-Box	lime								, add				lack of catch basin			
03_Nonthaburi	1959	DOH	Truss	rust	reduce thickness			breaking exfoliation	breaking	breaking			fixed	leakage		rust			Lighting
04_Rama 4	2006	DRR	PC-Box	lime leakage of rust											partly				
05_New Phra Nangklao	2008	DOH	PC-Box												partly				
06_Phra Nangklao	1985	DOH	PC-Box	lime								rust, movement		leakage	partly		chipped		Hinge breaking, leakage of water supply
07_Rama 5	2002	DRR	PC-Box	lime		scratch							extension spacing		upstream	lack of catch basin		stolen	
08_Rama 7	1992	DRR	PC-Box	lime on approach										leakage	partly			lost bolt	leakage of water supply, lighting cover
10_Krung Thon	1958	DRR	Truss	rust	reduce thickness		surface, under girder		crack exfoliation			rust soil dump		leakage		pipe falling	chipped		
11_Rama 8	2002	BMA	Cable-stayed							pot-hole									leakage from cable
12_Pinklao	1973	DRR	PC-Box	lime									corrosion	leakage					leakage from manhole, crack of approach pier
13_Memorial	1932	DRR	Truss	rust remaining water	rust remaining water	1 member lost		lime, crack	lime, crack		crack under bearing	rust soil dump	rust						rivet lost
14_Phra Pokklao	1984	DRR	PC-Box	lime on center bridge		scratch											chipped		
15_Taksin	1982	DRR	PC-Box	linne, cold joint or crack∙				-		unevenness (small)		rust, movement		partly			cover disappear		
16_Rama 3	2000	DRR	PC-Box									-	-	-	-	-	-	-	
17_Krung Thep	1959	DRR	Truss	rust	reduced thickness at center span			lime, crack	crack exfoliation		crack under bearing (approach)	rust		partly		lack of catch basin			
18_Rama 9	1987	EXAT	Cable-stayed																
20_IRR North	2006	DRR	Cable-stayed	remaining water					crack		çrack		noise						unevenness of vertical alignment
21_IRR_South	2006	DRR	Cable-stayed	_					crack		crack								
22_Kanchanapisek	2007	DOH	Cable-stayed																

Difficult to approach and measure the defect. Possibility of remarkable defect

Slight defect Remarkable defect

Bridge	No.	
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1

Photo No. ( ~

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	sridge name		Pa	atum inani Bridg	ge			ŕ		Auth	ority			No.	-
	Place fr	romAmp	hue Lat Lun Ka	eo		Distar	from	km+	. 0					Survey date	2009/10/28
	t	to Amp	hoe Mueang Pat	hum Thani			to	km+	. 0			1	1	_	
	Bridge ty	ype(1)	main road	• side road •	ramp		Cambe	r deform	yes • no		ltem	Туре			State
ŝ	Bridge ty	ype (2)	bridge	• viaduct •	• plank pass		Differen	ce in glade	eyes ∙ no		Main girder	PC-Box	Leakage	from gap between	girder
tie	Bridge ty	ype (3)	4-s	pan continuous PC box	(girder	i d	ontinuou	s of barrie	eyes ∙ no		Cross beam	-	-		
oper	Total le	ength		47 70	240.00 (m)	(	Continuo	us of curve	eyes no		Stringer	-	-		
e pr	Spar	า		4/ + /3 +	+ /3 + 4/ (m)		N	oise	yes • no		Cross frame	-	-		
idge	Nos. of	span		01 () ( 10.0	4 span	-Ins	Spa	ce change	yes • no		Lateral brace	-	-		
B	Widt	h	32	.21 (m) / 10.6-	-original (m)	2		rence grade	eyes ∙ no	nage	Slab	Destauration	Tree lin	ne, leakage	
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l I	Nearby Cr Traff	ic	yes - nu	Madium - Littla	m)		ossibili	ty of scou			Pavement	asphalt, concrete	General	ly healthy	
load	Commercial	traffi	Much	Medium · Little		⊢	Walkway		1 963 - 110		Joint	drained undrained	leakage	at end	
1 *		cruiti	Maon			ŀ	Vehicle	ves • no	 7		Drainage		Blocked		
ш	1. Urban		2. Suburbs	3. Mountain	4. Seaside	ŀ		,00	4			300 110			
viro	5. Industr	ial	6. Harbor	7. Residential	8. Bussiness	way									
Ē	9.Salty		10.Cold and s	snow 11. Heavy snow	12.Others	ion					• Fractu	re of slab concrete	e is seen	under longitudi	nal joint by leakage
bric	1. Shinkan 5. River	ser	2.Railway 6 Lake	3.Highway 7 Bayine	4. Road 8. Valley	pect.					• Differ	ence of grade (less	s than 10	mm?) is appeared	
der	9. Waterwa	у	10. Parking	11.Bike parkin	12. Park	Ins				ons					
Unc	13. Vacant		14. Harbor	Name (Ch	ao Phraya )					ess					
0	Superstru	ucture	1. Inspection car 6.On boat 7.Spe	2.Falsework 3.On ground 4.1 ecial camera 8.Others(	Ladder 5.Lift car )	H	leight of §	girde	about 10m	lmpr					
metho	Substruc	cture	1. Inspection car6. On boat7. Spectrum	2.Falsework 3.On ground 4.1 ecial camera8.Others(	Ladder 5.Lift car )	s	Deteri deficien	oration of	bridge 🔶						
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			will be requ	lired		۵.	• Differ	ence of gra	ade of		Surve	eyor; Mr,Chujo,	Mr.Kudo		
							Longit	udinal joir	nt						

米 行資 本

Prese	nt state (1	/ 6 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Patum Tani bridg				

	Picture No.	1
	Span	1
	Member	Side view
The second s		
	Picture No.	2
	Span	2
	Member	View on road
and the second sec		
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	Picture No.	3
	Span	<u> </u>
	Member	View under bridge
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Prese	nt state (2	/ 6 )				
Authority	DOH	Address	Bangkok	Data	28-0ct-09	
Bridge Patum Tani bridge						

	Picture No.	4
	Span	1
	Member	Longitudinal joint
	Longitudina	al joint between girder
	Leakage fro	m joint
	Picture No.	5
	Span	1
1 - A - A - A - A - A - A - A - A - A -	Member	Longitudinal joint
and the second	member	Longi taainai joint
and the second the	Longitudina	l joint between girder
	Exfoliatior	n of concrete
and the second second		
AT THE REAL PROPERTY OF		
The second s		
	Picture No.	6
	Span	1
	Member	Approach bridge
	Limit of ve	hicle heignt, 3.5m
	1	

Authority DOH Address Bangkok Data 28-Oct-09	Prese	nt state (3	/ 6 )					
	Authority	DOH	Address	Bangkok	Data	28-0ct-09		
Bridge Patum Tani bridge	Bridge	Patum Tani bridge						

	Picture No.	7
	Span	1
	Member	Side barror
	コンクリー	トの剥離
	Picture No.	8
A PARTICIPAL AND A AND A PARTICIPAL AND	Span	1
	Member	Expansion joint
	Loakago	
ALL	Leakage	
AVALUES ON THE PROPERTY OF		
	Picture No.	9
	Span	1
	Member	Longitudinal joint
	Difference	of grade
and the second		

Prese	nt state (4	/ 6 )					
Authority	DOH	Address	Bangkok	Data	28-0ct-09		
Bridge	Bridge Patum Tani bridge						

	Picture No.	10
	Span	1
	Member	Bearing
	Deteriorati	on of corrosion proofi
and the second of the second s		
	Picture No.	11
Company of the company of	Span	1
	Member	bearing
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the section of the se	Spacing of	side block
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and the second sec		
and only of the state of the st		
	*Survey on	board, 31-oct
	Distuna Na	10
	Snan	12
	Member	Bearing
	Momber	Douring
and the second s	Additional	bridge, no movement
a second s		
The second second second second		

Prese	nt state (5	/ 6 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Patum Tani bridg	ge			

	Picture No.	7
	Span	1
	Member	manhole
	About 5m.	
The second se		
	Picture No.	8
	Span	1
	Member	Catch basin
	D1 1 . (	N . 1 1 ·
	Blocking of	catch basin
A RANGE		
The second secon		
and the second		
	Picture No.	9
	Span	1
	Member	Walkway
	Obstacle of	bicycle
and a second		

Prese	nt state (6	6 / 6 )						
Authority	DOH	Address	Bangkok	Data	28-0ct-09			
Bridge Patum Tani bridge								

	Picture No.	10
	Span	1
	Member	Barrier
The second se	Chipping of	barrier
And the second		
Pilli in a second		
	Picture No.	11
	Span	1
	Member	Footing
	Ship collis	ion to protection
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Martin deale as		
and a second sec		
		10
	Picture No.	12
	Span	1
	Member	
	1	

Bridge	No.	
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Photo No. ( ~

				Roi	ite name	345					DOH		Code of authority	_
	Br	idge name	Patom Ihani 2 Bridge	Not		040		Aut	thority		Don		No.	-
	Р	lace	mphue Lat Lun Kaeo	Dista	from	km+	- 0						Survey date	2009/10/28
	_	to	mphoe Mueang Pathum Thani		to	km+	- 0	_						
	F	Bridge type	1) main road side road ramp		Cambe	r detorm	yes • I	10	It	tem	lype	<b>-</b>		State
	<u>_</u>	Bridge type	2) bridge • viaduct • plank pass		Differen	ce in glade	e yes • r	10	Main	girder	PC-Box	Free lu	ne from construct	ion hole
	- Le	Bridge type	3) 3-span continuous PC box girder		ontinuou	s of barri	eyes • r	10	Cross	s beam	-	-		
	ado	lotal leng	h //8.10 (m)		Continuo	us of curve	eyes • r	10	Stri	inger	_	-		
	d P	Span	(180) + 129.05 + 160 + 129.05 + (180) (m)	ц.	N		yes • r	10	Cross	s frame	_	-		
-	an -	NOS. OI SPA	n 3 span	Inse		ce change	yes • I	10	Latera	al brace	_	- 		ion holo
ć		Completie	27.90 (m) / (m)	y re		ing domogo					Pootongular	Free III	ne from construct	Ion note
	┢	Compretion	2009	urve	Blockod		yes • r			lior	-	- Girder	directry connect :	to footing
派 一	+	Horizonta	$(\mathbf{P}_{\mathbf{r}}) = (\mathbf{P}_{\mathbf{r}})$	S	Crack of	f navomont	yes • r	10 0	Bea	aring	Slide bearing	Gonoral		
-85	₌┝	Gradient				f lighting			Bar	rrier	Tranezoidal	General	ly healthy	
	÷	Nearby tunn				ofsign	yes - 1	ē	B Rai	iling	Steel	General	ly healthy	
	Ē	Nearby cross	$r_{\rm res}$ $r_{\rm r}$ $r_{\rm r$		Damage o	f handrail	ves • I	10	CL	urb	_	-		
-	ĒĤ	Traffic	Nuch · Medium · ittle		Possibili	ty of scou	rves • r	10	Pave	ement	asphalt.concrete	General	lv healthv	
		Commercial tra	ffi Much Medium · Little		Walkway	ves • no			Jo	oint	drained undrained	General	ly healthy	
	F				Vehicle	yes • no	1		Drai	inage	yes • no	Without	catch basin	
	LO .	1. Urban	2. Suburbs 3. Mountain 4. Seaside	٨										
		5. Industrial	6. Harbor 7. Residential 8. Bussiness	i waj					Na		due and menerally	h a a l thau		
-	ц : 57 -	9. Jaily	2 Railway 2 Highway 4 Road	tior					• Ne		uge and generally	neartny		
		5. River	6. Lake 7. Ravine 8. Valley	spec				 	,					
	Jan	9. Waterway	10. Parking 11. Bike parkin 12. Park	<u>n</u>				, or	5					
-	5	13. Vacant	14. narbor Name (Chao Phraya)					Les:	<u>.</u>					
	_	Superstruct	re 6. On boat 7. Special camera 8. Others ( )		Height of g	irde	about7.	8m -	2					
4	eruo	Substructu	e 1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car		◆ Deteri	oration of	bridge •	•						
	≓⊢		• All bridge section is on the water	sis	deficient	eable noint	good		-					
	ano	Reason	• If inspection car is not available, false work	agnc				· · ·	listo	ory of	repair;			Repaint; <u>    yy</u> — mm
	ĭ		will be required	Di					Ś	Survey	yor; Mr,Chujo,	Mr.Kudo		

米 行資 本

Prese	nt state (1	/ 2 )							
Authority	DOH	Address	Bangkok	Data	28-0ct-09				
Bridge Patum Tani 2 bridge									



Prese	nt state (2	/2)						
Authority	DOH	Address	Bangkok	Data	28-0ct-09			
Bridge Patum Tani 2 bridge								

	Picture No.	4
and the second se	Span	1
A CONTRACTOR OF	Member	Bearing
A REAL PROPERTY AND A REAL		
and an and the second s		
and all the second s		
A CONTRACTOR OF A CONTRACTOR OFTA CONTRACTOR O		
and the second s		
the second s		
a second state of the seco		
	Picture No.	5
	Span	1
	Member	Iongitudinal joint
	Member	Longituarnai joint
	Lime from c	construction hole
and the second second		
	Picture No.	6
The second s	Span	l De la
	Member	Drainage
	Without oot	ah hagin
	without cat	
the second s		
et allers and an and an and an an		
at the second		
and the second sec		

Br	Inspection sheet of visual survey Aridge No. 3 Photo No. ( ~ )												
	Bridge name	Nonthaburi Bridge	Ro	ute name	307		Auth	ority	DOH		Code of authorit No.	2	-
	Place from to	Phathum Thani Nonthaburi	Dist	ance from to	km+ km+	0					Survey date		2009/10/28
Bridøe nronerties	Bridge type Bridge type Bridge type Total leng Span Nos. of sp Width	(1) main road • side road • ramp   (2) bridge • viaduct • plank pass   (3) 4-span steel truss   (4) 260.00 (m)   (5) 65+65+65 (m)   (a) 4 span   (about 13 (m) / (m) (m)	/ result	Cambe Differen Continuou Continuo N Spa diffe	r deform ce in glade s of barrie us of curve oise ce change rence grade	yes   no	lage	Item Main girder Cross beam Stringer Cross frame Lateral brace Slab	Type Truss   section stee    section stee  T section stee  	Corrosic leakage leakage - - breaking	n, Deterioration	State n of proofin akage	g, deformation
ad information	Completio Horizonta Gradient Nearby tun Nearby cros Traffic	n 1959 Il Straight · incli( $\theta$ = °) · Curve (R m) Cone way ( ↗ · ↘) parabol ( ⊡ · ⊡ ) nel yes · no ( m) sing yes · no ( m) Much · Wedium · Little	Survey	drain Blocked Crack o Damage o Damage Damage o Possibili	ning damage d drainage f pavement of lighting e of sign of handrail	yes   •   no     yes   •   no	Outline of dam	Abutment Pier Bearing Barrier Railing Curb Pavement	Oval Oval Pin bearing Trapezoidal Steel - asphalt•concrete	- Generall Generall Generall - Breaking	y healthy <b>y healthy</b> y healthy g on cross beam		
nder hrid Environn Ro	Commercial tr 1. Urban 5. Industria 9. Salty 1. Shinkanse 5. River 9. Waterway 13. Vacant	affi Much Medium Little   2. Suburbs 3. Mountain 4. Seaside   6. Harbor 7. Residential 8. Bussiness   10. Cold and snow 11. Heavy snow 12. Others   2. Railway 3. Highway 4. Road   6. Lake 7. Ravine 8. Valley   10. Parking 11. Bike parkin 12. Park   14. Harbor Name (Chao Phrava )	Inspection way	Walkway Vehicle	yes • no yes • no		sions	Joint Drainage • Sever • Remarka • Vertica	drained undrained yes no leakage was found d able reduction of al and inclined me	Joint wa Under ba on cross steel thi mber was	s filled by asph rrrier. Deteriora beam from broken ckness and openi deformed by coll	nalt, leakag ation of dra n slab ng of vertio ision	e in function. sal member
Access method	Superstruct Substructu Reason	Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car   6. On boat 7. Special camera 8. Others()   Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car   6. On boat 7. Special camera 8. Others()   Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car   6. On boat 7. Special camera 8. Others()   Image: the section of the sec	Diagnosis	Height of g Deteri deficien Noticu · Corros · Breaki	girde oration of b l fair eable point ion of vert ng of slab	about 7m ridge good ical membe	lmpres	listory o Surve	f repair <mark>: • Setting</mark> eyor ; Mr.Chujo,	of barri Mr.Kudo	er to protect v	ehicle colli Repai	sion to vertical member nt;yy mm

Prese	nt state (1	/ 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg				

	Picture No.	1
	Span	1
	Member	Side view
the second se		
	*Survey on	board, 31-oct
	Picture No.	9
	Snan	2
	Member	View on road
THE AN		
1/		
	Picture No.	3
	Span	1
	Member	View under bridge
	1	

Prese	nt state (2	2 / 19)			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi brid	ge			

	Picture No.	4
	Span	1
	Member	Side view of a span
		1 1 01
	*Survey on	board, 31-oct
	Picture No.	5
	Span	1
	Member	Walkway
	Picture No.	6
	Span	1
	Member	Expansion joint
	_	
	Expansion j	joint was filled by
	asphalt	
1 minutes for the second	D = 4 = 1 = 1	1_
	bangkok sid	16
Will make the first of the		

Prese	nt state (3	/ 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	7
	Span	1
	Member	Expansion joint
	Leakage fro	om expansion joint
	Picture No.	8
	Span	1
	Member	Expansion joint
	Thon Buri s	side
	Picture No.	9
	Span	1
	Member	
	Lack of rub	ber at end
	Thop Durai	i do
and the second	THON DULL S	side

Prese	nt state (4	/ 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	10
	Span	1
	Member	Water supply
A State	Water suppl	y was removed
M X LEED A	Limit of us	biolo boight 2 Am
	LIMIL OI VE	enicie neight, 3.0m
A SPACE A		
	Picture No.	11
	Span	l I
	Member	Newel
See See 18 1		
and the second se		
	Picture No.	12
	Span	1
	Member	Newel
	Opening of	door
	Erosion of	abutment
and the second		
stor alle		

Prese	nt state (5	/ 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	7
	Span	1
1	Member	Approach road
	Approach ro Main bridge Approach ro under wider	pad is 4 lane e is 2 lane pad of Thon Buri side i ning.
	Picture No.	8
	Span	1
	Member	Bearing
	Structure a	around bearing
	Picture No.	9
	Span	1
	Member	Approach bridge
	Corrosion o	on bearing
	Deteriorati	on of corrosion proofi

Prese	nt state (6	/ 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	10
	Span	1
	Member	Bearing
	Expansion o	of steel by corrosion
	Deteriorati	on of corrosion proofi
1 y		
R AS		
	Picture No.	11
Share and the state of the state of the	Span	1
and the second s	Member	Bearing
	Inclination	n of locker bearing
	of Approach	n bridge
A DESCRIPTION OF THE REAL PROPERTY OF		
- THE STATE AND A MARKA		
	Picture No.	12
	Span	1
	Member	Vertical member
	Gap betweer	n steel and slab
Maria Part 1	Mount up an	round steel member
	It's good o	countermeasure for
	corrosion p	proofing by water

Prese	nt state (7	/ 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	13
The second se	Span	1
	Member	Vertical member
	Remarkable	reducing of thickness
The second se	of plate	
	Opening at	bottom end
Contraction of the second seco		
	Picture No.	14
	Span	1
0	Member	Vertical member
	Enlarged ph	noto
a la	0	1
4	Opening at	bottom end
the second second second		
A THE PARTY		
		15
	Picture No.	15
	Span	I Vontical members
	Member	vertical member
The Property of the Property o	Romarkahlo	reducing of thickness
	of plate	reducing of thickness
	or prace	
	Hole positi	on is higher than
	contact sec	tion with concrete
11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		

Prese	nt state (8	/ 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	16
	Span	1
	Member	Bearing
	Remarkable	reducing of thickness
	of plate	
		17
	Picture No.	17
	Span	l Vortical mombar
	Member	vertical member
	Proceeding	of corrosion is differ
	between eac	ch member
the state of the state of the state		
	Picture No.	18
	Span	1
	Member	Vertical member
		1 1:1 11::.
	Deformation	i by venicle collision

Prese	nt state (9	/ 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	13
	Span	1
	Member	Vertical member
	Deformation	n by vehicle collision
- HATA MAN		
	Picture No.	14
	Span	1
	Member	Vertical member
	Deformation	n by vehicle collision
Not In		
D YA KERAZ	D: t N	15
	Span	10
	Member	Vertical member
	Momo or	, or or or one moment
	Deformation	n by vehicle collision

Preser	nt state (10	)/19)			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	16
	Span	1
	Member	Vertical member
	Deformatior	by vehicle collision
	Mark of rei	nforcement
	Picture No.	17
	Span	1
	Member	Chord member
	Deformation	by vehicle collision
and a second		
A CARACTER STATE		
	Picture No.	18
	Span	1
	Member	Vertical member
	Deformation	by vehicle collision

Prese	nt state (1 <sup>-</sup>	1 / 19)				
Authority	DOH	Address	Bangkok	Data	28-0ct-09	
Bridge	ge Nonthaburi bridge					

	Picture No.	19
	Span	1
	Member	Vertical member
	Deformation	n by vehicle collision
	Picturo No	20
	Span	1
	Member	Bracket
	Deformatior	n by vehicle collision
the second secon		
	Picture No.	21
	Span	1
	Member	Pavement
	Breaking of	f pavement on cross bea

nt state (12	2/19)			
DOH	Address	Bangkok	Data	28-0ct-09
Nonthaburi bridg	e			
	<b>t state (12</b> DOH Nonthaburi bridg	t state(12/19)DOHAddressNonthaburi bridge	t state (12/19)DOHAddressBangkokNonthaburi bridge	t state (12/19)DOHAddressBangkokDataNonthaburi bridge

	Picture No.	22	
	Span	1	
	Member	Pavement	
and the second			
and the second of the second o	Breaking of pavement on cross bea		
and the second second	Severe leak	age is found on	
South Carpet	bottom slab	).	
The west of the second se	It is estim	nated that this breaking	
	go through	slab.	
	Picture No.	23	
	Span	1	
	Member	Pavement	
	Breaking of	f pavement on cross bea	
the second s			
and the states			
the set of the fits			
and the second			
	Picture No.	24	
	Span	1	
	Member	Drainage	
	Catch basir	n may exist under barri	
	Deteriorati	on of drain function	
A MARKEN AND A SAME AND A SA			
2 Walter and a second sec			

Prese	nt state (1	5 / 19)			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	25
	Span	1
	Member	Drainage
	Drainage un	der barrier
	Picture No.	26
	Span	1
	Member	slab
	Crack	
	Free lime	
	Picture No.	27
	Span	1
	Member	Slab
	Deteriorati	on of corrosion proofi
	Fracture of	concrete surface
	D 1.	
Contraction and a second second second second second	Free lime	

Prese	nt state (10	6 / 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	28
	Span	1
A CONTRACT OF A	Member	Slab
	Leakage fro	om slab on cross beam
	Picture No.	29
	Span	1
	Member	Slab
	Leakage fro	om slab on cross beam
A A A A A A A A A A A A A A A A A A A		
and the second se		
No. of the Contract of the Con		
	Picture No.	30
	Span	1
	Member	slab
and the second	Crack	
	D 1.	
	Free lime	

Prese	nt state (1	7 / 19)			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	31
	Span	1
	Member	Slab
	Leakage fro	om slab on cross beam
	Crack, free	e lime
	Concrete sl	ab was changed to dirt
	*Survey on	board, 31-oct
	Picture No	32
the second secon	Span	1
and a state of the	Member	slab
	51	
AND	Plant	
	Possibility	of soil dump
	Picture No.	33
	Span Mamh an	l
	Member	5180
	Reduce of t	hickness by corrosion
	*Survey er	hoard 21-act
	<i>™Suivey ON</i>	DUALU, JI UCL

Data	28-0ct-09
_	Data

	Picture No.	34
	Span	1
	Member	Approach bridge
	コンクリー	トの剥離と補修
and the second s		
DV KIT -		
17)		
line in the second s		
	Picture No.	35
	Span	1
	Member	Chord member
	防蝕性能の多	劣化
	Picture No.	36
	Span	1
	Member	Lighting pole
	破損	
Arres 10 The		

Prese	nt state (1	7 / 19)			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi brid	ge			

	Picture No.	37
	Span	1
	Member	Substructure
Contraction of the second seco		
······································		
	*Survey on	hoard 31-oct
		<i>board, of oet</i>
	Picture No.	38
	Span	1
An and the second	Member	Transverse bean
and an international statements of the second statements		
	Corrosion a	nd fall of rivet
In the second		
	*Survey on	hoard 31-oct
0.50		<i>board, br bet</i>
	Picture No.	39
	Span	1
	Member	Cross frame
	Deformation	by ship collision
	2nd span fr	om Bangkok side
	*Survev on	board, 31-oct
Contraction of the local division of the loc		,

Prese	nt state (18	8 / 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	40
	Span	1
	Member	Bottom chord
No	<b>D</b> 0	
	Deformation	n by ship collision
The		
	*Survey on	board, 31-oct
	Dicture N	<i>A</i> 1
	Span	41
	Member	Bottom chord
	Moniber	Bottom energ
	Deformatior	by ship collision
	*Survey on	board, 31-oct
	Picture No.	42
	Span	Pottom shoud
	Member	Bottom chord
	Deformation	hy ship collision
	Derormation	by ship corrision
	*Survey or	hoard 21-act
	wourvey OII	DUALU, JI UCL

Prese	nt state (19	9 / 19 )			
Authority	DOH	Address	Bangkok	Data	28-0ct-09
Bridge	Nonthaburi bridg	ge			

	Picture No.	43
A CONTRACTOR OF THE OWNER OWNER OF THE OWNER	Span	1
	Member	Slab
		•
	Fracture of	f concrete surface
	Rock pocket	;
	Crack	
and the second se		
	*Survey on	board, 31-oct
		A A
	Picture No.	44
	Span M 1	
	memper	
	*Survey on	board, 31-oct
		1
	Picture No.	45
	Span	1
	Member	

Bridge No.

4

Photo No. ( ~

			RAMA IV Bridge	Pol	uto nomo	-					ססט	DRR		Code of authority	-
	Br	idge name		Rou	ute name			Au	itho	ority	DKK			No.	-
	P	from/	nphoe Bang Bua Thong	Dista	from	km+	C	)						Survey date	2009/10/20
	1	to #	nphoe Pak Kret	DIOCO	to	km+	C	)						Survey date	2009/10/20
		Bridge type(	1) <u>main road</u> · side road · ramp		Camber	deform	yes •	no		ltem	Туре				State
		Bridge type(	2) bridge · viaduct · plank pass	D	Differend	e in glade	yes •	no	) )	Main girder	PC-Box	F	ree lim	e and rust from	web
	tie	Bridge type(	3) 3-span continuous PC box girder		iont i nuous	s of barrie	yes •	no		Cross beam	_		-		
	oper	Total lengt	n 278.00 (m)	sult bt 10	Cont i nuou	is of curve	yes •	no	ŀ	Stringer	-	-	-		
	e pr	Span	/2 + 134 + /2 (m)		No	lse	yes •	no	ŀ	Cross frame	-	-	-		
	) ago	Nos. of spa	1 3 span			e change	yes •	no		Lateral brace	_		-		
	2	Completion	13. 03 X Z (m) / (m)	y re		ing domogo	yes •	no	mage	Abutmont					
	┢	Golipterton	2000	ur ve	Blocked	drainage	yes ·	no -	f da	Pier	Rectangul	ar G	Generall	v healthv	
		Horizontal	Straight $\cdot$ incli $(\theta = \circ) \cdot Curve(\mathbf{R} - \mathbf{m})$	S	Crack of	a avement	ves ·	no	o e	Bearing	Slide bear	ing –	-	y nour city	
	₅⊢	Gradient	One way (オ・、) parabol (円・円)		Damage o	flighting	ves •	no	i i i	Barrier	Trapezoid	al G	enerall	v healthv	
	lat i	Nearby tunn	l ves · no ( m)	ĺŀ	Damage	ofsign			3	Railing	Steel	G	Generall	y healthy	
	5	Nearby cross	ng yes · no ( m)		Damage o	f handrail	yes •	no		Curb	_	_	-		
	╘┝	Traffic	Much · Medium · Little	P,	Possibili	ty of scour	yes •	no		Pavement	asphalt•con	icrete G	Generall	y healthy	
	<b>2</b> 2007 0	Commercial tra	fi Much • Medium • Little		Walkway	yes • no	(water sup	ply		Joint	drained und	rainedG	Generall	y healthy	
					Vehicle	yes • no	]			Drainage	yes • no	) P	Partly b	locked	
	ron	1. Urban	2. Suburbs 3. Mountain 4. Seaside	~											
	Envi	9. Salty 10. Cold and snow 11. Heavy snow 12. Others	n wa												
	ő.	1. Shinkanser	2. Railway 3. Highway 4. Road	ctio					ł						
		5.River	6. Lake 7. Ravine 8. Valley	uspe					SU						
-	Jnde	9. Waterway 13. Vacant	10. Parking II. Bike parkin I2. Park 14. Harbor Name (Chao Phraya)						SSI 0						
		Cum ou ot used to	1. Inspection car2. Falsework 3. On ground 4. Ladder 5. Lift car	<b>1</b>  ··					1pr e						
	p	Superstructu	6. On boat 7. Special camera 8. Others ( )		Height of g	irde ;	about 5.	6m <sup>-</sup>	=						
	ethc	Substructur	1. Inspection car 6. On boat 17. Special camera 8. Others (		Deteri	pration of b	ridge	•							
	ss m		• All bridge section is on the water	osis	♦ Notice	able point	good	•							
	Acce	Reason	• If inspection car is not available, false work	agni	Generaly	healthy				listory of	repair ;				Repaint; — yy — mm
	<u></u>		will be required	Di						Surve	yor; Mr,C	Chujo, N	Nr. Kudo		
Prese	nt state	(1/5)													
--------	----------	---------	---------	------	-----------										
Road		Address	Bangkok	Data	20-0ct-09										
Bridge	RAMA IV														

	Picture No.	1
	Span	1
	Member	View under girder
	<i>*Survey on</i>	board, 31-oct
	Picture No.	2
Ţ	Span	1
I THE I	Member	View on ground
		¥
÷ • •		
he is the second s		
	Picture No.	3
	Span	1
	Member	Side view
and the second		
W I B Back- I I I I I I		
A DE TO		
the second second second		
		1 1 01
	*Survey on	board, 31-oct
the second of th		

Prese	nt state	(2/5)			
Road		Address	Bangkok	Data	20-0ct-09
Bridge	RAMA IV				

	Picture No.	4
	Span	1
A CONTRACTOR OF A CONTRACTOR O	Member	Name plate
	Picture No.	5
and the second state of the second state of the	Span	1
	Member	Box-girder
The Date of the Date	Insufficien	cy of cover concrete
	Renairing w	ork was finished
	Kepalling w	ork was rinnsneu
A LAND THE REAL PROPERTY AND A REAL PROPERTY A		
	Picture No.	6
	Span	1
	Member	Expansion joint
The MANAGE		
NA.		

Prese	nt state	(3/5)			
Road		Address	Bangkok	Data	20-0ct-09
Bridge	RAMA IV				

A REAL AND A	Picture No.	7
	Span	1
	Member	桁下全景
	water supp]	y y
	No expanded	l metal plate.
	lt´s not su	iitable for inspection.
and the second second		
	Picture No.	8
The standard and the standard and the	Span	1
The second s	Member	slab (walkway, roadway)
	Ooze out of	rust
and the second s		
	*Survey on	board, 31-oct
	Picture No.	9
	Span	1
	Member	Bearing
The second se	D	
	Drainage fu	Inction of joint is
and the second se	good.	

Prese	nt state	(4/5)			
Road		Address	Bangkok	Data	20-0ct-09
Bridge	RAMA IV				



Presen	t state	(5/5)			
Road		Address	Bangkok	Data	20-0ct-09
Bridge	Rama IV				
and a start of the	William I The	Te I	Pi	cture No.	13
	1	All and a set of the set of the	1 1 1 1 1 1	Span	1
	- it with the		- 59 C.M.	Member	Barrior
Bene Day and	and and and and and	and the second second	Cı	cack.	
ITTURE MAN	afress a	Continues a second	Re	epariring mate	erial with
IIIIAAAA	· Kara		pe	ermeability?	
No. Se	· · · · · · · · · · · · · · · · · · ·		Pi	cture No.	14
and -	1		P	Span	1
				Survey on boa.	rd, 31-oct
Entry Men	- 1-	and the second second	Pi	cture No.	15
				Span	1
			E BOTO	Member	Substructure
			***	Survey on boa	rd, 31-oct
	3	-			

Bridge No. 5

Photo No. ( ~

				Poi	ita nama	_						DOH		Code of authority	-
	Br	idge name	New Phra Nangklao Bridge	Not					uth	ority		DOIT		No.	-
	Р	from	Anphoe Bang Bua Thong	Dista	from	k	m+	0						Survev date	2009/10/24
	_	to	Anphoe mueang Nonthaburi		to	k	m+	0			1			-	
		Bridge type	(1)     main road     • side road     • ramp		Cambe	r deform	yes •	no		ltem	Ту	pe			State
	s	Bridge type	2) bridge · viaduct · plank pass		Differen	ce in gla	de yes	no		Main girder	PC-	Вох	Generall	y healthy	
	tie.	Bridge type	3) 5-span continuous PC box girder		ontinuou	s of barn	ie yes •	no		Cross beam	-	-	-		
	oper	lotal leng	th 329.10 (m)		Continuo	us ot cur	ve yes •	no		Stringer	-	_	-		
	e pr	Span	50.55 + 72 + 84 + 72 + 50.55 (m)	ц.	N Cm a		yes •	no		Cross frame	-	_	-		
	i dg	NOS. OI Spa	10.0 × 2 (m) (m)	Inse	ti diffo	ce change	yes •	no		Lateral brace	-	-	- Conorol I	v boolthy	
	ش ا	Completio	10.9 X Z (m) / (m)	y re		ing dama	te yes	no	mage	Abutmont		_		y neartny	
36	-	Compretion	2000	urve	Blocker	drainag		no	f da	Pier	2nlate	oval	_		
	+	Horizonta	Straight $\cdot$ incli $(\theta = \circ)$ $\cdot$ Gurve $(\mathbf{R} = \mathbf{m})$	S	Crack of	f navemer	t ves	no	o el	Bearing	Slide b	hearing	_		
-112	۶ŀ	Gradient	One way (オ・、) parabol (でり・ 川)		Damage o	f lighti	ng ves •	no	ıtlir	Barrier	Trapez	zoidal	Generall	v healthv	
	latio	Nearby tunn	el ves · no ( m)		Damage	ofsign		-	O	Railing	Ste	eel	Generall	y healthy	
	for	Nearby cross	ing yes · no ( m)		Damage c	f handra	il yes •	no		Curb	-	_	-		
		Traffic	Much • Medium • Little		Possibili	ty of sc	ouryes •	no		Pavement	asphalt	• concrete	Generall	y healthy	
	20a	Commercial tra	ffi Much • Medium • Little		Walkway	yes •	10			Joint	drained	undraineo	-		
					Vehicle	yes •	10			Drainage	yes	• no	Partly b	locked	
	r on	1. Urban	2. Suburbs 3. Mountain 4. Seaside	Ŋ											
	Envi	5. Industria 9. Salty	6. Harbor 7. Kesidential 8. Bussiness 10. Cold and snow 11. Heavy snow 12. Others	n wa											
	ő	1. Shinkanser	2. Railway 3. Highway 4. Road	ctio											
	ے ا	5.River	6. Lake 7. Ravine 8. Valley	Jspe					JS						
	Jnde	9. Waterway 13. Vacant	10. Parking II. Bike parkin I2. Park 14. Harbor Name (Chao Phraya)	_					ssio						
	-	0	1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car						ıpr es						
		Superstruct	6. On boat 7. Special camera 8. Others ( )		Height of §	;irde	about	10m	ln						
	metho	Substructu	e 1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car 6. On boat 7. Special camera 8. Others ()	S	<ul> <li>Deteri</li> <li>deficien</li> </ul>	oration o • fair	f bridge . good	•							
	ess		• All bridge section is on the water	isor	◆ Notic	eable poi	nt	٠		listory of	f renair ·				
	Acc	Reason	<ul> <li>If inspection car is not available, false work will be required</li> </ul>	) i agı	Generall	y healthy				Curve	vor	Mr Chuic	Mr. Kuda		Repaint; — by —
	┢									Surve	syor; I	wir, unujo,	wr.ruao		
L															

Prese	nt state (1	/ 3 )			
Authority	DOH	Address	Bangkok	Data	24-0ct-09
Bridge	New Phra Nangkla	ao Bridge			

	Picture No.	1
	Span	1
STORE STORES	Member	Side view
	Picture No.	2
and the second se	Span	1
	Member	View on road
T T		
	Picture No.	3
	Span	1
	Member	View under girder

Prese	nt state (2	/ 3 )			
Authority	DOH	Address	Bangkok	Data	24-0ct-09
Bridge	New Phra Nangkla	no Bridge			

	Picture No.	4
A MARKEN AND A MARKEN	Span	1
A THE REAL PROPERTY AND A PARTY OF A PARTY O	Member	Pier
	Pier height	is low
	The structu	ire may occure large
	moment afte	er shirinkage, creep
	and tempera	iture.
A Manufacture 17 17	Continuous	careful checking is
	required.	
	Distan M	
N THE REAL PROPERTY AND A DESCRIPTION OF A DESCRIPTIONO OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPANTI OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION O	Picture No.	0
	Mombon	Drainage
and the second states of	Member	Dramage
5	Parts for w	vator sprinkling
TRA CALLER CONTRACTOR	Garhage	atter oprimiting
	Gui Bugo	
	Picture No.	6
	Span	1
	Member	Drainage

Prese	nt state (3	/3)			
Authority	DOH	Address	Bangkok	Data	24-0ct-09
Bridge	New Phra Nangkla	ao Bridge			

	Picture No.	7
	Span	1
and the second sec	Member	Drainage
	Partly blocke	ed
	Picture No.	8
	Span	1
	Member	
	Picture No.	9
	Span	1
	Member	
	Thon Buri sid	de

Bridge No. 6

Photo No. ( ~

						Det	ita nama						DOU		Code of authority	
	Br	idge name	Pral	Nangklao Brid	ge	κοι		-		A	uth	ority	DOU		No.	-
	Р	from	Anphoe Bang Bua Thon	g		Dista	from	km	+	0					Survey date	24-oct-2009
		to	Anphoe mueang Nonthal	bur i			to	km	+	0				<u> </u>		
		Bridge type	(1) main road •	side road •	ramp		Cambe	r deform	yes •	no		ltem	Туре			State
	<u>ه</u>	Bridge type	(2) bridge •	viaduct •	plank pass		Differen	ce in glac	e yes •	no		Main girder	PC-Box	Much wa	ter is flowed ins	side of box by leakage of water sup
	tie:	Bridge type	(3) 5-span	continuous PC box	girder		ontinuou	s of barri	e yes •	no		Cross beam	-	-		
	oper	lotal leng	th	F1 · 70 · 04 ·	330.00 (m)		Continuo	us of curv	e yes •	no		Stringer	-	-		
	e pr	Span	212	51 + 72 + 84 +	- /2 + 51 (m)	t.	N Sno	olse	yes •	no		Cross frame	_	-		
	ridg	Width	21.80	(m) (	o span	esul			yes •	no		Lateral brace		-	from modium	
	Ē	Completio	21.00	1985	(11)	y r	drain	ing damag		no	mage	Abutment	Rectangular	-		
241	┢	0011010210		1000		urve	Blocker	drainage	ves •	no	f da	Pier	plate rectang	la -		
슻 구		Horizonta	Straight • incli(θ=	= 1.5°) • Curv	ve (Rm)	55	Crack o	f pavement	ves •	no	ne o	Bearing	Slide bearing	move to	center (not crit	cical)
-118	5	Gradient	0ne way ( ↗ •	) parabol (	(凸・凹)		Damage c	of lightin	g yes •	no	rli	Barrier	Trapezoidal	General	ly healthy	
	nati	Nearby tunr	iel yes • no	(	 m)		Damage	ofsign			õ	Railing	Steel	General	ly healthy	
	fer	Nearby cross	ing yes • no	(	m)		Damage c	f handrai	l yes •	no		Curb	-	-		
	.= 	Traffic	Much • Mediu	um • Little			Possibili	ty of sco	ur yes •	no		Pavement	asphalt • concr	te General	ly healthy	
	စ္ဆို	Commercial tra	ıffi₀ Much • Medii	um • Little			Walkway	yes • n	D			Joint	drained undrai	ned leakage		
							Vehicle	yes • n	)			Drainage	yes · no	Partly	blocked	
	ron	1.Urban 5.Industria	2. Suburbs	3. Mountain 7. Regidential	4. Seaside	ay										
	Envi	9. Salty	10. Cold and snow	v 11. Heavy snow	12. Others	in w						• Vertica	al movement is c	ccurred in	dependently at him	nge of center
F	, id	1. Shinkanser	2.Railway	3.Highway	4. Road	sctic						•Free li	ime from constru	ction join <sup>.</sup>	t	
	ir bi	5.River	6. Lake	7. Ravine	8. Valley	nspe					su	•Breakin	ng of ship prote	ction		
	Unde	13. Vacant	14. Harbor	Name ( Cha	ao Phraya )	_					ssio					
		Superstruct	ure 1. Inspection car 2. Fa 6. On boat 7. Special	alsework 3.0n ground 4.L I camera 8.Others(	_adder 5.Lift car )		Height of §	;irde	about	10m	lmpre					
	methoc	Substructu	re 1. Inspection car 2. Fa 6. On boat 7. Special	alsework 3.0n ground 4.L I camera 8.Others(	adder 5.Lift car)	s	<ul> <li>Deteri</li> <li>deficien</li> </ul>	oration of • fair •	bridge <sub>good</sub>	•						
	Access	Reason	All bridge sec     If inspection     will be require	ction is on the wat car is not availab ed	ter ble, false work	Diagnosi	<ul> <li>Notice</li> <li>Hinge</li> <li>Leakage</li> </ul>	eable poin is removed e from wat	t er supp	◆   v		listory of Surve	f repair ; vor : Mr.Chu	io. Mr.Kudo	)	Repaint; — yy — mm
			·				-0						- , , ,			

Prese	nt state (1	/ 10 )			
Authority	DOH	Address	Bangkok	Data	24-0ct-09
Bridge	Phra NangKlao Bi	ridge			

	Picture No.	1
	Span	1
	Member	Side view
And the second s		
the state of the state	40	1 1 01
	*Survey on	board, 31-oct
and the state of the state of the		
	Picture No.	2
	Span	2
	Member	View on road
011		
ANVER		
	Picture No.	3
	Span	1
	Member	View under bridge
and the second sec		
and the second sec		

Prese	nt state (2	/ 10 )			
Authority	DOH	Address	Bangkok	Data	24-0ct-09
Bridge	Phra NangKlao Br	ridge			



Prese	nt state (3	/ 10 )			
Authority	DOH	Address	Bangkok	Data	24-0ct-09
Bridge	Phra NangKlao Br	ridge			

	Picture No.	7
The second se	Span	1
	Member	Water supply
	Leakage ins	side of PC-box girder
THE BELLE		
and the second of the second of the second		
	Picture No.	8
	Span	1
	Member	Bearing
	Movement of	girder
	Thon Buri s	side
		1 • 1 1
-	effect of s	shrinkage and creep
11 12 2 2 3 3 3 3 4		
A AND A AND AND AND A		
		0
	Picture No.	9
	Span	Boaring
and the second sec	Member	Deal mg
- And and and a second se	Movement of	girder
		0
1 And a second s	Bangkok sid	le is lager than Thonbu
ASPONALA AND DE		
A for the second		

Prese	nt state (4	/ 10 )				
Authority	DOH	Address	Bangkok	Data	24-0ct-09	
Bridge	Phra NangKlao Bridge					

	Picture No.	10
	Span	1
	Member	Bearing
	Deteriorati	on of corrosion proofi
	<b>D.I</b>	
The second secon	Picture No.	11
	Span	Expansion joint
	Member	Expansion joint
	Deteriorati	on of drain function
	Leakage fro	om medium
	Picture No.	12
	Span	1
	Member	Pylon

Prese	nt state (5	/ 10 )			
Authority	DOH	Address	Bangkok	Data	24-0ct-09
Bridge	Phra NangKlao Bi	ridge			

	Picture No.	7
	Span	1
	Member	Expansion joint
	Deteriorati	on of drain function
and the second s		
and the second states the		
AND		
the state		
	Picture No.	8
· · · · · · · · · · · · · · · · · · ·	Span	1
	Member	Drainage
The total and guarant and		
and the second	Blocking of	catch basin
anipolis of property and a second sec		
	Picture No.	9
	Span	1
	Member	Drainage
	dint	
	arri	
State and the second se		
And the second sec		

Prese	nt state (6	/ 10 )						
Authority DOH		Address	ess Bangkok Data 24-0c					
Bridge	Phra NangKlao Bi	ridge						

Picture No.	10
Span	Manhala
Member	mannore
graffiti	
Manhole car	ı be access by ladder
Picture No.	11
Span	1
Member	Manhole
With a kov	
with a key	
Picture No.	12
Span	1
Member	Lighting pole
Damaged	

Prese	nt state (7	/ 10 )							
Authority DOH		Address	Bangkok Data 24-Oct-O						
Bridge	Phra NangKlao Bridge								

Picture No.	13
Member	1
Repair of e	electric cable
Picture No.	14
Span	l Monitoring asmora
Member	Monitoring camera
	15
Picture No. Snan	15
Member	Management office

Prese	nt state (8	/ 10 )						
Authority DOH		Address	Bangkok Data 24-Oct-O					
Bridge	Phra NangKlao Br	ridge						

	Picture No.	16
	Span	1
the second s	Member	Footing
and the second se	Footing is	close to new pra
	nangklao bi	ridge at Thonburi side
The second se		
	Picture No.	17
	Span	1
	Member	View of footing
F.		
	*Survey on	board, 31-oct
3		
	Picture No.	18
	Span	1
- Start - Star	Member	Water supply
		C 1 1 1 1
	Much water	from manhole due to
	Teakage OI	water supply
	*Survey on	board, 31-oct
Market and the second s		

Prese	nt state (9	/ 10 )			
Authority	Authority DOH		Bangkok	24-0ct-09	
Bridge	Phra NangKlao Bi	ridge			

	Picture No.	7
	Span	1
	Member	PC-box
	Free lime f	rom construction joint
	*Survey on	board, 31-oct
	Picture No.	8
THE AND A REAL PROPERTY OF THE	Span	1
	Member	Hinge
- Ann and and	Lack of pir	1
	Vortical m	woment is ecourred
	independent	·lv
	Independent	,
I have been		
P. I. MILL WITH A MARKEN AND A		
LI II - Company and the second		
	*Survey on	board, 31-oct
II VERILLA IN THE INTERNATION		
	Picture No.	Q
	Span	1
	Member	PC-box
	Nest and dr	coppings
AND		
	*Survey on	board, 31-oct

Prese	nt state (10	0/10)			
Authority	Authority DOH		Bangkok	24-0ct-09	
Bridge	Phra NangKlao Bi	ridge			

Picture No.	10
Span	1
Member	Footing
	10001110
Breaking ar	nd movement
breaking a	
*Survey on	board, 31-oct
Picture No.	11
Span	1
Member	
Picture No.	19
Span	12
Mombon	1
memper.	

Bridge No.

7

Photo No. ( ~

							_	_				DRR			Code of authority	-
	Br	idge name	RAMA V Bridge		NO					uth	ority	DIN		No.	-	
	Р	lace from	Anphoe Bang Bua Thong		Dist	from	km+		0						Survey date	2009/10/20
		to	Anphoe mueang Nonthaburi			to	km+		0							
		Bridge type	(1) main road • side road • ra	amp		Camber	r deform	yes •	no		ltem	Ту	/pe			State
		Bridge type	2) bridge • viaduct • plan	k pass		Differend	ce in glade	yes •	no		Main girder	PC-	-Box	Free lin	ne, scratch due t	o ship collision
	L le	Bridge type	3) 3-span continuous PC box girder			iont i nuous	s of barrie	yes •	no		Cross beam		_	-		
	oper	Total lengt	h 320.00	) (m)		Continuou	us of curve	yes •	no		Stringer		_	-		
	j pr	Span	95 + 130 + 9	95 (m)		No	bise .	yes •	no		Cross frame		_	-		
	l age	Nos. of spa		3 span	- I ns	Space	ce change	yes •	no		Lateral brace		-	-		
		Width	11. / x 2 (m) /	(m)	y re		rence grade	eyes ∙	no	nage	Slab	Deatha	-	-		
~	-	Completion	2002		- Ir ve	drain	ing damage	yes •	no	dan	Abutment	Recta	ngular	-		
滚		llenimentel		\ \	Š	Blocked		yes •	no	e of	Pier	Recla	ngular	-		
-12	₋⊦	Gradiant	Straight $\cdot$ incl $(\theta = )$ $\cdot$ curve (R	m)		Domogra	f lighting	yes •	no	tlin	Bearing	Trana	zoidol	- Conoral I	ly hoolthy	
9		Nearby tunn		· 四 )	-	Daniage U	ofsign	yes -	110	0u1	Railing	11 ape. \$+		Partiv	stolen	
	Ē	Nearby cross		m)			f handrail	VAS			Curb	50	_			
-	Ξ+	Traffic	Much • Medium • Little	1117		Possibili	ty of scou	ves •	no		Pavement	asphalt	•concrete	General	lv healthv	
		commercial tra	ffi Much · Medium · Little			Walkway	ves • no	, ,	110		Joint	drained	undrained	Spacing	is extended	
						Vehicle	yes • no	1			Drainage	yes	• no	Blocked		
	u -	1. Urban	2. Suburbs 3. Mountain 4. Sea	side												
		5. Industria	6. Harbor 7. Residential 8. Bus	siness	way											
		9. Salty	10. Cold and snow 11. Heavy show 12. Ut	ners d	t ion						Scratci	n was seer	n under gi	irder in	center span	ar completion
		5. River	6. Lake 7. Ravine 8. Val	u ley	spec					6	- opacing					
	ider	9.Waterway	10. Parking 11. Bike parkin 12. Pa	rk	- n n					i on (						
-	5	13. Vacant	14. Harbor Name (Chao Phra	ya )						ress						
		Superstructu	re 1. Inspection car 2. Falsework 3. Un ground 4. Ladder 5. 6. On boat 7. Special camera 8. Others (	Lift car )		Height of g	irde	about	5. 5m	lmp						
	еглос	Substructur	e 1. Inspection car 2. Falsework 3. On ground 4. Ladder 5.	Lift car		◆ Deteri	oration of b	oridge	•							
	≣		• All bridge section is on the water	)	sis	Notice	able noint	good								
	cce	Reason	• If inspection car is not available, fa	lse work	agno				<b>.</b>		listory o	f repair ;				Repaint; — yy — mm
	۲L		will be required		Di						Surve	yor;	Mr,Chujo,	Mr.Kudo		

米 行資 工 (

Prese	nt state	(1/10)			
Road		Address	Bangkok	Data	20-0ct-09
Bridge	Rama V				

	Picture No.	1
	Span	1
	Member	View under girder
ANA A BANK AND		
Non-testilities stands date to be a standard stands		
	Picture No.	2
	Span	1
	Member	View on road
	Momo or	
a contract of the second		
		0
	Picture No.	3
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Span Mamb att	
	Member	Side view
And the Real Real		
	*Survey on	board, 31-oct

Presen	t state	(2/10)			
Road		Address	Bangkok	Data	20-0ct-09
Bridge	Rama V				
				Picture No.	4
の一部に使用			inter the	Span	1 Maphala
				Member	Mannore
	1	Self S	Lander Street	No key	
		2 I Day to a little	Part Barris		
the street	Concentration of the		All Prover and the second		
	and the	1			
13 3	5 - 5	and all and	and the second		
12 - 23		1			
and a series			1. 4 L. M		
and the state			AND THE THE REAL		
the Winder	light of the	and the second second	and the second		
100				Diatura Na	5
			Carlos and	Span	1
			an	Member Manl	nole (walkway side)
	1		Contraction of the	····	
1. 1. 1. 1.	- Contraction	15 - 2	· .	With key	
and the second			Page - States		
States and		The states			
Fig.	The second second				
	·	and the second second			
		1 2 3 1	Red man		
and the second		and the second s	The property Ma		
CHE CT	B. The				
ANT REAL R	A SHARE		A State of the second		
				Picture No.	6
				Span	1 Manhala
	and the second	TRACE		Memper	Mannore
		NA AND		About 6m heigh	t
		A	P	L:C/ 1	11. : 1 1
				Lift car or lac	dder 1s needed
	14				
			A DE SHARE		

Prese	nt state	(3/10)			
Road		Address	Bangkok	Data	20-0ct-09
Bridge	Rama V				

	Picture No.	7
	Span	1
and the second sec	Member	Catch basin
	Blocking	
	Part withou	It noise harrier is
	cleaned and	l has no blocking
	Picture No.	8
	Span	1
the support of the second s	Member	slab (walkway, roadway)
the second se	Electric ar	nd communication line
	Picture No.	9
	Member	Girder
	internis et	011.001
	Defect of d	construction?
and the second second second		
the second and the second second		

reser	nt state	(4/10)			
Road		Address	Bangkok	Data	20-0ct-09
ridge	Rama V				
1 10	Series 1	14. Co		Picture No.	10
10	1 F		T.S	Span Member	l Expansion joint
				Leaving of :	form work
			AN ALL AND	Picture No.	11
			and the Real Property lies	Span	1
	all a stand		I. P. P. T	Member	Expansion joint
				Spacing is o	expanded 5cm



Prese	nt state	(5	/ 10 )			
Road			Address	Bangkok	Data	20-0ct-09
Bridge	Rama V					

	Picture No.	7
	Span	1
	Member	walkway
	Less than 2	2m
	Inspection	vehicle cannot park
	in walkway	
	Picture No.	8
	Snan	1
	Member	Handrail
A CONTRACTOR OF THE OWNER OF THE OWNER OF THE	member	nunururr
	Stolen of s	tainless handrail
	Picture No.	Q
	Span	1
and the second	Member	Pier head
	Genellary h	nealthy

Prese	nt state	(6/10)			
Road		Address	Bangkok	Data	20-0ct-09
Bridge	Rama V				

	Picture No.	10
	Span	1
	Member	Water supply
	Walkway of	water supply
	will be ava	ilable to use for
	detailed su	rvey of slab at center
The second se		
	Picture No.	11
	Span	1
	Member	Girder
	Scrach by s	hip collision
A the second sec		
A Cartha I I		
K & Z A State A		
	*Survey on	board, 31-oct
	Picture No.	12
	Span	1
	Member	Footing
A A A A A A A A A A A A A A A A A A A		
	*Survev on	board, 31-oct
	,	

## Bridge No. 8

Photo No. ( ~

						Do	uto nomo							חחח		Code of authority	-
	Brid	dge name		RAMA 7 Bridge		κo	ule name	_			Auth	ority	DKK		No.	-	
	Pla	ace from	Khat Bang Phlat			Dist	from		km+	0						Survey date	2009/10/20
	-	to	Khet Dusit	-			to		km+	0			-			_	
	В	Bridge type	(1) main road	• side road	• ramp		Cambe	r deform	n yes	• no		ltem	Ту	ре			State
	В	Bridge type	(2) bridge	• viaduct	<ul> <li>plank pass</li> </ul>		Differer	ce in g	ade yes	• no		Main girder	PC-	Box	free lin	ne, leakage from	water supply
-	B	Bridge type	(3) 3-s	pan continuous PC bo	x girder		i nuou	s of ban	rieyes	• no		Cross beam	-	-	-		
, ad	5	Total leng	th		290.00 (m)		Continuc	us of cu	ır ve yes	• no		Stringer	-	_	-		
L L	2	Span		85 +	- 120 + 85 (m)		N	oise	yes	• no		Cross frame	-	_	-		
dap	2020	Nos. of sp	an		3 span	드	Spa کې	ce chang	ge yes	• no		Lateral brace	-	_	-		
Å	5	Width	14. 45	5 x 2 (m) 🗡	(m)	res	.드 diffe	rence gr	ade yes	• no	age	Slab			free lin	ne, leakage (appr	oach span)
		Completio	n	1992		Vey	drai	ning dam	age yes	• no	dame	Abutment	-	_	-		
滚						Sur	Blocke	d draina	ge yes	• no	٩	Pier	Rectar	ngular	-		
각 -		Horizonta	Straight • incli	$(\theta = \circ) \cdot c$	urve (R m)		Crack c	f paveme	ent yes	• no	ine	Bearing	Slide b	b <b>ear</b> ing	-		
36		Gradient	One way ( 🥕	• 🍾 ) parabol	(凸・凹)		Damage	of light	ing yes	• no	ort I	Barrier	Trapez	zoidal	General	y healthy	
ta ta		Nearby tunr	nel yes • no	(	m)		Damag	e of sig	n	—		Railing	Ste	eel	General	y healthy	
n fo	N	earby cross	ing yes • no	(	m)		Damage	of handr	ail yes	• no		Curb	-	-	-		
Po		Traffic	Much •	Medium • Little			Possibil	ty of s	couryes	• no		Pavement	asphalt	• concrete	General	y healthy	
ä	Co	mmercial tra	affio Much•	Medium • Little			Walkway	yes •	no			Joint	drained	undraineo	leakage		
							Vehicle	yes •	no			Drainage	yes	• no	Blocked		
1001	1.	. Urban	2. Suburbs	3. Mountain	4. Seaside	ž											
	5. 9	Salty	6.Harbor 10 Cold and s	snow 11 Heavy snow	8. Bussiness 12 Others	n wa						• Damage	of draina	ve of ioi	nt Arou	nd bearing It sh	hould check influence of leackage f
7	<sup>3</sup> 1.	. Shinkanser	2. Railway	3.Highwav	4. Road	ct io						• Contin	uous drain	from mar	nhole of	center span. Leak	kage of water supply might make dam
2	5.	River	6. Lake	7. Ravine	8. Valley	spec					s	inside	of girder.				
a pu	9.	.Waterway	10.Parking	11.Bike parkin	12. Park	-					sion						
F	5 1.	S. VACATL	14. Harbor	Naille ( G	Ladder E Lift eer						r es:						
-	, S	Superstruct	6. On boat 7. Sp	ecial camera 8. Others(	)		Height of	girde	about	t 8.9m	ᄪ						
athoc	2	Substructu	re 1. Inspection car	2. Falsework 3. On ground 4.	Ladder 5.Lift car		◆ Deter	oration	of bridge	•							
ш о			• All bridge	section is on the wa	ater	osis	◆ Notic	eable no	oint	•	<u> </u>						
	200	Reason	<ul> <li>If inspect</li> </ul>	ion car is not availa	able, false work	agno	• Damage	of dra	nage of	joint		listory o	f repair ;				Repaint; <u>    yy    mm</u>
	Ĺ		will be requ	uired		Di						Surve	eyor;	Mr,Chujo,	Mr.Kudo		

Prese	nt state (	1 / 6 )			
Authority	DRR	Address	Bangkok	Data	20-0ct-09
Bridge	Rama VII				



Prese	nt state	(2/6)			
Authority DRR		Address	Bangkok	Data	20-0ct-09
Bridge	Rama VII				

	Picture No.	4
	Span	1
	Member	Water supply
	Picture No.	5
	Span	1
	Member	Handrail
and the second		
	Antitheft w	velding
and the second		
A MATE PARA		
	Picture No.	6
	Span	1
	Member	Lighting pole
	Deformation	of bolt
the same we have a manufacture way to		

Prese	nt state	(3	/ 6 )			
Authority	thority DRR		Address	Bangkok	Data	20-0ct-09
Bridge	Rama VII					

	Picture No.	7
	Span	1
	Member	Catch basin
	D. (1 11	1 1
	Partly bloc	скеа
	Picturo No	Q
The second second second second second	Span	1
	Member	Expansion joint
	Deteriorati	on of drain fanction
	Picture No.	9
	Span	1
	Member	Expansion joint
	Deteriorati	on of drain fanction
A set of the set of th		

Prese	nt state (	4 / 6 )			
Authority	DRR	Address	Bangkok	Data	20-0ct-09
Bridge	Rama VII				

	Picture No.	10
	Span	1
	Member	End pier
	Corrosion o	of steel plate at base
	Picturo No	11
	Snan	11
	Member	End pier
	member	
	Corrosion o	of steel plate at base
A A A A A A A A A A A A A A A A A A A		
A A A A A A A A A A A A A A A A A A A		
	Picture No.	12
	Span	1
	Member	Approach bridge
A CARLES AND A C	D 1:	
	Free lime	
	1	

Prese	nt state (	5 / 6 )			
Authority	thority DRR		Bangkok	Data	20-0ct-09
Bridge	Rama VII				

	Picture No. Span	7
a second s	Member	Approach bridge
	Settlement	around nier
	Settlement	
	Picture No.	8
	Span	1
	Member	Approach bridge
	Deteriorati	on of drain function
	First one i	is good. 2nd, 3rd drain
	is blocked	
.》体部 26		
	Picture No.	9
	Span	1
	Member	Site management office
	Management	office
	Technical 1	person
Additional and a second and a se	Labor 15 pe	erson
	Managamant	of bridge and north
	management	of pridge and park
	They send r	report of bridge
	once a week	to DRR

Prese	nt state (	6 / 6 )			
Authority DRR		Address	Bangkok	Data	20-0ct-09
Bridge	Rama VII				

Picture No.	10
Span	1
Member	Site management office
Management	area is yellow section
Green secti	ion is managed by BMA
Picture No. Span Member	11 1 Site management office
Picture No.	12
Span Membor	l Site management office

1	ממת	A 1 1.	D. 1 1		
hority	DKK	Address	Bangkok	Data	20-0ct-09
ridge	Kama VII				
			Pi	cture No	7
	- and			Span	1
			1 21-	Member	Substructure
			Pi	cture No. Span Member	8
			Pi	cture No.	9
				Span	1
				Member	
			-		
			-		

Bridge No.

10

Photo No. ( ~

					ute name	e name -				DRR		Code of authority	_
	Br	idge name	Ige name Krung Ihon Bridge					Auth	nority			No.	-
	Р	from Kha	at Bang Phlat	Dista	from	km+	- 0					Survey date	2009/10/24
		to Khe	et Dusit		to	km+	- 0			-	ĩ		
		Bridge type(1)	main road • side road • ramp		Cambe	r deform	yes • no		ltem	Туре			State
	s	Bridge type(2)	bridge · viaduct · plank pass		Differen	ce in glade	eyes • no		Main gir	der Truss	Corros	ion, Deterioration	of proofing, deformation by collis
	tie	Bridge type(3)	6-span steel truss		iont i nuou	s of barrie	eyes ∙ no	-	Cross be	am I section s	steel -		
	oper	lotal length	360.00 (m)		Continuo	us of curve	eyes ∙ no		Stringe	r I section s	steel Deteri	oration of proofin	g
	e pr	Span	58 + 58 + 64 + 64 + 58 + 58 (m)	4	N Sma	0150	yes • no		Cross fr	ame I SECTION S	steel Expans	ion by corrosion	
	i dg	Nos. of span	0 span	Inse	ti diffo	ce change	yes • no		Lateral b	ace —	- Crook	fraa Lima Exfali	ation
	œ	Completion	12.00 (m) / (m)	y re		rence grade	yes • no	mage	Abutmor	+ _	- Ur ack,	Tree Time, Extori	
24	┢	COMPTERTON	1930	urve	Blocke	drainage	yes - no	f da	Pier	Rectangu	lar –		
亦		Horizontal	Straight $\cdot$ incli $(A = 1, 7, \%)$ $\cdot$ Curve $(B, m)$	S	Crack o	f navement	yes no	.o 19	Bearin	Pin hear	ing Corros	ion accumulation	of soil flucture of locker bearing
-14	-	Gradient			Damage	of lighting	ves • no	tlir	Barrie	Trapezoio	dal Fluctu	re of edge	
44	atio	Nearby tunnel			Damage	e of sign	-	3	Railin	s Steel	Genera	llv healthy	
	탈	Nearby crossing	g ves · no ( m)		Damage	of handrail	ves • no		Curb			, , ,	
		Traffic	Much · Medium · Little		Possibil	ity of scou	ryes • no		Pavemer	t asphalt.co	ncrete Genera	lly healthy	
	Roa	Commercial traffi	Much • Medium • Little		Walkway	yes • no	]		Joint	drained und	lrained Leakag	e	
					Vehicle	yes • no	]	-	Drainag	∘ yes∙n	0		
Г	r onn	1. Urban	2. Suburbs 3. Mountain 4. Seaside	~									
	i v	5.Industrial 9 Salty	6. Harbor 7. Residential 8. Bussiness 10. Cold and snow 11. Heavy snow 12. Others	n wa					• \$000	r (information	from DRR)		
H	i di	1. Shinkanser	2. Railway 3. Highway 4. Road	stio					• Rema	rkablecrack and	l ex foliatio	n is found at bott	om surface of walkway
	م ا	5.River	6. Lake 7. Ravine 8. Valley	Ispe				sı	• Some	drainage pipe	was drop off		
	Inder	9.Waterway 13 Vacant	10.Parking 11.Bike parkin 12.Park 14 Harbor Name (Chao Phrava )	-				sior	Cond     Espe	ision of painti cially flange c	ng is not ba of bracket sh	d, but some plate ould be take care	thickness was reduced by corrosion
ŀ	_		1. Inspection car2. Falsework 3. On ground 4. Ladder 5. Lift car					pr es	• Defo	rmation by ship	collision w	as found at 1 cent	er span.
	8	Superstructure	6. On boat 7. Special camera 8. Others ( )		Height of	girde	about 8.5m	<u> </u>					········
	tho	Substructure	1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car		◆ Deter	oration of I	bridge 🔶						
	ss me		6. Un boat //. Special camera 8. Others())	s is	deficier	able noint	good	<u> </u>		l.n	atail survoy	was finished on Sc	an 2000
	cces	Reason	• If inspection car is not available, false work	agno	• Exfoli	ation of s	ab		listory	of repair ;	GLATT SULVEY		Repaint; — yy — mm
	Ā		will be required	Di	Reduce	thickness	by corrosi		Sui	veyor; Mr,	Chujo, Mr.Ku	lo	
L													
Prese	nt state (1	/ 19 )											
-----------	------------------	---------	---------	------	-----------								
Authority	DRR	Address	Bangkok	Data	24-0ct-09								
Bridge	Krung Thon Bridg	ge											

	Picture No.	1
	Span	1
the second se	Member	Side view
and the second division of the second divisio		
and the second se		
	Picturo No	9
	Span	1
	Member	View on road
	Member	view on road
	Piaturo No	3
	Span	1
ALL DE LE CONTRACTOR DE LE	Member	View under girder
1	Member	fiew anaci giraci

Prese	nt state (2	/ 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	4
	Span	1
	Member	Side view of 1 span
THE NEW MICH		
	Dioture N-	E
	Spop	0
	Mombor	View of welkwey
	Member	view of walkway
S. C. S.		
	Dioturo No	ß
	Span	1
	Member	Expansion joint
	Member	
	Between 1st	and 2nd span
	(Thon Buri	side)
		· · · · ·
entre andre and an and a second		

Prese	nt state (3	/ 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	7
And a state of the second s	Span	1
	Member	Expansion joint
HILL HELL	Thon Buri e	end
A REAL PROPERTY AND A REAL	Fracture of	side barrier
ALC: NO		
200 - 01 - 031	Picture No.	8
	Span	1
	Member	Side barrier
	Fracture of	side barrier
and a state of the		
A Contract of the second s		
	Picture No.	9
	Span	1
	Member	Sign
ระสาร เระพ.เกมร์ออก		
ARKUNG THON BRIDGE		
Althouse (expension expension by a province in the province of		
Name and a second secon		

Prese	nt state (4	/ 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	10
	Span	1
	Member	Newe1
the second the second second		
	Picture No.	11
	Span	1
The I want to the second	Member	Approach bridge
	Limit of ve	hicle height2.6m
WWINGERN 2.60 H. K IV	(Thon Buri	side)
	16	1
	Many scratc	h
RO.7654		
	Picture No.	19
	Span	1
	Member	Approach bridge
A Share	member	hpprodon bridge
	Limit of ve	hicle height 3 2m
	(Bangkok s	ide)
	(Dunghon D	100)

Prese	nt state (5	/ 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	13
	Span	1
	Member	Water supply
	Picture No.	14
	Span	1
	Member	Bottom chord
	Deformation	by vehicle collision
	Picture No.	15
The second se	Span	1
	Member	Bottom chord
	Scratch by	vehicle collision

Prese	nt state (6	/ 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	16
	Span	1
	Member	slab
	Picture No.	17
	Span	1
	Member	Bearing
	Approach br	idge
	Picture No.	18
The second se	Span	1
	Member	Bearing
	Deteriorati	on of corrosion proofi
	A 1 1	• 1
	Approach br	ldge
and the second s		
	<u> </u>	
and the second se		

Prese	nt state (7	/ 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	19
	Span	1
	Member	Bearing
	Deteriorati	on of corrosion proofi
	Fructure of	edge
	Approach br	ridge
		00
	ricture No.	20
	Span	Pooring
	Member	bearing
	Booring on	aross hoom hotwoon
	main girder	,
G		
	Approach br	idge
	11	0
and the second		
	Picture No.	21
	Span	l D
	Member	Bearing
	Dotoriorati	on of corresion proofi
	Deteriorati	

Prese	nt state (8	/ 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	22
	Span	1
	Member	Bearing
	Deformation	n of base plate
distance being a to		
The second se		
and a start of the		
and the second and the second		
	Picture No.	23
	Span	1
	Member	Bearing
A CONTRACT MARKEN		
1/29-110-110-110-110-1		
CHIR THE A		
	Picture No.	24
	Span	1
	Member	Bearing
	Deteriorati	on of corrosion proofi
- and the second s		

Prese	nt state (9	/ 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	e Krung Thon Bridge				

	Picture No.	25
	Span	1
2 2 3 1	Member	Bearing
	Rivet at bo	ottom side is replaced
	by bolt	*
and the second sec	5	
	It might be	corroded before
	it might be	Corrotation Service
	<u> </u>	
		90
	ricture No.	20
	Span	1
	Member	Cross frame
	Peeling of	paint
	Expansion c	of steel by corrosion
The second s		
and the second sec		
and the second of the second sec		
	Picture No.	27
	Span	1
	Member	Bearing
		-
	Accumulatio	on of soil
- VIS - TANK		

Prese	nt state (10	0/19)			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	28
h A A A A A A A A A A A A A A A A A A A	Span	1
	Member	Bracket
	D 1	C 1 4 41 1
	Reduction of	of plate thickness
00		
0		
2 Carl Content Fred The Content of t		
	Picture No.	29
and the second	Span	1
	Member	Bracket
	D 1	C . 1
	Reduction (	of plate thickness
and the second state of the se		
- A Billion		
	Picture No.	30
	Span	1
	Member	Chord member
	It's not cl	ear the concent of gar
	Gap width i	s small.
	1	
2100000000		

Prese	nt state (1	1 / 19)			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	31
	Span	1
and the second sec	Member	Stringer
	D 1: C	• .
	Peeling of	paint
A A A A A A A A A A A A A A A A A A A		
A PARTICIPATION OF THE PARTICI		
A REAL PROPERTY OF THE		
ALL		
	Picture No.	32
	Span	1
	Member	Chord member
	Fracture of	concrete
	Picture No.	33
	Span	1
· · · · · · · · · · · · · · · · · · ·	Member	Chord member
* / * * A		
	Mount up to	prevent remaining
sill . The	water	
	Possibility	of corrosion inside c
	concrete si	ab

Prese	nt state (12	2 / 19)			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridge				

	Picture No.	34
	Span	1
000000	Member	Chord member
10 - 10-01		
	Crack and m	ark of water
cale - star		
A. LIFE O		
	ļ	
	Picture No.	35
	Span	1
	Member	Chord member
	Compagion	
	COLLOSION	
All a traine		
	Picture No	36
	Span	1
	Member	Bottom chord
	Deteriorati	on of corrosion proofi
-		
000		
a white and a second		
upon democratic y		
2		
and the second s		

Presei	nt state (13	3 / 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	37
	Span	1
	Member	Upper chord
	Deteriorati	on of corrosion proofi
	Picture No.	38
	Span	1
	Member	Vertical member
	Poinforcom	unt by additional plate
	4-vertical	member was reinforced
· · · · · · · · · · · · · · · · · · ·	1 /01/01/041	
A STAR A CONTRACTOR		
A CONTRACTOR OF A CONTRACTOR OFTA CONTRACTOR O		
	Picture No	30
	Span	1
	Member	Cross frame
	Deformatior	at the end of cross
	frame	
here is a top and the second sec	Adjustment	of height?
Martin Carlo and		
a de la de l		
Part Parts		
A A A A A		
ATT I WANTED		
the state of the		

Prese	nt state (14	4 / 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	D: N	10
	Picture No.	40
	Span	1
and the second se	Member	Chord member
	Deformation	by vehicle collision
	Picture No.	41
	Span	1
	Member	slab
A	Replaced sl	ah undar roadway
	Replaced SI	ab unuer roadway
1 kmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm		
A		
	Picture No.	42
	Span	1
	Member	Slab
The ATT AND ATTA	Slab undor	walkway
	STAD UNDET	walkway
	Crack and f	ree lime

Prese	nt state (1	5 / 19)			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	43
	Span	1
and the second sec	Member	Slab
	Slab under	walkway
the second se		
	Crack and f	ree lime
	Picture No.	44
	Span	1
	Member	Slab
	Exposure of	rebar
	Crack above	e bracket
THE REPORT OF THE PARTY OF THE		
	Picture No.	45
	Span	1
	Member	slab
		<b>5</b> 1
I HE ROLDER ALE	Exposure of	rebar
TE NEW AND AND		
and the former		
1		

Preser	nt state (10	6/19)			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	46
	Span	1
	Member	Slab
	Exposure of	rebar
	1	
	Picture No.	47
A DECEMBER OF THE PARTY AND A	Span	1
	Member	slab
	Crack on wa	lkway
	Crack spaci	ng is 2-4m.
and the second second second second		
	D. J. M.	10
A STATE AND A STAT	Picture No.	48
	Span	
Mar Har Litter 100 L	Member	Slab
	w 11 O	1
	walkway. Cr	аск
	0 4mm = 0 75	·
	0.400.78	011111
A STATE OF		

Prese	nt state (1	7 / 19)			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	49
	Span	1
	Member	Under bridge
	Residence u	nder bridge
	Bangkok sid	le
	Picture No.	50
	Span	1
	Member	Slab
	Signboard c	f inspection and
	repairing w	vork
Land the second se	150days fro	m 2009 Feb
	10000035 110	
	Consultant	is Norconsultant
	Picture No.	51
	Snan	1
	Member	Substructure
A REAL PROPERTY OF THE REAL PR		
	*Survey on	board. 31-oct
	5ar , 6 y - 011	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Prese	nt state (18	3 / 19 )			
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	52
A CONTRACT IN THE	Span	1
prover and the second s	Member	Slab
	Falling of	drainage pipe
STATE 1 1 362		
a la la raine		
	*Survey on	board, 31-oct
	Picture No.	53
	Span	
	Member	slab
	Crack and f	Free lime under walkway
	*Survey on	board 31-oct
	-buivey en	
	Picture No.	54
	Span	1
	Member	Slab
	0 1 1 0	. 1. 1 11
	Crack and f	ree lime under walkway
No. Contraction of the second		
1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	*Survey on	board, 31-oct
Catholic Contraction (1)		

Present state (19/19)					
Authority	DRR	Address	Bangkok	Data	24-0ct-09
Bridge	Krung Thon Bridg	ge			

	Picture No.	55
Musica and a second	Span	1
	Member	Slab
	Deformation	by ship collision
	Picture No.	56
	Span	1
	Member	Water supply
	*Survey on	board, 31-oct
	Picture No.	57
	Span	1
	Member	

## Inspection sheet of visual survey

Bridge No.

11

Photo No. ( ~

				Pol	uto nomo					DMA		Code of authority	-
	Br	idge name	RAMA VIII Bridge	NO				Autł	nority	DiniA		No.	-
	Р	lace from	hat Bang Phlat	Dista	from	km+	0					Survey date	23-0ct-2009
		to	het Phra Nakhon		to	km+	0						
		Bridge type	1) main road · side road · ramp		Cambe	r deform	yes • no		ltem	Туре			State
		Bridge type	2) bridge • viaduct • plank pass		Differen	ce in glade	yes • no	4	Main girder	Composite I girder	-		
	r le	Bridge type	3) 4-span composite 2   girder cable stayed bridge		iont i nuou	s of barrie	yes ∙no		Cross beam	I section steel	-		
	oper	Total lengt	h 475.00 (m)		Continuo	us of curve	yes • no		Stringer	-	-		
	bla	Span	75 + 50 + 50 + 300  (m)		N	oise	yes • no	1	Cross frame	-	-		
	l age	Nos. of spa	n 4 span	sult		ce change	yes • no	1	Lateral brace	-	-		
	۵	Width	29.20 (m) / (m)	/ re	.≒ diffe	rence grade	yes • no	age	Slab	-	(cannot	see from outside	due to decorative plate)
		Completior	2002	r ve)	draii	ning damage	yes • no	dan h	Abutment	-	-		
派				Su	Blocke	d drainage	yes • no	j e	Pier	Rectangular	Free lin	ne at cross beam	
<u>+</u> -1		Horizontal	Straight · incli $(\theta = 2 \%)$ · Curve (R m)		Crack o	fpavement	yes • no	in a	Bearing	Slide bearing	-		
64		Gradient	One way ( ァ ・ ゝ ) parabol ( 凸 ・ 凹 )		Damage	of lighting	yes • no	Ĕ	Barrier	Steel	General	y healthy	
		Nearby tunn	el yes • no ( m)		Damag	e of sign			Railing	Steel	General	y healthy	
	Ĕ	Nearby cross	ng yes • no (ramp way )		Damage	of handrall	yes • no	1	Curb	-	-		
		Irattic	Much • Medium • Little		Possibil	ity of scou	ryes • no	4	Pavement	asphalt concrete	Pot hole	<u>}</u>	
1	20	ommercial tra	TIO Much • Medium • <u>Little</u>		Walkway	yes ∙ no		-	Joint	drained undrained			
	EI	4.11.1			Vehicle	yes no			Drainage	yes • no			
		1.Urban 5.Industria	2. Suburbs 3. Mountain 4. Seaside 6. Harbor 7. Residential 8. Bussiness	<i>i</i> ay									
	P L L	9.Salty	10.Cold and snow 11.Heavy snow 12.Others	on v									
	r a	1.Shinkanser	2.Railway 3.Highway 4.Road	ect i									
		5.River 9 Waterway	6.Lake 7.Ravine 8.Valley 10.Parking 11.Bike parking 12.Park	usp				suc					
	nua	13. Vacant	14. Harbor Name (Chao Phraya )					ssio					
		Superstructu	1. Inspection car2. Falsework 3. On ground 4. Ladder 5. Lift car					mpre					
			6. On boat 7. Special camera 8. Others ( Inspection vehicle )		Height of	girde	about 10r	1 =					
1	eruc	Substructur	1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car 6. On boat 7. Special camera 8. Others (		<ul> <li>Deter</li> <li>deficier</li> </ul>	ioration of l	oridge 🔶						
	SS II		• Center span section is on the water	osis	♦ Notic	eable point		⊢		c .			
	Acce	Reason	• If inspection car is not available, false work	agn	• Leakag	e form cabl	e		listory o	t repair ;			Repaint; — yy — mm
	⁻┢		will be required	Di					Surve	eyor; Mr,Chujo,	Mr.Kudo		

Present state (1/8)					
Authority	BMA	Address	Bangkok	Data	23-0ct-09
Bridge	RAMA VIII				

	Picture No.	1
The second distance in	Span	1
Strength of the second s	Member	Side view
and the second se		
and the second		
and the second sec	*Survey on	board, 31-oct
	Picture No.	2
	Span	1
	Member	View on road
A CAN AG		
	Disture N	0
	Span	ئ 1
	Member	View under bridge
	Momoor	, ion ander billage
The state has been and the state of the stat		

Present state (2/8)					
Authority	BMA	Address	Bangkok	Data	23-0ct-09
Bridge	RAMA VIII				

	Picture No.	4
	Span	1
	Member	Pylon
	•	<i>.</i>
	*Survev on	board. 31-oct
		,
	Picture No.	5
	Span	1
	Member	Expansion joint
		* 0
	Modular typ	e
and the second sec		
	Picture No.	6
	Span	1
	Member	Expansion joint
	Lack of bol	t
AND A REAL PROPERTY AND A REAL PROPERTY AND A REAL PROPERTY.		
the state of the s	Soil dump	
the first the second second		
A A A A A A A A A A A A A A A A A A A		

Present state (3/8)					
Authority	BMA	Address	Bangkok	Data	23-0ct-09
Bridge	RAMA VIII				

	Picture No	7
	Span	1
	Member	View of cable
	member	
	Helical typ	be wind resistance
	Picture No.	8
	Span	1
	Member	Cable
	Leakage fro	om cable
All And The Address of the Address o		
		0
	Picture No.	9
	Span	
	Member	Cable
		1.1
	Leakage fro	om cable
	Opening und	ler side of cable cover
	for drainag	ge

Present state (4/8)					
Authority	BMA	Address	Bangkok	Data	23-0ct-09
Bridge	RAMA VIII				

	D	10
	Picture No.	10
	Span	1
	Member	Cable fixing structure
	Gap and cal	lking between cable and
	slab. And r	nounted up around cable
	to prevent	remaining water.
	to protone	
yes and the second s		
	Picture No.	11
	Span	1
	Member	Cable fixing structure
	Member	
	alah And r	nounted up around apple
	to prevent	remaining water.
	Diatura No	10
	ricture no.	12
C C C C C C C C C C C C C C C C C C C	Span	
	Member	Cable flxing structure
	Calking and	d name plate of cable
	well mainta	ained but aging
A REAL PROPERTY AND A REAL		
and the second		
A second s		

Present state (5/8)					
Authority	BMA	Address	Bangkok	Data	23-0ct-09
Bridge	RAMA VIII				

	Picture No.	7
	Snan	1
	Mombor	Sido span and approach
	Member	
	aide enen	ia 2+2 long for nome we
	side span .	is 3+2 lane for ramp wa
A CONTRACT OF		
	Picture No.	8
	Span	1
	Member	Anchorage
	member	monorage
A A A A A A A A A A A A A A A A A A A		
and the second sec		
and the second sec		
the second s		
		<u>^</u>
	ricture No.	9
	Span	
	Member	Newel
Entrance and Entrance		

Present sta	te (6	/8)			
Authority BM	IA	Address	Bangkok	Data	23-0ct-09
Bridge RAMA V	III			1	
	Just Party	1ª	Pi	cture No.	10
		-		Span	1
1	00 L	**	Anna Caller	Member	Pavement
100 TO 100 TO 100	The second	1 and	Po	ot-hole	
and the second s	nation in the	Munit	the second second second		
			and a second		
- ARE FRANK STOLEN	<b>从</b> 上的有效的增	an a			
	A STATE OF STATE		and the second second		
		0	Pi	cture No.	11
		A PART		Span	1
	0-22	Stal alt	A Contraction of the	Member	Drainage
	1		Really I		
	and the share of	The state			
		1			
			NAT THE		
	and the second	and the state	en (* 1846 - 18		
			Pi	cture No.	12
Are and and	for the second s			Span	1
A STATE AND	1.		123.26	Member.	cross beam
- from see	1 - 5		Le	eakage and	small fructure of
			co	oncrete su	rface
1	1				
1		IF! IF			
the state	- This	1 here -			
1					
	The Ale		and the second		
			and a star while the start of the start		

Prese	nt state (	7 / 8 )			
Authority	BMA	Address	Bangkok	Data	23-0ct-09
Bridge	RAMA VIII				

	Picture No. Span	7
the second se	Member	Barrier
	Look of bol	taan
	Lack of Dol	i cap
B B B B B B B B B B B B B B B B B B B		
	Picture No.	8
	Span	1
	Member	Hand rail of walkway
N WHI		
	Picture No.	9
	Span	1
	Member	Cable fixing of pylon
TABLE		
the second secon		
the state of the s		

Prese	nt state	(8/8)			
Authority	BMA	Address	Bangkok	Data	23-0ct-09
Bridge	RAMA VIII				

	Picture No.	10
	Span	1
	Member	Decorative plate
	leakage lin	e
	Picture No.	11
	Span	1
the second se	Member	Bearing
	Picture No.	12
	Span	1
	Member	

## Inspection sheet of visual survey

Bridge No.

12

Photo No. ( ~

				Rou	ita nama	_					DRR		Code of authority	-
	Br	idge name	Pinklao Bridge	Nou	Au:		uthor i t		DAR		No.	-		
	Р	from	hat Bangkok Noi	Dista	from	km+	0	)					Survey date	2009/10/23
		to	het Phra Nakhon		to	km+	0	)					our voy unco	2000, 10, 20
		Bridge type	1) main road · side road · ramp		Camber	deform	yes •	no		ltem	Туре			State
	_	Bridge type	2) bridge • viaduct • plank pass		Differend	e in glade	yes •	no		Main girder	PC-Box	Leakage	from box girder	
	tie	Bridge type	3) 3-span continuous PC box girder		ont i nuous	s of barrie	yes •	no	Ļ	Cross beam	-	-		
	oper	Total lengt	n 276.00 (m)		Continuou	is of curve	yes •	no	Ļ	Stringer	_	-		
	pr.	Span	83 + 110 + 83 (m)		No	oise	yes •	no	Ļ	Cross frame	_	-		
	i dge	Nos. of spa	n 4 span	su l 1	Space	e change	yes •	no	1	Lateral brace	_	-		
	Ъ	Width	32. 21 (m) / (m)	y re		ence grade	yes •	no	lage	Slab		free lin	10	
~	┝	Completion	1973	ar ve	drain	Ing damage	yes •	no .	dar	Abutment	-	-		
添立		llenizentel		ŝ	Diocked	drainage	yes •	no	e d	Pier	Reclangular	-		
-17	_	Gradiant	Straight $\cdot$ incli( $\theta = $ ) $\cdot$ Curve (R m)	·	Domogra o	flighting	yes •	no	Ē	Bearing	Silde bearing	- Conorol	y hoolthy	
ω	le.			-	Dailiage U	of sign	yes		3	Darrier	Steel	General	y healthy	
	Ë.	Nearby cross		ŀ		f handrail		no	ŀ	Gurb			y nearchy	
	<u>-</u>	Traffic	Much • Medium • Little		Possibili	ty of scou	ves	no	ŀ	Pavement	asphalt concret	eGeneral	v healthv	
	Road	Commercial tra	fi Much · Medium · Little		Walkway	ves • no	,	110	F	Joint	drained undrain	ed leakage	,,	
	F				Vehicle	yes • no			ŀ	Drainage	yes ∙ no	Blocked		
	uuo	1. Urban	2. Suburbs 3. Mountain 4. Seaside				<b>!</b>		F					
	l vir	5. Industria	6. Harbor 7. Residential 8. Bussiness	way								I		
⊢	ш б	9. Salty	10. Cold and snow 11. Heavy snow 12. Uthers	tion						• Sever I	eakage from expa	ISION JOIN	t o dofoot in hov	
	pri	5. River	2. Kallway 3. Highway 4. Koad 6. Lake 7. Ravine 8. Vallev	.bec.			••••••			Grack o	of pier of approa	h bridge		
	der	9. Waterway	10. Parking 11. Bike parkin 12. Park	Ins					suoi					
	ĥ	13. Vacant	14.Harbor Name (Chao Phraya)						ess.					
		Superstructu	re 1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car 6. On boat 7. Special camera 8. Others ()		Height of g	irde a	bout 11.	5m	Impr					
	methoc	Substructur	e 1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car 6. On boat 7. Special camera 8. Others ( )	s	Deterio     deficient	oration of b	good	•						
	ess		• All bridge section is on the water	(nos i	◆ Notice	able point		٠		istory of	repair ;			Densint
	Acc	Keason	• II Inspection car is not available, false work will be required	Diag	Leackage	e from man	approact hole		ŀ	Survey	vor: Mr Chuid	. Mr. Kudo		κepaint; — yy — mm
	ľ				2000.108	,			ŀ		<u>, , , , , , , , , , , , , , , , , , , </u>	,		

Presei	nt state (1	/7)				
Authority	DRR	Address	Bangkok	Data	23-0ct-09	
Bridge	ge Phra Pin Klao Bridge					



Prese	nt state (2	/7)			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Phra Pin Klao Bridge				

	Picture No.	4
	Span	1
	Member	Hinge
	<b></b>	_
	Picture No.	5
	Span	
	Member	Expansion joint
	Corrosion a	it end
and the state of the second		
	Picture No.	6
	Span	1
	Member	Expansion joint
	Corrosion	
A CARLES AND		

Prese	nt state (3	/7)			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Phra Pin Klao Bi	ridge			

	Picture No.	7
	Span	1
	Member	Expansion joint
	Center hing	ge part
	Picture No.	8
	Span	1
	Member	Expansion joint
	Deteriorati	on of drain function
	Bangkok sid	le
	No door in	manhole
A state that the		
	Picture No.	9
	Span	1
	Member	bottom slab
A CONTRACT OF A	Deteriorati	on of drain function
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Thon Buri s	side
A B B B B B B B B B B B B B B B B B B B		

Present state (4/7)					
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Phra Pin Klao Bridge				

	Picture No.	10
	Span	1
A second	Member	Approach bridge
and the second se		
	Crack	
The second second		
A CALLER AND A CAL		
A CONTRACTOR OF THE OWNER		
	D. J. M.	4 4
	Picture No.	
	Span	M . 1 1
	Member	Man noie
	Leakage fro	om manhole
	Leakage fro	om water supply?
The second s		
	Picture No.	12
	Span M1-	D1
	Member	Pylon
	Mark of lea	kage from joint of
	barrier	~ •
1 10 - Contraction of the second		
the first of the second second		
the sector is the second care - a		

Present state (5/7)					
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Phra Pin Klao Bridge				

	Picture No.	13
	Span	1
	Member	Drainage
	D1 1.	
	Blocking	
The second s		
	Picture No.	14
	Span	1
	Member	Lighting pole
	D	
	Deteriorati	on of corrosion proofi
	Picture No.	15
	Span	1
	Member	Walkway
	0 00:4:	
	Graffiti	
	Fracture of	decorative plate

Present state (6/7)					
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Phra Pin Klao Bridge				

	Picture No.	16
and the second se	Span	1
THE REAL PROPERTY OF THE PROPE	Member	Slab
and the second s		
	Free lime f	from construction joint
and the second s		
	*Survey on	board, 31-oct
		1-
	Picture No.	17
the second s	Span	l
a kan a start NS 1055 Mar	Member	ninge
	Leakage	
and the second s		
THE REAL VILLEN		
	*Survey on	hoard 31-oct
The second s	·burvey on	<i>board, of occ</i>
and the second sec	Picture No.	18
	Span	1
King and Frankling I	Member	Slab
	NT 1	
	Nest harm	
A TANK A DELAY		
S. P. Lander		
AMELL FILL VE		
all a set to the set		
	*Survey on	board, 31-oct
A A A A A A A A A A A A A A A A A A A		

Present state (7/7)					
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Phra Pin Klao Bridge				

	Picture No.	19
	Span	1
	Member	Substructure
and the second se		
CARGE AND A CONTRACT OF A CARGE AND A C		
	*Cutarion on	boond 21-oot
	*Survey on	<i>Doard, 31-001</i>
	Picture No	20
	Span	1
	Member	
	Picture No.	21
	Span	1
	Member	
		-
Bridge No.

13

Photo No. ( ~

				Ro	uto namo	_				DRR		Code of authority	-
	Br	idge name	Memorial Bridge	NO				Auth	nority	DIII	DKK		-
	Р	from	hat Thon Buri	Dist	from	km+	0					Survey date	2009/10/23
	_	to	het Phra Nakhon		to	km+	0				_		
		Bridge type	1) main road side road ramp		Camber	r deform	yes • no		ltem	Туре		<b>.</b>	State
	s	Bridge type	2) bridge • viaduct • plank pass		Differend	c in glade	yes • no		Main girde	r Iruss	Corrosi	on, Deterioration	of proofing, deformation by collis
	tie	Bridge type	3) 3-span steel truss		iont i nuous	s of barrie	yes ∙no		Cross bea	I section steel	-		
	oper	lotal lengt	n 234.00 (m)		Continuo	us ot curve	yes no		Stringer	I section steel	- D.f.		
	e pr	Span	78 + 78 + 78 (m)	4	NO Smart	olse	yes • no		Cross tran	I SECTION STEEL	Detorma	tion by collision	
	'i dg	NOS. OI SPa	10.00 (m) (m)	Inse	t diffor		yes • no		Lateral bra	ce —	- Creek (	under and tan of	read under wellower) free line
	Ē	Completion	10.00 (iii) / (iii)	r Z		ing damage		mage	Abutmont			under and top of	road, under warkway), free fille,
211	╞	USUNDIELIU	1902	۳۲	Blocked	drainage	yes - no	f da	Pier	Octagon	_		
亦		Horizontal	Straight incli $(A = ^{\circ})$ Curve $(B = m)$	S	Crack of	f navement	ves • no	.o 9	Bearing	Pin hearing	Deterio	ration of proofin	g of anchor bolt
-181	Ξ	Gradient			Damage o	f lighting	ves • no	Ē	Barrier	-	-		
	atio	Nearby tunn			Damage	ofsign	<u> </u>	13	Railing	Steel	General	lv healthv	
	fern	Nearby cross	ing ves · no ( m)		Damage o	f handrail	ves • no	1	Curb	_	_	<u> </u>	
		Traffic	Much • Medium • Little		Possibili	ty of scou	ryes • no	4	Pavement	asphalt.concret	e General	ly healthy	
	Roa	Commercial tra	ffi Much Medium Little		Walkway	yes • no	]	1	Joint	drained undrain	Partly	leakage	
	ſ				Vehicle	yes • no	(center span)		Drainage	yes · no	Blocked		
	r onn	1. Urban	2. Suburbs 3. Mountain 4. Seaside	~									
	i vi	5. Industria 9 Salty	6.Harbor /.Kesidential 8.Bussiness 10.Cold and snow 11 Heavy snow 12 Others	n wa					• Serio	us damage by shin	ollision	and vehicle coll	ision was seen
F	i di	1. Shinkanser	2. Railway 3. Highway 4. Road	ctio					• 1 cro	ss frame of center	span was	dropped off	
	pr	5.River	6. Lake 7. Ravine 8. Valley	ispe				sı	• Remai	ning water was fou	nd in chor	d member	
	Inder	9.Waterway 13 Vacant	10.Parking 11.Bike parkin 12.Park 14.Harbor Name (Chao Phrava )	-				sior	• Longi	tudinal crack loca ty of support memb	ted betwee er of walk	en walkway and roa way More detail	adway might be caused by insufficie
ŀ	_		1. Inspection carl2. Falsework 3. On ground 4. Ladder 5. Lift car					pres	• Some	rivet was lost			
	8	Superstructu	re 6.0n boat 7.Special camera 8.Others( Inspection vehicle )		Height of g	irde	about 7.3r	<u> </u>					
	tho	Substructur	e 1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car		◆ Deteri	oration of b	oridge 🔶						
	ss me		6. Un boat /. Special camera 8. Others ()	s i s	deficient	· fair ·	good	⊢		. Mainta	nanca and	renairing work w	uas done hy ODA at 1081
	cces	Reason	• If inspection car is not available, false work	agno	• Deforma	ation by co	llision		listory	of repair ;	nanos anu	Toparting work W	Repaint ; — yy — mm
	Ā		will be required for center span	Di	• Corros	ion of some	member		Sur	veyor; Mr,Chujo	, Mr.Kudo		
L					• Crack u	under walkw	lay						

Prese	nt state (1	/ 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	1
the second	Span	1
	Member	Side view
	Picture No.	2
and the second se	Span	1
	Member	View on road
	Picture No.	3
	Span	
A STATE AND A STAT	Member	view under girder
	Inspection	vehicle of side span
	mspectron	veniere of side span.
	No inspecti	on vehicle in center
	span	
TIGHT		

Prese	nt state (2	/ 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	4
	Span	1
and the second s	Member	Side view of side span
	Picture No.	5
	Span	2
and the second se	Member	side view of center sp
	Disture No.	
	Picture No.	6
	Mombor	View of welkwey
	Melliber	view of walkway
The second se		

Prese	nt state (3	/ 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	7
	Span	1
	Member	material
	The materia	al made in England
	T. 2	.1
	lt s seems	that same fabricator
No. S. C.	provide mat	cerial for repairing wo
/ UAU RIMANIA DAL		
and the second		
and the second		
	Picture No.	8
	Span	1
	Member	Material
	A325 (ASTM)	NKVM
	A020 (A01M)	, 1/1/1/1/
	High tensic	on bolt
	produced MI	SUBOSHI
	-	
	Picture No.	9
	Span	1
	Member	Inspection vehicle
and the second		
	Han powered	l inspection vehicle.

Prese	nt state (4	/ 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	10
	Span	1
	Member	Expansion joint
	D 1 1 1	1
	Bangkok sic	le
	Picture No.	11
	Span	1
	Member	Expansion joint
	Bangkok sid	le
Designed and the second	Deteriorati	on of corrosion proofi
Contraction of the second s		
and the second sec		
		10
	Picture No.	12
	Member	Fypansion joint
	Member	
	between sid	le span and center spar
	Peeling of	surface layer
· · · · · · · · · · · · · · · · · · ·		

Prese	nt state (5	/ 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	7
· · · · · · · · · · · · · · · · · · ·	Span	1
	Member	Bearing
	Deteriorati	on of corrosion proofi
and the second se		
and the second		
	Diatura Na	0
CI CLARK MARKED	Span	0
A CONTRACT OF THE OWNER OF THE OWNER	Mombor	Pooring
131200	Member	Deal Ing
	Remaining w	ater
	itemetining (	
A Design the second second		
	Distan M	0
	Spop	9
8	Mombor	Bearing
	Member	Deal mg
	Mark of rem	arkable corrosion
	Main of for	
	There is no	) remaining water at
The Provide States of the second states of the seco	survey. Imp	proved?
and the second sec		

Prese	nt state (6	/ 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No	10
	Span	1
	Member	 Stay cable
		,
	Connection	between steel and slab
	It looks ma	ake gap around steel
	member from	n bottom side.
A CONTRACTOR OF A CONTRACTOR O		
Martin Martin Martin		
	Picture No.	11
	Span	1
	Member	Inspection vehicle
	Mounted up	around steel member
	to prevent	remaining water.
	It looka na	an enound steel memb
	from top si	do
		ue.
A CARLER OF		
THAT I -		
	Picture No.	12
	Span	l
	Member	STab
	It looks no	gan around steel memb
	from top si	de.
	1	

Prese	nt state (7	/ 18 )			
Authority	DRR	n	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	13
	Span	1
	Member	slab
	Reinforceme	ent by additional plate
		· · ·
	Original st	ructure is connected
	by rivet	
	Reinforceme	ent structure is
	connected b	oy high tension bolt.
A CONTRACTOR OF A CONTRACT		
	Picture No.	14
A Alberton and a	Span	1
	Member	slab
	Dainfanaama	nt plata
and the second	top and bot	tom of mombor
	top and bot	
EL.		
	Picture No.	15
	Span	1
1	Member	slab
	D · ·	
	Remaining w	vater is seen inside of
		9 <u>1</u>
THE REAL PROPERTY OF THE PROPERTY OF THE REAL PROPE		

Prese	nt state (8	/ 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	16
	Span	1
	Member	slab
	Remaining w	vater
	It will mak	e corrosion
	Picture No.	17
	Span	1
	Member	slah
	member	5145
	Remarkable	reduced section
		10
	Ficture No.	18
	Span	l
ZIB MEIN	Member	STAD
	Rivet is po	t abanged to helt
	KIVET IS IIC	ot changed to bort.
	Reinforceme	nt plate was connected
	only center	by bolt.
		,

Prese	nt state (9	/ 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	13
	Span	1
	Member	slab
	Deteriorati	on of corrosion proofi
	Picture No.	14
	Span	1
	Member	slab
	Corrosion o	of diaphragm
	Accumulatio	n of soil
All the second s	needmaratic	
All have been and the second sec		
	Picture No.	15
0 0	Span	1
	Member	Lighting pole
	Correction	fdianhnam
		or uraphragm
10 01		

Prese	nt state (10	) / 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	16
	Span	1
	Member	Chord member
	Repaired me	ember
	Picture No.	17
	Span	1
	Member	Bolt
and the second s	Rivot was r	conlaced by bolt
0	Kivet was i	epiaced by boit
6		
6 6 6 60		
	Picturo No	18
	Snan	1
	Member	Bolt
		Dort
	Looseness c	of bolt

Prese	nt state (1	1 / 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				
			Diet	Ma	10

	Picture No.	19
	Span	1
	Member	Bolt
	Falling of	rivet
5 7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		
2. 2. 6. 6. 1		
	Picture No.	20
	Span	1
	Member	Upper chord
	1	**
	Deformation	
	Picture No.	21
	Span	1
	Member	Lighting pole
and the second second second		
	Corrosion	

Prese	nt state (12	2 / 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	22
The second se	Span	1
and the second	Member	Stringer
	Stringer is tension bol	connected by high t.
	411	
	All stringe	er might be replaced
	at repairir	ig work
THANKING STORES		
	Picture No.	23
	Span	1
The second second	Member	Bottom chord
	Deformation	by vehicle collision
	Limit of ve	hicle height is 3.5m
	No warning	frame is set before
	bridge at 1	`hon Buri side
CARLES CARLES		
	Picture No.	24
	Span	1
	Member	Bottom chord
1000		
and a second sec	Deformatior	by vehicle collision
State Ma	Thon Buri s	side
The second second		
	1	

Prese	nt state (13	3 / 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	25
	Span	1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Member	Cross frame
	Thon Buri s	ide
	Buckling by	vehicle collision
TTADO		
	Diatura Na	26
	Span	1
	Member	End cross beam
	member	Lind Crobb bedm
	Deformation	1
9		
the second s		
		07
	Picture No.	27
	Span	Detter shered
	Member.	Bottom chord
	Pupturo of	rivet by vehicle
	collision	livet by venicie
	0011151011	

Prese	nt state (14	4/18)			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	28
	Span	1
	Member	Monitoring camera
auus O auus n		
Thom Buri District Area		
THE REAL PROPERTY OF		
	Picture No.	29
	Span	1
	Member	Worning frame
3.80 at	There is wa	rning frame at Bangkok
	side	
and the second second		
3.8u 3		
	Picture No.	30
	Span	1
	Member	slab
	Crack on sl	ab

Presei	nt state (18	5/18)			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	31
	Span	1
	Member	slab
	Replaced sl	ab
	D 1	1.1
	Free lime i	s seen on slab of
	center spar	and walkway
A REAL PROPERTY AND A REAL	Picture No.	32
and the second sec	Span	1
	Member	slab
	0 1 1 0	1.
	Crack and I	ree lime
Participants and a series of the		
	Dioture M	<b>ე</b> ე
	snan	აა 1
	Member	Drainage
	momoor	21 armage
	Blocked	
and the second		

Prese	nt state (16	6 / 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	34
	Span	1
	Member	Slab
	Longitudina and walkway Insufficier bracket men *Survey on	al crack between road hey of rigidity of aber of walkway? board, 31-oct
	Picture No.	35
	Span	1
	Member	Slab
3.00	Longitudina	al crack between road
	and walkway	7
	*Survey on	board, 31-oct
	Picture No.	36
	Span	1
	Member	Slab
	Longitudinal crack between road and walkway Fracture of surface	
The second secon	*Survey on	board, 31-oct

Authority DRR Address Bangkok	Data	23-0ct-09
Bridge Memorial Bridge		

Picture No.	37
Span	1
Member	slab
Crack and f	free lime on bottom
surface of	slab
Deformation	of cross frame
by ship col	lision
*Survey on	board 31-oct
	<i>board, 51 bet</i>
Picture No.	38
Span	1
Member	Inspection car rail
Lack of bol	t
*Survev on	board. 31-oct
	······································
Picture No.	39
Span	1
Member	Cross frame
Drop off 1	member by ship
collision	
*Survey on	board, 31-oct

Prese	nt state (18	3 / 18 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Memorial Bridge				

	Picture No.	40
	Span	1
	Member	Gusset plate
	Damage by s	ship collision
A BARRAN R A SON ADDRESS		
Severe The H		
NARA PRE DEPENDENCE		
	*C	h 1 21 +
	*Survey on	board, 31-oct
	Picture No.	41
	Span	1
	Member	1
	Moniber	
	Picture No.	42
	Span	1
	Member	

Bridge No.

14

Photo No. ( ~

				Pou	ita nomo	_					DDD		Code of authority	-
	Bri	dge name	Phra Pokklao Bridge	NUL		Autho		thoi	hority		No.	-		
	ΡI	ace	hat Bangkok Noi	Dista	from	km+	0	)					Survev date	2009/10/23
		to	Khet Phra Nakhon		to	km+	0	)	_			1	-	
		Bridge type	1) <u>main road</u> · side road · ramp		Camber	deform	yes ·	no		ltem	Туре			State
		Bridge type	2) bridge • viaduct • plank pass		Differenc	e in glade	yes •	no	N	Main girder	PC-Box	free li	me	
:		Bridge type	3) 3-span continuous PC box girder		ontinuous	of barrie	yes •	no		Cross beam	-	-		
	Inde	Total lengt	l length 212.00 (m)		Continuou	s of curve	yes •	no		Stringer	-	-		
	5	Span	56 + 100 + 56 (m)	Ļ	No	ISE	yes •	no		Cross frame	_	-		
:	ngn -	NOS. OT SPA	1 3 span	- I nse		e change	yes •	no	La	ateral brace	_	-		
4		Completion	13. Z X Z (m) / (m)	y re		ence grade	yes •	no	lage	Abutment			me	
24		Compretion	1904	urve	Blocked	drainage	yes .	110		Pier	Rectangular			
素	+	Horizonta	Straight incli $(A - \circ)$ . Curve $(P - m)$	S	Crack of	navement		no	2	Bearing	Slide hearing	_		
-200	₌⊢	Gradient			Damage of	flighting	ves •	no +	5  -	Barrier	Trapezoidal	Exfolia	tion	
° :		Nearby tunn			Damage	of sign	,00		╕┝	Railing	Steel	General	ly healthy	
		learby cross	ng ves · no ( m)		Damage o	f handrail	ves •	no	┢	Curb	_	-	.,	
	┋┝╴	Traffic	Much · Medium · Little		Possibili <sup>.</sup>	ty of scour	yes ·	no		Pavement	asphalt.concre	te General	ly healthy	
4	20	ommercial tra	fi Much • Medium • Little		Walkway	yes • no			F	Joint	drained undrain	ied Leakage	at end	
					Vehicle	yes • no				Drainage	yes · no	General	ly healthy	
Г	5 1	. Urban	2. Suburbs 3. Mountain 4. Seaside	У										
		5. Industrial A Salty	6.Harbor 7.Residential 8.Bussiness	n wa					_					
H	2 1	Shinkanser	2 Railway 3 Highway 4 Road	stio										
-	5	5. River	6. Lake 7. Ravine 8. Valley	spec					2					
-	1 9 1	).Waterway 3 Vacant	10.Parking 11.Bike parkin 12.Park 14.Harbor Name (Chao Phrava )	-										
H			1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car						h es					
	,   ;	Superstructu	6. On boat 7. Special camera 8. Others ( )		Height of g	irde ;	about 8.	9m -	≣  …					
	21110	Substructu	1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car		◆ Deterio	oration of b	ridge	•						
	Ľ.		6. On boat 7. Special camera 8. Others ()	sis	deficient	• fair •	good				1			
	CCER	Reason	• If inspection car is not available, false work	agno					li	istory of	repair ;			Repaint; — yy — mm
	۲L		will be required	Dİ						Surve	yor; Mr,Chuj	o, Mr.Kudo		

Prese	nt state (1	/4)							
Authority	DRR	Address	Bangkok	Data	23-0ct-09				
Bridge Phra Pokklao Bridge									

	Picture No.	1
And No. of the Second Second	Span	1
1	Member	Side view
	Picture No.	2
	Span	1
	Member	View on road
The second se		
	Picture No.	3
	Span	1
	Member	View under girder
At a la the stand		

Prese	nt state (2	/4)								
Authority	DRR	Address	Bangkok	Data	23-0ct-09					
Bridge Phra Pokklao Bridge										

	Picture No.	4
	Span	1
	Member	Approach bridge
	Settlement	around pier
TIEH TANK & SA		
	Picture No.	5
	Span	1
	Member	Catch basin
(1) 化化学结构型的 化聚乙烯 计目录字段 医外外的 计分子 计容易变 医黄疸化素 化一次分子的一次分子的一次分子的一个分子的一个小子的一个小子的一个小子的一个小子的一个小子的一个小子的一个小子的一个小		2
	Picture No.	6
	Span Mamb an	
	Member.	Catch basin
	Cross fall	is parahola?
		15 parabora.
	Catch basin	n is installed at both
	side	

Prese	nt state (3	/4)								
Authority	DRR	Address	Bangkok	Data	23-0ct-09					
Bridge Phra Pokklao Bridge										

	Picture No.	7
	Span	1
The New York Comments	Member	Side barrier
very and the second of the		-
	Exfoliation	n of concrete
ALL PROPERTY AND A DECIMAL OF A		
		0
	Picture No.	8
	Span	
	Member	Center barrier
	Encotuno of	Cooponata gunfaca
		concrete surrace
and the second		
	Picture No.	9
	Span	1
	Member	
A REAL PROPERTY AND A REAL	Free lime	
	Deteriorati	on of drain function
· · · · · · · · · · · · · · · · · · ·		
	*C.	boond 91_c-+
	*Survey on	board, 31-oct

Prese	nt state (4	/4)							
Authority	DRR	Address	Bangkok	Data	23-0ct-09				
Bridge Phra Pokklao Bridge									

	Picture No.	10
	Span	1
	Member	Drainage
	Scratch by	ship collision
a la		
a matter a for the state		
Contraction of the second s		
	Picture No.	11
the second second second	Span	1
	Member	Substructure
and the second sec		
the second s		
	Picture No.	12
	Span	1
	Member	Pylon

Bridge No.

15

Photo No. ( ~

	- ·	· .	Talasia Duidas	Roi	ute name	-				DRR		Code of authority	-
	Brı	idge name	laksin Bridge					Aut	hority	2		No.	-
	P١	ace from	Khet Khlong San	Dista	from	km+	0					Survey date	2009/10/27
	Т	LO Bridge type	(1) main road · side road · ramo		Camber	deform	ves • n	1	ltem	Type			State
	F	Bridge type	(2) bridge · viaduct · plank pass		Differend	ce in glade	ves • n	2	Main girder	PC-Box	free li	ne. Suspicious of	crack
	es	Bridge type	(3) 3-span continuous PC box girder		ontinuous	s of barrie	yes • n	5	Cross beam	_	-		
	er t	Total leng	:h 224.00 (m)		Continuou	us of curve	yes n	D	Stringer	-	-		
	proc	Span	66 + 92 + 66 (m)		No	oise	yes • ne	D	Cross frame		-		
_	age	Nos. of spa	an 3 span	ult	Spac	ce change	yes • n	<b>0</b>	Lateral brac	e —	-		
6		Width	12.85 x 2 (m) 🗡 (m)	res	.E differ	ence grade	yes • no	ള്	Slab		free li	ne, leakage	
		Completion	1982	r vey	drain	ing damage	yes • n	o and	Abutment	-	-		
派				Su	Blocked	drainage	yes n	o fo	Pier	V shape	-		
<u>†-2(</u>	₋⊢	Horizonta	Straight · incli( $\theta$ = °) · Curve (R m)		Crack of	f pavement	yes • n	n i	Bearing	Slide bearing	Deterio	ration of proofin	g
5		Gradient	One way (ア・ゝ) parabol (凸・凹)		Damage o	f lighting	yes • n	의 불	Barrier	Irapezoidal	Lack of	cover at expansi	on joint, Extoliation
		Nearby Lunn	ing voo - ro		Damage	ol sign			Curb	-		ry neartny	
	┋┝	Traffic	Nuch Medium · Little		Possibili	tv of scou	ves n	2	Pavement	asphalt concrete	Unevenn	ess	
	080	ommercial tra	ffi Much Medium Little		Walkway	yes • no	<u>, , , , , , , , , , , , , , , , , , , </u>	5	Joint	drained undraine	leakage	at end	
					Vehicle	yes • no	]		Drainage	yes • no	Blocked		
	5 1	1. Urban	2. Suburbs 3. Mountain 4. Seaside	У									
		5.Industrial 9 Salty	6.Harbor 7.Residential 8.Bussiness	n wa					• Suspic	ious of shear crac	k is four	nd in Thonburi sid	de span. It is recommended watching
	ë 1	1. Shinkanser	2. Railway 3. Highway 4. Road	stio					conti	nuously	K TO TOUT		
-		5.River	6. Lake 7. Ravine 8. Valley	Ispe					• Moveme	ent to center span	was seen	at Bangkok side b	pearing. It is recommended watching
_		9. Waterway 13. Vacant	10. Parking 11. Bike parkin 12. Park 14. Harbor Name (Chao Phrava)	-				sion	contin • Cover	uously. of barrier and rai	ling was	disappear on expa	ansion ioint.
F	-	Superstruct	ITE 1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car		Hoight of a	irda	about 12	Impre:					
			1. Inspection card 2. Falsework 3. On ground 4. Ladder 5 lift car		▲ Deteri	oration of	about 12						
	шег	Substructu	6. On boat 7. Special camera 8. Others ( )	<u>.</u>	deficient	• fair	good						
	Access	Reason	<ul> <li>All bridge section is on the water</li> <li>If inspection car is not available, false work</li> </ul>	agnos	<ul> <li>Notice</li> <li>Crack of</li> </ul>	able point or cold joi	♦ nt on web		listory o	of repair ;			Repaint; — yy — mm
	⁻┢		will be required	Di	• Longitu	udinal move	of girde	r	Surve	eyor; Mr,Chujo,	Mr.Kudo		

Prese	nt state (1	/ 8 )			
Authority	DRR	Address	Bangkok	Data	27-0ct-09
Bridge	Taksin bridge				

	Picture No.	1
and the state of the	Span	1
	Member	Side view
and the second s		
	Picture No.	2
	Span	1
	Member	View on road
	Picture No.	3
	Span	1
	Member	View under girder

Present state (2/8)					
Authority	DRR	Address	Bangkok	Data	27-0ct-09
Bridge	Taksin bridge				

	Picture No.	4	
	Span	1	
	Member	Expansion Joint	
	Replaced ex	pansion joint	
	Picture No.	5	
SERE	Span	1	
	Member	Expansion joint	
	Spacing is	wider than 3cm than	
	other joint		
	Bangkok sid	le, down stream	
	Picture No.	6	
	Span	1	
	Member	Expansion joint	
	Lack of cover of barrier and cur		

Prese	nt state (3	/ 8 )			
Authority	DRR	Address	Bangkok	Data	27-0ct-09
Bridge	Taksin bridge				
_	-				

	Picture No.	7
	Span	1
	Member	Water supply
	modular typ	be is applied for the
	bridge of t	lpstream
	Lack of cov	ver of barrier
	Picture No.	8
	Span	1
	Member	Bearing
	Movement of	bearing.
	Bangkok sid	le
	Already rea	ich to end of sliding
	plate	
	Picture No.	9
	Span	1
	Member	Bearing
	M i G	י רי וידי
	Movement of	Thon Burl side is sma
And the second sec		
	1	

Prese	nt state (4	/8)			
Authority	DRR	Address	Bangkok	Data	27-0ct-09
Bridge	Taksin bridge				

	Picture No.	10
	Span	1
	Member	Expansion joint
	Deteriorati	on of drain fanction
	Mark of lea	ıkage
- and the second second		
the second se		
	Picture No.	11
	Span	1
	Member	Vertical alignment
	Bent angle	between main bridge
	and approad	ch bridge
	Picture No.	12
	Span	1
	Member	Slab
	Erre lime	
	Free lime	
2) Person and the loss of the		

Prese	nt state (5	/ 8 )			
Authority	DRR	Address	Bangkok	Data	27-0ct-09
Bridge	Taksin bridge				

	Picturo No	7
	Spop	1
	Mombert	Don airden
	Member	box girder
		11
	Shear crack	or severe cold joint
	Detailed st	udy is recommended
	Free lime f	from filled hole
	Without wat	cerproofing?
	Picture No.	8
8 8 e	Span	1
	Member	Catch basin
	Free lime f	from filled hole
	Without wat	erproofing?
and a second		
	Picture No.	9
	Span	1
	Member	Barrior
		Dairroi
	Exposure of	rehar
And the second	Supobare 01	. 1 2 Mai
The second se		
and the second of the second sec		

Authority DRR Address Bangkok Data	27-0ct-09
Bridge Taksin bridge	

	Picture No.	10
	Span	1
	Member	Slab
	Mark of rep	air
	Picture No	11
	Span	1
	Member	Bearing
		0
	Leakage fro	om joint
	<u>т</u> , т	י י ח וי
	Upstream, I	hon Burl side
	D. J. M.	10
A STATE OF THE STA	Picture No.	12
	Span	Lighting polo
	Member	Lighting pole
	Free lime (	lower)
	Crack (uppe	er)
A second	Upstream, E	angkok side

Prese	nt state (7	/ 8 )			
Authority	DRR	Address	Bangkok	Data	27-0ct-09
Bridge	Taksin bridge				

Picture No.	7
Span	1
Member	Catch basin
Blocking	
Picture No	8
Snan	1
Member	Pavement
Member	T dvomorre
Uneavenness	of navement
	or parometre
Upstream, B	angkok side
	anghon brac
Picture No.	9
Span	1
Member	Walkway
Feeling une	asy due to wide gap

Prese	nt state (8	8 / 8 )			
Authority	DRR	Address	Bangkok	Data	27-0ct-09
Bridge	Taksin bridge				

Picture No.	10
Span	1
Member	Girder
Free lime f	from construction joint
Picture No. Span	<u>11</u> 1
Member	Girder
 Acumuration	n of soil
Picture No.	12
Span	1
Member	Pier
Τ	1
Test of car	bonation is recommende

Bridge No.

16

Photo No. ( ~

					 Route name –				DRR		Code of authority	_		
	Br	idge name	RAMA III Bridge	RAMA III Bridge		A	uth	oritv	UKK		No.	-		
	Р	from	het Thon Buri	Dista	from	km+		0					Survey date	2009/10/23
		to	het Bang Kho Leam	01000	to	km+		0						2000/10/20
		Bridge type	1) main road · side road · ramp		Cambe	r deform	yes •	no		ltem	Туре			State
		Bridge type	2) bridge • viaduct • plank pass		Differen	ce in glade	yes •	no		Main girder	PC-Box	General	ly healthy	
	ties	Bridge type	3) 3-span continuous PC box girder		ontinuou	s of barrie	yes •	no		Cross beam	-	-		
	per	Total lengt	h 476.00 (m)		Continuo	us of curve	yes •	no		Stringer	-	-		
	pro	Span	125 + 226 + 125 (m)		No	bise	yes •	no		Cross frame	-	-		
	i dge	Nos. of spa	n 3 span	sult	Space	ce change	yes •	no		Lateral brace	-	-		
	Ъ	Width	23.00 (m) / (m)	/ re	·= diffe	rence grade	yes •	no	lage	Slab		-		
	╞	Completion	2000	ir ve,	drain	ing damage	yes •	no	darr	Abutment	-	-		
滚	_			Su	Blocked	drainage	yes •	no	e of	Pier	Rectangula	r –		
<u>†-21</u>	_	Horizontal	Straight · incli( $\theta$ = ) · Curve (R m)		Crack o	pavement	yes •	no	line	Bearing	-	-		
4	Ę	Gradient	One way ( ァ・ 、 ) parabo ( 凸・ 凹 )		Damage o	T lighting	yes •	no	Ort	Barrier	-			
	orma	Nearby tunn	yes • no ( m)		Damage	OT SIGN	-			Railing	-	-		
	infe	Nearby cross	ng yes • no ( m)		Damage o	T nandrall	yes •	no		Curb	-	- Kata Conorol	ly boolthy	
	oad		Much · Medium · Little		Wolkwoy		r yes •	no		Faveillerit	drained undr	rece deneral		
	~		in much · meanum · Little		Vohiolo	yes no	] 1			Drainaga		_		
┢	Ęſ	1 IIrhan	2 Suburbs 3 Mountain 1 Seaside		venicie	yes no	]			Diamage	yes no			
	viro	5. Industria	6. Harbor 7. Residential 8. Bussiness	way										
	Еù	9.Salty	10.Cold and snow 11.Heavy snow 12.Others	ion						•Hole fo	or fixing of f	ormwork of p	ier was not fille	d by mortar
	or i d	1. Shinkanser	2. Railway 3. Highway 4. Road	ect						• New br	idge			
	er	9. Waterway	10. Parking 11. Bike parkin 12. Park	Insp					ons					
L	Und	13. Vacant	14.Harbor Name (Chao Phraya )						essi					
	σ	Superstructu	re 1. Inspection car 6. On boat 7. Special camera 8. Others ()		Height of g	irde	about	34m	lmpr					
	metho	Substructur	e 1. Inspection car <sup>2</sup> . Falsework 3. On ground 4. Ladder 5. Lift car 6. On boat 7. Special camera 8. Others ()	s	<ul> <li>Deteri</li> <li>deficien</li> </ul>	oration of l	oridge good	•						
	sess	5	• All bridge section is on the water	r 🦉 ♦ Noti		able point		•		listory of	f repair ;			Descript
	Acc	Keason	• IT INSPECTION CAT IS NOT AVAILABLE, TAISE WORK will be required	Diag	• Survey	Trom boat				Surve	vor · Mr Ch	uio Mr Kude	)	кераint; — yy — mm
	╞										, mi, or	ajo, mi. Kuut	,	
_														

※ 行資 ↓

Prese	nt state (	(1/2)			
Authority	DRR	Address	Bangkok	Data	31-0ct-09
Bridge	Rama 3				

	Picture No.	1
	Span	1
- Fritzen - Fix & F	Member	Side view
the second second		
The second secon		
The second se		
	Picture No.	2
	Span	1
	Member	View under girder
	Picture No.	3
	Span	1
	Member	View of pier
	internite e t	, ion of prof

Prese	nt state (	2 / 2 )			
Authority	DRR	Address	Bangkok	Data	31-0ct-09
Bridge	Rama 3				

A DECEMBER OF	Picture No.	4
	Span	1
	Member	Pier
and the second		
	Unfilled ho	le
I A State of the second s		
THE REPORT OF THE PARTY OF THE		
2 I I I I I I I I I I I I I I I I I I I	Picture No.	5
	Span	1
	Member	Girder
	Unfilled ho	le
	Picture No.	6
	Span	1
	Member	
## Inspection sheet of visual survey

Bridge No. 17

Photo No. ( ~

				Poi	uto namo	_					NPP		Code of authority	-
	Br	idge name	Krung Thep Bridge	NUL				Au	thor	ritv	DAIX		No.	-
Γ	Р	lace from	het Thon Buri	Dista	from	km+	0						Survev date	2009/10/23
		to	Chet Bang Kho Leam		to	km+	0		_			1	-	
		Bridge type	1) <u>main road</u> · side road · ramp		Camber	r deform	yes · I	no		ltem	Туре			State
	<i>"</i>	Bridge type	2) bridge • viaduct • plank pass		Differend	ce in glade	yes • I	no	м	Main girder	Truss	Deterior	ration of proofin	g, Reduce of thickness at center sp
	tie	Bridge type	3) 5-span steel truss		iont i nuous	s of barrie	yes • I	no	(	Cross beam	l section steel	-		
	oper	Total leng	h 316.00 (m)		Cont i nuou	us of curve	yes • I	no		Stringer	l section steel	-		
	pr.	Span	64 + 64 + 60 + 64 + 64 (m)		No	oise	yes • I	no	С	Cross frame	T section steel	-		
	i dge	Nos. of spa	n 5 span	sult	Space	ce change	yes • I	no	La	ateral brace	—	-		
	Ъ	Width	12.00 (m) / (m)	v re	·= differ	rence grade	yes • I	no	lage	Slab		Fructure	e of botom side o	f walkway, Crack of walkway,free li
		Completion	1959	rve	drain	ing damage	yes • I	no		Abutment	_	-	/	
添付-217				Su	Blocked	drainage	yes • I	no 4		Pier	Oval	Crack ur	nder bearing (app	roach bridge)
	-	Horizonta	Straight incli $(\theta = 1.7\%)$ (R m)		Crack of	f pavement	yes • I	no	≝⊢	Bearing	Pin bearing	Deterior	ration of proofin	g
	١ <u>ظ</u>	Gradient	One way ( ァ ・ ゝ ) parabol ( 凸 ・ 3.45% )		Damage o	f lighting	yes • I	no d	5 L	Barrier	Irapezoidal	General	ly healthy	
	2 Lug	Nearby tunn	yes • no ( m)		Damage	of sign				Railing	Steel	General	ly healthy	
	- Le	Nearby cross	ng yes • no ( m)		Damage o	t handrail	yes • I	no		Curb	-	-		
	oad	Irattic	Much • Medium • Little		Possibili	ty of scoul	yes • I	no		Pavement	asphalt concrete	General	ly nealtny	
	20	commercial tra	Ti Much • <u>Medium</u> • Little		walkway	yes • no	1	_		Joint	drained undrained	Partiy	Теакаде	
-	Ξr	1 Halera	0 Octovelar		venicie	yes • no				Drainage	yes • no	DTOCKEU		
	iro	1. Urban 5. Industria	2. Suburbs 3. Mountain 4. Seaside 6. Harbor 7. Residential 8. Bussiness	vay					-					
	Env	9.Salty	10.Cold and snow 11.Heavy snow 12.Others	on v					•	Paintin	ng is renewd. But F	Reduction	of steel thickne	ess was seen at connection part bet
	rid	1. Shinkanser	2. Railway 3. Highway 4. Road	ecti						and conc	rete slab.			
	er b	5.River 9 Waterway	6.Lake /.Kavine 8.Valley 10.Parking 11.Bike parkin 12.Park	dsu					sus 	<ul> <li>Rust wa</li> <li>Crack (0)</li> </ul>	is seen over paint, 8mm on ton) and t	it migh lacture	of concrete was s	scraping before paint.
	Und	13. Vacant	14. Harbor Name (Chao Phraya)						ss			Tuoturo		
Γ		Superstruct	re 1. Inspection car 6. On boat 7. Special camera 8. Others ()		Height of g	irde	about 7.	5m -						
	methoc	Substructu	e 1. Inspection car 6. On boat 7. Special camera 8. Others ()	S	Deterio deficient	oration of b	good	•						
	Access	Reason	All bridge section is on the water     If inspection car is not available, false work	agnosi	<ul> <li>Notice</li> <li>Corrosi</li> </ul>	able point	ical mem	<b>♦</b> nbe	lia	story of	repair; · Counter	mesure wa	as planed by ODA	at 1982 Repaint ;
			will be required	Di	• Breakin	ng of sl <mark>a</mark> b				Survey	yor; Mr,Chujo,	Mr.Kudo		
L														

Prese	nt state (1	/ 16 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

	Picture No.	1
	Span	1
	Member	Side view
	Picture No.	2
-	Span	3
	Member	View on road
h 0 <sup>4</sup> "1		
	Picture No.	3
	Span	1
and the second	Member	View under girder

Prese	nt state (2	/ 16 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

L-4	Picture No.	4
	Span	1
	Member	Side view of side span
	Picture No.	5
	Span	1
	Member	Side view of center sp
THE R. L.		
		C
	ricture No.	0
	Span	l View of wellinger
	Member	view of walkway

Prese	nt state (3	/ 16 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

	Picture No.	7
	Span	1
AN A	Member	Approach bridge
T		
	Limit vehic	le height 2.3m
1. 44		
11-delate La vetera		
TUMMEN		
	Picture No.	8
	Snan	1
	Member	Expansion joint
and the second		
	Picture No.	9
	Span	1
	Member	Expansion joint
	Deteriorati	on of drainage functio
a Barry and the second state of the second sta		
P		
a second s		
a second and the second second second		

Prese	nt state (4	/ 16 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

Managana Man	Picture No.	10
	Span	1
	Member	Expansion joint
	Height adju	stment around joint
	Picture No.	11
the state of the second second	Span	1
	Member	Bearing
	Locker bear	ring, Approach bridge
A REAL PROPERTY AND A REAL		
the second		
	Picture No.	12
	Span	1
	Member	Expansion joint
	Fracture of	concrete edge of
	locker bear	ing
	Falling of	water proofing materia
and the second		

Prese	nt state (5	/ 16 )				
Authority	DRR	Address	Bangkok	Data	23-0ct-09	
Bridge	Krung Thep Bridge					

	Picture No.	13
4 A Carter Constant	Span	1
	Member	Water supply
	Water suppl	y was removed
the second se		
	Picture No.	14
	Span	1
	Member	Center span
	Potation or	nton of drawbridge
	NOTATION CE	anter of drawbildge
	Picturo No	15
	Snan	10
	Member	Center span
		Å
	Hinge part	
	Continuous	vibration
	It is impor	tant to check fatigue
	crack arour	d rotation center.
A COMPANY AND A CO		
and the second sec		

Prese	nt state (6	/ 16 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

	Picture No.	16
	Span	1
	Member	Stay cable
	Hinge of dr	awbr1dge
	Machanical	parts is replaced over
	2 vears	parts is replaced ever
L. Commin Mark	Z years.	
	Picture No.	17
	Span	1
	Member	Vertical member
	Mount up of	ound wantical member
	to provent	romaining water
	to prevent	remaining water.
		10
	Picture No.	18
	Mombor	Vortical mombar
	Member	vertical member
Contraction of the second s	Deteriorati	on of calking in gap
		on of calling in Sup
No contraction of the second		

Prese	nt state (7	/ 16 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

	Picture No.	19
	Span	1
	Member	Vertical member
	Deteriorati	on of calking.
the second second second		
		20
	Picture No.	20
	Span	Chand members
2, 2 3 3 41	Member	Chora member
	Mark of rem	paired (bottom of pictu
	repair by b	polt.
and a second state of the second		
	Picture No.	21
	Span	1
	Member	slab
	Fracture of	f mortar for height
	adjustment	
A LA CARE LAND		

Prese	nt state (8	/ 16 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

	Picture No.	22
	Span	1
	Member	Center span
	Fracture of	mortar for height
·	adjustment	
and the second second		
and the second s		
A A A A A A A A A A A A A A A A A A A		
	Picture No.	23
A sea and a	Span	1
	Member	Center span
	14 0	11 1 10
R AND A REAL PROPERTY	Manufacture	ed by plasticity deform
		0.4
	ricture No.	24
	Member	L Center span
	Mellinet	Center shan
	Continuous	vibration
	Painting is	not
	塗装が完全~	ではない

Prese	nt state (9	/ 16 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

	Picture No.	25
	Span	1
	Member	Center span
	Over coatin	ng is not painted
	lower side	of flange.
A Port		
- 1 F		
	Picture No.	26
	Span	1
the second s	Member	Center span
	Middle spli	ce plate is divided in
	2 plate.	
	Picture No.	27
	Span	1
The marked which it is a	Member	Center span
	Reduction c	of plate thickness of
is and a second of the second of the	steel plate	).
A CALLER AND A LART AND A LART		
and the second se		

Prese	nt state (10	)/16)			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

MIN MANNE	Picture No.	28
	Span	1
	Member	Center span
X	Reduction o	of plate thickness of
	steel plate	).
	There is no	o remaining water
a state of the second sec		
of the second second		
****	Picture No.	29
and and a second se	Span	1
	Member	Center span
	D: / 1:	
	Dirt line i	ls seen at bottom of we
		f
	Possibility	of remaining water an
1111 1111 1111 1111 1111 1111 1111 1111 1111	5011	
Providence Mannadove		
	Picture No.	30
	Span	1
	Member	Center span
		*
	Difference	at center joint
		-
The second se		
CREAT THE THE		

Prese	nt state (1 <sup>-</sup>	/ 16 )			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

	Picture No.	31
	Span	1
	Member	Center span
	Manhole	
Nº Nº		
	Lost of bol	t
	No kev	
the start of a		
and the second second second		
	Picture No.	32
	Snan	1
	Mombor	Contor span
	Melliber	Center Span
	Door to acc	loss to contor joint
	D001 10 dec	less to center joint
- A A A A A A A A A A A A A A A A A A A		
	Picture No.	33
	Span	1
	Member	Center span
		*
	Rust from p	ainting part
		01
	Possibility	of insuficient
	of scraping	g before painting
19 19 19 19 19 19 19 19 19 19 19 19 19 1		- *

23-0ct-09

	Picture No.	34
	Span	1
	Member	Center span
	Around cent	er joint
N KA	Change from	n revet to bolt
	Mark of rem	markable corrosion
1 A A A		
	Rust from p	painting part
	5 11 1 1	
a strate of	Possibility	v of insuficient
	of scraping	g before painting
So Many Contraction of the State		
	Picture No.	35
	Span	1
	Member	Center span
	Deflection	between vertical
	member?	
the second secon		
The And And And		
	Picture No.	36
	Span	1
	Member	Center span
	Inclination	of lockor boaring
Vertication I in the second second	Bangkok sid	le
	0	
1999 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
and the second sec		

Prese	nt state (13	3 / 16 )				
Authority DRR Address		Address	Bangkok	Data	23-0ct-09	
Bridge	lge Krung Thep Bridge					

	Picture No.	37
	Span	1
	Member	Vertical member
	Reinforceme	ent by additional plate
	Picture No	38
	Span	1
	Member	Approach bridge
	EXIOIIATIO	1
	Picture No.	39
	Span	1
	Member	Approach bridge
L The bar into a later	Domoining "	ratan at ahaa
	Remaining w	vater at snoe
and the second		
and the second		

Prese	nt state (14	4 / 16)			
Authority	DRR	Address	Bangkok	Data	23-0ct-09
Bridge	Krung Thep Bridg	ge			

	Picture No.	40
	Span	1
	Member	Approach bridge
St to I		
	Crack under	bearing
The literation of the second s		-
	Deteriorati	on of load capacity
	Picture No.	41
	Span	1
	Member	Drainage
	D: J M	40
the second se	Picture No.	42
	Span	1
	Member	
	Crack above	e bracket
1 1 2 3 2 3		
and the second second		
	*Survev on	board, 31-oct
The second se		
	1	

Prese	nt state (1	5/16)					
Authority DRR Address		Address	Bangkok	Data	23-0ct-09		
Bridge	Krung Thep Bridge						

	Picture No.	43
	Span	1
	Member	Slab
		<u> </u>
	Fracture of	f slab on bracket
	*Survey on	board, 31-oct
	ricture No.	44
	Span	4
	member	5180
	Crack	
	OLACK	
	Free lime	
	1100 1100	
	*Survey on	board, 31-oct
	Di tu N	45
Langer and the second second second	ricture No.	45
	Mombor	ں Slah
	member	STAD
	Center spar	)
	center spar	1
	*Survey on	board, 31-oct
H		

Prese	nt state (10	6 / 16 )					
Authority DRR Add		Address	Bangkok	Data	23-0ct-09		
Bridge	e Krung Thep Bridge						

Picture No.	46
Span	1
Member	Bearing
Deteriorati	on of corrosion proofi board, 31-oct
Picture No.	47
Span	1
Member	
Picture No. Span Member	48

## Inspection sheet of visual survey

Bridge No.

18

Photo No. ( ~

	•••••			Pa	uto nomo						EVAT		Code of authority	-
	Bri	idge name	RAMA IX Bridge	NU					Auth	ority	LAAT			-
	PI	from	het Rat Burana	Dista	from	km+	-	0		Mr.F	Pittaya, Mr.Yadpong	5	Survey date	26-0ct-2009
		to H	het Yan Nawa	5.00	to	km+		0						20 001 2000
		Bridge type(	1) main road side road ramp		Cambe	r deform	yes ·	• no		ltem	Туре			State
		Bridge type(	2) bridge • viaduct • plank pass		Differen	ce in glade	e yes ·	• no		Main girder	Steel box girder	Under r	einforcement of U	-rib
	1 es	Bridge type(	3) 7-span steel box girder cable stayed bridge		ont i nuou	s of barrie	yes ·	• no		Cross beam	truss	Mark of	MT	
	oper	Total lengt	h 781.20 (m)		Continuo	us of curve	yes	no		Stringer	-	-		
	br	Span	8 + 57.6 + 61.2 + 450 + 61.2 + 57.6 + 46.8 (m)		N	bise	yes ·	no		Cross frame	-	-		
	l dg	Nos. of spa	n / span	i ns	Spac	ce change	yes ·	no		Lateral brace	-	-		
4	۲ ۲	Width	33.00 (m) / (m)	y re		rence grade	e yes ·	• no	nage	Slab	-	-		
~	┢	Completion	1987	ur ve	arain	Ing damage	yes	no	: dar	Abutment	- Poetenguler	- Gonoral	ly boolthy	
素	+	Horizontal		S	Crocked		yes	• no	e of	Pier		deneral	ry neartny	
-23	₋⊢	Gradient	$\frac{1}{2} \frac{1}{2} \frac{1}$			f lighting	yes	- 110	tlin	Barrier	Steel	General	ly healthy	
4	말	Nearby tunn			Daniage C	ofsign	yes -	. 10	Out	Railing	Steel	General	ly healthy	
		Vearby cross			Damage o	f handrail	Ves	no		Curb	-	-		
-	Ēŀ	Traffic	Much · Medium · Little		Possibili	tv of scou	r ves	• no		Pavement	asphalt · concret	e –		
	0 00	ommercial tra	ffi Much Medium Little		Walkway	yes • no	,,,,,			Joint	drained undraine	d Just re	placed	
	F				Vehicle	yes • no				Drainage	yes • no			
		1. Urban	2. Suburbs 3. Mountain 4. Seaside	~										
		5. Industria	6. Harbor 7. Residential 8. Bussiness	i way						10				
-		1 Shinkanser	2 Railway 3 Highway 4 Road	tior						• Evalua	tion program by Ch	ulalongko	on 2003 orn Univ Jan2005	to Mar 2009
	DL I	5. River	6. Lake 7. Ravine 8. Valley	spec					s	• Cable	and pylon was repa	inted and	girder is repair	nting using inspection vehicle
-		9. Waterway	10. Parking 11. Bike parkin 12. Park	- L					sion	Reinfo	rcement of U-rib b	y CFRT		
-	5	IS. Vacant	14. marbor Nalle ( Glao Filfaya )						or es:	Replace     Pavement	e of expansion joi	ionmix'	tested by instit	tute of DOH at 2005
		Superstructu	6. On boat 7. Special camera 8. Others ( Inspection vehicle )		Height of g	irde	about	: 45m	l mg			Joumux		
:	etno	Substructur	e 1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car		◆ Deteri	oration of	bridge	•						
	ss m		• False work might be prepared for pylon	os i s		able point	good							
	loce	Reason	<ul> <li>Inspection vehicle is set on center and side spar</li> </ul>	agno	• Under	repairing	vork	· · · ·		History	of repair			Repaint; — yy — mm
				Di	from 20	)5				Surve	eyor; Mr,Chujo	Mr.Kudo		
L														

Prese	nt state (1	/9)			
Authority	EXAT	Address	Bangkok	Data	26-0ct-09
Bridge	RAMA IX Bridge				

	Picture No.	1
	Span	1
4	Member	Side view
	*Survev on	board. 31-oct
	201109 011	
	Picture No.	2
	Span	1
Contraction of the second s	Member	View on road
A la		
	Picture No.	3
	Span	1
	Member	View of connection gir
	*Survey on	board, 31-oct

Present state (2/9)					
Authority	EXAT	Address	Bangkok	Data	26-0ct-09
Bridge	RAMA IX Bridge				

	Picture No.	4
	Span	1
	Member	View under bridge
The second se	Under repai	nting using inspection
SHALL REPORT OF THE REPORT OF	vehicle	
the state of the s		
	*Survey on	board, 31-oct
	Picture No.	5
	Span	1
	Member	Inspection way
	Picture No.	6
	Span	1
	Member	View of pier
		1 • 1 • -
All and a second and a second as a	l inspectio	on vehicle apply for
	all side sp	ban.
	Numberg of	vehicles and 2
	Numbers of	venicies are 5.
Contraction of the second seco		

Prese	nt state (3	/9)			
Authority	EXAT	Address	Bangkok	Data	26-0ct-09
Bridge	RAMA IX Bridge				

	Picture No.	7
	Span	1
	Member	Inspection vehicle
	Preparing w	rork for painting?
	Picture No.	8
	Span	1
	Member	Pylon
	Bottom flar	nge is repainted.
	Shirinkage	crack is seen in pier.
	Picture No.	9
	Span	1
	Member	Bottom flange
公式自义主任王王、王马龙	Deteriorati	on of corrosion proofi
《四日公司》 其合語 上手骨雪		
· · · · · · · · · · · · · · · · · · ·		
法犯罪犯罪 医无动动物 起一员到了这个权		
TAU TA A PUT OF HERE'T		
I A Malaka Ma The The		
· Carpenter and the first the sec		

		· · · · · · · · · · · · · · · · · · ·			
thority	EXAT	Address	Bangkok	Data	26-0ct-09
Bridge	RAMA IX Bridge	<u> </u>			
			I	Picture No.	10
				Span	1
	(6)			Member	Expansion joint
163	1		- 0	Roplacod on	$0_{ct} = 2009$
	- Alla			Replaced on	001 2003
	li l	1111- 111-11		Only surface	plate was replace
	1911111111		-		<u>^</u>
1	9//////////////////////////////////////		B		
1191	1///////	1-44	3		
9/1/1	///////	9-11-11			
441	//////				
1.17	4441	1111			
1/1	LIT	11.			
1111					
500				Picture No.	11
L'and		0		Span	1
-0			1	Member	Cable
				Pooled anil	aphla
	-			NOCKEU COII	cable.
				Outside was	repainted.
					1
	A second to a				
			1 link		
The second	1				
ALL TOPIC			B		
			2		
A 1222		The Restance	0		
2	0		I	Picture No.	12
			1 13	Span	1
C.	+			Member	Cable damper
	4		9		
	4		-		

4

Prese	nt state (5	/9)			
Authority	EXAT	Address	Bangkok	Data	26-0ct-09
Bridge	RAMA IX Bridge				

	Picture No.	7
	Span	1
	Member	Drainage
N9 4238		
	Guide of ra	in water
	Picture No	8
	Span	1
	Member	Manhole
	Picture No.	9
	Span	1
	Member	Walkway in girder

Prese	nt state (6	/9)			
Authority	EXAT	Address	Bangkok	Data	26-0ct-09
Bridge	RAMA IX Bridge				

	Picture No.	10
	Span	1
	Member	Diaphragm
	Mark of MT	inspedction
	Picture No.	11
	Snan	1
	Member	Bottom flange
	Monio er	Doorom Trange
	Reinforceme	ent by CFRT
100		
	Picture No.	12
	Span	1
	Member	slab
	<u> </u>	
	Mark of def	formation of member
	Axial stres	s is small at span cer
+ //0	Normaly, fa	ar from vield stress.
	It's not cl	ear the deformation
0000	and reinfor	rcement at this survey.
0000		
00 00		

Present state (7/9)					
Authority	EXAT	Address	Bangkok	Data	26-0ct-09
Bridge	RAMA IX Bridge				

	Picture No.	13
	Span	1
	Member	Senser
	Temperature	sensor
A COL		
	Picture No.	14
	Span	1
	Member	Sensor
	Strain gaug	e
	Picture No.	15
	Span	1
	Member	Sensor
	Acceleromet	er

Present state (8/9)					
Authority	EXAT	Address	Bangkok	Data	26-0ct-09
Bridge	RAMA IX Bridge				

	Picture No.	16
	Span	1
	Member	Girder damper
The states of th		
	4-damper in	n girder
34 TUE		
to a Man Sitt		
	Picture No.	17
	Span	1
	Member	Pavement
	A11 1	£
and the second se	at 2005	of pavement was replace
	at 2005	
	Piaturo No	18
	Span	10
	Member	slab

Present state (9/9)					
Authority	EXAT	Address	Bangkok	Data	26-0ct-09
Bridge	RAMA IX Bridge				

Picture No.	13
Span	1
Member	Meeting
Picture No.	14
Span	1
Member	
ļ <u> </u>	
Picture No.	15
Span	1
Member	

## Inspection sheet of visual survey

Bridge No.

19

Photo No. ( ~

				 Po	uto namo	_				NPP		Code of authority	-
	Bri	dge name	Industrial Ring Road North Bridge	NO				Auth	nority	DIN		No.	-
	P١	ace from	Ket Yan Nawa Amphoe Phra Pradaeng	Dist	ance to	km- km-	+ 0					Survey date	22-0ct-2009
		LU Bridge type	(1) main road , side road , ramn		Cambe	r deform			ltem	Type			State
	H	Bridge type	(2) bridge · viaduct · plank pass	-	Differer	ce in glad	e ves • no		Main girder	Composite L girder	_		
0	3 1	Bridge type	(3) 5-span composite   girder cable staved bridge	-	ontinuo	s of barri	e ves • no	4	Cross beam	L section steel	_		
		Total leng	th 578.30 (m)		Continuc	us of curv	eves • no	_	Stringer	_	_		
		Span	50.6 + 74.5 + 326 + 74.5 + 50.6 (m)		N	oise	yes • no	7	Cross frame	_	-		
0.0	280	Nos. of spa	an 5 span	⊣ ±	Spa	ce change	yes • no	1	Lateral brace	-	_		
2.7		Width	35.9 - 55.2 (m) 🗡 (m)	resu	- diffe	rence grad	e yes • no	e B	Slab		Crack a	round fixing stru	cture, free lime
		Completion	n 2006	vey –	drai	ning damage	e yes • no	lama (	Abutment	-	_		
滚				Sur	Blocke	d drainage	yes · no	٩ ۲	Pier	Rectangular	Crack a	round cross beam	
<u>वे</u>		Horizonta	Straight · incli( $ heta=2.5$ %) · Curve(R m	)	Crack c	f pavement	yes • no	e.	Bearing	Fix at pylon	-		
244	5	Gradient	One way ( ァ ・ ゝ ) parabol ( 凸 ・ 凹 )		Damage	of lighting	g yes • no	H	Barrier	Trapezoidal, steel	General	ly healthy	
+ 5 1 1		Nearby tunn	el yes · no ( m)		Damag	e of sign	-	]	Railing	Stainless	General	ly healthy	
n for	N	learby cross	ing yes • no ( ramp way )		Damage	of handrai	yes · no		Curb	-	-		
		Traffic	Much • Medium • Little		Possibil	ity of scou	uryes ∙no		Pavement	asphalt.concrete	-		
à	2 Co	ommercial tra	ffi Much • Medium • Little		Walkway	yes • no	)		Joint	drained undrained	Occurren	nce of sound of i	mpact
Ļ					Vehicle	yes • no	)		Drainage	yes · no			
202	5 1	.Urban	2. Suburbs 3. Mountain 4. Seaside	ъ									
 24 1	9	). Salty	10. Cold and snow 11. Heavy snow 12. Others	in w					• Occurr	l ence of sound of im	pact and	jumping by heavy	y vehicle at at expansion joint
7	<u> </u>	. Shinkanser	2. Railway 3. Highway 4. Road	ctic	•••••				• Crack	is seen in pylon ar	ound cro	ss beam end. It	is required detailed investigation.
4	5	5.River	6. Lake 7. Ravine 8. Valley	adsu				JS	especi	ally in the case of	increas	ing the defect at	fter completion.
apul		9. Waterway 3. Vacant	10. Parking II. Bike parkin I2. Park 14. Harbor Name (Chao Phrava)	-				sio	• Improv	ement around fixing	; structu	re is recommended	a.
			1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car					pres					
7	,	Superstruct	fre 6.0n boat 7.Special camera 8.Others ( Inspection vehicle )		Height of	girde	about 55	n –					
matho.		Substructu	Pe 1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car 6. On boat 7. Special camera 8. Others (Inspection vehicle)	s	<ul> <li>Deter</li> <li>deficient</li> </ul>	oration of	bridge $\blacklozenge$						
3300	0000	Reason	• False work should be prepared for side span and	gnos i	◆ Notic	eable poin	t 🔶	F	listory o	f repair ;			Repaint — vv — mm
V	2	Neason		Dia	Crack	around fix	ing struct	u	Surve	eyor; Mr,Chujo,	Mr.Kudo		insparine, yy inin
L													

Prese	nt state (1	/ 14 )				
Authority	DRR	Address	Bangkok	Data	22-0ct-09	
Bridge	ge Industrial Ring Road Bridge (North)					

	Picture No.	1
	Span	1
	Member	Side view
Article and a second se		
194		
i v vine		
The second s		
	*Survey on	board, 31-oct
	Picture No.	2
	Span	2
	Member	View on road
DULINA AND DIAL DIAL DIAL DIAL DIAL DIAL DIAL DIA		
A/		
-		
	Picture No	3
	Span	1
	Member	View of connection gin
		0
	*Survey on	board, 31-oct

Prese	nt state (2	/ 14 )				
Authority	DRR	Address	Bangkok	Data	22-0ct-09	
Bridge	ge Industrial Ring Road Bridge (North)					

		Picture No.	4
A REAL		Span	1
		Member	View under bridge
	No and the second s	Momber	fiew ander bridge
LOW BUTTER SULFACE			
	LI THUNNAL STATES		
and the second s			
	1 1		1 1 21
		*Survey on	board, 31-oct
N 44			
		Picture No.	5
		Span	1
		Member	Pylon
A DECEMBER OF STREET			
A CONTRACT OF A			
and the second se			
	1 miles		
	1.4		
		Picture No.	6
R TH.		Span	1
	Mila	Member	Inspection way
Contraction of the second			
19 mil	the second se		

Prese	nt state (3	/ 14 )				
Authority	DRR	Address	Bangkok	Data	22-0ct-09	
Bridge	Bridge Industrial Ring Road Bridge (North)					

	Picture No.	7
	Span	1
	Member	Cable fixing part
and a contraction of the second secon		
Mitters & Sait		
	Picture No.	8
	Span	1 Venticel elignment
	Member	vertical alignment
	Saged verti	ical alignment
	Picture No.	9
	Span	1
	Member	Vertical alignment
	Saged verti	cal alignment
	bagea verei	
	1	

Prese	nt state (4	/ 14 )				
Authority	DRR	Address	Bangkok	Data	22-0ct-09	
Bridge	Industrial Ring Road Bridge (North)					

	Picture No.	10
	Span	1
	Member	Expansion joint
	South side	Adjustment of differe
at 1. We are the second s	of grade	
	or grade	
The second s		
	Picture No.	11
	Span	1
Change and the second s	Member	Expansion joint
	NT . 1 • 1	
	North side.	
	Occurrence	of sound of impact
	Tumping by	heavy vehicle
/		
10		
0.0		
	Picture No.	12
	Span	1
	Member	Expansion joint
	T	£ 114
	Looseness C	DI DOIL

Presei	nt state (5	/ 14 )			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge	e Industrial Ring Road Bridge (North)				

	Picture No.	7
The second se	Span	1
	Member	Expansion joint
	Connection	between main bridge an
	ramp. No sp	pacing
All and a second s		
JE-SARA I		
- timurte - /		
	Picture No.	8
	Span	1
	Member	Stay cable
- JAN AND		
	Picture No.	9
	Span	1
	Member	Stay cable
test and the second	D 1: 0	
	Peeling of	projection material
	TOT CADIE V	TUTATION CONTLOI

Prese	nt state (6	6 / 14 )			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge	Industrial Ring Road Bridge (North)				

	Picture No.	10
	Span	1
	Member	Stay cable
	ooze out of	grease
*		
	Picture No.	11
	Span	1
	Member	Inspection vehicle
A A AM		
	Picture No.	12
	Span	1
	Member	slab
March	Crack from	cable fixing structure
and the second s	It is strik	ting cables near pylon
A second s		
A liter and the second se		

Presen	t state (7	/14)			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge Industrial Ring Road Bridge (North)					

	Picture No.	13
	Span	1
A State A state of the state	Member	slab
(mu::um)	0 1 0	1.1
	Crack from	cable fixing structure
	0_1mm~0_2n	ım
天三課 美力器	0.111111 - 0.21	ШI
	Picture No.	14
Company and the second s	Span	1
	Member	slab
Verter Verter	Crack from	cable fixing structure
	D	
	Picture No.	15
	Momber	l
	Member	5140
A second	Remaining w	vater

Prese	nt state (8	/ 14 )			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge	Industrial Ring Road Bridge (North)				

	Picture No.	16			
	Span	1			
and the second	Member	slab			
		ł			
	Accumulator	n soil at fixing struct			
All and a second					
	Picture No.	17			
	Span	1			
	Member	slab			
	Accumulator	n soil at fixing struct			
00012-000 \$598100 B		10			
	Picture No.	18			
	Span				
	Member	slab			
	р. · ·	. 1			
	Remaining v	vater and			
	deteriorat	ton of corrosion proof			
CARE A CARE AND A					
	1				
Preser	nt state (9	/ 14 )			
--------------------------------------------	-------------	---------	---------	------	-----------
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge Industrial Ring Road Bridge (North)					

	Picture No.	13
	Span	1
	Member	slab
	Crack from	cable fixing structure
	PC girder p	part
e a state and the second se		
and the second s		
THE DECEMBER OF THE OPENING		
	Picture No.	14
	Span	1
	Member	slab
	Crack from	cable fixing structure
time internet interne	0.1mm∼0.15	5mm
三部 尼方縣	PC girder p	part
	Picture No.	15
	Span	1
	Member	slab
A Martin Contraction	crack	
	PC girder p	part
	1	

Prese	nt state (10	)/14)			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge	Industrial Ring	Road Brid	ge (North)		

	Picture No.	16
	Span	1
	Member	slab
	Peeling of	concrete
Art And All All All Arts		
A THE MERINE		
the second se		
	Dioture N-	17
	shee	1
	Span	1 1
The Star Star Barrier and Star	Member	slab
	<b>D</b>	
	Fixing stru	lcture
	Mold?	
Change and a		
		10
	Picture No.	18
	Span	
	Member	slab
	Remaining w	vater

Prese	nt state (1 <sup>-</sup>	/ 14 )			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge Industrial Ring Road Bridge (North)					

	Picture No.	19
	Span	1
	Member	Pylon
	crack arour	nd cross beam end
A A A A A A A A A A A A A A A A A A A		
- Harrison		
	<b>D</b>	
	Picture No.	20
	Span	Drulan
	Melliber	ГУТОП
	crack arour	nd cross beam end
	Picture No.	21
	Span	1
	Member	Lighting
	Continuous	vibration of pole
	Possibility	of fatigue crack

Prese	nt state (12	2 / 14 )			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge Industrial Ring Road Bridge (North)					

	Picture No.	22
	Span	1
	Member	Electric wire
A REAL PROPERTY OF THE REAL PR		
And the second s		
	Picture No.	23
	Span	1
A A A A A A A A A A A A A A A A A A A	Member	Lighting pole
	Gap betweer	base plate and founda
1003		
IPO-		
A The second		
		0.4
	Ficture No. Snan	1
IP03	Member	Lighting pole
		BIOMOING POIL
TACK CONTRACTOR	Gap betweer	n base plate and founda
The second secon		
	1	

Prese	nt state (13	3 / 14 )			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge Industrial Ring Road Bridge (North)					

	Picture No.	25
A Latin and the second of	Span	1
	Member	Newel
President and		
and the second s		
and the second s		
	Picture No.	26
	Span	1
	Member	Electric wire
AND A REAL PROPERTY AND A REAL		
	Lost of cov	ver and looseness of bo
HE TO BE AND A REAL PROPERTY AND A REAL PROPER		
And		
	Picture No.	27
	Span	1
	Member	Drainage
The second s		

Prese	nt state (14	4 / 14 )			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge Industrial Ring Road Bridge (North)					

	Picture No.	28
A A AND A	Span	1
The second V/77	Member	
Here and the first and the		
Destant All All All	North bridg	ge- South pylon - cente
	crack	
E Based Harrison	*Survey on	board, 31-oct
	Picture No.	29
	Span	1
	Member	
	North bridg	ge - North pylon - cent
	crack	
All and the second second of the	*Survev on	board. 31-oct
		0.0
	Picture No.	30
	Span	1
	Melliber	
	North bridg	ge - North pylon - cent
	crack	
	*Survey on	board, 31-oct

## Inspection sheet of visual survey

Bridge No.

20

Photo No. ( ~

			Industrial Ring Road South Bridge		uto namo	_	-				DRR		Code of authority	_
	Bri	idge name							uth	ority			No.	-
	ΡI	lace from Ban to	gkok	Dista	ance to	km⊣ km⊣	+	0					Survey date	22-0ct-2009
	Τ	Bridge type(1)	main road • side road • ramp		Camber	deform	yes •	no		ltem	Туре			State
		Bridge type(2)	bridge · viaduct · plank pass		Differend	e in glade	e yes •	no		Main girder	Composite   girder	· _		
	20	Bridge type(3)	5-span composite I girder cable stayed bridge		ont i nuous	s of barri	eyes •	no	Ī	Cross beam	I section steel	-		
+	חפן ר	Total length	702.30 (m)		Continuou	is of curve	e yes •	no	0	Stringer	_	-		
2	h la	Span	68.6 + 83.5 + 398 + 83.5 + 68.6 (m)		No	oise	yes •	no	[	Cross frame	-	-		
de o	agn	Nos. of span	5 span	/ result	Spac ر	e change	yes •	no		Lateral brace	-	-		
د د		Width	35.9 - 55.2 (m) 🗡 (m)		.⊑ differ	ence grade	e yes •	no	eg e	Slab		Crack ar	round fixing stru	cture, free lime
		Completion	2006	rvey	drain	ing damage	yes •	no	dam	Abutment	-	-		
滚				Su	Blocked	drainage	yes •	no	٩	Pier	Rectangular	Crack ar	round cross beam	
<u>+</u> -2		Horizontal	Straight · incli( $\theta = 2.5$ %) · Curve (R m)		Crack of	pavement	yes •	no	i ne	Bearing	Fix at pylon	-		
- 60 - 10 - 10		Gradient	One way ( ァ ・ ゝ ) parabol ( 凸 ・ 凹 )		Damage o	flighting	yes •	no	Ĕ	Barrier	Trapezoidal, stee	Generall	ly healthy	
i i i i i i i i i i i i i i i i i i i		Nearby tunnel	yes · no ( m)		Damage	of sign	_			Railing	Stainless	Generall	ly healthy	
- 	ĒĻ	Nearby crossing	yes • no (ramp way )		Damage o	f handrail	yes •	no		Curb	-	-		
792		Irattic	Much • <u>Medium</u> • Little		Possibili	ty of scou	r yes •	no		Pavement	asphalt concrete	- 		
Ó	2 00	ommercial tratti	Much • Medium • Little		Walkway	yes • no				Joint	drained undrained	-		
Ę	= -	1 11/11/11/11	2 Cubunta 2 Mauntain A Casaida		Venicle	yes • no				Drainage	yes • no			
2	5 5	1.Urban 5.Industria	6. Harbor 7. Residential 8. Bussiness	way										
2 L		9.Salty	10.Cold and snow 11.Heavy snow 12.Others	on '						• Crack is seen in pylon around cross beam end.		ss beam end. It i	is required detailed investigation.	
7:2	ñ 1	1. Shinkanser	2. Railway 3. Highway 4. Road	ect						• Improve	ement around fixing	g structu	re is recommended	l.
2		5. River 9. Waterway	6.Lake /.Ravine 8.Valley 10.Parking 11.Bike parkin 12.Park	lnsp					ons	especia	ally in the case of	Increas	ing the defect at	ter completion.
Pall		13. Vacant	14. Harbor Name (Chao Phraya)						essi					
-	-	Superstructure	1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car 6. On boat 7. Special camera 8. Others ( Inspection vehicle )		Height of g	irde	about	55m <sup>·</sup>	Impre					
and to m	IIIELIIU	Substructure	1. Inspection car 2. Falsework 3. On ground 4. Ladder 5. Lift car 6. On boat 7. Special camera 8. Others ( Inspection vehicle )	s	Deterie     deficient	oration of • fair •	bridge good	•						
0000	lucess	Reason	•False work should be prepared for side span and p	agnosi	♦ Notice • Crack a	able point around pyle	t on	•		listory o	f repair ;			Repaint; — yy — mm
	È			Di	• Crack a	around fix	ing str	uctu		Surve	eyor; Mr,Chujo,	Mr.Kudo		

Authority DRR Address Bangkok Data	22-0ct-09				
Bridge Industrial Ring Road Bridge (South)					



Prese	nt state (2	/ 5 )			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge	Industrial Ring Road Bridge (South)				



Prese	nt state (3	/5)			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge	lge Industrial Ring Road Bridge (South)				

	Picture No.	7
and the second	Span	1
	Member	slab bottom surface
	Free lime f	from filled hole
	Pioturo No	Q
	Snan	0
	Member	slab
		0100
	Crack from	cable fixing structure
Part		
	Picture No.	9
The second s	Span	1
	Member	bottom slab
	Crack from	cable fixing structure
		cable lixing structure
	0.15mm - 0.	3mm
CV77.Tig		
THE PARTY AND T		

Presei	nt state (4	/ 5 )				
Authority	DRR	Address	Bangkok	Data	22-0ct-09	
Bridge	dge Industrial Ring Road Bridge (South)					

	Picture No.	10
	Span	1
	Member	bottom slab
	Back surfac	ee of crack around fixi
A CONTRACTOR OF THE OWNER OF	Crack canno	ot find from inspection
	vehicle (ak	oout 2m from eye height
	Picture No.	11
	Span	Connection girder
The Mark	Member	connection girder
A A A A A A A A A A A A A A A A A A A	Inside of o	connection girder
	Harm of bir	ď
1 1 and the set of the set		
	Picture No.	12
	Span Mombor	Pylop
	Member	I y Ion
	Vertical cr	rack at cross beam end
The second s	Inclined cr	ack of pylon shaft
	Opening cor	istruction joint
and the second s		

Prese	nt state (5	/ 5 )			
Authority	DRR	Address	Bangkok	Data	22-0ct-09
Bridge Industrial Ring Road Bridge (South)					
Authority Bridge	DRR Industrial Ring	Address Road Brid	Bangkok ge (South)	Data	22-0ct-09

	Picture No.	7
	Span	1
	Member	Pylon
	Vertical cr	rack of pylon shaft
	Possibility	of shirincage crack
	during cons	struction is high.
		0
	Picture No.	8
	Member	Pvlon
	Member	1 9 1011
	Crack	
(7-3%) \ \		
	*Cutavor on	board 21-oot
the second s	*Survey on	<i>Doard, 31-001</i>
	Picture No.	9
THE REAL PROPERTY OF THE PARTY	Span	1
	Member	PC girder
and the second		
the second se		
	*Survey on	board, 31-oct
MAND ALL MANDA		