APPENDIX–R3 COST ESTIMATE OF EACH STUDY BRIDGE (216 BRIDGES)

No.	Key	State	Year Built	Max. Span (m)	No's of Spans	Span Length (m)	Type of Bridge	Rehabilitation Plans	Unit	Quantity	Unit Price (M$)	Amount (M$)	Total Amount (M$)	Remarks
24	00184600	Kedah	1960	6.20	1	6.20	RCS	DCRF-SWR	M2	30.0	760.0	22,800	50,603	
								ARF-PAL	M2	27.0	190.0	5,130		
								SRPR	M	10.4	24.0	250		
								SFRS	M2	15.0	41.0	615		
								DCPR-WPL	M2	44.0	75.0	3,300		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	52.0	21.3	1,108		
25	00184680	Kedah	1960	4.64	1	4.64	RCS	SRPR	M	9.3	24.0	223	22,923	
								EJN	M	14.0	1190.0	16,660		
								ASN	No	2.0	3020.0	6,040		
26	00186210	Kedah	1940	3.23	1	3.23	SBS	SBPR-REP	M2	25.0	0.0	0	38,845	
								DSRP-TOR	M2	22.0	560.0	12,320		
								APR-INJ	M	6.0	1200	720		
								BRP-TOR(S)	No	16.0	0.0	0		
								DETOUR	M	43.2	590.0	25,505		
27	00226540	Pahang	1955	6.28	1	6.28	SBS	SBPR-REP	M2	7.8	0.0	0	59,269	
								DSRP-TOR	M2	57.1	560.0	31,976		
								BRP-TOR(S)	No	14.0	0.0	0		
								DETOUR	M	46.3	590.0	27,293		
28	00226970	Pahang	1955	3.03	1	3.03	SOX	QCPR-SHT	M2	62.0	620.0	38,440	92,285	
								ARF-PAL	M2	83.0	190.0	15,770		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	30.3	21.3	645		
29	00230660	Pahang	1957	6.40	1	6.40	PRB	DCPR-WPL	M2	43.4	75.0	3,255	41,726	
								ARF-SP	M	7.8	1770.0	13,806		
								EJRP	M	15.6	1190.0	18,564		
								SRRE	M	12.8	176.0	2,253		
								SFRS	M2	6.0	41.0	246		
								WWRS	M3	6.0	500.0	3,000		
30	00231760	Pahang	1960	7.75	1	7.75	RCS	NON				0	0	NO DEFECT DETECTED
31	00232660	Pahang	1963	11.08	1	11.08	PRB	DCPR-WPL	M2	76.4	75.0	5,726	153,680	
								ARF-TOL	M	32.0	348.0	11,135		300x300
								ARF-SP	M	29.4	1770.0	52,038		
								EJRP	M	19.0	3020.0	57,380		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
32	00237200	Pahang	1950	6.90	3	28.70	SBC					223,645	223,645	INCLUDED IN DETAILED SURVEY
33	00303220	Johor	1940	4.84	1	4.84	SBE	CBPR-PAT	M2	2.5	270.0	675	49,955	
								SBPR-REP	M2	3.6	58.0	209		
								ASF-PAL	M2	40.0	190.0	7,600		
								SRRE	M	15.0	176.0	2,640		
								PFPR-RBP	M2	40.0	260.0	10,400		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	48.4	21.3	1,031		
34	00303430	Johor	1940	4.90	1	4.90	SBC	SBPR-REP	M2	42.0	58.0	2,436	45,760	
								DCPR-PAT	M2	6.0	270.0	1,620		
								DCPR-WPL	M2	47.0	75.0	3,525		
								ARF-PAL	M2	44.0	190.0	8,360		
								APPR-FPO	M2	72.0	33.4	2,405		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	49.0	21.3	1,044		
35	00303890	Johor	1940	4.59	2	9.18	RCS	DCPR-PAT	M2	0.1	270.0	27	101,419	
								DCPR-WPL	M2	60.6	75.0	4,545		
								ARF-PAL	M	14.0	348.0	4,872		300x300
								SRRE	M	19.0	176.0	3,344		
								ADD-IS	M2	38.0	1560.0	59,280		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	91.8	21.3	1,951		
36	00304060	Johor	1963	30.65	5	92.25	RCS	DCPR-INJ	M	27.0	120.0	3,240	148,830	
								DCPR-PAT	M2	3.2	270.0	864		
								SFRS	M2	644.8	41.0	26,437		
								EJRP	M	30.0	3020.0	90,600		
								ASIN	No	2.0	3020.0	6,040		
								SCAFFOLDING	M2	922.5	21.3	19,649		
37	00304390	Johor	1928	3.35	1	3.35	SBC	SBPR-REP	M2	32.0	58.0	1,856	90,971	
								ARF-PAL	M2	60.0	190.0	11,400		
								RTPR	M2	16.0	140.0	2,240		
								RING-SUP	M2	36.9	590.0	21,784		REPLACEMENT OF DECK SLAB
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	33.5	21.3	714		
								DETOUR	M	43.4	590.0	25,577		
38	00306390	Johor	1974	16.67	5	84.57	IT	CBPR-PAT	M2	0.4	270.0	113	188,007	
								DCPR-WPL	M2	456.3	75.0	34,973		
								EJRP	M	45.4	3020.0	137,165		
								SCAFFOLDING	M2	645.7	21.3	13,753		
39	00306710	Johor	1969	19.90	7	51.98	IT	DCPR-WPL	M2	412.0	75.0	30,900	203,621	
								DCPR-PAT	M2	0.2	270.0	54		
								PPR-PAT	M2	0.4	270.0	108		
								SFRS	M2	40.0	41.0	1,640		
								SRRE	M	40.0	176.0	7,040		
								EJN	M	50.6	3020.0	152,812		
								SCAFFOLDING	M2	519.8	21.3	11,067		
40	00313150	Johor	1950	4.40	1	4.40	SBE	DCPR-INJ	M	1.0	120.0	120	111,652	
								CBPR-PAT	M2	0.5	270.0	135		
								ARF-PAL	M2	55.0	190.0	10,450		
								WWRS	M3	36.0	600.0	21,600		
								SRRE	M	8.9	176.0	1,549		
								EJRP	M	18.5	1190.0	22,015		
								ADD-IS	M2	17.6	1560.0	27,456		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	44.0	21.3	937		
41	00313520	Pahang	1960	1.80	2	3.60	RCS	QCPR-PAT	M2	1.0	270.0	270	114,609	
								ARF-PAL	M2	32.0	190.0	6,080		
								PRF-PAL	M2	35.0	190.0	6,650		
								APR-INJ	M	3.2	120.0	384		
								EJN	M	16.2	1190.0	19,278		
								ADD-IS	M2	23.0	1560.0	35,880		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								COFFERDAM	No	1.0	17900.0	17,900		H=1.0
								SCAFFOLDING	M2	36.0	21.3	767		

APPENDIX-R3 COST ESTIMATE OF EACH STUDY BRIDGE (216 BRIDGES)

No.	Key	State	Year Built	Max. Span (m)	No's of Spans	Span Length (m)	Type of Bridge	Rehabilitation Plans	Unit	Quantity	Unit Price (M$)	Amount (M$)	Total Amount (M$)	Remarks
42	00314160	Johor	1954	5.50	2	11.00	PRB	APR-REV	M3	20.0	140.0	2,800	231,031	
								EJRP	M	23.7	1190.0	28,203		
								PRF-TOL	M	15.0	348.0	5,220		310x310
								ASIN	No	2.0	3020.0	6,040		
								WWRP	M3	20.0	600.0	12,000		
								ORRF	No	4.0	390.0	1,560		
								SRPR	M	22.0	24.0	528		
								RRE-SD	M2	668.0	310.0	181,280		
								COFFERDAM	No	1.0	23400.0	23,400		H=2.0
43	00316745	Pahang	1965	3.67	1	5.67	RCS	DCRF-SWR	M2	36.0	760.0	27,360	66,634	
								DCPR-WPL	M2	31.0	75.0	2,326		
								ARF-PAL	M2	28.8	190.0	5,054		
								SRRE	M	10.0	176.0	1,760		
								EJN	M	13.3	1190.0	15,827		
								COFFERDAM	No	2.0	16500.0	33,000		H=2.0
								SCAFFOLDING	M2	56.7	21.3	1,208		
44	00317600	Pahang	1974	45.78	9	397.32	PCB					2,053,043	2,053,043	INCLUDED IN DETAILED SURVEY
46	00319110	Pahang	1952	30.46	7	121.96	PCB					293,327	293,327	INCLUDED IN DETAILED SURVEY
48	00319390	Pahang	1950	5.67	2	11.34	PRB	DCPR-WPL	M2	85.0	75.0	6,375	64,013	
								EJRP	M	25.0	1190.0	29,739		
								APR-REV	M2	56.0	140.0	7,840		
								PRF-TOL	M	15.0	348.0	5,220		310x310
								WWRP	M3	9.0	600.0	5,400		
								ASIN	No	2.0	3020.0	6,040		
								COFFERDAM	No	1.0	23400.0	23,400		H=2.0
47	00323070	Pahang	1965	10.42	3	31.26	RCS	APR-INJ(M)	M	1.5	140.0	210	108,330	
								ARF-PAL	M	18.0	416.0	8,240		390x390
								APR-REV	M2	40.0	140.0	5,600		
								WWRP	M3	13.5	600.0	8,100		
								PRF-PAL	M	30.0	416.0	12,480		390x390
								SRPR	M	62.6	24.0	1,500		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								COFFERDAM	No	2.0	23400.0	46,800		H=2.0
48	00326020	Pahang	1965	5.73	1	5.73	PRB	DCPR-WPL	M2	37.6	75.0	2,820	68,172	
								ARF-PAL	M	18.0	348.0	6,586		310x310
								SRRE	M	12.2	176.0	2,147		
								EJN	M	12.3	1190.0	14,637		
								COFFERDAM	No	2.0	16500.0	33,000		H=2.0
49	00326950	Pahang	1965	8.68	4	23.52	PRB	DCPR-WPL	M2	45.2	75.0	3,390	164,057	
								PRF-TOL	M	36.0	348.0	12,528		300x300
								ARF-PAL	M	16.0	348.0	5,568		300x300
								EJRP	M	36.9	1190.0	43,892		
								SRPR	M	47.0	24.0	1,129		
								COFFERDAM	No	3.0	23400.0	70,200		H=2.0
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
50	00336310	Pahang	1958	12.00	3	36.00	RCS	BPR-REP	No	30.0	12.0	360	260,787	
								EJRP	M	31.2	3020.0	94,224		
								PRF-PAL	M	30.0	416.0	12,480		400x400
								PPR-PAT	M2	0.4	270.0	101		
								SRPR	M	72.0	24.0	1,728		
								ADD-IS	M2	74.4	1560.0	116,064		
								COFFERDAM	No	2.0	17900.0	35,800		H=1.0
51	00337240	Pahang	1957	6.58	1	6.58	RCS	ARF-PAL	M2	38.5	190.0	7,315	50,661	
								EJRP	M	13.4	1190.0	15,946		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
52	00338580	Terengganu	1965	28.03	15	219.13	PCB		M2	2338.9	3000.0	7,014,000	7,014,000	TOTAL REPLACEMENT
53	00339210	Terengganu	1953	15.22	10	152.20	PCB	CBRF-SSP	M2	80.0	930.0	74,400	668,494	
								CBRF-UG	M2	193.0	2980.0	575,340		
								APR-PAT	M2	4.0	270.0	1,080		
								PPR-PAT	M2	36.0	270.0	9,720		
								SFRS	M2	135.0	41.0	5,535		
								SCAFFOLDING	M2	1522.0	21.3	32,419		
54	00341600	Terengganu	1955	12.19	3	36.14	RCB					795,186	795,186	INCLUDED IN DETAILED SURVEY
55	00345740	Terengganu	1973	30.50	9	152.26	PCB					3,314,414	3,314,414	INCLUDED IN DETAILED SURVEY
56	00354190	Terengganu	1950	5.59	2	11.18	PRB						-	BRIDGE HAS BEEN REPLACED
57	00354930	Terengganu	1953	5.95	3	17.85	PRB	DCPR-WPL	M2	135.0	75.0	10,125	57,161	
								EJRP	M	36.0	1190.0	42,792		
								CBPR-PAT	M2	1.6	270.0	432		
								SCAFFOLDING	M2	178.6	21.3	3,802		
58	00356790	Terengganu	1959	5.90	9	53.10	PRB	DCPR-WPL	M2	370.0	75.0	27,750	46,590	
								APR-INJ	M	1.2	120.0	149		
								CRRE	M	106.2	176.0	18,691		
59	00357200	Terengganu	1959	5.94	3	5.94	PRB	CBPR-PAT	M2	6.9	270.0	1,863	50,746	
								CRPR	M	11.9	50.0	594		
								EJRP	M	31.6	1190.0	37,604		
								APR-INJ	M	1.0	120.0	120		
								DCPR-WPL	M2	124.0	75.0	9,300		
								SCAFFOLDING	M2	59.4	21.3	1,265		
60	00357270	Terengganu	1957	5.89	2	11.79	PRB	CBPR-PAT	M2	8.0	270.0	2,160	46,374	
								DCPR-WPL	M2	82.2	75.0	6,165		
								EJRP	M	23.8	1190.0	28,322		
								CRPR	M	23.6	50.0	1,178		
								ASIN	No	2.0	3020.0	6,040		
								SCAFFOLDING	M2	117.8	21.3	2,509		
61	00361490	Terengganu	1960	6.01	3	18.03	PRB	DCPR-WPL	M2	125.1	75.0	9,383	56,131	
								APR-PAT	M2	0.2	270.0	41		
								EJRP	M	13.3	1190.0	15,875		
								PRF-TOL	M	32.0	416.0	13,312		400x400
								ASIN	No	2.0	3020.0	6,040		
								ORRF	No	12.0	300.0	4,680		
								COFFERDAM	No	2.0	23400.0	46,800		H=2.0
62	00363630	Terengganu	1965	5.84	1	5.84	PRB	ARF-SP	M	17.8	1770.0	31,718	38,081	
								DCPR-WPL	M2	55.0	75.0	4,125		
								SFRE	M2	2.4	41.0	98		
								SRRE	M	12.2	176.0	2,140		
63	00365560	Kelantan	1952	5.41	6	32.46	PRB	CBPR-PAT	M2	22.1	0.0	0	559,958	
								PRF-PAL	M	100.0	348.0	34,800		305x305
								ARF-SP	M	7.0	1770.0	12,427		
								EJRP	M	42.1	0.0	0		
								SFRS	M2	67.3	0.0	0		
								RING-SUP	M2	193.0	830.0	160,190		REPLACEMENT OF SUPERSTRUCTURE
								ADD-IS	M2	130.0	1560.0	202,800		
								COFFERDAM	No	5.0	23400.0	117,000		H=2.0
								DETOUR	M	72.5	590.0	42,761		

APPENDIX-R9 COST ESTIMATE OF EACH STUDY BRIDGE (216 BRIDGES)

No.	Key	State	Year Built	Max. Span (m)	No's of Spans	Span Length (m)	Type of Bridge	Rehabilitation Plans	Unit	Quantity	Unit Price (M$)	Amount (M$)	Total Amount (M$)	Remarks
64	00366690	Kelantan	1951	4.70	2	9.58	RCS	DCRF-SWR	M2	61.0	760.0	61,560	135,089	
								ARF-PAL	M	24.0	348.0	8,352		305x305
								PRF-PAL	M	12.0	348.0	4,176		305x305
								SFRS	M2	62.4	41.0	2,560		
								COFFERDAM	No	1.0	23400.0	23,400		H=2.0
								COFFERDAM	No	2.0	16500.0	33,000		H=2.0
								SCAFFOLDING	M2	95.8	21.3	2,041		
65	00366300	Kelantan	1955	4.64	2	9.68	RCS	DCRF-SWR	M2	39.0	760.0	29,880	116,329	
								EJRP	M	15.2	1190.0	18,088		
								DCPR-PAT	M2	3.0	270.0	810		
								ARF-PAL	M	24.0	348.0	8,352		305x305
								APR-PAT	M2	0.1	270.0	32		
								PRF-PAL	M	18.0	348.0	6,264		305x305
								SFRS	M2	1.0	41.0	41		
								COFFERDAM	No	1.0	23400.0	23,400		H=2.0
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	96.8	21.3	2,062		
66	00505380	Johor	1965	11.89	4	47.62	RCS	DCPR-PAT	M2	2.0	270.0	540	398,364	
								PPR-PAT	M2	2.0	270.0	540		
								PRF-PAL	M	68.0	580.0	48,720		D610
								PPR-INJ	M	2.0	140.0	280		
								EJRP	M	75.9	3020.0	229,218		
								DRRF	No	24.0	390.0	9,360		
								AFPR-REV	M2	25.6	140.0	3,584		
								COFFERDAM	No	3.0	32000.0	96,000		H=3.0
								SCAFFOLDING	M2	475.2	21.3	10,122		
67	00506570	Johor	1971	15.09	3	36.17	IT	DCPR-WPL	M2	141.0	75.0	10,575	201,999	
								PRF-PAL	M	42.0	348.0	14,616		300x300
								EJRP	M	38.6	3020.0	116,572		
								SRPR	M	72.3	24.0	1,736		
								DRRF	No	30.0	390.0	11,700		
								COFFERDAM	No	2.0	23400.0	46,800		H=2.0
68	00507230	Johor	1966	11.77	3	35.21	PCB	APR-INJ	M	2.0	120.0	240	172,696	
								BPR-REP	No	24.0	12.0	288		
								PRF-PAL	M	36.0	416.0	14,976		350x350
								EJRP	M	29.2	3020.0	88,184		
								APR-PAT	M2	0.3	270.0	81		
								AFPR-REV	M2	36.0	140.0	5,040		
								SFRS	M2	267.0	41.0	10,947		
								ASIN	No	2.0	3020.0	6,040		
								COFFERDAM	No	2.0	23400.0	46,800		H=2.0
69	00507810	Johor	1968	12.09	6	47.83	IT	CBPR-PAT	M2	0.3	270.0	86	342,079	
								AFPR-REV	M2	20.0	140.0	2,800		
								EJRP	M	56.6	3020.0	171,053		
								PRF-PAL	M	72.0	416.0	29,952		350x350
								COFFERDAM	No	4.0	32000.0	128,000		H=3.0
								SCAFFOLDING	M2	478.3	21.3	10,188		
70	00510560	Johor	1960	10.42	3	31.24	RCB	BPR-REP	No	20.0	12.0	240	143,434	
								ARF-PAL	M	15.0	416.0	6,240		400X400
								ASIN	No	2.0	3020.0	6,040		
								EJRP	M	14.6	3020.0	44,092		
								PRF-PAL	M	30.0	416.0	12,480		400X400
								PPR-PAT	M2	0.6	270.0	162		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								COFFERDAM	No	2.0	23400.0	46,800		H=2.0
71	00512960	Johor	1955	11.30	3	30.22	RCB	PRF-PAL	M	42.0	416.0	17,472	500,759	380x380
								SFRE	M2	854.6	41.0	35,457		
								ASIN	No	2.0	3020.0	6,040		
								SRPR	M	70.4	24.0	1,690		
								ABUT.REPLACE	M	46.0	8550.0	393,300		RIGID FRAME TYPE
								COFFERDAM	No	2.0	23400.0	46,800		H=2.0
72	00514300	Johor	1960	10.45	3	22.07	IT	DCPR-WPL	M2	293.2	75.0	21,990	80,263	
								EJRP	M	12.7	3020.0	38,354		
								AFPR-REV	M2	76.2	140.0	10,669		
								PPR-INJ	M	12.7	140.0	1,778		
								PPR-PAT	M2	1.2	270.0	324		
								ASIN	No	2.0	3020.0	6,040		
								SRPR	M	45.2	24.0	1,109		
73	00514370	Johor	1960	6.31	1	6.31	RCB	CBRF-BSP	M2	10.6	930.0	9,859	42,352	
								ARF-PAL	M2	12.0	190.0	2,280		
								SRRF	M	14.0	105.0	1,470		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	63.1	21.3	1,344		
74	00514660	Johor	1955	6.97	9	45.03	RCB			-	-	-	-	BRIDGE HAS BEEN PLANNED TO BE RELACED
75	00516890	Johor	1956	6.30	3	17.82	RCB	CBPR-PAT	M2	3.9	270.0	1,040	64,416	
								PRF-TOL	M	30.0	416.0	12,480		380x380
								BPR-REP	No	25.0	12.0	300		
								COFFERDAM	No	2.0	23400.0	46,800		H=2.0
								SCAFFOLDING	M2	178.2	21.3	3,796		
76	00519360	Melaka	1955	6.22	7	42.70	RCS	PRF-TOL	M	90.0	416.0	37,440	224,285	380x380
								DCPR-WPL	M2	292.0	75.0	21,900		
								SRRE	M	85.7	176.0	15,083		
								DCPR-PAT	M2	1.4	270.0	367		
								COFFERDAM	No	6.0	23400.0	140,400		H=2.0
								SCAFFOLDING	M2	427.0	21.3	9,095		
77	00519530	Melaka	1940	4.95	1	4.95	PRB	APR-PAT	M2	6.8	270.0	1,836	2,931	
								DCPR-PAT	M2	0.2	270.0	41		
								SCAFFOLDING	M2	49.5	21.3	1,054		
78	00519700	Melaka	1951	4.88	1	4.88	PRB	APR-INJ	M	1.5	120.0	180	75,405	
								ARF-PAL	M	24.0	416.0	9,984		380x380
								APR-PAT	M2	6.4	270.0	1,728		
								SRPR	M	9.8	24.0	234		
								ADD-IS	M2	23.0	1560.0	35,880		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
79	00520130	Melaka	1960	6.46	1	6.46	PRB	DCPR-WPL	M2	62.8	75.0	4,709	7,449	
								SRRE	M	14.2	176.0	2,606		
								SFRS	M2	5.7	41.0	234		
80	00520850	Melaka	1950	4.27	1	4.27	SBE					24,165	24,165	INCLUDED IN DETAILED SURVEY
81	00521300	Melaka	1950	6.90	1	6.90	RCS	CBRF-LIG	M2	24.0	2980.0	71,520	119,370	
								DCPR-PAT	M2	6.0	270.0	1,620		
								APR-PAT	M2	4.0	270.0	1,080		
								ADD-IS	M2	28.0	1560.0	43,680		
								SCAFFOLDING	M2	69.0	21.3	1,470		

APPENDIX-R3 COST ESTIMATE OF EACH STUDY BRIDGE (216 BRIDGES)

No.	Key	State	Year Built	Max. Span (m)	No's of Spans	Span Length (m)	Type of Bridge	Rehabilitation Plans	Unit	Quantity	Unit Price (M$)	Amount (M$)	Total Amount (M$)	Remarks
82	00521710	Melaka	1960	10.72	1	10.72	RCB	CBRF-UG	M2	28.6	2580.0	79,288	190,059	
								APR-PAT	M2	1.6	270.0	486		
								ARF-PAL	M	24.0	348.0	8,352		300x300
								WWRP	M3	3.5	600.0	2,100		
								ASD-IS	M2	45.0	1560.0	70,200		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	107.2	21.3	2,283		
83	00521980	Melaka	1960	7.13	2	14.26	RCB	CBRF-UG	M2	32.6	2980.0	97,148	154,386	
								APR-PAT	M2	0.8	270.0	216		
								FRF-PAL	M2	61.4	190.0	11,666		
								CRPR	M	28.5	50.0	1,425		
								EJRP	M	14.7	1190.0	17,493		
								COFFERDAM	No	1.0	23400.0	23,400		H=2.0
								SCAFFOLDING	M2	142.6	21.3	3,037		
84	00522760	Melaka	1930	7.47	1	7.47	SSE	CBPR-PAT	M2	1.0	270.0	270	23,979	
								DCRF-SWR	M2	26.0	760.0	19,760		
								APR-INJ(M)	M	1.0	140.0	140		
								SRRE	M	12.6	176.0	2,218		
								SCAFFOLDING	M2	74.7	21.3	1,591		
85	00523300	Melaka	1960	9.33	1	9.33	SSE	CBPR-PAT	M2	1.2	270.0	324	3,910	
								APR-INJ(M)	M	3.0	140.0	420		
								SFRS	M2	6.0	41.0	246		
								CRPR	M	18.7	50.0	933		
								SCAFFOLDING	M2	93.3	21.3	1,987		
86	00523630	Melaka	1960	7.58	2	15.16	PRS	DCPR-WPL	M2	124.0	75.0	9,300	79,013	
								PRF-TOL	M	25.0	416.0	10,400		300x300
								SRRF	M	39.0	105.0	4,095		
								SFRE	M2	123.0	41.0	5,043		
								EJRP	M	22.6	1180.0	26,776		
								COFFERDAM	No	1.0	23400.0	23,400		H=2.0
87	00524420	Melaka	1950	3.60	1	3.60	RCB	DCRF-SWR	M2	13.5	760.0	10,260	59,191	
								ARF-PAL	M2	27.4	190.0	5,206		
								APR-INJ	M	0.5	120.0	60		
								CRPR	M	7.2	50.0	360		
								EJRP	M	11.7	1180.0	13,923		
								SFRS	M2	5.0	41.0	205		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	36.0	21.3	767		
88	00524990	Melaka	1950	1.85	1	1.85	BOX	DCPR-PAT	M2	7.0	270.0	1,890	4,439	
								SRRE	M	7.1	176.0	1,253		
								SFRE	M2	22.0	41.0	902		
								SCAFFOLDING	M2	18.5	21.3	394		
89	00529500	N.Sembilan	1950	3.05	1	3.05	SSB	SBPR-REP	M2	23.0	0.0	0	93,282	
								DSRP-TOR	M2	14.1	560.0	7,879		
								APR-PAT	M2	0.8	270.0	203		
								WWRS	M3	49.0	600.0	29,400		
								SRPR	M	6.1	0.0	0		
								SFRS	M2	17.6	0.0	0		
								BRR-TOR(S)	No	10.0	0.0	0		
								DETOUR	M	43.1	590.0	25,429		
90	00532980	N.Sembilan	1970	11.02	5	53.24	RCB	APR-INJ	M	0.5	120.0	60	193,200	
								PRF-PAL	M	160.0	416.0	66,560		300x300
								PPR-INJ	M	8.0	140.0	1,120		
								ARF-PAL	M2	34.0	190.0	6,460		
								COFFERDAM	No	4.0	23400.0	93,600		H=2.0
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
91	00534450	N.Sembilan	1965	8.83	4	35.33	RCB	DCPR-PAT	M2	0.4	270.0	108	158,906	
								EJRP	M	40.0	1180.0	47,600		
								PRF-TOL	M	60.0	416.0	24,960		400x400
								BPR-REP	No	40.0	12.0	480		
								SRPR	M	70.6	24.0	1,696		
								DRRF	No	16.0	390.0	6,240		
								COFFERDAM	No	3.0	23400.0	70,200		H=2.0
								SCAFFOLDING	M2	353.2	21.3	7,523		
92	00534570	Selangor	1950	6.95	4	32.84	RCB	CBRF-BSP	M2	33.0	930.0	30,690	240,817	
								DCPR-PAT	M2	2.0	270.0	540		
								DCRF-SWR	M2	35.0	760.0	26,600		
								APR-INJ	M	2.0	120.0	240		
								ARF-PAL	M	36.0	416.0	14,976		300x300
								PRF-PAL	M	90.0	416.0	37,440		300x300
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								COFFERDAM	No	3.0	32000.0	96,000		H=3.0
								SCAFFOLDING	M2	325.4	21.3	6,931		
93	00535560	Selangor	1950	14.70	5	61.34	RCB	SBPR-REP	M2	72.0	58.0	4,176	369,620	
								PRF-TOL	M	200.0	416.0	83,200		300x300
								APR-INJ	M	4.0	120.0	480		
								ASN	No	2.0	3020.0	6,040		
								DRRF	No	32.0	390.0	12,480		
								BPR-REP	No	60.0	12.0	729		
								EJRP	M	40.0	3020.0	120,800		
								SFRS	M2	16.1	41.0	659		
								COFFERDAM	No	4.0	32000.0	128,000		H=3.0
								SCAFFOLDING	M2	613.4	21.3	13,066		
94	00538970	Selangor	1950	2.30	1	2.30	BOX	DCRF-SWR	M2	34.0	760.0	25,840	27,730	
								AFPR-REV	M2	10.0	140.0	1,400		
								SCAFFOLDING	M2	23.0	21.3	490		
95	00540780	Selangor	1950	7.30	3	11.94	RCB	-	-	-	-	-	-	BRIDGE HAS BEEN REPLACED
96	00540910	Selangor	1950	6.29	1	6.29	SSB	DSRP-TOR	M2	42.0	560.0	23,520	86,667	
								ARF-PAL	M2	45.4	190.0	8,626		
								SBPR-REP	M2	50.0	0.0	0		
								BRP-TOR	No	12.0	0.0	0		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	46.3	590.0	27,311		
97	00541000	Selangor	1950	3.24	1	3.24	SSB	DSRP-TOR	M2	73.0	560.0	40,880	98,642	
								ARF-PAL	M2	25.0	190.0	4,750		
								SBPR-REP	M2	56.5	0.0	0		
								BRP-TOR	No	14.0	0.0	0		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	43.2	590.0	26,512		
98	00541210	Selangor	1950	4.73	1	4.73	SSB	SBPR-REP	M2	22.0	0.0	0	52,711	
								DSRP-TOR	M2	36.0	560.0	20,160		
								APR-INJ	M	1.0	120.0	120		
								BRP-TOR	No	14.0	0.0	0		
								ASN	No	2.0	3020.0	6,040		
								DETOUR	M	44.7	590.0	26,391		

APPENDIX-R3 COST ESTIMATE OF EACH STUDY BRIDGE (216 BRIDGES)

No.	Key	State	Year Built	Max. Span (m)	No's of Spans	Span Length (m)	Type of Bridge	Rehabilitation Plans	Unit	Quantity	Unit Price (M$)	Amount (M$)	Total Amount (M$)	Remarks
99	00548500	Selangor	1969	10.64	3	30.94	RCS					21,654	21,654	INCLUDED IN DETAILED SURVEY
100	00546980	Selangor	1992	10.64	3	30.94	RCS					892,599	892,599	INCLUDED IN DETAILED SURVEY
101	00549550	Selangor	1958	12.61	6	63.56	SBC	SPR-REP	No	60.0	12.0	720	161,076	
								PPR-PAT	M	4.3	270.0	1,148		
								ASN	No	2.0	3020.0	6,040		
								EJRP	M	40.0	3020.0	120,800		
								ORRF	No	48.0	390.0	18,720		
								SRRF	M	130.0	106.0	13,650		
102	00555290	Perak	1960	2.45	2	4.92	BOX	PRF-PAL	M2	25.5	190.0	4,845	35,677	
								SRRE	M	9.8	176.0	1,732		
								ATPR	M2	80.0	140.0	11,200		
								COFFERDAM	No	1.0	17900.0	17,900		H=1.0
103	00556900	Perak	1958	7.33	1	7.33	RCS	SRPR	M	14.7	24.0	362	45,136	
								WWRP	M3	3.0	600.0	1,800		
								ARF-TOL	M	24.0	418.0	9,984		350x350
								COFFERDAM	No	2.0	16500.0	33,000		H=2.0
104	00563800	Perak	1972	14.07	3	41.59	IT					122,189	122,189	INCLUDED IN DETAILED SURVEY
105	00567840	Perak	1960	8.06	2	12.12	PRB					247,092	247,092	INCLUDED IN DETAILED SURVEY
106	00559630	Perak	1950	2.83	1	2.83	SSB	DSRP-TOR	M2	27.0	560.0	15,120	40,390	
								BRP-TOR(S)	No	10.0	0.0	0		
								DETOUR	M	42.8	590.0	25,270		
107	00700660	Kedah	1964	19.40	1	19.40	PCS	ASN	No	1.0	3020.0	3,020	131,627	
								SRPR	M	36.8	24.0	883		
								SFRS	M2	35.0	41.0	1,476		
								DCPR-PAT	M2	3.9	270.0	1,053		
								CBPR-PAT	M2	12.0	270.0	3,240		
								ADD-IS	M2	78.6	1500.0	117,936		
								SCAFFOLDING	M2	184.0	21.3	3,919		
108	00700780	Kedah	1970	18.36	1	18.36	RCS	CRRF	M	30.7	0.0	0	192,022	
								EJN	M	24.6	0.0	0		
								RING-SUP	M2	192.0	830.0	159,360		REPLACEMENT OF SUPERSTRUCTURE
								DETOUR	M	65.4	590.0	32,662		
109	00701610	Kedah	1970	30.52	3	48.60	PCS	EJRP	M	34.7	3020.0	104,794	115,507	
								SFRS	M2	8.0	41.0	328		
								PPR-PAT	M2	7.8	270.0	2,012		
								SRPR	M	97.2	24.0	2,333		
								ASN	No	2.0	3020.0	6,040		
110	00702630	Kedah	1960	9.54	1	9.54	RCS	SPR-REP	No	14.0	12.0	168	71,353	
								ARF-PAL	M2	37.6	190.0	7,144		
								SRPR	M	19.1	24.0	458		
								EJN	M	25.7	1190.0	30,583		
								COFFERDAM	No	2.0	16500.0	33,000		H=2.0
111	00703930	Perlis	1953	24.80	1	24.80	PCS	APR-PAT	M2	2.2	270.0	583	34,348	
								EJRP	M	8.2	3020.0	24,824		
								SRRE	M	50.8	176.0	8,941		
112	00706230	Perlis	1950	6.83	1	6.83	SSB			-	-	-	-	BRIDGE HAS BEEN REPLACED
113	00800360	Pahang	1950	3.47	1	3.47	SSB	SBPR-REP	M2	7.5	0.0	0	36,847	
								DSRP-TOR	M2	20.0	560.0	11,200		
								BRP-TOR(S)	No	10.0	0.0	0		
								DETOUR	M	43.5	590.0	25,647		
114	00803050	Pahang	1950	9.04	2	18.08	SSB	DSRP-TOR	M2	94.0	560.0	52,640	133,507	
								BRP-TOR(S)	No	20.0	0.0	0		
								ARF-PAL	M2	18.0	190.0	3,420		
								AFPR-REV	M2	15.0	140.0	2,100		
								PFPR-REP	M2	53.0	260.0	13,780		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	58.1	590.0	34,267		
115	00803900	Pahang	1952	6.47	2	10.94	SSB	SBPR-REP	M2	145.0	0.0	0	152,995	
								DSRP-TOR	M2	68.0	560.0	38,080		
								APR-INJ	M	6.5	120.0	780		
								ARF-PAL	M2	30.0	190.0	5,700		
								PRF-PAL	M2	35.0	190.0	6,650		
								PFPR-REP	M2	80.0	260.0	20,800		
								BRP-TOR(S)	No	24.0	0.0	0		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								COFFERDAM	No	1.0	23400.0	23,400		H=2.0
								DETOUR	M	50.9	590.0	30,056		
116	00810120	Pahang	1960	6.90	1	6.90	SSB	SBPR-REP	M2	64.0	0.0	0	50,191	
								DSRP-TOR	M2	40.0	560.0	22,400		
								APR-INJ	M	1.0	120.0	120		
								BRP-TOR(S)	No	12.0	0.0	0		
								DETOUR	M	46.9	590.0	27,671		
117	00813470	Pahang	1960	11.67	1	11.67	PRB	DCPR-WPL	M2	72.0	75.0	5,400	108,153	
								ARF-PAL	M	30.0	416.0	12,480		350x350
								WWRP	M3	12.0	600.0	7,200		
								EJN	M	15.0	3020.0	45,300		
								SRPR	M	23.3	24.0	560		
								CRRE	M	23.3	176.0	4,106		
								SFRS	M2	65.0	41.0	2,665		
								AFPR-REV	M2	7.5	140.0	1,050		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
118	00819050	Pahang	1950	30.49	1	30.49	PCS	NON				0	0	NO DEFECT DETECTED
119	00822340	Kelantan	1982	31.13	3	90.91	PCS	SRPR	M	181.8	24.0	4,364	224,624	
								EJN	M	73.0	3020.0	220,460		
120	00834650	Kelantan	1960	4.63	3	13.71	RCS					334,175	334,175	INCLUDED IN DETAILED SURVEY
121	00834950	Kelantan	1960	3.34	1	3.34	RCS	SFRS	M2	15.0	0.0	0	49,807	
								RING-SUP	M2	29.2	830.0	24,236		REPLACEMENT OF SUPERSTRUCTURE
								DETOUR	M	43.3	590.0	25,571		
122	00836900	Kelantan	1960	6.69	2	12.02	RCS	CBPR-PAT	M2	1.3	270.0	351	47,846	
								DCPR-PAT	M2	4.3	270.0	1,161		
								DCPR-WPL	M2	78.0	75.0	5,850		
								PRF-PAL	M	15.0	348.0	5,220		300x300
								APR-INJ(M)	M	0.3	140.0	42		
								SRPR	M	24.0	24.0	577		
								EJN	M	7.3	1190.0	8,687		
								COFFERDAM	No	1.0	23400.0	23,400		H=2.0
								SCAFFOLDING	M2	120.2	21.3	2,560		
123	00838100	Kelantan	1961	4.48	2	9.72	RCS	DCPR-PAT	M2	11.7	0.0	0	238,665	
								DCPR-WPL	M2	63.0	0.0	0		
								PPR-PAT	M2	2.0	0.0	0		
								CRPR	M	19.4	0.0	0		
								EJN	M	15.6	0.0	0		
								VAD-SS	M2	63.0	2460.0	153,720		
								RING-SUP	M2	67.0	830.0	55,610		REPLACEMENT OF SUPERSTRUCTURE
								DETOUR	M	49.7	590.0	29,335		

APPENDIX-R3 COST ESTIMATE OF EACH STUDY BRIDGE (216 BRIDGES)

No.	Key	State	Year Built	Max. Span (m)	No's of Spans	Span Length (m)	Type of Bridge	Rehabilitation Plans	Unit	Quantity	Unit Price (M$)	Amount (M$)	Total Amount (M$)	Remarks
124	00901360	N.Sembilan	1950	6.74	1	6.74	RCS	DCRF-SWR	M2	42.0	760.0	31,920	44,239	
								APR-INJ	M	1.4	120.0	168		
								AFPR-REV	M2	5.6	140.0	784		
								SFRS	M2	21.0	41.0	861		
								EJN	M	7.6	1190.0	9,282		
								SCAFFOLDING	M2	97.4	21.3	1,223		
125	00901420	N.Sembilan	1950	3.24	1	3.24	SBD	SBPR-REP	M2	26.0	0.0	0	69,512	
								SBRF-WSP	M2	2.0	830.0	1,660		
								DSRP-TOR	M2	42.0	560.0	23,520		
								ARF-PAL	M2	30.0	190.0	5,700		
								PFPR-RBP	M2	22.0	360.0	5,720		
								BRP-TOR(S)	No	10.0	0.0	0		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	43.2	590.0	25,512		
126	00901700	N.Sembilan	1950	3.63	1	3.63	SBD	SBPR-REP	M2	20.8	0.0	0	38,076	
								DSRP-TOR	M2	23.1	560.0	12,936		
								BRP-TOR(S)	No	10.0	0.0	0		
								DETOUR	M	43.8	590.0	25,742		
127	00901950	N.Sembilan	1950	9.07	2	18.14	SBS	SBPR-REP	M2	178.0	0.0	0	182,113	
								DSRP-TOR	M2	142.0	560.0	79,520		
								BRP-TOR(S)	No	20.0	0.0	0		
								ARF-PAL	M2	31.0	190.0	5,890		
								PRF-PAL	M	20.0	580.0	11,600		D580
								COFFERDAM	No	1.0	23400.0	23,400		H=2.0
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	58.1	590.0	34,303		
128	00902270	N.Sembilan	1950	3.11	1	3.11	SBS	SBPR-REP	M2	17.5	0.0	0	36,635	
								DSRP-TOR	M2	20.0	560.0	11,200		
								BRP-TOR(S)	No	10.0	0.0	0		
								DETOUR	M	43.1	590.0	25,435		
129	00902300	N.Sembilan	1950	3.11	1	3.11	SBS	SBPR-REP	M2	16.0	0.0	0	62,931	
								DSRP-TOR	M2	42.0	560.0	23,520		
								BRP-TOR(S)	No	10.0	0.0	0		
								ARF-PAL	M2	27.4	190.0	5,206		
								RTPR	M2	10.0	140.0	1,400		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	43.1	590.0	25,425		
130	00902430	N.Sembilan	1950	3.10	1	3.10	SBS	SBPR-REP	M2	31.9	0.0	0	61,829	
								DSRP-TOR	M2	36.0	560.0	20,160		
								BRP-TOR(S)	No	10.0	0.0	0		
								RTPR	M2	116.0	140.0	16,240		
								DETOUR	M	43.1	590.0	25,428		
131	00902460	N.Sembilan	1950	3.10	1	3.10	SBS	SBPR-REP	M2	32.0	0.0	0	46,176	
								DSRP-TOR	M2	37.0	560.0	20,720		
								BRP-TOR(S)	No	10.0	0.0	0		
								APR-PAT	M2	0.1	270.0	27		
								DETOUR	M	43.1	590.0	25,429		
132	00904330	N.Sembilan	1950	7.77	1	7.77	SBS	SBPR-REP	M2	69.5	0.0	0	82,964	
								DSRP-TOR	M2	44.3	560.0	24,780		
								BRP-TOR(S)	No	10.0	0.0	0		
								DETOUR	M	47.8	590.0	28,184		
133	00906190	N.Sembilan	1950	9.54	1	9.54	SBS	SBPR-REP	M2	99.0	0.0	0	61,149	
								DSRP-TOR	M2	57.0	560.0	31,920		
								BRP-TOR(S)	No	12.0	0.0	0		
								DETOUR	M	49.5	590.0	29,229		
134	00907010	N.Sembilan	1930	6.36	1	6.36	SBS	SBPR-REP	M2	51.0	0.0	0	48,658	
								DSRP-TOR	M2	38.0	560.0	21,280		
								BRP-TOR(S)	No	12.0	0.0	0		
								APR-PAT	M2	0.1	270.0	27		
								DETOUR	M	46.4	590.0	27,350		
135	00908400	N.Sembilan	1935	10.70	5	36.70	SBE	CBPR-PAT	M2	0.2	270.0	55	197,813	
								CBRF-BSP	M2	40.2	930.0	37,386		
								DCPR-PAT	M2	1.0	270.0	259		
								PRF-PAL	M	40.0	416.0	16,640		360x360
								APR-INJ(M)	M	3.0	140.0	420		
								EJN	M	13.2	3020.0	39,864		
								SRPR	M	73.4	24.0	1,762		
								COFFERDAM	No	4.0	23400.0	93,600		H=2.0
								SCAFFOLDING	M2	367.0	21.3	7,817		
136	00911990	Pahang	1951	10.77	4	32.96	SBS	SBPR-REP	M2	237.3	0.0	0	166,462	
								DSRP-TOR	M2	201.1	560.0	112,616		
								BRP-TOR(S)	No	30.0	0.0	0		
								WWRS	M3	18.0	600.0	10,800		
								DETOUR	M	73.0	590.0	43,046		
137	01105770	N.Sembilan	1970	6.16	3	18.32	PRB	DCPR-WPL	M2	122.0	75.0	9,150	49,745	
								CBPR-PAT	M2	4.0	270.0	1,080		
								AFPR-REV	M2	88.0	140.0	12,320		
								APR-INJ	M	9.0	120.0	1,080		
								PPR-INJ	M	1.2	140.0	168		
								EJN	M	13.6	1160.0	15,066		
								RTPR	M2	30.0	140.0	4,200		
								DRAF	No	2.0	390.0	780		
								SCAFFOLDING	M2	183.2	21.3	3,902		
138	01800020	Perak	1950	3.68	1	3.68	RCS	DCPR-SHT	M2	20.0	620.0	12,400	61,984	
								WID-SS	M2	20.0	2440.0	48,800		
								SCAFFOLDING	M2	36.8	21.3	784		
139	01800670	Perak	1950	4.78	1	4.78	SBC	SBPR-REP	M2	68.0	56.0	3,946	140,265	
								DCPR-PAT	M2	11.7	270.0	3,159		
								APR-PAT	M2	0.9	270.0	243		
								WID-SS	M2	66.0	1990.0	131,920		
								SCAFFOLDING	M2	47.9	21.3	1,018		
140	02305040	Johor	1950	6.29	2	12.28	SBS	SBPR-REP	M2	48.0	0.0	0	69,445	
								DSRP-TOR	M2	68.0	560.0	38,080		
								BRP-TOR(S)	No	20.0	0.0	0		
								PFPR-RBP	M2	2.0	260.0	520		
								DETOUR	M	52.3	590.0	30,845		
141	02305970	Johor	1950	6.69	2	7.60	RCS	DCPR-PAT	M2	0.1	0.0	0	70,879	
								APR-PAT	M2	0.6	270.0	162		
								PPR-PAT	M2	0.2	270.0	54		
								CRRE	M	15.2	0.0	0		
								SFRS	M2	0.1	0.0	0		
								EJN	M	15.5	0.0	0		
								RING-SUP	M2	51.3	830.0	42,579		REPLACEMENT OF SUPERSTRUCTURE
								DETOUR	M	47.6	590.0	28,084		

APPENDIX-R3 COST ESTIMATE OF EACH STUDY BRIDGE (216 BRIDGES)

No.	Key	State	Year Built	Max. Span (m)	No's of Spans	Span Length (m)	Type of Bridge	Rehabilitation Plans	Unit	Quantity	Unit Price (M$)	Amount (M$)	Total Amount (M$)	Remarks
142	05001070	Johor	1918	4.77	1	4.77	SBB					76,328	76,328	INCLUDED IN DETAILED SURVEY
143	05001690	Johor	1950	5.05	1	5.05	SBB	SBPR-REP	M2	43.0	0.0	0	70,316	
								DSRP-TOR	M2	78.1	560.0	43,736		
								BRP-TOR(S)	No	14.0	0.0	0		
								DETOUR	M	45.1	590.0	26,580		
144	05002590	Johor	1940	4.76	1	4.76	SBB	SBPR-REP	M2	30.0	0.0	0	63,383	
								DSRP-TOR	M2	63.0	560.0	35,960		
								BRP-TOR(S)	No	14.0	0.0	0		
								DETOUR	M	44.8	590.0	26,403		
145	05100840	N.Sembilan	1950	9.41	1	9.41	SBB			-	-	-	-	UNDER CONSTRUCTION
146	05101360	N.Sembilan	1940	3.31	1	3.31	SBB	SBPR-REP	M2	43.0	0.0	0	51,367	
								DSRP-TOR	M2	46.0	560.0	25,760		
								BRP-TOR(S)	No	16.0	0.0	0		
								APR-PAT	M2	0.2	270.0	54		
								DETOUR	M	43.3	590.0	25,553		
147	05101460	N.Sembilan	1950	3.26	1	3.26	SBB	SBPR-REP	M2	14.0	0.0	0	48,315	
								DSRP-TOR	M2	40.7	560.0	22,792		
								BRP-TOR(S)	No	14.0	0.0	0		
								DETOUR	M	43.3	590.0	25,523		
148	05102060	N.Sembilan	1950	4.74	1	4.74	SBB	SBPR-REP	M2	33.0	0.0	0	53,697	
								DSRP-TOR	M2	48.8	560.0	27,160		
								BRP-TOR(S)	No	12.0	0.0	0		
								APR-INJ(M)	M	1.0	140.0	140		
								DETOUR	M	44.7	590.0	26,397		
149	05102280	N.Sembilan	1950	4.81	1	4.81	SBB	SBPR-REP	M2	28.0	0.0	0	42,118	
								DSRP-TOR	M2	28.0	560.0	15,680		
								BRP-TOR(S)	No	10.0	0.0	0		
								DETOUR	M	44.8	590.0	26,438		
150	05102380	N.Sembilan	1950	3.21	1	3.21	SBB	RING-SUP	M2	18.0	560.0	10,080	38,574	REPLACEMENT OF SUPERSTRUCTURE
								WWRP	M3	5.0	600.0	3,000		
								DETOUR	M	43.2	590.0	25,494		
151	05102970	N.Sembilan	1950	3.21	1	3.21	SBB	SBPR-REP	M2	28.8	0.0	0	81,470	
								DSRP-TOR	M2	42.9	560.0	23,772		
								BRP-TOR(S)	No	10.0	0.0	0		
								ADD-IS	M2	16.8	1940.0	32,204		
								DETOUR	M	43.2	590.0	25,494		
152	05103030	N.Sembilan	1950	3.79	1	3.79	SBB	SBRF-WSP	M2	1.0	830.0	830	42,514	
								DSRP-TOR	M2	29.3	560.0	16,848		
								BRP-TOR(S)	No	10.0	0.0	0		
								DETOUR	M	43.8	590.0	25,836		
153	05103300	N.Sembilan	1958	9.62	2	16.08	SBB	SBPR-REP	M2	56.0	0.0	0	94,362	
								DSRP-TOR	M2	108.9	560.0	60,996		
								BRP-TOR(S)	No	20.0	0.0	0		
								PPR-INJ	M	2.0	140.0	280		
								DETOUR	M	56.1	590.0	33,087		
154	05200280	N.Sembilan	1932	4.66	1	4.66	SBB	SBPR-REP	M2	39.0	0.0	0	77,859	
								DSRP-TOR	M2	92.0	560.0	51,520		
								BRP-TOR(S)	No	14.0	0.0	0		
								DETOUR	M	44.7	590.0	26,349		
155	05202450	Selangor	1955	12.11	1	12.11	RCB	CBRF-BSP	M2	25.0	930.0	23,250	33,110	
								DCPR-INJ	M	11.0	120.0	1,320		
								APR-PAT	M2	0.3	270.0	81		
								AFPR-REV	M2	42.0	140.0	5,880		
								SCAFFOLDING	M2	121.1	21.3	2,579		
156	05203510	Selangor	1950	1.60	2	3.20	BOX	AFPR-REV	M2	10.0	140.0	1,400	2,808	
								SRRE	M	8.0	176.0	1,408		
157	05204870	Selangor	1964	19.24	3	54.50	SBC	SBPR-REP	M2	780.0	56.0	43,240	177,959	
								BPR-REP	No	30.0	12.0	360		
								DCPR-PAT	M2	0.6	270.0	162		
								EJN	M	39.9	3020.0	120,499		
								SCAFFOLDING	M2	545.0	21.3	11,609		
158	05300470	N.Sembilan	1950	9.35	1	9.35	SBB	SBPR-REP	M2	98.0	0.0	0	114,593	
								DSRP-TOR	M2	80.0	560.0	44,800		
								BRP-TOR(S)	No	16.0	0.0	0		
								ARF-PAL	M2	40.4	190.0	7,676		
								COFFERDAM	No	2.0	16500.0	33,000		H=2.0
								DETOUR	M	49.4	590.0	29,117		
159	05300660	N. Sembilan	1950	6.27	1	6.27	SBB	SBPR-REP	M2	11.5	0.0	0	60,139	
								DSRP-TOR	M2	58.0	0.0	0		RAISING GRADE
								BRP-TOR(S)	No	16.0	0.0	0		
								APR-INJ	M	3.0	120.0	360		
								RING-SUP	M2	58.0	560.0	32,480		DSRP-TOR
								DETOUR	M	46.3	590.0	27,299		
160	05301190	N.Sembilan	1950	4.84	1	4.84	SBB			-	-	-	-	BRIDGE HAS BEEN REPLACED
161	05302050	N. Sembilan	1950	6.45	1	6.45	SBB	SBPR-REP	M2	2.5	0.0	0	69,120	
								DSRP-TOR	M2	68.0	560.0	38,080		
								BRP-TOR(S)	No	12.0	0.0	0		
								APR-PAT	M2	0.2	270.0	54		
								WWRP	M3	4.0	600.0	2,400		
								DETOUR	M	46.5	590.0	28,586		
162	05302160	N. Sembilan	1950	6.31	1	6.31	SBB	SBPR-REP	M2	49.7	0.0	0	58,390	
								DSRP-TOR	M2	49.3	560.0	27,619		
								BRP-TOR(S)	No	12.0	0.0	0		
								APR-INJ	M	5.4	120.0	648		
								AFPR-REV	M2	20.0	140.0	2,800		
								DETOUR	M	46.3	590.0	27,323		
163	05302340	N. Sembilan	1940	6.70	1	6.70	SBB	DSRP-TOR	M2	46.0	560.0	25,760	91,943	
								BRP-TOR(S)	No	10.0	0.0	0		
								ARF-PAL	M2	37.0	190.0	7,030		
								RTPR	M2	30.0	140.0	4,200		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	46.7	590.0	27,553		
164	05403400	Selangor	1950	6.58	1	6.58	RCB	ARF-PAL	M2	38.8	190.0	7,372	43,206	
								SRRE	M	13.1	176.0	2,309		
								DCPR-PAT	M2	0.4	270.0	108		
								RTPR	M2	33.0	140.0	4,620		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	65.6	21.3	1,397		
165	05403570	Selangor	1950	3.05	1	3.05	BOX	DCRF-UG	M2	45.4	3160.0	143,464	182,838	
								ARF-PAL	M2	59.6	190.0	11,324		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	30.5	21.3	650		

APPENDIX-R3 COST ESTIMATE OF EACH STUDY BRIDGE (216 BRIDGES)

No.	Key	State	Year Built	Max. Span (m)	No's of Spans	Span Length (m)	Type of Bridge	Rehabilitation Plans	Unit	Quantity	Unit Price (M$)	Amount (M$)	Total Amount (M$)	Remarks
165	05901510	Perak	1950	5.60	1	5.60	SBB	SBPR-REP	M2	39.0	0.0	0	47,899	
								DSRP-TOR	M2	35.7	560.0	20,659		
								BRP-TOR(S)	No	12.0	0.0	0		
								APR-INJ	M	3.6	120.0	432		
								DETOUR	M	45.6	590.0	26,904		
167	05901620	Perak	1950	3.67	1	3.67	SBB	SBPR-REP	M2	28.2	0.0	0	69,077	
								DSRP-TOR	M2	23.8	560.0	13,328		
								BRP-TOR(S)	No	12.0	0.0	0		
								ARF-PAL	M2	13.6	190.0	2,584		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	43.7	590.0	25,765		
168	05903340	Perak	1950	4.97	1	4.97	SBB					65,140	65,140	INCLUDED IN DETAILED SURVEY
169	05901000	Perak	1950	4.88	1	4.88	SBC	SBPR-REP	M2	40.0	58.0	2,320	30,941	
								DCRF-SWR	M2	34.0	760.0	25,840		
								CBPR-PAT	M2	0.4	270.0	108		
								AFPR-REV	M2	10.0	140.0	1,400		
								SRPR	M	9.8	24.0	234		
								SCAFFOLDING	M2	48.8	21.3	1,039		
170	05901070	Perak	1950	4.71	1	4.71	SBC	SBPR-REP	M2	34.0	58.0	1,972	41,341	
								DCPR-PAT	M2	0.7	270.0	189		
								CBPR-PAT	M2	0.7	270.0	189		
								ARF-PAL	M2	41.6	190.0	7,885		
								AFPR-REV	M2	10.0	140.0	1,400		
								SRRF	M	0.7	105.0	74		
								CRRF	M	9.4	100.0	942		
								SFRS	M2	7.0	41.0	287		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	47.1	21.3	1,003		
171	05901480	Perak	1950	1.95	2	3.90	SBC	SBPR-REP	M2	34.0	58.0	1,972	86,229	
								DCPR-PAT	M2	3.3	270.0	891		
								PRF-PAL	M2	35.0	190.0	6,650		
								ARF-PAL	M2	35.0	190.0	6,650		
								AFPR-REV	M2	20.0	140.0	2,800		
								SRPR	M	7.8	24.0	187		
								SFRS	M2	0.1	41.0	4		
								EJN	M	17.6	1190.0	20,944		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								COFFERDAM	No	1.0	17900.0	17,900		H=1.0
								SCAFFOLDING	M2	39.0	21.3	831		
172	05901580	Perak	1950	7.63	1	7.63	SBC	SBPR-REP	M2	42.0	58.0	2,436	25,849	
								CBPR-PAT	M2	0.7	270.0	189		
								AFPR-REV	M2	10.0	140.0	1,400		
								SRPR	M	15.3	24.0	366		
								EJN	M	16.7	1190.0	19,873		
								SCAFFOLDING	M2	76.3	21.3	1,625		
173	05901650	Perak	1950	9.53	1	9.53	SBC	SBPR-REP	M2	87.0	58.0	5,046	73,646	
								DCRF-SWR	M2	59.0	760.0	44,840		
								AFPR-REV	M2	10.0	140.0	1,400		
								SRPR	M	19.1	24.0	457		
								EJN	M	16.7	1190.0	19,873		
								SCAFFOLDING	M2	95.3	21.3	2,030		
174	05902030	Perak	1950	3.58	1	3.58	SBC	SBPR-REP	M2	19.0	58.0	1,102	23,220	
								DCPR-PAT	M2	0.1	270.0	27		
								CBPR-PAT	M2	0.4	270.0	108		
								DCPR-WPL	M2	20.6	75.0	1,535		
								SRPR	M	7.1	24.0	171		
								EJN	M	16.4	1190.0	19,518		
								SCAFFOLDING	M2	35.5	21.3	756		
175	05902230	Perak	1950	8.21	1	8.21	SBC	SBPR-REP	M2	79.0	58.0	4,581	32,430	
								CBPR-PAT	M2	0.3	270.0	81		
								DCPR-WPL	M2	51.2	75.0	3,840		
								AFPR-REV	M2	16.5	140.0	2,310		
								SRAE	M	8.0	176.0	1,408		
								SRPR	M	8.0	24.0	192		
								EJN	M	15.4	1190.0	18,326		
								SCAFFOLDING	M2	82.1	21.3	1,749		
176	05902550	Perak	1950	8.80	1	8.80	SBC	SBPR-REP	M2	45.0	58.0	2,610	25,298	
								EJRP	M	17.6	1190.0	20,944		
								SFRS	M2	7.0	41.0	287		
								SCAFFOLDING	M2	68.0	21.3	1,448		
177	05902920	Perak	1950	8.77	1	8.77	SBC	SBPR-REP	M2	45.0	58.0	2,610	58,188	
								DCPR-PAT	M2	4.5	270.0	1,215		
								ARF-PAL	M2	67.0	190.0	12,730		
								SFRS	M2	1.0	41.0	41		
								SRPR	M	17.5	24.0	421		
								EJN	M	16.7	1190.0	19,873		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								SCAFFOLDING	M2	87.7	21.3	1,868		
178	05903120	Perak	1950	10.88	3	23.18	SBC					251,883	251,883	INCLUDED IN DETAILED SURVEY
179	05906010	Pahang	1961	30.74	4	122.35	PCB	CBPR-PAT	M2	56.2	270.0	15,174	171,852	
								BPR-REP	No	20.0	12.0	240		
								DCPR-WPL	M2	1040.6	75.0	78,720		
								EJRP	M	17.0	3020.0	51,340		
								SRRF	M	3.0	105.0	315		
								SCAFFOLDING	M2	1222.6	21.3	26,063		
180	05905290	Pahang	1930	6.05	1	6.05	SBB	DSRP-TOR	M2	47.0	560.0	26,320	55,030	
								BRP-TOR	No	14.0	0.0	0		
								AFPR-REV	M2	11.0	140.0	1,540		
								DETOUR	M	46.1	590.0	27,170		
181	05905010	Pahang	1930	6.35	1	6.35	SBB	SBPR-REP	M2	47.0	0.0	0	52,457	
								DSRP-TOR	M2	44.8	560.0	25,110		
								BRP-TOR	No	14.0	0.0	0		
								DETOUR	M	46.4	590.0	27,347		
182	06000970	Perak	1930	3.14	1	3.14	SBE		M2	53.6	1990.0	106,664	132,117	TOTAL REPLACEMENT
								DETOUR	M	43.1	590.0	25,453		
183	06001330	Perak	1950	5.02	1	5.02	RCB	SRPR	M	11.0	24.0	264	26,402	
								DCRF-SWR	M2	26.5	760.0	20,140		
								CBRF-BSP	M2	5.3	930.0	4,929		
								SCAFFOLDING	M2	50.2	21.3	1,069		

APPENDIX-R3 COST ESTIMATE OF EACH STUDY BRIDGE (216 BRIDGES)

No.	Key	State	Year Built	Max. Span (m)	No's of Spans	Span Length (m)	Type of Bridge	Rehabilitation Plans	Unit	Quantity	Unit Price (M$)	Amount (M$)	Total Amount (M$)	Remarks
184	05005070	Perak	1950	7.20	4	27.14	SBC	SBPR-REP	M2	159.5	58.0	9,257	29,956	
								DCPR-PAT	M2	14.1	270.0	3,812		
								DCPR-WPL	M2	45.5	75.0	3,413		
								APR-INJ	M	3.0	120.0	360		
								SRPR	M	54.3	24.0	1,303		
								ASIN	No	2.0	3020.0	6,040		
								SCAFFOLDING	M2	271.4	21.3	6,781		
185	05005230	Perak	1960	7.01	1	7.01	RCB	SRPR	M	14.0	24.0	335	10,564	
								SFRS	M2	7.0	41.0	287		
								ASIN	No	2.0	3020.0	6,040		
								CBPR-PAT	M2	0.3	270.0	68		
								DRRF	No	6.0	390.0	2,340		
								SCAFFOLDING	M2	70.1	21.3	1,493		
186	05005740	Perak	1960	6.60	3	21.95	RCB	CBPR-PAT	M2	3.0	270.0	810	22,552	
								DCPR-PAT	M2	1.6	270.0	440		
								APR-PAT	M2	0.1	270.0	27		
								EJRP	M	13.8	1190.0	16,422		
								SFRS	M2	4.5	41.0	185		
								SCAFFOLDING	M2	219.5	21.3	4,675		
187	05006030	Perak	1950	5.08	1	5.08	SBB	SBPR-REP	M2	28.0	0.0	0	73,953	
								DSRP-TOR	M2	26.0	560.0	14,560		
								BRP-TOR(S)	No	10.0	0.0	0		
								ARF-TOL	M2	20.4	190.0	5,396		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	48.1	590.0	26,597		
188	05403300	Pahang	1930	12.31	1	12.31	SBB	SBPR-REP	M2	129.0	0.0	0	73,843	
								DSRP-TOR	M2	76.0	560.0	42,000		
								BRP-TOR(S)	No	12.0	0.0	0		
								APR-INJ	M	6.5	120.0	780		
								DETOUR	M	52.3	590.0	30,863		
189	05403900	Pahang	1930	11.91	1	11.91	SBB	SBPR-REP	M2	113.5	0.0	0	67,027	
								DSRP-TOR	M2	65.0	560.0	36,400		
								BRP-TOR(S)	No	12.0	0.0	0		
								DETOUR	M	51.9	590.0	30,627		
190	05404270	Pahang	1930	10.91	1	10.91	SBB	SBPR-REP	M2	94.5	0.0	0	63,637	
								DSRP-TOR	M2	60.0	560.0	33,600		
								BRP-TOR(S)	No	10.0	0.0	0		
								DETOUR	M	50.9	590.0	30,037		
191	05404940	Pahang	1930	6.21	1	6.21	SBB	SBPR-REP	M2	48.0	0.0	0	103,266	
								DSRP-TOR	M2	34.0	560.0	19,040		
								BRP-TOR(S)	No	10.0	0.0	0		
								ARF-PAL	M2	72.0	190.0	13,680		
								ARF-SP	M	6.6	1770.0	11,682		
								WWRP	M3	7.0	600.0	4,200		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	46.2	590.0	27,264		
192	05405650	Pahang	1930	6.31	1	6.31	SBB	SBPR-REP	M2	45.0	0.0	0	48,001	
								DSRP-TOR	M2	34.0	560.0	19,040		
								BRP-TOR(S)	No	10.0	0.0	0		
								APR-REV	M2	11.7	140.0	1,638		
								DETOUR	M	46.3	590.0	27,323		
193	05406280	Pahang	1930	4.90	1	4.80	SBB	SBPR-REP	M2	17.0	0.0	0	108,272	
								DSRP-TOR	M2	26.0	560.0	14,560		
								BRP-TOR(S)	No	10.0	0.0	0		
								ARF-PAL	M2	21.0	190.0	3,990		
								ADD-IS	M2	19.5	1940.0	35,890		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	44.8	590.0	26,432		
194	06701200	Kedah	1930	6.05	1	6.05	RCB	DCPR-PAT	M2	2.6	270.0	705	2,284	
								SRPR	M	12.1	24.0	290		
								SCAFFOLDING	M2	60.5	21.3	1,289		
195	06701230	Kedah	1940	6.13	2	12.25	RCB	CBPR-PAT	M2	0.2	270.0	54	34,137	
								DCPR-PAT	M2	4.0	270.0	1,080		
								PRF-PAL	M	12.0	348.0	4,176		310x310
								APPR-REV	M2	15.0	140.0	2,100		
								SRRE	M	26.0	176.0	4,576		
								SFRS	M2	40.0	41.0	1,640		
								COFFERDAM	No	1.0	17900.0	17,900		H=1.0
								SCAFFOLDING	M2	122.5	21.3	2,611		
196	06701690	Kedah	1958	30.64	3	91.52	PCB	DCPR-WPL	M2	684.0	75.0	51,300	187,911	
								WWRS	M3	32.0	600.0	19,200		
								SFRS	M2	187.0	41.0	7,667		
								EJRP	M	29.2	3020.0	88,184		
								DRRF	No	4.0	390.0	1,560		
197	06702060	Kedah	1960	7.16	1	7.16	SBE	SRPR	M	14.3	24.0	344	45,049	
								SFRS	M2	25.0	41.0	1,025		
								ADD-IS	M2	28.0	1560.0	43,680		
198	07000230	Perak	1950	5.88	1	5.88	SBB	SBPR-REP	M2	41.0	0.0	0	92,381	
								DSRP-TOR	M2	42.0	560.0	23,520		
								BRP-TOR(S)	No	12.0	0.0	0		
								ARF-PAL	M	24.0	348.0	8,352		310x310
								ASIN	No	2.0	3020.0	6,040		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	45.9	590.0	27,069		
199	07001760	Perak	1970	14.80	3	44.36	IT	EJRP	M	19.0	3020.0	57,380	125,255	
								PRF-PAL	M2	76.0	190.0	14,440		
								SFRS	M2	14.6	41.0	595		
								ASIN	No	2.0	3020.0	6,040		
								COFFERDAM	No	2.0	23400.0	46,800		H=2.0
200	07002480	Perak	1950	3.98	1	3.98	SBB	SBPR-REP	M2	29.2	0.0	0	77,359	
								DSRP-TOR	M2	23.5	560.0	13,160		
								BRP-TOR(S)	No	10.0	0.0	0		
								ARF-PAL	M2	28.0	190.0	5,320		
								COFFERDAM	No	2.0	16500.0	33,000		H=2.0
								DETOUR	M	43.9	590.0	25,880		
201	07602330	Perak	1950	6.35	1	6.35	SBB	DSRP-TOR	M2	35.0	560.0	19,600	46,947	
								BRP-TOR(S)	No	10.0	0.0	0		
								DETOUR	M	48.4	590.0	27,347		
202	07602480	Perak	1950	5.34	1	5.34	SBB	SBPR-REP	M2	6.0	0.0	0	57,671	
								DSRP-TOR	M2	30.0	560.0	16,800		
								BRP-TOR(S)	No	10.0	0.0	0		
								APPR-REV	M2	18.0	140.0	2,520		
								WWRP	M3	36.0	600.0	21,600		
								DETOUR	M	45.3	590.0	26,751		

APPENDIX-R3 COST ESTIMATE OF EACH STUDY BRIDGE (218 BRIDGES)

No.	Key	State	Year Built	Max. Span (m)	No's of Spans	Span Length (m)	Type of Bridge	Rehabilitation Plans	Unit	Quantity	Unit Price (M$)	Amount (M$)	Total Amount (M$)	Remarks
203	07804020	Perak	1950	6.35	1	6.35	SBB	SBPR-REP	M2	34.0	0.0	0	124,277	
								DSRP-TOR	M2	34.0	560.0	19,040		
								BRP-TOR(S)	No	10.0	0.0	0		
								ARF-PAL	M2	*35.0*	190.0	6,840		
								ADD-IS	M2	22.5	1940.0	43,650		
								COFFERDAM	No	2.0	13700.0	27,400		H=1.0
								DETOUR	M	48.4	560.0	27,347		
204	07804100	Perak	1950	3.23	1	3.23	SBB	SBPR-REP	M2	14.0	0.0	0	69,656	
								DSRP-TOR	M2	17.5	560.0	9,800		
								BRP-TOR(S)	No	10.0	0.0	0		
								ADD-IS	M2	12.5	1940.0	24,250		
								DETOUR	M	43.2	560.0	28,606		
205	07804750	Perak	1950	9.34	1	9.34	SBB	SBPR-REP	M2	97.0	0.0	0	66,561	
								DSRP-TOR	M2	63.0	560.0	35,280		
								BRP-TOR(S)	No	12.0	0.0	0		
								AFPR-REV	M2	14.0	140.0	1,960		
								APR-INJ(M)	M	1.5	140.0	210		
								DETOUR	M	49.3	560.0	29,111		
206	07806390	Perak	1950	3.07	1	3.07	SBB	SBPR-REP	M2	18.0	0.0	0	37,691	
								DSRP-TOR	M2	17.0	560.0	9,520		
								BRP-TOR(S)	No	10.0	0.0	0		
								WWRS	M3	2.1	600.0	1,260		
								AFPR-REV	M2	10.0	140.0	1,400		
								DETOUR	M	43.1	560.0	25,411		
207	08801000	N.Sembilan	1950	9.62	1	9.62	SBB	*SBPR-REP*	M2	*97.0*	*0.0*	*0*	*97,464*	
								DSRP-TOR	M2	72.3	560.0	40,488		
								BRP-TOR(S)	No	12.0	0.0	0		
								ARF-SP	M	10.0	1770.0	17,700		
								DETOUR	M	49.6	560.0	29,276		
208	08801190	N.Sembilan	1950	4.64	1	4.64	SBB	SBPR-REP	M2	27.0	0.0	0	47,490	
								DSRP-TOR	M2	23.0	560.0	12,880		
								BRP-TOR(S)	No	10.0	0.0	0		
								APR-INJ	M	1.0	120.0	120		
								WWRS	M3	13.5	600.0	8,100		
								APR-PAT	M2	0.1	270.0	27		
								DETOUR	M	48.6	560.0	28,338		
209	08801610	N.Sembilan	1950	3.66	1	3.66	SBB	–	–	–	–	–	–	BRIDGE HAS BEEN REPLACED
210	08801830	N.Sembilan	1950	3.75	1	3.75	SBB	DSRP-TOR	M2	33.0	560.0	18,480	44,293	
								BRP-TOR(S)	No	12.0	0.0	0		
								DETOUR	M	43.8	560.0	25,813		
211	08802180	N.Sembilan	1950	3.70	1	3.70	SBB	SBPR-REP	M2	9.5	0.0	0	39,783	
								DSRP-TOR	M2	25.0	560.0	14,000		
								BRP-TOR(S)	No	12.0	0.0	0		
								DETOUR	M	43.7	560.0	25,783		
212	08802600	N.Sembilan	1950	3.00	1	3.00	SBB		M2	97.0	1930.0	133,330	158,866	REPLACEMENT OF SUPERSTRUCTURE
								APR-INJ(M)	M	*1.2*	*140.0*	*168*		
								DETOUR	M	43.0	560.0	25,370		
213	08802940	N.Sembilan	1950	3.08	1	3.08	RCB	–	–	–	–	–	–	BRIDGE HAS BEEN REPLACED
214	08803735	N.Sembilan	1950	4.86	2	9.72	SBB		M2	134.0	1990.0	266,660	295,995	TOTAL REPLACEMENT
								DETOUR	M	49.7	590.0	29,335		
215	08803990	N.Sembilan	1950	9.62	1	9.62	SBB	SBPR-REP	M2	58.8	0.0	0	81,442	
								DSRP-TOR	M2	57.4	560.0	32,166		
								BRP-TOR(S)	No	12.0	0.0	0		
								DETOUR	M	49.6	560.0	29,276		
216	08804640	N.Sembilan	1950	9.51	1	9.51	SBB	SBPR-REP	M2	66.2	0.0	0	132,966	
								DSRP-TOR	M2	57.1	560.0	31,993		
								BRP-TOR(S)	No	12.0	0.0	0		
								APR-PAT	M2	1.4	270.0	378		
								ADD-IS	M2	36.8	1940.0	71,392		
								DETOUR	M	49.6	560.0	29,211		
											Grand Total	34,612,065	34,612,065	

SPECIAL BRIDGES

1	–	SABAH	1954	25.70	3	80.10	SBC					757,671		INCLUDED IN DETAILED SURVEY
2	–	SARAWAK	1955	19.80	5	71.80	SBC					401,977		INCLUDED IN DETAILED SURVEY
3	371000	KELANTAN	1962	30.00	29	840.00	RCB					699,435		INCLUDED IN DETAILED SURVEY
											Total	$1,859,083		

APPENDIX – S

BACKUP DATA FOR ECONOMIC EVALUATION

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APPENDIX – S1

SUMMARY OF CURRENT TRAFFIC DATA FOR COST BENEFIT ANALYSIS

Appendix-S1 Summary of Current Traffic Data for Cost Benefit Analysis (1)

NO.	KEY	STATE	STN.	DISTRICT	M.S.	CARRIA WAY (m)	SIDE WALK (m)	L or R	NO'S OF PEDEST	TRAFFI CAPACI	PRESENG DEMAND	GROWTH RATE	16-Hrs TRAFFIC	PEAK Hr TRAFFIC	Percentage Vehicle Composition CARS TAXIES	S.VANS UTL.	MED. LORRY	HEAVY LORRY	BUSES	M'CYCL
R201	R202	S201$	S202$	S203$	S204$	R203	R204	S205$	S206$	R205	R206	R207	R210	R211	R212	R213	R214	R215	R216	R217
1	102590	JOHOR	45	J. BAHRU	225-461	15.90	3.72	L&R		4,250	1,990	3.20	22,565	1,826	53.0	7.6	11.4	10.8	3.5	13.8
2	108100	JOHOR	42	KLUANG	222-453	6.91	0.54	L&R		1,941	934	4.40	10,693	869	47.9	10.0	11.4	12.8	3.2	14.7
3	108990	JOHOR	42	KLUANG	222-453	7.40				2,368	934	4.40	10,693	869	47.9	10.0	11.4	12.8	3.2	14.7
4	112630	JOHOR	40R	BATU PAHAT	219-220	6.11	0.48	L&R		1,920	618	7.10	7,758	562	39.9	8.6	12.7	15.0	1.7	22.0
5	113760	JOHOR	40R	SEGAMAT	219-220	6.00			Much	1,756	618	7.10	7,758	562	39.9	8.6	12.7	15.0	1.7	22.0
6	114920	JOHOR	40R	SEGAMAT	219-220	6.28				1,756	618	2.20	7,758	562	39.9	8.6	12.7	15.0	1.7	22.0
7	116580	JOHOR		SEGAMAT	219-220	7.56				1,898	579	2.20	7,758	562	39.9	8.6	12.7	15.0	1.7	22.0
8	121260	JOHOR	38	SEGAMAT	213-217	6.80				2,103	495	0.10	5,667	450	42.1	10.0	11.2	12.2	2.4	22.1
9	121280	JOHOR	38	SEGAMAT	213-217	6.90				1,960	495	0.10	5,667	450	42.1	10.0	11.2	12.2	2.4	22.1
10	125250	NS	35	TAMPIN	201-211	6.54				2,068	653	2.20	5,056	500	51.3	8.9	7.4	6.3	2.3	23.8
11	128254	NS	33	REMBAU	197-198	7.45				2,028	653	2.20	8,477	837	43.4	13.9	12.2	8.9	5.3	16.3
12	*145100*	SELANGOR	*50*	*ULU S'GOR*	*153-154*	*6.20*	*1.81*	*L&R*		2,059	1,026	2.90	9,537	765	56.2	13.0	9.7	5.7	4.7	10.7
13	146800	SELANGOR	50	ULU S'GOR	153-439	7.35	0.50	L&R	Much	2,052	870	2.80	9,537	765	56.2	13.0	9.7	5.7	4.7	10.7
14	148800	PERAK	21A	BTG PADANG	152-439	7.50				2,448	868	2.60	8,617	753	53.9	10.3	9.0	10.8	5.2	10.7
15	149820	PERAK	21	BTG PADANG	152-437	8.10				2,154	868	2.60	10,648	817	48.4	14.0	9.7	8.2	4.6	15.2
16	151360	PERAK	21	BTG PADANG	151-437	6.76				2,154	868	2.60	10,648	817	48.4	14.0	9.7	8.2	4.6	15.2
17	155590	PERAK	C33	KINTA	150-151	7.52				2,375	973	0.80	10,524	865	49.0	9.6	9.5	11.2	3.8	16.8
18	159100	PERAK	18R	KINTA	138-139	10.70			Much	2,453	2,432	2.90	17,791	1,484	57.8	10.6	7.2	4.8	4.0	15.5
19	161140	PERAK	15	KINTA	134-482	7.33			Much	2,140	836	-0.30	8,937	871	38.7	13.0	15.1	9.7	3.3	20.1
20	161290	PERAK	15	KINTA	133-134	9.35			Much	2,262	836	-0.30	8,937	871	38.7	13.0	15.1	9.7	3.3	20.1
21	166220	PERAK	C10	LRT MATANG	130-426	8.79				1,959	722	1.60	2,946	319	34.9	11.0	7.9	1.8	5.1	39.3
22	166510	PERAK	C10	LRT MATANG	130-426	7.87				1,959	586	1.60	2,946	319	34.9	11.0	7.9	1.8	5.1	39.3
23	184400	KEDAH	A12	KOTA SETAR	108-109	13.86				2,356	1,085	0.10	5,057	622	45.8	6.7	11.6	0.4	1.5	34.0
24	184900	KEDAH	A12	KOTA SETAR	108-109	8.40				2,205	1,085	0.10	5,057	622	45.8	6.7	11.6	0.4	1.5	34.0
25	184980	KEDAH	A12	KOTA SETAR	108-109	7.00	0.71	L&R		2,205	1,085	0.10	5,057	622	45.8	6.7	11.6	0.4	1.5	34.0
26	186210	KEDAH	A12	KOTA SETAR	106-107	7.15				2,161	1,070	3.90	5,057	622	45.8	6.7	11.6	0.4	1.5	34.0
27	228540	PAHANG	81A	MARAN	252-256	7.94				1,973	758	1.20	6,080	468	45.9	12.5	13.2	10.9	3.3	14.3
28	228970	PAHANG	81A	MARAN	252-256	7.30	6.50	L&R		2,262	758	1.20	6,080	468	45.9	12.5	13.2	10.9	3.3	14.3
29	230850	PAHANG		KUANTAN	252-256	6.78				1,973	758	1.20	6,080	468	45.9	12.5	13.2	10.9	3.3	14.3
30	231790	PAHANG		KUANTAN	252-256	10.50	0.79	L&R		2,262	758	1.20	6,080	468	45.9	12.5	13.2	10.9	3.3	14.3
31	232880	PAHANG		KUANTAN	252-256	6.62			Much	1,963	758	4.90	6,080	468	45.9	12.5	13.2	10.9	3.3	14.3
32	237200	PAHANG	J22	KUANTAN	258-261	7.32	0.91	L&R		2,131	1,394	7.40	12,593	1,310	51.7	11.3	3.4	3.6	1.5	28.4
33	303220	JOHOR	P48A	K. TINGGI	233-234	6.53				1,889	754	5.10	9,022	673	44.5	9.8	15.8	6.0	3.1	20.8
34	*303430*	*JOHOR*	*P48A*	*K. TINGGI*	*233-234*	*7.72*				2,153	754	5.10	9,022	673	44.5	9.8	15.8	6.0	3.1	20.8
35	303890	JOHOR		K. TINGGI	234-235	6.37			Much	2,051	754	5.10	3,768	358	42.0	10.6	13.5	7.3	2.5	24.1
36	304060	JOHOR	H09	K. TINGGI	235-236	6.99	1.92	L&R		1,899	754	5.10	3,768	358	42.0	10.6	13.5	7.3	2.5	24.1
37	304390	JOHOR	H09	K. TINGGI	235-236	8.93	1.32	L&R		2,122	370	4.00	3,768	358	42.0	10.6	13.5	7.3	2.5	24.1
38	306390	JOHOR	P50	K. TINGGI	236-238	7.57				1,941	370	1.10	2,878	278	37.8	10.3	8.4	12.0	2.2	29.3
39	306710	JOHOR	P50	K. TINGGI	236-238	7.33				1,941	370	1.10	2,878	278	37.8	10.3	8.4	12.0	2.2	29.3
40	313150	JOHOR	P51	MERSING	239-299	8.67			Much	2,101	370	0.80	5,746	464	35.5	7.6	5.4	3.7	1.5	46.2
41	313520	JOHOR	P51	MERSING	239-299	7.56			Much	2,103	370	7.60	5,746	464	35.5	7.6	5.4	3.7	1.5	46.2
42	314180	JOHOR	P51	MERSING	239-299	7.36				2,103	370	7.60	5,746	464	35.5	7.6	5.4	3.7	1.5	46.2
43	316745	JOHOR	P51	MERSING	240-299	5.35				1,947	510	7.60	5,746	464	35.5	7.6	5.4	3.7	1.5	46.2
44	317000	PAHANG	J19	ROMPIN	240-299	7.30	0.92	L&R		1,755		7.60	2,064	195	37.6	19.0	8.6	7.0	2.2	25.6
45	319110	PAHANG	J19	ROMPIN	240-299	6.74	1.00	L&R	Much	1,655		6.40	2,064	195	37.6	19.0	8.6	7.0	2.2	25.6
46	319690	PAHANG	J19	ROMPIN	240-299	6.85				1,655		6.40	2,064	195	37.6	19.0	8.6	7.0	2.2	25.6
47	*323070*	PAHANG	S30	PEKAN	24-241	7.30	0.98	L&R		1,775		1.80	1,751	151	46.8	14.5	7.3	6.0	1.8	23.5
48	326020	PAHANG	S30	PEKAN	240-241	6.16				1,674		1.80	1,751	151	46.8	14.5	7.3	6.0	1.8	23.5
49	326950	PAHANG	S30	PEKAN		6.15				1,674		1.80	1,751	151	46.8	14.5	7.3	6.0	1.8	23.5
50	336310	PAHANG	J22	KUANTAN		6.68			Much	1,831	439	1.80	2,626	281	31.9	13.9	5.2	6.2	2.4	40.3
51	337240	PAHANG	J26	KUANTAN	259-260	6.70	0.50	L&R	Much	1,831	439	1.80	2,626	281	31.9	13.9	5.2	6.2	2.4	40.3
52	338580	TRENGGANU	92	KEMAMAN	261-262	6.72	1.16	L&R	Much	1,907	428	9.80	4,206	379	43.7	20.4	10.1	5.1	2.9	17.8
53	339210	TRENGGANU	92	KEMAMAN	262-263	6.73	1.14	L&R		1,907	428	9.80	4,206	379	43.7	20.4	10.1	5.1	2.9	17.8
54	341800	TRENGGANU	92	KEMAMAN	262-263	6.76			Much	1,920	312	1.50	4,206	379	43.7	20.4	10.1	5.1	2.9	17.8
55	346740	TRENGGANU	K13	DUNGUN	265-266	6.72			Much	1,868	511	8.20	8,656	703	49.2	16.0	7.2	5.4	2.3	20.0
56	354190	TRENGGANU	94	K.T.	272-273	7.68				1,978	474	19.80	8,191	682	47.1	15.2	3.1	2.7	3.3	28.6
57	354830	TRENGGANU	94	K.T.	272-273	7.33				1,978	474	19.80	8,191	682	47.1	15.2	3.1	2.7	3.3	28.6
58	356790	TRENGGANU		K.T.		6.70				1,889	474	4.30	4,193	442	42.3	13.9	6.5	6.7	1.9	28.8
59	357200	TRENGGANU		K.T.		6.70				1,889	474	4.30	4,465	363	47.8	16.9	8.5	6.7	3.1	17.0
60	357270	*TRENGGANU*	95	K.T.	275-276	6.71				1,889	474	4.30	4,465	363	47.8	16.9	8.5	6.7	3.1	17.0
61	361490	TRENGGANU	K15	BESUT	276-277	6.67			Much	1,876	474	11.90	4,465	363	47.8	16.9	8.5	6.7	3.1	17.0
62	363630	TRENGGANU	K15	BESUT	277-278	7.29				1,876	474	11.90	4,465	363	47.8	16.9	8.5	6.7	3.1	17.0
63	366660	KELANTAN	96	P. PUTEH	280-281	5.94			Much	1,689		9.40	8,022	666	41.8	15.8	5.6	4.4	2.9	29.6
64	366890	KELANTAN	96	P. PUTEH	218-282	6.32				1,689		9.40	8,022	666	41.8	15.8	5.6	4.4	2.9	29.6
65	368300	KELANTAN	97R	P. PUTEH	218-282	7.62				2,074	910	7.30	11,036	846	39.5	20.7	8.1	4.7	2.3	24.7
66	505380	JOHOR	F46R	PONTIAN	230-231	6.86	1.65	L&R	Much	1,893	929	9.40	6,583	535	47.9	9.6	8.0	2.6	5.4	26.6
67	506670	JOHOR	F46R	PONTIAN	230-231	7.32	0.92	L&R	Much	1,848	579	-0.60	6,583	535	47.9	9.6	8.0	2.6	5.4	26.6
68	507230	JOHOR	F46R	PONTIAN	230-231	7.30	0.50	L&R		1,848	579	-0.60	6,583	535	47.9	9.6	8.0	2.6	5.4	26.6
69	507810	JOHOR	F46R	PONTIAN	230-231	7.30				1,848	579	-0.60	6,583	535	47.9	9.6	8.0	2.6	5.4	26.6
70	510560	JOHOR	F44	BATU PAHAT	207-230	7.30	0.92	L&R		1,980	579	1.40	7,735	583	48.6	14.1	6.7	1.3	2.1	27.2
71	512960	JOHOR		BATU PAHAT	207-209	7.32	2.45	L&R		2,004	570	5.80	8,836	734	39.8	11.3	8.2	6.2	4.0	30.6
72	514300	JOHOR	F43	BATU PAHAT	207-209	7.28	1.80	L&R		1,849	570	3.70	8,836	734	39.8	11.3	8.2	6.2	4.0	30.6
73	514370	JOHOR	F42A	BATU PAHAT	207-209	15-				1,849	570	3.70	7,741	593	53.6	9.3	8.7	5.6	4.0	18.7

Append-S

Appendix-S1 Summary of Current Traffic Data for Cost Benefit Analysis (2)

NO.	KEY	STATE	STN.	DISTRICT	M.S.	CARRIA WAY (m)	SIDE WALK (m)	L or R	NO'S OF PEDEST	TRAFFIC CAPACI	PRESENDEMAND	GROWTH RATE	16-Hrs TRAFFIC	PEAK Hr TRAFFIC	Percentage Vehicle Composition					
															CARS TAXIES	S.VANS UTL.	MED. LORRY	HEAVY LORRY	BUSES	M'CYCL
R201	R202	S201S	S202S	S203S	S204S	R203	R204	S205S	S206S	R205	R206	R207	R210	R211	R212	R213	R214	R215	R216	R217
74	514860	JOHOR	F42A	MUAR	207-209	6.10	1.84	L&R		1,893	570	-5.00	7,741	593	53.6	9.3	8.7	5.6	4.0	18.7
75	516890	JOHOR	H19	MUAR	207-209	6.21	0.95	L&R		1,763	570	4.10	6,446	547	51.8	11.8	7.8	1.1	2.9	24.7
76	519360	MELAKA		JASIN	205-206	6.78			Much	1,893	1,202	8.70	13,977	1,143	5.9	11.2	7.7	4.6	3.5	19.1
77	519550	MELAKA	F40	JASIN	205-206	6.70	0.82	L&R	Much	1,893	1,202	8.70	13,977	1,143	5.9	11.2	7.7	4.6	3.5	19.1
78	519700	MELAKA	F40	JASIN	205-206	6.70	0.85	L&R	Much	1,893	1,202	9.70	13,977	1,143	5.9	11.2	7.7	4.6	3.5	19.1
79	520130	MELAKA		JASIN	205-206	6.70	0.85	L&R	Much	1,893	1,202	8.70	13,061	1,130	50.2	7.5	10.5	3.8	3.9	24.1
80	520850	MELAKA	G19	JASIN	205-206	6.72	0.45	L&R	Much	1,849	1,212	7.10	13,061	1,130	50.2	7.5	10.5	3.8	3.9	24.1
81	521300	MELAKA	G22	MELAKA TGH	205-206	8.14			Much	1,984	1,202	7.10	3,391	410	45.8	6.8	5.6	0.6	3.4	37.8
82	521710	MELAKA	F39	MELAKA TGH	202-204	6.53			Much	1,995	1,202	6.90	13,712	1,101	45.8	8.3	4.8	2.6	4.0	34.4
83	521980	MELAKA	F38	MELAKA TGH	202-204	6.70				1,995	1,202	6.90	19,640	1,564	50.7	6.4	2.1	0.7	2.5	37.5
84	522760	MELAKA	G17	MPM	202-204	14.60	2.60	R		2,390	1,646	3.90	8,494	743	47.5	5.7	3.8	0.7	3.2	39.1
85	523300	MELAKA	G17	MELAKA TGH	202-204	8.80				2,175	1,646	4.80	8,494	743	47.5	5.7	3.8	0.7	3.2	39.1
86	523520	MELAKA	G3	MELAKA TGH	202-204	6.80	0.65	L&R		1,854	761	4.80	3,494	263	44.7	6.4	3.5	1.2	2.1	42.1
87	524420	MELAKA	G2	MELAKA TGH	202-204	5.35				1,793	761	4.90	7,408	658	44.5	6.2	4.0	5.5	2.6	37.2
88	524990	MELAKA	G1	ALOR GAJAH	194-202	5.90	2.10	L&R		1,793	761	4.90	7,215	723	40.9	5.8	3.6	4.9	2.5	42.3
89	529600	NS		PD		4.69				1,542	537	-2.90	6,920	513	36.4	9.3	7.7	11.7	2.3	32.6
90	532850	NS	53	PD	194-202	6.32	0.88	L&R		1,493	537	3.80	6,920	513	36.4	9.3	7.7	11.7	2.3	32.6
91	534450	NS	53	PD	175-194	6.70	0.37	L&R		1,507	372	4.30	6,920	513	36.4	9.3	7.7	11.7	2.3	32.6
92	534570	SELANGOR	F21	SEPANG	175-194	5.56				1,507	372	4.30	4,607	338	39.2	8.8	12.0	0.9	3.8	35.4
93	535660	SELANGOR	F21	SEPANG	175-194	6.72	0.35	L&R		1,507	372	4.30	4,607	338	39.2	8.8	12.0	0.9	3.8	35.4
94	538970	SELANGOR	D21	K. LANGAT	BRIDGE	8.20	1.50	L&R		1,840	372	9.50	4,607	338	39.2	8.8	12.0	0.9	3.8	35.4
95	540780	SELANGOR	D21	K. LANGAT	BRIDGE	6.65				1,660	1,195	9.50	17,632	1,510	39.2	9.8	11.3	5.8	5.3	28.6
96	540910	SELANGOR	D21	K. LANGAT	BRIDGE	6.95				1,660	1,195	10.90	17,632	1,510	39.2	9.8	11.3	5.8	5.3	28.6
97	541000	SELANGOR	D21	K. LANGAT	BRIDGE	7.48				1,793	1,195	9.50	17,632	1,510	39.2	9.8	11.3	5.8	5.3	28.6
98	541210	SELANGOR	F20	K. LANGAT	165-175	7.94				1,793	1,195	9.50	13,804	1,123	42.0	10.5	12.4	5.5	3.0	26.7
99	546560	SELANGOR	D33	K.SELANGOR	162-163	7.29	0.70	L&R	Much	1,728	767	-1.90	7,986	650	35.4	13.8	16.5	7.6	3.0	23.7
100	546980	SELANGOR	D33	K.SELANGOR	162-163	6.76	1.84	L&R		1,728	767	-1.90	7,986	650	35.4	13.8	16.5	7.6	3.0	23.7
101	549550	SELANGOR	F15R	K.SELANGOR	161-162	6.72	0.61	L&R	Much	1,566	714	-1.90	8,583	745	41.6	13.9	9.6	2.9	1.6	30.5
102	555290	PERAK	C35	H. PERAK	148-161	5.40	1.22	L&R	Much	1,503	850	6.70	8,014	782	32.3	15.7	14.4	8.4	2.3	26.9
103	556900	PERAK	F14	H. PERAK	148-161	6.74				1,699	969	5.80	11,698	901	38.7	9.7	5.0	1.8	3.2	41.6
104	563880	PERAK	C12	MANJUNG	141-142	7.10			Much	1,772	269	1.20	3,755	368	39.0	11.9	5.9	1.3	2.8	39.1
105	567840	PERAK	F10	KINTA	135-142	6.14			Much	1,649	2,325	1.30	20,315	2,232	50.2	11.6	5.0	1.0	1.9	30.2
106	569630	PERAK	F10	KINTA	135-142	13.00	2.50	L	Much	2,150	1,461	4.40	20,315	2,232	50.2	11.6	5.0	1.0	1.9	30.2
107	700660	KEDAH	F3A	KOTA SETAR	104-105	10.54			Much	2,196	1,070	4.80	10,291	904	42.6	12.3	9.3	3.1	2.3	30.6
108	700750	KEDAH		KOTA SETAR		7.30	1.85	L&R	Much	1,915	1,070	4.80	10,291	904	42.6	12.3	9.3	3.1	2.3	30.6
109	701810	KEDAH	F3A	KBG. PASU	104-105	7.95			Much	2,055	1,070	4.80	10,291	904	42.6	12.3	9.3	3.1	2.3	30.6
110	702630	KEDAH	F3A	KBG. PASU	104-105	7.40	1.80	L&R		1,915	1,070	4.80	10,291	904	42.6	12.3	9.3	3.1	2.3	30.6
111	703330	PERLIS	A18	PERLIS	104-105	7.30				1,805	879	3.30	8,728	735	48.3	8.1	8.9	1.1	1.8	31.9
112	706230	PERLIS	A18	PERLIS	BRIDGE	6.20				1,649	529	5.90	8,728	735	48.3	8.1	8.9	1.1	1.8	31.9
113	800350	PAHANG	78	BENTONG	284-285	5.54				1,929	840	2.50	4,287	370	44.9	9.6	8.9	1.6	3.1	31.9
114	803050	PAHANG	J10	RAUB		5.10				1,449	431	3.70	4,290	388	43.8	10.4	12.4	6.2	3.2	24.1
115	803900	PAHANG	J18	RAUB	284-285	5.64				1,506	169	3.70	5,526	596	37.5	12.2	6.7	9.1	2.0	32.5
116	810120	PAHANG	F58	K. LIPIS	286-288	6.00				1,413	323	7.70	3,763	281	37.5	13.2	9.5	13.2	2.6	24.1
117	813470	PAHANG	J23	K. LIPIS	288-309	6.20	0.30	L&R		1,540	323	16.30	3,030	242	34.7	17.1	3.1	12.0	0.8	32.3
118	818060	PAHANG	J23	K. LIPIS	289-309	7.31				1,634	323	16.30	3,030	242	34.7	17.1	3.1	12.0	0.8	32.3
119	822340	KELANTAN		GUA MUSANG	289-308	7.30	1.88	L&R		1,762	299	11.70	3,030	242	34.7	17.1	3.1	12.0	0.8	32.3
120	834850	KELANTAN	F63	KUALA KRAI	290-291	6.53				1,517	688	3.80	7,016	625	52.5	10.3	8.0	7.3	1.8	20.2
121	834950	KELANTAN	F63	KUALA KRAI	290-291	8.20				1,701	688	3.80	7,016	625	52.5	10.3	8.0	7.3	1.8	20.2
122	836900	KELANTAN	F62R	MACHANG	283-471	6.69				1,593	688	5.90	8,521	648	57.0	15.4	6.5	2.5	2.2	16.5
123	838100	KELANTAN	F62R	MACHANG	283-471	6.70				1,810	2,429	5.90	8,521	648	57.0	15.4	6.5	2.5	2.2	16.5
124	901360	NS	F33	K. PILAH	192-201	6.68				1,514	250	4.60	2,505	230	42.2	11.0	6.5	4.7	4.5	31.1
125	901420	NS	F33	K. PILAH	192-201	6.70				1,514	250	4.60	2,505	230	42.2	11.0	6.5	4.7	4.5	31.1
126	901700	NS	F33	K. PILAH	192-201	6.74	0.59	L&R		1,514	250	4.60	2,505	230	42.2	11.0	6.5	4.7	4.5	31.1
127	901960	NS	F33	K. PILAH	192-201	6.80	0.50	L&R		1,514	250	4.60	2,505	230	42.2	11.0	6.5	4.7	4.5	31.1
128	902270	NS	F32	K. PILAH	192-201	6.74	0.50	L&R		1,497	250	4.60	2,546	202	36.6	11.4	8.7	5.9	3.2	34.2
129	902360	NS	F32	K. PILAH	192-201	6.85	0.50	L&R		1,497	250	4.60	2,546	202	36.6	11.4	8.7	5.9	3.2	34.2
130	902430	NS	F32	K. PILAH	1920201	6.80	0.50	L&R		1,497	250	4.60	2,546	202	36.6	11.4	8.7	5.9	3.2	34.2
131	902440	NS	F32	K. PILAH	192-201	6.90	0.50	L&R		1,497	250	4.60	2,546	202	36.6	11.4	8.7	5.9	3.2	34.2
132	904330	NS	F24	K. PILAH	190-199	5.90				1,512	250	4.60	3,803	304	41.1	11.3	4.8	2.9	2.1	37.9
133	906190	NS	F24	JEMPUL	189-190	6.19				1,560	541	5.10	3,803	304	41.1	11.3	4.8	2.9	2.1	37.9
134	907010	NS	F22	JELEBU	189-248	6.18				1,711	307	6.80	3,181	267	26.0	9.4	4.1	5.1	1.2	54.2
135	908400	NS	F22	JELEBU	189-249	6.10				1,711	307	6.80	3,181	267	26.0	9.4	4.1	5.1	1.2	54.2
136	911980	PAHANG	J04	BENTONG	189-248	6.10				1,624	307	6.20	2,406	194	28.6	8.6	10.6	2.8	2.3	47.2
137	1105770	NS	F23	JEMPUL		5.56	0.39	L&R		1,643	469	31.60	4,599	427	28.3	15.2	13.4	15.9	3.6	23.6
138	1800060	PERAK	C19	MANJUNG	144-145	6.50			Much	1,854	2,008	6.00	15,800	1,280	47.1	9.0	4.6	0.5	2.9	36.0
139	1800670	PERAK	C19	MANJUNG	144-145	6.75				1,730	1,992	6.00	15,800	1,280	47.1	9.0	4.6	0.5	2.9	36.0
140	2305040	JOHOR	S22	SEGAMAT	210-218	5.55				1,577	259	1.60	4,088	325	45.2	9.2	9.6	1.6	1.6	32.9
141	2305970	JOHOR	S22	SEGAMAT	210-218	6.75				1,793	259	1.60	4,088	325	45.2	9.2	9.6	1.6	1.6	32.9
142	5001070	JOHOR	F41	BATU PAHAT	209-221	5.75	4.00	L&R		1,849	2,067	4.00	10,064	859	53.6	10.2	11.7	4.5	3.6	16.4
143	5001890	JOHOR	F41	BATU PAHAT	209-221	6.08	3.73	L&R		1,691	1,171	4.00	10,064	859	53.6	10.2	11.7	4.5	3.6	16.4
144	5002590	JOHOR	F41	BATU PAHAT	209-221	5.90				1,605	1,171	6.70	10,064	859	53.6	10.2	11.7	4.5	3.6	16.4
145	5100840	NS	F27	SEREMBAN	187-191	6.30				1,531	522	-6.50	5,702	487	51.1	11.9	7.9	5.7	2.2	21.2
146	5101360	NS	F27	SEREMBAN	187-191	13.70	2.50	L		1,762	522	-6.50	5,702	487	51.1	11.9	7.9	5.7	2.2	21.2

Append-S

Appendix-S1 Summary of Current Traffic Data for Cost Benefit Analysis (3)

NO.	KEY	STATE	STN.	DISTRICT	M.S.	CARRIA WAY (m)	SIDE WALK (m)	L or R	NO'S OF PEDEST	TRAFFI CAPACI	PRESEN DEMAND	GROWTH RATE	16-Hrs TRAFFIC	PEAK Hr TRAFFIC	CARS TAXIES	S.VANS UTL.	MED. LORRY	HEAVY LORRY	BUSES	M'CYCL
R201	R202	S201$	S202$	S203$	S204$	R203	R204	S205$	S206$	R205	R206	R207	R210	R211	R212	R213	R214	R215	R216	R217
147	5101460	NS	F27	SEREMBAN	187-191	12.60	1.70	R		1,762	522	-6.50	5,702	487	51.1	11.9	7.9	5.7	2.2	21.2
148	5102060	NS	F27	K. PILAH	187-191	7.55				1,623	522	1.60	5,702	487	51.1	11.9	7.9	5.7	2.2	21.2
149	5102280	NS	F27	K. PILAH	187-191	5.84				1,531	522	1.60	5,702	487	51.1	11.9	7.9	5.7	2.2	21.2
150	5102380	NS	F27	K. PILAH	187-191	5.70				1,538	522	1.60	5,702	487	51.1	11.9	7.9	5.7	2.2	21.2
151	5102670	NS	F27	K. PILAH	187-191	7.32				1,762	522	1.60	5,702	487	51.1	11.9	7.9	5.7	2.2	21.2
152	5103030	NS	F27	K. PILAH	187-191	6.76	0.35	L&R		1,531	522	1.60	5,702	487	51.1	11.9	7.9	5.7	2.2	21.2
153	5103300	NS	F26A	K. PILAH	187-191	6.74	0.35	L&R		1,578	522	1.60	7,989	667	56.3	8.3	6.0	3.9	2.3	23.2
154	5200280	NS	31R	SEREMBAN	73-181	9.78				2,439	625	3.80	7,331	576	56.3	11.3	7.7	3.7	3.7	17.4
155	5202450	SELANGOR	29	U. LANGAT	180-181	6.92				2,087	576	4.70	7,501	663	56.5	9.7	8.4	3.3	3.3	18.8
156	5203510	SELANGOR	29	U. LANGAT	179-180	8.40	1.12	R		2,580	721	5.40	7,501	663	56.5	9.7	8.4	3.3	3.3	18.8
157	5204870	SELANGOR	29	U. LANGAT	177-108	7.38	0.80	L&R		2,580	721	5.40	7,501	663	56.5	9.7	8.4	3.3	3.3	18.8
158	5300470	NS	F29	PD	193-194	8.90				2,051	653	2.20	4,213	431	43.8	8.9	12.9	6.1	1.6	26.6
159	5300960	NS	E20R	PD	193-194	8.55				2,051	653	2.20	9,914	746	46.7	7.3	13.1	6.4	2.3	24.3
160	5301190	NS	E27	PD	193-194	8.45				1,940	653	2.20	6,816	517	51.9	9.9	8.4	7.3	2.6	19.8
161	5302050	NS	E27	SEREMBAN	193-194	6.78	0.58	L&R		1,940	653	2.20	6,816	517	51.9	9.9	8.4	7.3	2.6	19.8
162	5302160	NS	E27	SEREMBAN	184-193	6.90				1,994	653	2.20	6,816	517	51.9	9.9	8.4	7.3	2.6	19.8
163	5302340	NS	E27	SEREMBAN	184-193	8.10	0.55	L&R		1,994	653	2.20	6,816	517	51.9	9.9	8.4	7.3	2.6	19.8
164	5403460	SELANGOR	D08	PETALING	162-442	ｴﾗｰ				1,962	1,000	11.30	8,200	959	37.2	14.4	9.7	0.9	3.7	34.1
165	5403570	SELANGOR	D08	PETALING		6.90	4.00	L&R		1,731	1,000	11.30	8,200	959	37.2	14.4	9.7	0.9	3.7	34.1
166	5801510	PERAK	C28	HLR PERAK	149-151	ｴﾗｰ				1,291	417	1.00	5,347	464	28.0	10.8	18.8	10.4	5.6	26.5
167	5801620	PERAK	C28	HLR PERAK	149-151	6.90				1,291	417	1.00	5,347	464	28.0	10.8	18.8	10.4	5.6	26.5
168	5803340	PERAK	F13	BTG PADANG	149-151	6.70				1,578	361	3.50	4,288	325	36.5	10.4	19.0	2.6	3.2	34.3
169	5901000	PERAK	F12R	BTG PADANG	150-434	6.70	0.58	L&R		1,749	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
170	5901070	PERAK	F12R	BTG PADANG	150-434	6.70	0.36	L&R		1,749	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
171	5901480	PERAK	F12R	BTG PADANG	296-434	7.20	0.56	L&R		1,749	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
172	5901580	PERAK	F12R	BTG PADANG	296-434	6.75	0.54	L&R		1,749	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
173	5901690	PERAK	F12R	BTG PADANG		6.74	0.54	L&R		1,749	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
174	5902030	PERAK	F12R	BTG PADANG		6.60	0.64	L&R		1,649	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
175	5902230	PERAK	F12R	BTG PADANG		6.65	0.54	L&R		1,649	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
176	5902690	PERAK	F12R	BTG PADANG	296-434	7.20	0.54	R		1,749	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
177	5902920	PERAK	F12R	BTG PADANG	296-434	6.75	0.55	L&R		1,749	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
178	5903120	PERAK	F12R	BTG PADANG	296-434	6.70	0.54	L&R		1,749	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
179	5905010	PAHANG		LIPIS	BRIDGE	6.60	0.92	L&R		1,649	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
180	5905290	PAHANG		LIPIS	BRIDGE	6.90				1,749	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
181	5906010	PAHANG		LIPIS	BRIDGE	6.95				1,749	544	19.40	5,031	495	40.6	8.7	4.1	2.2	1.4	43.0
182	6000970	PERAK	C16R	MANJUNG	140-145	4.60	0.40	R		1,488	352	5.70	3,658	318	32.9	6.7	8.8	7.5	2.7	41.3
183	6001330	PERAK	C16R	MANJUNG	140-145	ｴﾗｰ				1,578	352	5.70	3,658	318	32.9	6.7	8.8	7.5	2.7	41.3
184	6005070	PERAK	F09	L&M&SELAMA	140-426	6.70				1,439	346	3.00	1,555	143	2.1	10.8	15.9	10.3	3.7	36.1
185	6005220	PERAK	C08	L&M&SELAMA	140-426	6.70	0.30	L&R		1,439	346	3.00	5,138	425	37.0	12.9	11.7	3.9	3.0	31.5
186	6005740	PERAK	C08	L&M&SELAMA	140-426	6.90			Much	1,578	346	5.70	5,138	425	37.0	12.9	11.7	3.9	3.0	31.5
187	6006050	PERAK	C08	L&M&SELAMA	140-426	ｴﾗｰ				1,405	346	5.70	5,138	425	37.0	12.9	11.7	3.9	3.0	31.5
188	6403300	PAHANG	J02	JERANTUT	286-287	6.30				1,405	169	5.40	1,251	121	27.8	18.0	11.6	11.0	3.1	28.5
189	6403900	PAHANG	J02	JERANTUT	286-287	6.15				1,405	169	5.40	1,251	121	27.8	18.0	11.6	11.0	3.1	28.5
190	6404270	PAHANG	J02	JERANTUT	286-287	5.60				1,405	169	5.40	1,251	121	27.8	18.0	11.6	11.0	3.1	28.5
191	6404940	PAHANG	J02	JERANTUT	286-287	5.70				1,405	169	5.40	1,251	121	27.8	18.0	11.6	11.0	3.1	28.5
192	6405650	PAHANG	J02	JERANTUT	286-287	6.65				1,490	169	5.40	1,251	121	27.8	18.0	11.6	11.0	3.1	28.5
193	6406260	PAHANG	J02	JERANTUT	286-287	5.60				1,405	169	5.40	1,251	121	27.8	18.0	11.6	11.0	3.1	28.5
194	6701200	KEDAH		K. MUDA/SIK	123-413	6.80				1,822	578	4.40	6,483	565	44.1	10.8	6.7	0.8	2.7	34.9
195	6701230	KEDAH	F4B	K. MUDA/SIK	123-413	6.80				1,822	578	4.40	6,483	565	44.1	10.8	6.7	0.8	2.7	34.9
196	6701690	KEDAH		K. MUDA/SIK		7.30	0.90	L&R		1,822	578	4.40	6,483	565	44.1	10.8	6.7	0.8	2.7	34.9
197	6702060	KEDAH	F4A	BALING	BOUNDARY	6.90				1,822	578	4.40	5,541	447	39.0	10.2	9.4	3.3	3.5	34.7
198	7000230	PERAK	C28	HLR PERAK	147-149	7.02				1,551	417	-3.30	5,347	464	28.0	10.8	18.8	10.4	5.6	26.5
199	7001790	PERAK	C27A	HLR PERAK		7.34	1.08	L&R		1,551	417	-3.30	3,851	344	35.8	10.2	8.4	9.5	2.9	33.2
200	7002480	PERAK	C27A	BTG PADANG		5.69				1,463	417	-3.30	3,851	344	35.8	10.2	8.4	9.5	2.9	33.2
201	7602330	PERAK	C10	K. KANGSAR		5.70				1,431	258	5.00	2,946	319	34.9	11.0	7.9	1.8	5.1	39.3
202	7602460	PERAK	S11	K. KANGSAR	130-303	5.80	1.06	R		1,550	258	5.50	3,259	284	34.4	10.9	8.3	8.3	5.4	32.6
203	7604020	PERAK	C24	HULU PERAK	130-303	5.60				1,550	258	5.50	2,333	186	37.2	11.9	6.0	5.3	2.7	36.9
204	7604160	PERAK	C24	HULU PERAK	130-303	5.60				1,550	258	5.50	2,333	186	37.2	11.9	6.0	5.3	2.7	36.9
205	7604750	PERAK	C29	HULU PERAK	130-303	7.00				1,530	258	8.00	1,974	180	31.8	9.5	8.5	11.9	2.4	35.9
206	7606390	PERAK	C29	HULU PERAK	130-303	5.70				1,443	258	8.00	1,974	180	31.8	9.5	8.5	11.9	2.4	35.9
207	8601000	NS	S17	SEREMBAN	187-188	6.95				1,104	353	6.80	3,649	367	43.9	11.2	3.6	1.6	1.9	37.9
208	8601190	NS	S17	SEREMBAN	187-188	5.00				1,104	353	6.80	3,649	367	43.9	11.2	3.6	1.6	1.9	37.9
209	8601410	NS	S17	SEREMBAN	187-188	5.06				1,104	353	6.80	3,649	367	43.9	11.2	3.6	1.6	1.9	37.9
210	8601830	NS	S17	SEREMBAN		6.92				1,622	353	7.40	3,649	367	43.9	11.2	3.6	1.6	1.9	37.9
211	8602160	NS	S17	SEREMBAN	187-188	6.34				1,530	353	7.40	3,649	367	43.9	11.2	3.6	1.6	1.9	37.9
212	8602600	NS	S17	JELEBU	187-188	8.20	4.85	L&R		1,715	277	7.40	3,649	367	43.9	11.2	3.6	1.6	1.9	37.9
213	8602840	NS	S17	JELEBU	187-188	6.29				1,530	277	7.40	3,649	367	43.9	11.2	3.6	1.6	1.9	37.9
214	8603735	NS	E02	JELEBU	188-189	4.40				1,530	415	8.10	3,376	376	32.0	8.0	7.3	3.6	3.9	45.2
215	8603990	NS	E02	JELEBU	188-189	4.81				1,530	415	8.10	3,376	376	32.0	8.0	7.3	3.6	3.9	45.2
216	8604640	NS	E02	JELEBU	188-189	6.21				1,530	418	8.10	3,376	376	32.0	8.0	7.3	3.6	3.9	45.2

APPENDIX – S2

SUMMARY OF BRIDGE REHABILITATION DATA FOR COST BENEFIT ANALYSIS

Appendix-S2 Summary of Bridge Rehabilitation Data for Cost Benefit Analysis (1)

No.	Key	State	District	Year Built	Bridge Length (m)	CARRIAG WAY (m)	SIDE WALK (m)	S.F.	Detour Route Da (Km)	Db (Km)	Reco	Rehabilitation Wide	Reinf	Prote	Project Cost (M$)	Economic Cost (M$)
1	102590	Johor	J. BAHRU	1955	3.60	15.9	3.7	3.3	65	8				*	6,433	5,146
2	108100	Johor	KLUANG	1954	27.40	6.9	0.5	3.0	52	20				*	129,535	103,628
3	108990	Johor	KLUANG	1937	2.18	7.4		2.1	52	20				*	6,354	5,083
4	112630	Johor	BATU PAHAT	1960	6.27	6.1	0.5	1.9	105	44				*	45,128	36,102
5	113760	Johor	SEGAMAT	1955	20.34	6.0		1.9	105	44		*		*	239,015	191,212
6	114920	Johor	SEGAMAT	1955	12.86	6.3		2.1	105	44				*	189,701	151,761
7	116580	Johor	SEGAMAT	1947	4.88	7.6		2.3	41	28				*	52,675	42,140
8	121260	Johor	SEGAMAT	1955	2.42	6.8			85	28					0	0
9	121280	Johor	SEGAMAT	1950	2.83	6.9			83	44					0	0
10	125250	N.Sembilan	TAMPIN	1940	6.70	6.5		2.6	39	14				*	6,596	5,277
11	128254	N.Sembilan	REMBAU	1930	9.58	7.5		2.5	8	7				*	46,160	36,928
12	145100	Selangor	ULU S'GOR	1935	1.85	6.2	1.8	1.9	82	49				*	2,715	2,172
13	146800	Selangor	ULU S'GOR	1965	25.91	7.4	0.5	2.6	82	49				*	97,915	78,332
14	148800	Perak	BTG PADANG	1962	2.40	7.5		2.3	28	11				*	3,625	2,900
15	149820	Perak	BTG PADANG	1963	36.24	8.1		2.6	140	60				*	81,747	65,398
16	151360	Perak	BTG PADANG	1960	63.56	6.8		1.4	140	60				*	151,773	121,418
17	155590	Perak	KINTA	1970	3.62	7.5		1.9	47	12			*		501,095	400,876
18	159100	Perak	KINTA	1948	31.30	10.7		3.7	14	14					0	0
19	161140	Perak	KINTA	1950	19.11	7.3		3.5	25	14		*	*		676,314	541,051
20	161290	Perak	KINTA	1955	16.18	9.4		2.7	23	12		*	*		430,460	344,368
21	166220	Perak	LRT MATANG	1945	5.67	8.8		4.0	88	27			*		146,316	117,053
22	166510	Perak	LRT MATANG	1935	10.72	7.9		3.6	88	27	*	*			843,424	674,739
23	184400	Kedah	KOTA SETAR	1950	12.20	13.9		3.7	39	19			*		189,991	151,993
24	184900	Kedah	KOTA SETAR	1950	5.20	8.4		4.0	39	19			*		101,813	81,450
25	184980	Kedah	KOTA SETAR	1950	4.64	7.0	0.7	1.6	39	19				*	38,511	30,809
26	186210	Kedah	KOTA SETAR	1940	3.23	7.2		2.6	15	4			*		64,757	51,806
27	228540	Pahang	MARAN	1955	6.26	7.9		2.9	26	3			*		99,572	79,658
28	228970	Pahang	MARAN	1965	3.03	7.3	6.5	3.0	203	95				*	138,188	110,550
29	230850	Pahang	KUANTAN	1957	6.40	6.8		2.8	65	28				*	70,096	56,077
30	231790	Pahang	KUANTAN	1960	7.75	10.5	0.8	1.0	65	28					0	0
31	232880	Pahang	KUANTAN	1963	11.08	6.6		3.5	28	19				*	258,182	206,546
32	237200	Pahang	KUANTAN	1960	26.70	7.3	0.9	3.4	20	13				*	375,724	300,579
33	303220	Johor	K. TINGGI	1940	4.84	6.5		2.8	50	14				*	83,924	67,139
34	303430	Johor	K. TINGGI	1940	4.90	7.7		3.6	50	14				*	78,607	62,886
35	303890	Johor	K. TINGGI	1940	9.16	6.4		2.1	30	6		*		*	170,384	136,307
36	304060	Johor	K. TINGGI	1963	92.25	7.0	1.9	1.6	15	6				*	246,674	197,339
37	304390	Johor	K. TINGGI	1928	3.35	8.9	1.3	2.8	85	14			*		152,831	122,265
38	306390	Johor	K. TINGGI	1974	64.57	7.6		1.8	170	70				*	312,492	249,994
39	306710	Johor	K. TINGGI	1969	51.96	7.3		1.4	170	70				*	342,083	273,666
40	313150	Johor	MERSING	1950	4.40	8.7		1.7	367	153		*		*	187,592	150,074
41	313520	Pahang	MERSING	1960	3.60	7.6		3.3	367	153		*		*	192,543	154,034
42	314180	Johor	MERSING	1964	11.00	7.4		1.5	367	153				*	388,132	310,506
43	316745	Pahang	MERSING	1965	5.67	5.4		4.0	367	153			*		145,377	116,302
44	317000	Pahang	ROMPIN	1974	397.32	7.3	0.9	2.4	308	98			*		3,449,112	2,759,290
45	319110	Pahang	ROMPIN	1962	121.96	6.7	1.0	3.0	308	98				*	492,789	394,231
46	319690	Pahang	ROMPIN	1960	11.34	6.9		3.1	308	98				*	141,142	112,914
47	323070	Pahang	PEKAN	1965	31.26	7.3	1.0	2.3	140	70				*	181,994	145,595
48	326020	Pahang	PEKAN	1965	5.73	6.2		3.5	140	70				*	97,729	78,183
49	326950	Pahang	PEKAN	1965	23.52	6.2		3.4	140	70				*	275,633	220,506
50	336310	Pahang	KUANTAN	1958	36.00	6.7		2.4	28	11		*		*	438,072	350,458
51	337240	Pahang	KUANTAN	1957	6.58	6.7	0.5	2.7	72	36				*	85,110	68,088
52	338580	Terengganu	KEMAMAN	1965	219.13	6.7	1.2	3.5	74	47	*				11,783,520	9,426,816
53	339210	Terengganu	KEMAMAN	1963	152.20	6.7	1.1	3.4	27	5			*		1,123,070	898,456
54	341800	Terengganu	KEMAMAN	1955	36.14	6.8		3.5	75	23		*		*	1,335,912	1,068,730
55	346740	Terengganu	DUNGUN	1973	152.26	6.7		2.1	54	2			*		5,568,216	4,454,573
56	354190	Terengganu	K.T.	1960	11.18	7.7			29	8					0	0
57	354830	Terengganu	K.T.	1963	17.85	7.3		2.8	29	8				*	96,014	76,811
58	356790	Terengganu	K.T.	1959	53.10	6.7		2.3	27	4				*	78,271	62,617
59	357200	Terengganu	K.T.	1959	5.94	6.7		3.3	56	24				*	85,253	68,202
60	357276	Terengganu	K.T.	1957	11.78	6.71		2.2	56	24				*	77,908	62,326
61	361490	Terengganu	BESUT	1960	18.03	6.67		2.0	59	55				*	161,500	129,200
62	363630	Terengganu	BESUT	1965	5.84	7.29		2.8	50	9				*	63,976	51,181
63	366660	Kelantan	P.PUTEH	1952	32.46	5.94		4.0	13	4			*		957,546	766,037
64	366890	Kelantan	P.PUTEH	1951	9.58	6.32		2.6	24	4			*		226,950	181,560
65	368300	Kelantan	P.PUTEH	1955	9.68	7.62		3.6	22	8			*		193,753	155,002
66	505380	Johor	PONTIAN	1966	47.52	6.86	1.7	3.4	110	24				*	669,252	535,402
67	506670	Johor	PONTIAN	1971	36.17	7.32	0.9	1.8	110	24				*	339,358	271,486
68	507230	Johor	PONTIAN	1966	35.21	7.30	0.5	2.8	110	24				*	289,961	231,969
69	507810	Johor	PONTIAN	1968	47.83	7.30		2.7	110	24				*	574,693	459,754
70	510560	Johor	BATU PAHAT	1960	31.24	7.30	0.9	2.6	22	19				*	241,003	192,802
71	512960	Johor	BATU PAHAT	1965	30.22	7.32	2.5	2.6	41	6				*	841,275	673,020
72	514300	Johor	BATU PAHAT	1960	22.07	7.28	1.8	2.6	41	16				*	134,842	107,874
73	514370	Johor	BATU PAHAT	1950	6.31	7.16		3.1	41	16			*		71,151	56,921

Appendix-S2 Summary of Bridge Rehabilitation Data for Cost Benefit Analysis (2)

No.	Key	State	District	Year Built	Bridge Length (m)	CARRIAG WAY (m)	SIDE WALK (m)	S.F.	Detour Da (Km)	Route Db (Km)	Rehabilitation Reco	Wide	ReinfProte		Project Cost (M$)	Economic Cost (M$)
74	514860	Johor	MUAR	1955	46.03	6.10	1.8	2.6	41	16					0	0
75	516890	Johor	MUAR	1966	17.82	6.21	1.0	2.8	42	30				*	108,219	86,575
76	519360	Melaka	JASIN	1955	42.70	6.78		2.4	45	19				*	376,800	301,440
77	519550	Melaka	JASIN	1940	4.95	6.70	0.8	2.5	11	1				*	4,924	3,939
78	519700	Melaka	JASIN	1961	4.88	6.70	0.9	2.1	10	3		*		*	126,682	101,346
79	520130	Melaka	JASIN	1960	6.46	6.70	0.9	2.4	3	2				*	12,514	10,011
80	520850	Melaka	JASIN	1950	4.27	6.72	0.5	4.0	22	5				*	40,599	32,479
81	521300	Melaka	MELAKA TGH	1950	6.90	8.14		3.6	46	10			*		200,542	160,434
82	521710	Melaka	MELAKA TGH	1960	10.72	6.53		3.1	10	1		*	*		319,350	255,480
83	521980	Melaka	MELAKA TGH	1960	14.26	6.70		3.1	15	7			*		259,368	207,494
84	522760	Melaka	MPM	1930	7.47	14.60	2.6	4.0	5	4			*		40,285	32,228
85	523300	Melaka	MELAKA TGH	1950	9.33	8.80		2.3	12	6				*	6,569	5,255
86	523620	Melaka	MELAKA TGH	1960	15.16	6.80	0.7	3.0	32	8				*	132,742	106,194
87	524420	Melaka	MELAKA TGH	1950	3.60	5.35		4.0	32	8			*		97,744	78,195
88	524990	Melaka	ALOR GAJAH	1960	1.85	5.90	2.1	1.9	19	3				*	7,458	5,966
89	529600	N.Sembilan	PD	1950	3.05	4.69		4.0	34	21			*		104,634	83,707
90	532850	N.Sembilan	PD	1970	53.24	6.32	0.9	2.6	14	4				*	327,936	262,349
91	534450	N.Sembilan	PD	1965	35.32	6.70	0.4	2.8	34	18				*	266,794	213,435
92	534570	Selangor	SEPANG	1960	32.54	5.56		2.6	42	65			*		404,573	323,658
93	535660	Selangor	SEPANG	1960	61.34	6.72	0.4	3.6	42	65				*	620,962	496,770
94	538970	Selangor	K. LANGAT	1950	2.30	8.20	1.5	1.9	11	4			*		46,586	37,269
95	540780	Selangor	K. LANGAT	1960	11.94	6.65			89	60					0	0
96	540910	Selangor	K. LANGAT	1950	6.29	6.95		1.7	89	60			*		145,920	116,736
97	541000	Selangor	K. LANGAT	1950	3.24	7.48		3.4	89	60			*		165,551	132,441
98	541210	Selangor	K. LANGAT	1950	4.73	7.94		3.7	67	21			*		88,554	70,843
99	546560	Selangor	K.SELANGOR	1969	30.94	7.29	0.7	2.6	9	38			*		36,715	29,372
100	546980	Selangor	K.SELANGOR	1969	30.94	6.76	1.8	4.0	86	38			*		1,146,765	917,412
101	549550	Selangor	K.SELANGOR	1965	63.56	6.72	0.6	2.1	86	38				*	270,611	216,489
102	555290	Perak	H. PERAK	1960	4.92	6.40	1.2	2.1	175	30				*	59,937	47,950
103	556900	Perak	H. PERAK	1958	7.33	6.74		1.6	175	30				*	75,828	60,662
104	563880	Perak	MANJUNG	1972	41.59	7.10		2.3	26	7				*	205,278	164,222
105	567840	Perak	KINTA	1960	12.12	6.14		2.7	106	4		*		*	415,115	332,092
106	569630	Perak	KINTA	1950	2.83	13.00	2.5	2.6	13	9			*		67,855	54,284
107	700660	Kedah	KOTA SETAR	1964	18.40	10.54		2.9	12	8		*		*	220,965	176,772
108	700750	Kedah	KOTA SETAR	1970	15.36	7.30	1.9	1.9	12	8			*		322,597	258,078
109	701810	Kedah	KBG. PASU	1970	48.60	7.95		2.6	43	11				*	194,050	155,240
110	702630	Kedah	KBG. PASU	1960	9.54	7.40	1.8	1.6	32	11				*	119,873	95,898
111	703330	Perlis	PERLIS	1963	24.80	7.30		1.4	8	3				*	57,705	46,164
112	705230	Perlis	PERLIS	1950	6.63	6.20		1.6	9	5					0	0
113	800350	Pahang	BENTONG	1950	3.47	5.5		2.9	78	32			*		51,903	49,522
114	803050	Pahang	RAUB	1950	18.08	5.1		3.8	39	22			*		224,460	179,568
115	803900	Pahang	RAUB	1952	10.94	5.6		2.8	39	22			*		256,813	205,450
116	810120	Pahang	K. LIPIS	1950	6.90	6.0		2.9	76	39			*		84,321	67,457
117	813470	Pahang	K. LIPIS	1960	11.67	6.2	0.3	2.9	500	240				*	178,354	142,683
118	818060	Pahang	K. LIPIS	1980	30.49	7.3		1.0	500	240					0	0
119	822340	Kelantan	GUA MUSANG	1982	90.91	7.3	1.9	1.0	170	130				*	377,704	302,163
120	834850	Kelantan	KUALA KRAI	1960	13.71	6.5		2.9	32	12			*		551,414	449,131
121	834950	Kelantan	KUALA KRAI	1960	3.34	8.2		3.0	32	12			*		83,676	66,941
122	836900	Kelantan	MACHANG	1960	12.02	6.7		2.9	43	16				*	80,385	64,308
123	838100	Kelantan	MACHANG	1941	9.72	6.7		2.6	13	5		*	*		400,957	320,766
124	901360	N.Sembilan	K. PILAH	1960	5.74	6.7		4.0	10	2			*		74,320	59,456
125	901420	N.Sembilan	K. PILAH	1950	3.24	6.7		3.6	39	19			*		150,380	120,304
126	901700	N.Sembilan	K. PILAH	1950	3.63	6.7	0.6	2.3	39	19			*		64,979	51,983
127	901960	N.Sembilan	K. PILAH	1950	18.14	6.8	0.5	4.0	59	20			*		305,950	244,760
128	902270	N.Sembilan	K. PILAH	1950	3.11	6.7	0.5	2.9	34	16			*		61,547	49,238
129	902360	N.Sembilan	K. PILAH	1950	3.11	6.9	0.5	4.0	26	12			*		139,374	111,499
130	902430	N.Sembilan	K. PILAH	1950	3.10	6.8	0.5	3.6	26	12			*		103,873	83,098
131	902440	N.Sembilan	K. PILAH	1950	3.10	6.9	0.5	4.0	26	12			*		77,576	62,061
132	904330	N.Sembilan	K. PILAH	1950	7.77	5.9		2.9	37	18			*		88,980	71,184
133	906190	N.Sembilan	JEMPUL	1950	9.54	6.2		2.6	27	16			*		102,730	82,184
134	907010	N.Sembilan	JELEBU	1930	6.36	6.2		3.4	16	10			*		81,747	65,398
135	908400	N.Sembilan	JELEBU	1935	36.70	6.1		3.8	120	60			*		332,326	265,861
136	911990	Pahang	BENTONG	1951	32.96	6.1		3.2	153	71			*		279,656	223,725
137	1105770	N.Sembilan	JEMPUL	1970	18.32	5.6	0.4	3.0	210	90				*	81,892	65,514
138	1800060	Perak	MANJUNG	1960	3.68	6.50		2.3	13	9		*		*	104,133	83,306
139	1800670	Perak	MANJUNG	1950	4.78	6.75		2.9	38	30		*		*	235,680	188,544
140	2305040	Johor	SEGAMAT	1950	12.28	5.55		2.4	41	29			*		116,668	93,334
141	2305970	Johor	SEGAMAT	1950	7.60	6.75		2.6	25	11			*		119,076	95,261
142	5001070	Johor	BATU PAHAT	1919	4.77	5.75	4.0	2.8	39	20			*		128,231	102,585
143	5001890	Johor	BATU PAHAT	1950	5.05	6.08	3.7	1.7	39	20			*		118,131	94,505
144	5002590	Johor	BATU PAHAT	1940	4.75	5.90		3.4	39	20			*		106,450	85,160
145	5100840	N.Sembilan	SEREMBAN	1950	9.41	6.3		1.7	65	29					0	0
146	5101360	N.Sembilan	SEREMBAN	1940	3.31	13.7	2.5	3.6	60	29			*		86,297	69,038

Appendix-S2 Summary of Bridge Rehabilitation Data for Cost Benefit Analysis (3)

No.	Key	State	District	Year Built	Bridge Length (m)	CARRIAG WAY (m)	SIDE WALK (m)	S.F.	Detour Route Da (Km)	Db (Km)	Reco	Rehabilitation Wide	Reinf	Prote	Project Cost (M$)	Economic Cost (M$)
147	5101460	N.Sembilan	SEREMBAN	1950	3.26	12.6	1.7	2.6	60	29			*		81,169	64,935
148	5102060	N.Sembilan	K. PILAH	1950	4.74	7.6		4.0	12	5			*		90,211	72,169
149	5102280	N.Sembilan	K. PILAH	1960	4.81	5.8		2.6	12	5			*		70,758	56,606
150	5102360	N.Sembilan	K. PILAH	1960	3.21	5.7		2.9	12	5			*		64,804	51,843
151	5102670	N.Sembilan	K. PILAH	1960	3.21	7.3		2.9	12	5		*	*		136,870	109,496
152	5103030	N.Sembilan	K. PILAH	1950	3.79	6.8	0.4	2.6	12	5			*		71,424	57,139
153	5103300	N.Sembilan	K. PILAH	1958	16.08	6.7	0.4	1.3	24	6			*		158,528	126,822
154	5200280	N.Sembilan	SEREMBAN	1932	4.66	9.78		1.7	29	14			*		130,820	104,656
155	5202450	Selangor	U.LANGAT	1955	12.11	6.92		3.4	12	8			*		55,625	44,500
156	5203510	Selangor	U.LANGAT	1950	3.20	8.40	1.1	1.4	15	8				*	4,717	3,774
157	5204870	Selangor	U.LANGAT	1964	54.50	7.38	0.8	1.9	33	15				*	298,820	239,056
158	5300470	N.Sembilan	PD	1950	9.35	8.90		3.6	23	6			*		192,516	154,013
159	5300960	N.Sembilan	PD	1950	6.27	8.55		3.4	23	6			*		101,034	80,827
160	5301190	N.Sembilan	PD	1950	4.84	8.45		4.0	23	6					0	0
161	5302050	N.Sembilan	SEREMBAN	1950	8.45	6.78	0.6	2.1	23	6			*		116,122	92,898
162	5302160	N.Sembilan	SEREMBAN	1950	6.31	6.90		2.4	23	7			*		98,095	78,476
163	5302340	N.Sembilan	SEREMBAN	1940	6.70	8.10	0.6	2.8	23	7			*		154,464	123,571
164	5403460	Selangor	PETALING	1950	6.56	9.70		2.1	25	23				*	72,586	58,069
165	5403570	Selangor	PETALING	1960	3.05	6.90	4.0	4.0	25	23			*		307,168	245,734
166	5801510	Perak	HLR PERAK	1950	5.60	6.80		3.6	34	11			*		80,470	64,376
167	5801620	Perak	HLR PERAK	1950	3.67	6.90		2.1	44	26			*		116,049	92,839
168	5803340	Perak	BTG PADANG	1950	4.97	6.70		2.9	43	17			*		109,435	87,548
169	5901000	Perak	BTG PADANG	1950	4.88	6.70	0.6	3.3	999	999			*		51,981	41,585
170	5901070	Perak	BTG PADANG	1950	4.71	6.70	0.4	3.3	999	999				*	69,453	55,562
171	5901480	Perak	BTG PADANG	1950	3.90	7.20	0.56	3.7	999	999				*	144,865	115,892
172	5901580	Perak	BTG PADANG	1950	7.63	6.75	0.5	2.4	999	999				*	43,494	34,795
173	5901690	Perak	BTG PADANG	1950	9.53	6.74	0.5	3.3	999	999			*		123,725	98,980
174	5902030	Perak	BTG PADANG	1950	3.56	6.60	0.6	2.6	999	999				*	39,010	31,208
175	5902230	Perak	BTG PADANG	1950	8.21	6.65	0.5	2.9	999	999				*	54,482	43,586
176	5902690	Perak	BTG PADANG	1950	6.80	7.20	0.5	2.1	999	999				*	42,486	33,989
177	5902920	Perak	BTG PADANG	1950	8.77	6.75	0.6	2.9	999	999				*	111,145	88,916
178	5903120	Perak	BTG PADANG	1950	23.18	6.70	0.5	3.2	999	999			*		423,163	338,530
179	5905010	Pahang	LIPIS	1961	122.36	6.60	0.9	1.8	999	999				*	288,711	230,969
180	5905290	Pahang	LIPIS	1930	6.05	6.90		2.1	999	999			*		92,450	73,960
181	5906010	Pahang	LIPIS	1930	6.35	6.95		1.0	999	999			*		88,128	70,502
182	6000970	Perak	MANJUNG	1930	3.14	4.60	0.4	4.0	48	19	*				221,957	177,566
183	6001330	Perak	MANJUNG	1960	5.02	6.40		2.9	48	19			*		44,355	35,484
184	6005070	Perak	L&M&SELAMA	1950	27.14	6.70		3.2	16	21				*	50,343	40,274
185	6005220	Perak	L&M&SELAMA	1960	7.01	6.70	0.3	1.9	16	21				*	17,748	14,198
186	6005740	Perak	L&M&SELAMA	1960	21.95	6.90		3.3	11	4				*	37,899	30,319
187	6006050	Perak	L&M&SELAMA	1950	5.08	5.64		2.9	82	34			*		124,241	99,393
188	6403300	Pahang	JERANTUT	1930	12.31	6.30		2.6	201	57			*		123,720	98,976
189	6403900	Pahang	JERANTUT	1930	11.91	6.15		3.1	201	57			*		112,605	90,084
190	6404270	Pahang	JERANTUT	1930	10.91	5.60		3.7	65	20			*		106,910	85,528
191	6404940	Pahang	JERANTUT	1930	6.21	5.70		2.6	65	20			*		173,487	138,790
192	6405650	Pahang	JERANTUT	1930	6.31	6.65		2.8	65	20			*		80,642	64,514
193	6406260	Pahang	JERANTUT	1930	4.80	5.60		4.0	61	20		*	*		181,897	145,518
194	6701200	Kedah	K.MUDA/SIK	1930	6.05	6.80		1.3	33	16				*	3,837	3,070
195	6701230	Kedah	K.MUDA/SIK	1940	12.26	6.80		2.4	33	16				*	57,350	45,880
196	6701690	Kedah	K.MUDA/SIK	1968	91.52	7.30	0.9	2.4	63	6				*	282,090	225,672
197	6702060	Kedah	BALING	1950	7.16	6.90		1.0	60	28				*	75,682	60,546
198	7000230	Perak	HLR PERAK	1950	5.88	7.02		2.8	35	15			*		155,200	124,160
199	7001790	Perak	HLR PERAK	1970	44.36	7.34	1.1	1.7	36	8				*	210,428	168,342
200	7002480	Perak	BTG PADANG	1950	3.88	5.60		4.0	37	24			*		129,980	103,984
201	7602330	Perak	K. KANGSAR	1950	6.35	5.70		2.6	119	56			*		78,871	63,097
202	7602480	Perak	K. KANGSAR	1950	5.34	5.80	1.1	4.0	18	8			*		113,687	90,950
203	7604020	Perak	HULU PERAK	1950	6.35	5.60		3.4	103	56		*	*		208,785	167,028
204	7604160	Perak	HULU PERAK	1950	3.23	5.60		2.6	103	56		*	*		100,054	80,043
205	7604750	Perak	HULU PERAK	1950	9.34	7.00		3.7	103	56			*		111,822	89,458
206	7606390	Perak	HULU PERAK	1950	3.07	5.70		3.7	150	90			*		63,153	50,522
207	8601000	N.Sembilan	SEREMBAN	1950	9.62	6.95		3.4	36	4			*		146,940	117,552
208	8601180	N.Sembilan	SEREMBAN	1950	4.64	5.00		2.6	36	4			*		79,741	63,793
209	8601410	N.Sembilan	SEREMBAN	1950	3.68	5.06			36	4					0	0
210	8601830	N.Sembilan	SEREMBAN	1950	3.75	6.92		2.3	37	5			*		74,412	59,530
211	8602160	N.Sembilan	SEREMBAN	1950	3.70	6.34		1.7	85	18			*		66,835	53,468
212	8602600	N.Sembilan	JELEBU	1950	3.00	8.20	4.9	2.9	85	18			*		266,898	213,518
213	8602840	N.Sembilan	JELEBU	1960	3.08	6.29			5	1					0	0
214	8603735	N.Sembilan	JELEBU	1950	9.72	4.40		5.0	63	55	*		*		497,272	397,818
215	8603990	N.Sembilan	JELEBU	1930	9.62	4.81		2.9	63	55			*		103,223	82,578
216	8604640	N.Sembilan	JELEBU	1950	9.51	6.21		4.0	18	9		*	*		223,383	178,706
		Total													58,148,267	46,518,614

APPENDIX – S3

ECONOMIC INDICATORS OF INDIVIDUAL BRIDGE

Appendix-S3 Economic Indicators of Individual Bridge (1)

No.	Key	State	District	Year Built	Bridge Length (m)	CARRIAGE WAY (m)	S.F.	Detour Da (Km)	Detour Db (Km)	RcuEqui Age	Rehabilitati RC	WD	RE	PR	Economic Cost (M$)	GROWTH RATE (%)	16-Hrs TRAFFIC	NPV	BCR	IRR (1994)	IRR (1999)
1	102590	Johor	J. BAHRU	1955	3.60	15.90	3.3	65	8	30				*	5,146	3.2	22,565	2,323,413	405.8	2571.05%	
12	145100	Selango	ULU S'GO	1935	1.85	6.20	1.9	82	49	40				*	2,172	2.9	9,537	489,366	203.0	2408.45%	
3	108990	Johor	KLUANG	1937	2.18	7.40	2.1	52	20	40				*	5,083	4.4	10,693	624,688	111.2	1221.65%	
194	6701200	Kedah	K.MUDA/S	1930	6.05	6.80	1.3	33	16	40				*	3,070	4.4	6,483	245,836	72.8	1032.41%	
77	519550	Melaka	JASIN	1940	4.95	6.70	2.5	11	1	40				*	3,939	8.7	13,977	298,131	68.9	798.29%	
181	5906010	Pahang	LIPIS	1930	6.35	6.95	1.0	999	999	40			*		70,502	19.4	5,031	5,888,534	80.0	675.88%	
137	1105770	N.Sembi	JEMPUL	1970	18.32	5.56	3.0	210	90	30				*	65,514	31.6	4,599	11,785,260	162.3	633.50%	
180	5905290	Pahang	LIPIS	1930	6.05	6.90	2.1	999	999	40			*		73,960	19.4	5,031	5,721,855	74.1	627.21%	
98	541210	Selango	K. LANGA	1950	4.73	7.94	3.7	67	21	40			*		70,843	9.5	13,804	4,114,481	55.9	523.66%	
15	149820	Perak	BTG PADA	1963	36.24	8.10	2.6	140	60	30				*	65,998	2.6	10,648	5,992,383	83.1	505.77%	
169	5901000	Perak	BTG PADA	1950	4.88	6.70	3.3	999	999	30			*		41,585	19.4	5,031	4,269,832	98.1	485.95%	
14	148800	Perak	BTG PADA	1962	2.40	7.50	2.3	28	11	30				*	2,900	2.6	8,617	224,401	70.4	453.32%	
43	316745	Johor	MERSING	1965	5.67	5.35	4.0	367	153	40			*		116,302	7.6	5,746	5,443,578	45.3	437.04%	
16	151360	Perak	BTG PADA	1960	63.56	6.76	1.4	140	60	30				*	121,418	2.6	10,648	8,233,074	61.8	380.98%	
172	5901580	Perak	BTG PADA	1950	7.63	6.75	2.4	999	999	30				*	34,795	19.4	5,031	3,119,197	81.2	363.77%	
176	5902690	Perak	BTG PADA	1950	6.80	7.20	2.1	999	999	30				*	33,989	19.4	5,031	2,919,281	77.8	350.60%	
102	555290	Perak	H. PERAK	1960	4.92	5.40	2.1	175	30	30				*	47,950	6.7	8,014	3,259,630	61.9	323.60%	
10	125250	N.Sembi	TAMPIN	1940	6.70	6.54	2.6	39	14	30				*	5,277	2.2	5,056	247,121	43.0	315.66%	
173	5901690	Perak	BTG PADA	1950	9.53	6.74	3.3	999	999	30			*		98,980	19.4	5,031	6,224,150	60.5	310.49%	
175	5902230	Perak	BTG PADA	1950	8.21	6.65	2.9	999	999	30				*	43,586	19.4	5,031	3,238,448	67.6	310.16%	
103	556900	Perak	H. PERAK	1958	7.33	6.74	1.6	175	30	30				*	60,662	5.8	11,698	3,630,751	54.7	297.62%	
179	5905010	Pahang	LIPIS	1961	122.36	6.60	1.8	999	999	30				*	230,969	19.4	5,031	15,254,530	60.2	295.57%	
174	5902030	Perak	BTG PADA	1950	3.56	6.60	2.6	999	999	30				*	31,208	19.4	5,031	2,001,496	58.5	272.27%	
4	112630	Johor	BATU PAH	1960	6.27	6.11	1.9	105	44	30				*	36,102	7.1	7,758	1,726,129	43.9	243.16%	
96	540910	Selango	K. LANGA	1950	6.29	6.95	1.7	89	60	30			*		116,736	10.9	17,632	4,558,200	37.9	219.87%	
85	523300	Melaka	MELAKA T	1950	9.33	8.80	2.3	12	6	30				*	5,255	4.8	8,494	127,537	22.8	217.42%	
34	303430	Johor	K. TINGG	1940	4.90	7.72	3.6	50	14	45				*	62,886	5.1	9,022	797,686	12.4	197.01%	
170	5901070	Perak	BTG PADA	1950	4.71	6.70	3.3	999	999	30				*	55,562	19.4	5,031	2,328,638	38.6	194.30%	
156	5203510	Selango	U.LANGAT	1950	3.20	8.40	1.4	15	8	30				*	3,774	5.4	7,501	99,888	24.7	181.63%	
177	5902920	Perak	BTG PADA	1950	8.77	6.75	2.9	999	999	30				*	88,916	19.4	5,031	3,314,761	34.4	178.23%	
80	520850	Melaka	JASIN	1950	4.27	6.72	4.0	22	5	40				*	32,479	7.1	13,061	517,062	15.3	170.59%	
171	5901480	Perak	BTG PADA	1950	3.90	7.20	3.7	999	999	40				*	115,892	19.4	5,031	2,097,401	17.2	170.47%	
178	5903120	Perak	BTG PADA	1950	23.18	6.70	3.2	999	999	30			*		338,530	19.4	5,031	10,173,230	29.4	164.70%	
13	146800	Selango	ULU S'GO	1965	25.91	7.35	2.6	82	49	30				*	78,332	2.8	9,537	1,937,474	23.2	163.86%	
2	108100	Johor	KLUANG	1954	27.40	6.91	3.0	52	20	30				*	103,628	4.4	10,693	2,369,553	21.5	147.07%	
144	5002590	Johor	BATU PAH	1940	4.75	5.90	3.4	39	20	40			*		85,160	6.7	10,064	1,100,930	13.2	138.94%	
33	303220	Johor	K. TINGG	1940	4.84	6.53	2.8	50	14	40				*	67,139	5.1	9,022	806,214	11.8	138.19%	
97	541000	Selango	K. LANGA	1950	3.24	7.48	3.4	89	60	30			*		132,441	9.5	17,632	2,813,030	21.1	134.50%	
99	546560	Selango	K.SELANG	1969	30.94	7.29	2.6	9	38	20			*		29,372	-1.9	7,986	367,976	12.8	126.35%	
88	524990	Melaka	ALOR GAJ	1960	1.85	5.90	1.9	19	3	30				*	5,966	4.9	7,215	97,587	15.7	114.56%	
189	6403900	Pahang	JERANTUT	1930	11.91	6.15	3.1	201	57	30			*		90,084	5.4	1,251	1,383,025	15.5	112.64%	
57	354830	Terengg	K.T.	1963	17.85	7.33	2.8	29	8	30				*	76,811	19.8	8,191	1,448,856	17.9	112.01%	
5	113760	Johor	SEGAMAT	1955	20.34	6.00	1.9	105	44	30		*		*	191,212	7.1	7,758	3,280,818	17.7	111.71%	
117	813470	Pahang	K. LIPIS	1960	11.67	6.20	2.9	500	240	20				*	142,683	16.3	3,030	4,113,491	26.8	107.91%	
109	701810	Kedah	KBG. PAS	1970	48.60	7.95	2.6	43	11	30				*	155,240	4.8	10,291	2,266,779	14.1	107.58%	
73	514370	Johor	BATU PAH	1950	6.31	7.16	3.1	41	16	30			*		56,921	3.7	7,741	775,485	13.9	106.50%	
188	6403300	Pahang	JERANTUT	1930	12.31	6.30	2.6	201	57	30			*		98,976	5.4	1,251	1,402,332	14.4	105.80%	
142	5001070	Johor	BATU PAH	1919	4.77	5.75	2.8	39	20	40			*		102,585	4.0	10,064	865,706	9.0	102.15%	
196	6701690	Kedah	K.MUDA/S	1968	91.52	7.30	2.4	63	6	30				*	225,672	4.4	6,483	2,958,772	12.8	101.65%	
116	810120	Pahang	K. LIPIS	1950	6.90	6.00	2.9	76	39	20			*		67,457	7.7	3,763	1,067,572	16.0	100.42%	
135	908400	N.Sembi	JELEBU	1935	36.70	6.10	3.8	120	60	40			*		265,861	6.8	3,181	2,171,524	8.7	96.00%	
195	6701230	Kedah	K.MUDA/S	1940	12.26	6.80	2.4	33	16	40				*	45,880	4.4	6,483	326,008	7.4	94.91%	
122	836900	Kelanta	MACHANG	1960	12.02	6.69	2.9	43	16	30				*	64,308	5.9	8,521	811,643	12.3	93.24%	
201	7602330	Perak	K. KANGS	1950	6.35	5.70	2.6	119	56	20			*		63,097	5.0	2,946	831,949	13.5	91.51%	
65	368300	Kelanta	P. PUTEH	1955	9.68	7.62	3.6	22	8	40			*		155,002	7.3	11,036	1,206,997	8.4	91.15%	
182	6000970	Perak	MANJUNG	1930	3.14	4.60	4.0	48	19	45	*				177,566	5.7	3,658	1,201,943	7.6	89.14%	
101	549550	Selango	K.SELANG	1965	63.56	6.72	2.1	86	38	30				*	216,489	-1.9	8,583	2,032,802	9.4	86.22%	
105	567840	Perak	KINTA	1960	12.12	6.14	2.7	106	4	30		*		*	332,092	1.3	20,315	3,482,038	11.2	87.70%	
6	114920	Johor	SEGAMAT	1955	12.86	6.28	2.1	105	44	30				*	151,761	2.2	7,758	1,594,090	10.4	86.55%	
41	313520	Johor	MERSING	1960	3.60	7.56	3.3	367	153	30		*		*	154,034	7.6	5,746	1,848,959	12.7	86.18%	
211	8602160	N.Sembi	SEREMBAN	1950	3.70	6.34	1.7	85	18	20				*	53,468	7.4	3,649	679,080	13.0	84.78%	
183	6001330	Perak	MANJUNG	1960	5.02	6.40	2.9	48	19	20				*	35,484	5.7	3,658	416,472	12.1	83.22%	
42	314180	Johor	MERSING	1964	11.00	7.36	1.5	367	153	30				*	310,506	7.6	5,746	3,456,809	11.0	82.28%	
21	166220	Perak	LRT MATA	1945	5.67	8.79	4.0	88	27	45				*	117,053	1.6	2,946	544,065	5.4	80.41%	
146	5101360	N.Sembi	SEREMBAN	1940	3.31	13.70	3.6	60	29	40				*	69,038	-6.5	5,702	365,428	6.0	79.30%	
72	514300	Johor	BATU PAH	1960	22.07	7.28	2.6	41	16	30				*	107,874	3.7	8,836	988,937	9.2	78.31%	
66	505380	Johor	PONTIAN	1966	47.52	6.86	3.4	110	24	30				*	535,402	9.4	6,583	5,477,319	10.2	77.21%	
187	6006050	Perak	LEMSSELA	1950	5.08	5.64	2.9	82	34	20				*	99,393	5.7	5,138	1,067,469	11.2	76.65%	
87	524420	Melaka	MELAKA T	1950	3.60	5.35	4.0	32	8	40				*	78,195	4.9	7,408	466,202	6.6	76.29%	
206	7606390	Perak	HULU PER	1950	3.07	5.70	3.7	150	90	30				*	50,522	8.0	1,974	470,117	9.8	73.98%	
45	319110	Pahang	ROMPIN	1962	121.96	6.74	3.0	308	98	20				*	394,231	6.4	2,064	4,953,286	12.3	72.79%	
44	317000	Pahang	ROMPIN	1974	397.32	7.30	2.4	308	98	20				*	2,759,290	7.6	2,064	27,306,680	10.4	71.49%	
136	911990	Pahang	BENTONG	1951	32.96	6.10	3.2	153	71	20				*	223,725	6.2	2,406	2,148,609	10.1	71.15%	
113	800350	Pahang	BENTONG	1950	3.47	5.54	2.9	78	32	20				*	49,522	2.5	4,287	431,711	9.2	71.02%	
190	6404270	Pahang	JERANTUT	1930	10.91	5.60	3.7	65	20	40				*	85,528	5.4	1,251	460,128	6.1	70.66%	

Appendix-S3 Economic Indicators of Individual Bridge (2)

No.	Key	State	District	Year Built	Bridge Length (m)	CARRIAGE WAY (m)	S.F.	Detour Da (Km)	Db (Km)	Equi Age	Rehabilitati RC	WD	RE	PR	Economic Cost (M$)	GROWTH RATE (%)	16-Hrs TRAFFIC	NPV	BCR	IRR (1994)	IRR (1999)
143	5001890	Johor	BATU PAHI	1950	5.05	6.08	1.7	39	20	30			*		94,505	4.0	10,064	712,478	8.1	67.69%	
76	519360	Melaka	JASIN	1955	42.70	6.78	2.4	45	19	30				*	301,440	8.7	13,977	2,444,356	8.3	67.48%	
166	5801510	Perak	HLR PERA	1950	5.60	6.80	3.6	34	11	30			*		64,376	1.0	5,347	415,560	7.1	65.89%	
46	319690	Pahang	ROMPIN	1960	11.34	6.85	3.1	308	98	20				*	112,914	6.4	2,064	1,236,411	10.8	64.98%	
58	356790	Terengg	K. T.	1959	53.10	6.70	2.3	27	4	20				*	62,617	4.3	4,193	507,608	8.3	63.84%	
205	7604750	Perak	HULU PER	1950	9.34	7.00	3.7	103	56	30			*		89,458	8.0	1,974	660,005	8.0	63.64%	
159	5300960	N. Sembi	PD	1950	6.27	6.55	3.4	23	6	30			*		80,827	2.2	9,914	505,097	6.9	62.31%	
62	363630	Terengg	BESUT	1965	5.84	7.29	2.8	50	9	20				*	51,181	11.9	4,465	506,224	9.9	59.10%	
27	228540	Pahang	MARAN	1955	5.26	7.94	2.9	26	3	20			*		79,658	1.2	6,080	479,280	6.7	57.12%	
100	546980	Selango	K. SELANG	1969	30.94	6.76	4.0	86	38	40			*		917,412	-1.9	7,986	3,156,590	4.3	56.77%	
154	5200280	N. Sembi	SEREMBAN	1932	4.66	9.78	1.7	29	14	40			*		104,656	3.8	7,331	392,749	4.5	55.35%	
110	702630	Kedah	KBG. PAS	1960	9.54	7.40	1.6	32	11	30				*	95,898	4.8	10,291	535,734	6.0	55.35%	
37	304390	Johor	K. TINGG	1928	3.35	8.93	2.8	85	14	30			*		122,265	4.0	3,768	682,210	6.3	55.06%	
79	520130	Melaka	JASIN	1960	6.46	6.70	2.4	3	2	30				*	10,011	8.7	13,061	49,724	5.5	54.32%	
7	116580	Johor	SEGAMAT	1947	4.88	7.56	2.3	41	28	30				*	42,140	2.2	7,758	210,841	5.5	53.94%	
121	834950	Kelanta	KUALA KR	1960	3.34	8.20	3.0	32	12	30			*		66,941	3.8	7,016	327,506	5.6	50.90%	
68	507230	Johor	PONTIAN	1966	35.21	7.30	2.8	110	24	20				*	231,969	-0.6	6,583	1,323,626	6.1	50.59%	
153	5103300	N. Sembi	K. PILAH	1958	16.08	6.74	1.3	24	6	30			*		126,822	1.6	7,989	547,131	5.1	49.59%	
64	366890	Kelanta	P. PUTEH	1951	9.58	6.32	2.6	24	4	30			*		181,560	9.4	8,022	942,637	5.9	49.56%	
119	822340	Kelanta	GUA MUSA	1982	90.91	7.30	1.0	170	130	20				*	302,163	11.7	3,030	1,979,409	6.9	48.95%	
147	5101460	N. Sembi	SEREMBAN	1950	3.26	12.60	2.6	60	29	20			*		64,935	-6.5	5,702	289,831	5.2	48.81%	
22	166510	Perak	LRT MATA	1935	10.72	7.87	3.6	88	27	40	*	*			674,739	1.6	2,946	2,078,562	4.0	48.74%	
157	5204870	Selango	U. LANGAT	1964	54.50	7.38	1.9	33	15	30				*	239,056	5.4	7,501	1,043,043	4.9	48.43%	
29	230850	Pahang	KUANTAN	1967	6.40	6.78	2.8	65	28	20				*	56,077	1.2	6,080	317,185	5.1	48.37%	
155	5202450	Selango	U. LANGAT	1955	12.11	6.92	3.4	12	8	30			*		44,500	4.7	7,501	192,470	5.1	48.13%	
38	306390	Johor	K. TINGG	1974	64.57	7.57	1.8	170	70	20				*	249,994	1.1	2,878	1,286,318	5.6	47.35%	
60	357270	Terengg	K. T.	1957	11.78	6.71	2.2	56	24	20				*	62,326	4.3	4,465	357,495	6.1	46.92%	
28	228970	Pahang	MARAN	1965	3.03	7.30	3.0	203	95	20				*	110,550	1.2	6,080	600,114	5.9	46.62%	
161	5302050	N. Sembi	SEREMBAN	1950	8.45	6.78	2.1	23	6	20			*		92,898	2.2	6,816	421,194	5.3	45.94%	
67	506670	Johor	PONTIAN	1971	36.17	7.32	1.8	110	24	20				*	271,486	-0.6	6,583	1,304,744	5.3	45.75%	
186	6005740	Perak	L&M&SELA	1960	21.95	6.90	3.3	11	4	20				*	30,319	5.7	5,138	139,008	5.1	45.51%	
127	901960	N. Sembi	K. PILAH	1950	18.14	6.80	4.0	59	20	40			*		244,760	4.6	2,505	699,866	3.7	45.41%	
192	6405650	Pahang	JERANTUT	1930	6.31	6.65	2.8	65	20	30			*		64,514	5.4	1,251	259,772	4.8	44.30%	
162	5302160	N. Sembi	SEREMBAN	1950	6.31	6.90	2.4	23	7	20			*		78,476	2.2	6,816	335,215	5.0	44.17%	
208	8601190	N. Sembi	SEREMBAN	1950	4.64	5.00	2.6	36	4	20			*		63,793	6.8	3,649	308,452	5.6	44.12%	
210	8601830	N. Sembi	SEREMBAN	1950	3.75	6.92	2.3	37	5	20			*		59,530	7.4	3,649	287,251	5.6	43.88%	
111	703330	Perlis	PERLIS	1963	24.80	7.30	1.4	8	3	30				*	46,164	3.3	8,728	148,106	3.9	43.69%	
40	313150	Johor	MERSING	1950	4.40	8.67	1.7	367	153	20		*		*	150,074	0.8	5,746	708,530	5.6	43.62%	
24	184900	Kedah	KOTA SET	1950	5.20	8.40	4.0	39	19	40			*		81,450	0.1	5,057	180,026	3.1	41.74%	
197	6702060	Kedah	BALING	1950	7.16	6.90	1.0	60	28	20				*	60,546	4.4	5,541	268,928	5.0	40.42%	
39	306710	Johor	K. TINGG	1969	51.96	7.33	1.4	170	70	20				*	273,666	1.1	2,878	1,068,011	4.5	40.15%	
168	5803340	Perak	BTG PAUA	1950	4.97	6.70	2.9	43	17	20			*		87,548	3.5	4,288	322,500	4.5	39.16%	
53	339210	Terengg	KEMAMAN	1963	152.20	6.73	3.4	27	5	20			*		898,455	9.8	4,206	3,539,354	4.7	38.98%	
207	8601000	N. Sembi	SEREMBAN	1950	9.62	6.95	3.4	36	4	20			*		117,552	6.8	3,649	451,727	4.6	38.72%	
83	521980	Melaka	MELAKA T	1960	14.26	6.70	3.1	15	7	30			*		207,494	6.9	19,640	680,972	4.1	38.49%	
204	7604160	Perak	HULU PER	1950	3.23	5.60	2.6	103	56	20		*	*		80,043	5.5	2,333	294,540	4.6	37.97%	
132	904330	N. Sembi	K. PILAH	1950	7.77	5.90	2.9	37	18	20			*		71,184	4.6	3,803	251,040	4.3	37.83%	
91	534450	N. Sembi	PD	1965	35.32	6.70	2.8	54	18	30				*	213,435	4.3	6,920	606,126	3.5	37.78%	
166	569630	Perak	KINTA	1950	2.83	13.00	2.6	13	9	30			*		54,284	4.4	20,315	162,082	3.8	37.56%	
89	529600	N. Sembi	PD	1950	3.05	4.69	4.0	34	21	40			*		83,707	-2.9	6,920	153,223	2.7	36.86%	
215	8603990	N. Sembi	JELEBU	1930	9.62	4.81	2.9	63	55	30			*		82,578	8.1	3,376	238,946	3.7	35.60%	
69	507810	Johor	PONTIAN	1968	47.83	7.30	2.7	110	24	20				*	459,754	-0.6	6,583	1,380,157	3.7	35.26%	
167	5801620	Perak	HLR PERA	1950	3.67	6.90	2.1	44	26	20			*		92,839	1.0	5,347	261,652	3.7	35.16%	
114	803050	Pahang	RAUB	1950	18.08	5.10	3.8	39	22	30			*		179,568	3.7	4,290	468,151	3.5	34.93%	
59	357200	Terengg	K. T.	1959	5.94	6.70	3.3	56	24	20				*	68,202	4.3	4,465	210,153	3.8	33.36%	
163	5302340	N. Sembi	SEREMBAN	1940	6.70	8.10	2.8	23	7	30			*		123,571	2.2	6,816	273,017	3.1	32.48%	
198	7000230	Perak	HLR PERA	1950	5.88	7.02	2.8	35	15	20			*		124,160	-3.3	5,347	287,906	3.2	32.41%	
55	346740	Terengg	DUNGUN	1973	152.26	6.72	2.1	54	2	30			*		4,454,573	8.2	8,656	10,359,800	3.2	31.36%	
126	901700	N. Sembi	K. PILAH	1950	3.63	6.74	2.3	39	19	20			*		51,983	4.6	2,505	128,674	3.3	31.00%	
48	326020	Pahang	PEKAN	1965	5.73	6.16	3.5	140	70	30				*	78,183	1.8	1,751	148,258	2.7	30.84%	
84	522760	Melaka	MPM	1930	7.47	14.60	4.0	5	4	45			*		32,228	3.9	8,494	97,100	2.1	29.98%	
71	512960	Johor	BATU PAH	1965	30.22	7.32	2.6	41	6	30				*	673,020	5.8	8,836	1,302,978	2.7	29.91%	
164	5403460	Selango	PETALING	1950	6.56	9.70	2.1	25	23	30				*	58,069	11.3	8,200	112,499	2.7	29.67%	
75	516890	Johor	MUAR	1966	17.82	6.21	2.8	42	30	20				*	86,575	4.1	6,446	200,302	3.1	29.58%	
81	521300	Melaka	MELAKA T	1950	6.90	8.14	3.6	46	10	30			*		160,434	7.1	3,391	325,940	2.9	29.51%	
203	7604020	Perak	HULU PER	1950	6.35	5.60	3.4	103	56	20		*	*		167,028	5.5	2,333	383,989	3.2	29.42%	
193	6406260	Pahang	JERANTUT	1930	4.80	5.60	4.0	61	20	45		*	*		145,518	5.4	1,251	173,426	2.2	29.36%	
47	323070	Pahang	PEKAN	1965	31.26	7.30	2.3	140	70	20				*	145,595	1.8	1,751	306,747	2.9	29.17%	
128	902270	N. Sembi	K. PILAH	1950	3.11	6.74	2.9	34	16	20			*		49,238	4.6	2,546	100,481	2.9	28.06%	
140	2305040	Johor	SEGAMAT	1950	12.28	5.55	2.4	41	29	20			*		93,334	1.6	4,088	171,906	2.7	27.89%	
115	803900	Pahang	RAUB	1952	10.94	5.64	2.8	39	22	20			*		205,450	3.7	5,526	400,586	2.8	27.60%	
94	538970	Selango	K. LANGA	1950	2.30	8.20	1.9	11	4	20			*		37,269	9.5	4,607	77,088	3.0	27.42%	
133	906190	N. Sembi	JEMPUL	1950	9.54	6.19	2.6	27	16	20			*		82,184	5.1	3,803	155,502	2.8	27.12%	
82	521710	Melaka	MELAKA T	1960	10.72	6.53	3.1	10	1	30		*	*		255,480	6.9	13,712	435,933	2.7	27.05%	
212	8602600	N. Sembi	JELEBU	1950	3.00	8.20	2.9	85	18	20			*		213,518	7.4	3,649	427,301	2.9	27.01%	

Appendix-83 Economic Indicators of Individual Bridge (3)

No.	Key	State	District	Year Built	Bridge Length (m)	CARRIAGE WAY (m)	S.F.	Detour Da (Km)	Detour Db (Km)	RouEqui Age	Rehabilitati RC	Rehabilitati WD	Rehabilitati RE	Rehabilitati PR	Economic Cost (M$)	GROWTH RATE (%)	16-Hrs TRAFFIC	NPV	BCR	IRR (1994)	IRR (1999)
202	7602480	Perak	K. KANGS	1950	5.34	5.80	4.0	18	8	40			*		90,950	5.5	3,259	108,170	2.1	26.59%	
131	902440	N.Sembi	K. PILAH	1950	3.10	6.90	4.0	26	12	40			*		62,061	4.6	2,546	68,932	2.1	25.84%	
23	184400	Kedah	KOTA SET	1950	12.20	13.86	3.7	39	19	30			*		151,993	0.1	5,057	195,545	2.2	25.77%	
25	184980	Kedah	KOTA SET	1950	4.64	7.00	1.6	39	19	20				*	30,809	0.1	5,057	46,774	2.4	25.36%	
35	303890	Johor	K. TINGG	1940	9.16	6.37	2.1	30	6	30		*		*	136,307	5.1	3,768	178,489	2.3	24.86%	
148	5102060	N.Sembi	K. PILAH	1950	4.74	7.55	4.0	12	5	40			*		72,169	1.6	5,702	69,145	1.9	24.78%	
90	532850	N.Sembi	PD	1970	53.24	6.32	2.6	14	4	30				*	262,349	3.8	6,920	320,541	2.1	24.71%	
11	128254	N.Sembi	REMBAU	1930	9.58	7.45	2.5	8	7	40				*	36,928	2.2	8,477	30,506	1.7	24.49%	
17	155590	Perak	KINTA	1970	3.62	7.52	1.9	47	12	30			*		400,876	0.8	10,524	495,746	2.2	24.46%	
185	6005220	Perak	L&M&SELA	1960	7.01	6.70	1.9	16	21	20				*	14,198	3.0	5,138	16,533	2.2	24.30%	
26	186210	Kedah	KOTA SET	1940	3.23	7.15	2.6	15	4	30			*		51,806	3.9	5,057	67,177	2.2	24.29%	
199	7001790	Perak	HLR PERA	1970	44.36	7.34	1.7	36	8	20				*	168,342	-3.3	3,851	217,283	2.2	24.11%	
78	519700	Melaka	JASIN	1961	4.88	6.70	2.1	10	3	30	*			*	101,346	9.7	13,977	126,224	2.2	23.83%	
191	6404940	Pahang	JERANTUT	1930	6.21	5.70	2.6	65	20	30			*		138,790	5.4	1,251	177,131	2.2	23.76%	
61	361490	Terengg	BESUT	1960	18.03	6.67	2.0	59	55	20				*	129,200	11.9	4,465	194,395	2.3	23.44%	
36	304060	Johor	K. TINGG	1963	92.25	6.99	1.6	15	6	20				*	197,339	5.1	3,768	223,708	2.0	22.63%	
149	5102280	N.Sembi	K. PILAH	1960	4.81	5.84	2.6	12	5	20			*		56,606	1.6	5,702	64,235	2.1	22.12%	
158	5300470	N.Sembi	PD	1950	9.35	8.90	3.6	23	6	30			*		154,013	2.2	4,213	151,902	1.9	21.87%	
32	237200	Pahang	KUANTAN	1960	26.70	7.32	3.4	20	13	30				*	300,579	7.4	12,593	277,805	1.8	21.21%	
120	834850	Kelanta	KUALA KR	1960	13.71	6.53	2.9	32	12	30			*		449,131	3.8	7,016	423,265	1.9	21.02%	
19	161140	Perak	KINTA	1950	19.11	7.33	3.5	25	14	40	*		*		541,051	-0.3	8,937	347,668	1.6	20.89%	
141	2305970	Johor	SEGAMAT	1950	7.60	6.75	2.6	25	11	20			*		95,261	1.6	4,088	93,972	1.9	20.87%	
20	161290	Perak	KINTA	1955	16.18	9.35	2.7	23	12	30	*		*		344,368	-0.3	8,937	278,878	1.8	20.66%	
124	901360	N.Sembi	K. PILAH	1960	5.74	6.68	4.0	10	2	40			*		59,456	4.6	2,505	39,525	1.6	20.39%	
52	338580	Terengg	KEMAMAN	1965	219.13	6.72	3.5	74	47	30	*				9,426,816	9.8	4,206	8,082,214	1.8	20.04%	
139	1800670	Perak	MANJUNG	1950	4.78	6.75	2.9	38	30	30		*		*	188,544	6.0	15,800	150,479	1.8	19.95%	
63	366660	Kelanta	P. PUTEH	1952	32.46	5.94	4.0	13	4	40			*		766,037	9.4	8,022	503,505	1.6	19.80%	
152	5103030	N.Sembi	K. PILAH	1950	3.79	6.76	2.6	12	5	20			*		57,139	1.6	5,702	48,051	1.8	19.56%	
150	5102380	N.Sembi	K. PILAH	1960	3.21	5.70	2.9	12	5	20			*		51,843	1.6	5,702	42,936	1.8	19.41%	
51	337240	Pahang	KUANTAN	1957	6.58	6.70	2.7	72	36	20				*	68,088	1.8	2,626	55,612	1.7	19.11%	
123	838100	Kelanta	MACHANG	1941	9.72	6.70	2.6	13	5	40	*		*		320,766	5.9	8,521	180,448	1.5	18.81%	
200	7002480	Perak	BTG PADA	1950	3.88	5.60	4.0	37	24	40			*		103,984	-3.3	3,851	50,891	1.5	18.72%	
49	326950	Pahang	PEKAN	1965	23.52	6.15	3.4	140	70	20				*	220,506	1.8	1,751	144,019	1.6	17.69%	
138	1800060	Perak	MANJUNG	1960	3.68	6.50	2.3	13	9	30		*		*	83,306	6.0	15,800	45,878	1.5	17.50%	
92	534570	Selango	SEPANG	1960	32.54	5.56	2.6	42	65	20			*		323,658	4.3	4,607	178,892	1.5	16.68%	
86	523620	Melaka	MELAKA T	1960	15.16	6.80	3.0	32	8	20				*	106,194	4.8	3,494	57,077	1.5	16.52%	
216	8604640	N.Sembi	JELEBU	1950	9.51	6.21	4.0	18	9	40	*		*		178,706	8.1	3,376	67,933	1.4	16.34%	
107	700660	Kedah	KOTA SET	1964	18.40	10.54	2.9	12	8	30		*		*	176,772	4.8	10,291	71,202	1.4	16.10%	
104	563880	Perak	MANJUNG	1972	41.59	7.10	2.3	26	7	20				*	164,222	1.2	3,755	71,056	1.4	15.99%	
31	232880	Pahang	KUANTAN	1963	11.08	6.62	3.5	28	19	30				*	206,546	4.9	6,080	79,950	1.3	15.76%	
108	700750	Kedah	KOTA SET	1970	15.36	7.30	1.3	12	8	30			*		258,078	4.8	10,291	84,083	1.3	14.84%	
130	902430	N.Sembi	K. PILAH	1950	3.10	6.80	3.6	26	12	30			*		83,098	4.6	2,546	21,615	1.2	14.09%	
125	901420	N.Sembi	K. PILAH	1950	3.24	6.70	3.6	39	19	30			*		120,304	4.6	2,505	31,081	1.2	14.06%	
134	907010	N.Sembi	JELEBU	1930	6.36	6.18	3.4	16	10	30			*		65,398	6.6	3,181	16,597	1.2	14.01%	
129	902360	N.Sembi	K. PILAH	1950	3.11	6.85	4.0	26	12	40			*		111,499	4.6	2,546	16,865	1.1	13.29%	
54	341800	Terengg	KEMAMAN	1955	36.14	6.76	3.5	75	23	30		*		*	1,068,730	1.5	4,206	173,026	1.2	13.18%	
184	6005070	Perak	L&M&SELA	1950	27.14	6.70	3.2	16	21	20				*	40,274	3.0	1,555	3,879	1.1	12.45%	
70	510560	Johor	BATU PAH	1960	31.24	7.30	2.6	22	19	30				*	192,802	1.4	7,735	-4,259	1.0	10.67%	12.72%
214	8603735	N.Sembi	JELEBU	1950	9.72	4.40	5.0	63	55	40	*		*		397,818	8.1	3,376	-12,338	1.0	10.53%	14.33%
151	5102670	N.Sembi	K. PILAH	1960	3.21	7.32	2.9	12	5	20		*	*		109,496	1.6	5,702	-11,748	0.9	9.66%	10.18%
165	5403570	Selango	PETALING	1960	3.05	6.90	4.0	25	23	40			*		245,734	11.3	8,200	-28,385	0.9	9.23%	13.15%
93	535660	Selango	SEPANG	1960	61.34	6.72	3.6	42	65	30				*	496,770	4.3	4,607	-111,922	0.8	7.63%	9.99%
50	336310	Pahang	KUANTAN	1958	36.00	6.68	2.4	28	11	20		*		*	350,458	1.8	2,626	-169,632	0.5	3.65%	5.75%
74	514860	Johor	MUAR	1955	46.03	6.10	2.6	41	16	0					0	-5.0	7,741	0	0.0	0.00%	
8	121260	Johor	SEGAMAT	1955	2.42	6.80		85	28	0					0	0.1	5,667	0	0.0	0.00%	
160	5301190	N.Sembi	PD	1950	4.84	8.45	4.0	23	6	0					0	2.2	6,816	0	0.0	0.00%	
118	818060	Pahang	K. LIPIS	1980	30.49	7.31	1.0	500	240	0					0	16.3	3,030	0	0.0	0.00%	
56	354190	Terengg	K. T.	1960	11.16	7.68		29	8	0					0	19.8	8,191	0	0.0	0.00%	
213	8602840	N.Sembi	JELEBU	1960	3.08	6.29		5	1	0					0	7.4	3,649	0	0.0	0.00%	
209	8601410	N.Sembi	SEREMBAN	1950	3.68	5.06		36	4	0					0	6.8	3,649	0	0.0	0.00%	
95	540780	Selango	K. LANGA	1960	11.94	6.65		89	60	0					0	9.5	17,632	0	0.0	0.00%	
145	5100840	N.Sembi	SEREMBAN	1950	9.41	6.30	1.7	65	29	0					0	-6.5	5,702	0	0.0	0.00%	
9	121280	Johor	SEGAMAT	1950	2.83	6.90		83	44	0					0	0.1	5,667	0	0.0	0.00%	
18	159100	Perak	KINTA	1948	31.30	10.70	3.7	14	14	0					0	2.9	17,791	0	0.0	0.00%	
30	231790	Pahang	KUANTAN	1960	7.75	10.50	1.0	65	28	0					0	1.2	6,080	0	0.0	0.00%	
112	706230	Perlis	PERLIS	1950	6.68	6.20	1.6	9	5	0					0	5.9	8,728	0	0.0	0.00%	

APPENDIX – S4

EXAMPLE OF CALCULATION FOR ECONOMIC INDICATORS

Appendix-S4 Example of Calculation for Economic Indicators (1)

< BRIDGE DATA >

No.	Key	State	District	Year Built	Length (m)	Carriageway Width (m)	Rating fro safety V.P	Equivalent Age	Detour Route (km) Da	Db
6	114920	Johor	Segamat	1965	12.85	6.20	2.1	30	105.0	44.0

< TRAFFIC CENSUS DATA >

Traffic Census station State	District	Sta. Index	Year	16-Hours Traffic	Growth (%/Yr)	Vehicle Composition (%) CARS & TAXIES	S.VANS & UTILITIES	MED. LORRIES	HEAVY LORRIES	BUSES	M'CYCLE
Johor	Batu Pahat	0408	1988	7758	2.2%	39.9%	8.6%	12.7%	15.0%	1.7%	22.0%

< REHABILITATION DATA >

Rehabilitation Method

Protect.	Reinfor.	Reconst.	Widening
1	0	0	0

	Rehabilitation Cost($)	Standard Const. Cost ($/m2)	Standard Const. Period (days)
financial	189,701	2,500	145
C/F	0.8	0.8	
economic	151,761	2,000	

< Vehicle Operation Cost ($/km) >

	Cars&Taxi	S.Vans&Ut	Med.Lorry	Heavy lorr	Buses	M'cycles
regular rt	0.184	0.498	0.785	1.059	1.517	0.046
detour rt.	0.220	0.632	0.911	1.147	1.859	0.055
before wid	0.266	0.867	1.248	1.579	2.761	0.066

< ECONOMIC EVALUATION >

Evaluation Period (20 years) from 1994

Discount Rate 11.0%

	IRR	NPV	BCR
Indicator	86.55%	1,594,090	10.42

PROVABILITY DENSITY OF BRIDGE UNSERVICEABILITY >

	EQUIVALENT AGE 20				EQUIVALENT AGE 30				EQUIVALENT AGE 40				EQUIVALENT AGE 45			
	WITHOUT	PROTECT	REINF.	RECONST.	WITHOUT	PROTECT	REINF.	RECONST.	WITHOUT	PROTECT	REINF.	RECONST.	WITHOUT	PROTECT	REINF.	RECONST.
1994	0.493%	0.482%	0.122%	0.027%	1.312%	1.234%	0.590%	0.027%	2.720%	2.400%	1.953%	0.027%	3.638%	3.086%	2.536%	0.027%
1995	0.546%	0.482%	0.122%	0.032%	1.407%	1.234%	0.590%	0.032%	2.815%	2.400%	1.953%	0.032%	3.697%	3.086%	2.536%	0.032%
1996	0.607%	0.482%	0.122%	0.038%	1.503%	1.234%	0.590%	0.038%	2.902%	2.400%	1.953%	0.038%	3.744%	3.086%	2.536%	0.038%
1997	0.670%	0.482%	0.122%	0.046%	1.601%	1.234%	0.590%	0.046%	2.961%	2.400%	1.953%	0.046%	3.778%	3.086%	2.536%	0.046%
1998	0.737%	0.482%	0.122%	0.054%	1.698%	1.234%	0.590%	0.054%	3.051%	2.400%	1.953%	0.054%	3.798%	3.086%	2.536%	0.054%
1999	0.807%	0.482%	0.122%	0.063%	1.795%	1.234%	0.590%	0.063%	3.112%	2.400%	1.953%	0.063%	3.805%	3.086%	2.536%	0.063%
2000	0.882%	0.536%	0.137%	0.074%	1.851%	1.323%	0.636%	0.074%	3.162%	2.483%	2.010%	0.074%	3.798%	3.137%	2.574%	0.074%
2001	0.959%	0.594%	0.153%	0.087%	1.985%	1.414%	0.684%	0.087%	3.202%	2.560%	2.065%	0.087%	3.778%	3.176%	2.607%	0.087%
2002	1.040%	0.655%	0.171%	0.101%	2.076%	1.505%	0.734%	0.101%	3.231%	2.630%	2.117%	0.101%	3.744%	3.205%	2.634%	0.101%
2003	1.123%	0.721%	0.190%	0.117%	2.163%	1.597%	0.785%	0.117%	3.249%	2.692%	2.164%	0.117%	3.697%	3.222%	2.655%	0.117%
2004	1.209%	0.790%	0.211%	0.136%	2.246%	1.688%	0.839%	0.136%	3.254%	2.746%	2.208%	0.136%	3.638%	3.228%	2.671%	0.136%
2005	1.296%	0.862%	0.234%	0.156%	2.324%	1.776%	0.894%	0.156%	3.249%	2.790%	2.247%	0.156%	3.567%	3.222%	2.680%	0.156%
2006	1.385%	0.938%	0.258%	0.179%	2.396%	1.867%	0.951%	0.179%	3.231%	2.826%	2.282%	0.179%	3.485%	3.205%	2.683%	0.179%
2007	1.475%	1.017%	0.285%	0.205%	2.461%	1.952%	1.008%	0.205%	3.202%	2.851%	2.312%	0.205%	3.393%	3.176%	2.680%	0.205%
2008	1.565%	1.098%	0.313%	0.234%	2.519%	2.034%	1.067%	0.234%	3.162%	2.866%	2.337%	0.234%	3.291%	3.137%	2.671%	0.234%
2009	1.654%	1.182%	0.344%	0.266%	2.569%	2.112%	1.127%	0.266%	3.112%	2.872%	2.357%	0.266%	3.180%	3.086%	2.656%	0.266%
2010	1.742%	1.267%	0.376%	0.301%	2.611%	2.185%	1.187%	0.301%	3.051%	2.866%	2.372%	0.301%	3.063%	3.026%	2.635%	0.301%
2011	1.829%	1.354%	0.411%	0.339%	2.644%	2.253%	1.248%	0.339%	2.981%	2.851%	2.381%	0.339%	2.939%	2.956%	2.608%	0.339%
2012	1.913%	1.442%	0.448%	0.381%	2.668%	2.315%	1.308%	0.381%	2.902%	2.826%	2.385%	0.381%	2.810%	2.878%	2.575%	0.381%
2013	1.993%	1.530%	0.487%	0.427%	2.682%	2.369%	1.370%	0.427%	2.815%	2.790%	2.384%	0.427%	2.678%	2.792%	2.537%	0.427%

< COST BENEFIT FLOW >

No.	YEAR	A.A.D.T. (VPD)	fo-fw	REHABIL. COST (WITH)	MAINT. COST (WITH)	E.COST STREAM	BENEFIT FROM PROTECTION OR REINFORCEMENT OR RECONSTRUCTION CARS & TAXIES	S.VANS & UTILITIES	MED. LORRIES	HEAVY LORRIES	BUSES	M'CYCLE	BENEFIT FR WIDENING	MAINT. COST (WITHOUT)	BENEFIT STREAM
1	1994	9,660		151,761		151,761								1,615	1,615
2	1995	9,848	0.173%			0	14,780	9,437	19,162	27,344	5,391	2,037	0	1,615	79,766
3	1996	10,036	0.270%			0	23,453	14,975	30,408	43,390	8,554	3,233	0	1,615	125,625
4	1997	10,223	0.367%			0	32,516	20,762	42,157	60,159	11,860	4,482	0	1,615	173,552
5	1998	10,411	0.465%			0	41,915	26,763	54,343	77,548	15,288	5,778	0	1,615	223,250
6	1999	10,599	0.562%		15,176	15,176	51,585	32,938	66,890	95,438	18,814	7,111	0	1,615	274,384
7	2000	10,787	0.588%			0	53,103	33,907	68,848	98,247	19,369	7,320	0	1,615	282,411
8	2001	10,974	0.571%			0	54,318	34,683	70,424	100,495	19,813	7,487	0	1,615	288,835
9	2002	11,162	0.571%			0	55,193	35,242	71,558	102,113	20,132	7,608	0	1,615	293,460
10	2003	11,350	0.566%			0	55,693	35,561	72,206	103,038	20,314	7,677	0	1,615	296,103
11	2004	11,538	0.558%		15,176	15,176	55,787	35,621	72,328	103,212	20,348	7,690	0	1,615	296,600
12	2005	11,725	0.546%			0	55,448	35,405	71,889	102,586	20,225	7,643	0	1,615	294,810
13	2006	11,913	0.529%			0	54,656	34,898	70,861	101,119	19,936	7,534	0	1,615	290,618
14	2007	12,101	0.509%			0	53,393	34,092	69,224	98,783	19,475	7,360	0	1,615	283,941
15	2008	12,289	0.485%			0	51,650	32,980	66,985	95,589	18,839	7,120	0	1,615	274,728
16	2009	12,476	0.457%		15,176	15,176	49,426	31,559	64,081	91,443	18,028	6,813	0	1,615	262,965
17	2010	12,664	0.426%			0	46,724	29,834	60,577	86,444	17,042	6,441	0	1,615	248,678
18	2011	12,852	0.391%			0	43,556	27,811	56,471	80,584	15,887	6,004	0	1,615	231,929
19	2012	13,040	0.353%			0	39,943	25,504	51,786	73,900	14,569	5,506	0	1,615	212,824
20	2013	13,227	0.313%			0	35,912	22,930	46,559	66,440	13,099	4,950	0	1,615	191,505
	TOATL			151,761	45,528	197,289	859,052	554,902	1,126,724	1,607,840	316,985	119,794	0	32,304	4,627,602

< CALCULATION FOR INDICATORS >

d : discount rate(%) NPV3= -3 NPVo= 121 NPV1= -4,384

		DISCOUNT 11.0%	COST	BENEFIT	d3 86.55%	COST	BENEFIT	do 86.50%	COST	BENEFIT	d1 88.50%	COST	BENEFIT
1	1994	1.000	151,761	1,615	1.000	151,761	1,615	1.000	151,761	1,615	1.000	151,761	1,615
2	1995	0.901	0	71,881	0.536	0	42,758	0.536	0	42,770	0.531	0	42,316
3	1996	0.812	0	101,860	0.287	0	36,097	0.288	0	36,118	0.281	0	35,355
4	1997	0.731	0	126,899	0.154	0	26,731	0.154	0	26,754	0.149	0	25,912
5	1998	0.659	0	141,062	0.083	0	18,432	0.083	0	18,453	0.079	0	17,683
6	1999	0.593	9,006	162,833	0.044	672	12,143	0.044	673	12,161	0.042	638	11,529
7	2000	0.535	0	150,988	0.024	0	6,700	0.024	0	6,711	0.022	0	6,295
8	2001	0.482	0	139,120	0.013	0	3,673	0.013	0	3,680	0.012	0	3,416
9	2002	0.434	0	127,340	0.007	0	2,000	0.007	0	2,005	0.006	0	1,841
10	2003	0.391	0	115,754	0.004	0	1,082	0.004	0	1,085	0.003	0	985
11	2004	0.352	5,345	104,458	0.002	30	581	0.002	30	583	0.002	27	524
12	2005	0.317	0	93,538	0.001	0	310	0.001	0	311	0.001	0	276
13	2006	0.286	0	83,071	0.001	0	164	0.001	0	164	0.000	0	144
14	2007	0.258	0	73,119	0.000	0	86	0.000	0	86	0.000	0	75
15	2008	0.232	0	63,735	0.000	0	44	0.000	0	45	0.000	0	38
16	2009	0.209	3,172	54,961	0.000	1	23	0.000	1	23	0.000	1	20
17	2010	0.188	0	46,824	0.000	0	12	0.000	0	12	0.000	0	10
18	2011	0.170	0	39,343	0.000	0	6	0.000	0	6	0.000	0	5
19	2012	0.153	0	32,524	0.000	0	3	0.000	0	3	0.000	0	2
20	2013	0.138	0	26,356	0.000	0	1	0.000	0	1	0.000	0	1
			159,284	3,763,373		152,463	152,460		152,465	152,585		152,426	148,043
			BCR	10.417									
			NPV	1,594,090		NPV3=	-3		NPVo=	121		NPV1=	-4,384

Appendix-S4 Example of Calculation for Economic Indicators (2)

< BRIDGE DATA >

No.	Key	State	District	Year Built	Length (m)	Carriageway Width (m)	Rating fro safety V.P	Equivalent Age	Detour Route (km) Da	Db
19	161140	Perak	Kinta	1950	19.11	7.33	3.5	40	25.0	14.0

< TRAFFIC CENSUS DATA >

Traffic Census station State	District	Stn. Index	Year	16-Hours Traffic	Growth (%/Yr)	Vehicle Composition (%) CARS & TAXIES	S. VANS & UTILITIES	MED. LORRIES	HEAVY LORRIES	BUSES	M'CYCLE
Perak	Kinta	R5	1988	6937	-0.3%	36.7%	13.0%	15.1%	9.7%	3.3%	20.1%

< REHABILITATION DATA >

Rehabilitation Method

Protect.	Reinfor.	Reconst.	Widening
0	1	0	1

	Rehabilitation Cost($)	Standerd Const. Cost ($/m2)	Standard Const. Period (days)
finansial	676,314	2,500	182
C/F	0.8	0.8	
economic	541,051	2,000	

< Vehicle Operation Cost ($/km) >

	CarsATaxi	S.VansAUt	Med.Lorry	Heavy lorr	Buses	M'cycles
regular rt	0.184	0.498	0.785	1.059	1.517	0.048
detour rt.	0.220	0.632	0.913	1.147	1.659	0.055
before wid	0.266	0.867	1.248	1.579	2.761	0.066

< ECONOMIC EVALUATION >

Evaluation Period (20 years) from 1994 — Discount Rate 11.0%

	IRR	NPV	BCR
Indicator	20.89%	347,667	1.52

<PROVABILITY DENSITY OF BRIDGE UNSERVICEABILITY >

	EQUIVALENT AGE 20				EQUIVALENT AGE 30				EQUIVALENT AGE 40				EQUIVALENT AGE 45			
	WITHOUT	PROTECT	REINF.	RECONST.	WITHOUT	PROTECT	REINF.	RECONST.	WITHOUT	PROTECT	REINF.	RECONST.	WITHOUT	PROTECT	REINF.	RECONST.
1994	0.493%	0.482%	0.122%	0.027%	1.312%	1.234%	0.590%	0.027%	2.720%	2.400%	1.953%	0.027%	3.638%	3.086%	2.536%	0.027%
1995	0.548%	0.482%	0.122%	0.032%	1.407%	1.234%	0.590%	0.032%	2.815%	2.400%	1.953%	0.032%	3.657%	3.086%	2.536%	0.032%
1996	0.607%	0.482%	0.122%	0.038%	1.503%	1.234%	0.590%	0.038%	2.902%	2.400%	1.953%	0.038%	3.744%	3.086%	2.536%	0.038%
1997	0.670%	0.482%	0.122%	0.046%	1.601%	1.234%	0.590%	0.046%	2.981%	2.400%	1.953%	0.046%	3.778%	3.086%	2.536%	0.046%
1998	0.737%	0.482%	0.122%	0.054%	1.698%	1.234%	0.590%	0.054%	3.051%	2.400%	1.953%	0.054%	3.798%	3.086%	2.536%	0.054%
1999	0.807%	0.482%	0.122%	0.063%	1.795%	1.234%	0.590%	0.063%	3.112%	2.400%	1.953%	0.063%	3.805%	3.086%	2.536%	0.063%
2000	0.882%	0.536%	0.137%	0.074%	1.891%	1.323%	0.636%	0.074%	3.162%	2.483%	2.010%	0.074%	3.798%	3.137%	2.574%	0.074%
2001	0.959%	0.594%	0.153%	0.087%	1.985%	1.414%	0.684%	0.087%	3.202%	2.560%	2.065%	0.087%	3.778%	3.176%	2.607%	0.087%
2002	1.040%	0.655%	0.171%	0.101%	2.076%	1.505%	0.734%	0.101%	3.231%	2.630%	2.117%	0.101%	3.744%	3.205%	2.634%	0.101%
2003	1.123%	0.721%	0.190%	0.117%	2.163%	1.597%	0.785%	0.117%	3.249%	2.692%	2.164%	0.117%	3.697%	3.222%	2.655%	0.117%
2004	1.209%	0.790%	0.211%	0.136%	2.246%	1.688%	0.839%	0.136%	3.254%	2.746%	2.208%	0.136%	3.638%	3.228%	2.671%	0.136%
2005	1.296%	0.862%	0.234%	0.156%	2.324%	1.778%	0.894%	0.156%	3.249%	2.790%	2.247%	0.156%	3.567%	3.222%	2.680%	0.156%
2006	1.385%	0.938%	0.258%	0.179%	2.395%	1.867%	0.951%	0.179%	3.231%	2.826%	2.282%	0.179%	3.485%	3.205%	2.683%	0.179%
2007	1.475%	1.017%	0.285%	0.205%	2.461%	1.952%	1.008%	0.205%	3.202%	2.851%	2.312%	0.205%	3.393%	3.176%	2.680%	0.205%
2008	1.565%	1.098%	0.313%	0.234%	2.519%	2.034%	1.067%	0.234%	3.162%	2.866%	2.337%	0.234%	3.291%	3.137%	2.671%	0.234%
2009	1.654%	1.182%	0.344%	0.266%	2.569%	2.112%	1.127%	0.266%	3.112%	2.872%	2.357%	0.266%	3.180%	3.086%	2.656%	0.266%
2010	1.742%	1.267%	0.376%	0.301%	2.611%	2.185%	1.187%	0.301%	3.051%	2.866%	2.372%	0.301%	3.063%	3.026%	2.635%	0.301%
2011	1.829%	1.354%	0.411%	0.339%	2.644%	2.253%	1.248%	0.339%	2.981%	2.851%	2.381%	0.339%	2.939%	2.956%	2.608%	0.339%
2012	1.913%	1.442%	0.446%	0.381%	2.668%	2.315%	1.308%	0.381%	2.902%	2.826%	2.385%	0.381%	2.810%	2.876%	2.575%	0.381%
2013	1.993%	1.530%	0.487%	0.427%	2.682%	2.369%	1.370%	0.427%	2.815%	2.790%	2.384%	0.427%	2.678%	2.792%	2.537%	0.427%

< COST BENEFIT FLOW >

No.	YEAR	A.A.D.T. (VPD)	fo-fw	REHABIL. COST (WITH)	MAINT. COST (WITH)	E.COST STREAM	BENEFIT FROM PROTECTION OR REINFORCEMENT OR RECONSTRUCTION CARS & TAXIES	S.VANS & UTILITIES	MED. LORRIES	HEAVY LORRIES	BUSES	M'CYCLE	BENEFIT FR WIDENING	MAINT. COST (WITHOUT)	BENEFIT STREAM
1	1994	9,831		541,051		541,051								2,802	2,802
2	1995	9,831	0.862%			0	17,410	17,657	27,379	20,668	12,813	2,261	528	2,802	101,518
3	1996	9,831	0.949%			0	19,169	19,441	30,146	22,757	14,108	2,489	528	2,802	111,440
4	1997	9,831	1.028%			0	20,767	21,052	32,658	24,653	15,284	2,696	528	2,802	120,450
5	1998	9,831	1.098%			0	22,187	22,501	34,891	26,339	16,329	2,881	528	2,802	128,457
6	1999	9,831	1.159%		13,526	13,526	23,414	23,746	36,821	27,796	17,232	3,040	528	2,802	135,379
7	2000	9,831	1.152%			0	23,269	23,599	36,593	27,624	17,126	3,021	528	2,802	134,562
8	2001	9,831	1.137%			0	22,970	23,296	36,123	27,269	16,905	2,983	528	2,802	132,875
9	2002	9,831	1.115%			0	22,515	22,834	35,407	26,728	16,570	2,923	528	2,802	130,307
10	2003	9,831	1.084%			0	21,904	22,214	34,446	26,003	16,121	2,844	528	2,802	126,861
11	2004	9,831	1.047%		13,526	13,526	21,139	21,439	33,243	25,095	15,558	2,745	528	2,802	122,548
12	2005	9,831	1.001%			0	20,225	20,512	31,806	24,010	14,885	2,626	528	2,802	117,396
13	2006	9,831	0.949%			0	19,169	19,441	30,146	22,757	14,108	2,489	528	2,802	111,439
14	2007	9,831	0.890%			0	17,979	18,234	28,274	21,344	13,232	2,334	528	2,802	104,726
15	2008	9,831	0.825%			0	16,665	16,901	26,207	19,784	12,265	2,164	528	2,802	97,315
16	2009	9,831	0.754%		13,526	13,526	15,239	15,455	23,965	18,091	11,216	1,979	528	2,802	89,274
17	2010	9,831	0.679%			0	13,715	13,909	21,568	16,281	10,094	1,781	528	2,802	80,677
18	2011	9,831	0.599%			0	12,107	12,279	19,039	14,373	8,910	1,572	528	2,802	71,609
19	2012	9,831	0.516%			0	10,431	10,579	16,404	12,383	7,677	1,354	528	2,802	62,158
20	2013	9,831	0.431%			0	8,704	8,827	13,688	10,333	6,406	1,130	528	2,802	52,418
	TOATL			541,051	40,579	581,630	348,978	353,929	548,803	414,286	256,840	45,313	10,032	56,031	2,034,212

< CALCULATION FOR INDICATORS > d : discount rate(%) NPV3= 5 NPVo= 49.535 NPV1= 67

	DISCOUNT 11.0%	COST	BENEFIT	d1 20.89%	COST	BENEFIT	do 16.89%	COST	BENEFIT	d1 20.89%	COST	BENEFIT
1	1.000	541,051	2,802	1.000	541,051	2,802	1.000	541,051	2,802	1.000	541,051	2,802
2	0.901	0	91,456	0.827	0	83,974	0.841	0	85,388	0.827	0	83,976
3	0.812	0	90,447	0.684	0	76,250	0.707	0	78,841	0.684	0	76,254
4	0.731	0	88,072	0.566	0	68,172	0.595	0	71,675	0.566	0	68,177
5	0.659	0	84,618	0.468	0	60,139	0.501	0	64,295	0.468	0	60,144
6	0.593	8,027	80,341	0.387	5,238	52,426	0.421	5,894	56,993	0.387	5,239	52,432
7	0.535	0	71,943	0.320	0	43,105	0.354	0	47,649	0.320	0	43,110
8	0.482	0	64,000	0.265	0	35,208	0.298	0	39,526	0.265	0	35,214
9	0.434	0	56,544	0.219	0	28,561	0.251	0	32,844	0.219	0	28,566
10	0.391	0	49,593	0.181	0	23,000	0.211	0	26,731	0.181	0	23,005
11	0.352	4,764	43,160	0.150	2,029	18,378	0.177	2,397	21,720	0.150	2,029	16,382
12	0.317	0	37,248	0.124	0	14,563	0.149	0	17,501	0.124	0	14,567
13	0.286	0	31,854	0.103	0	11,435	0.125	0	13,973	0.103	0	11,438
14	0.258	0	26,969	0.085	0	8,889	0.105	0	11,045	0.085	0	8,892
15	0.232	0	22,577	0.070	0	6,833	0.089	0	8,633	0.070	0	6,835
16	0.209	2,827	18,659	0.058	786	5,185	0.075	1,009	6,661	0.058	786	5,186
17	0.188	0	15,191	0.048	0	3,876	0.063	0	5,063	0.048	0	3,877
18	0.170	0	12,147	0.040	0	2,846	0.053	0	3,780	0.040	0	2,847
19	0.153	0	9,499	0.033	0	2,043	0.044	0	2,760	0.033	0	2,044
20	0.138	0	7,217	0.027	0	1,425	0.037	0	1,958	0.027	0	1,426
		556,669	904,337		549,103	549,108		550,152	599,687		549,105	549,172
		BCR	1.625									
		NPV	347,667		NPV3=	5		NPVo=	49.535		NPV1=	67

Appendix-S4 Example of Calculation for Economic Indicators (3)

< BRIDGE DATA >

No.	Key	State	District	Year Built	Length (m)	Carriageway Width (m)	Rating fro safety V, P	Equivalent Age	Detour Route (km) Da	Db
22	166510	Perak	LRT Matang	1935	10.32	7.87	3.5	40	88.0	27.0

< TRAFFIC CENSUS DATA >

Traffic Census station State	District	Stn. index	Year	16-Hours Traffic	Growth (%/Yr)	Vehicle Composition (%) CARS & TAXIES	S. VANS & UTILITIES	MED. LORRIES	HEAVY LORRIES	BUSES	M'CYCLE
Perak	LRT Matang	E10	1988	2946	1.5%	34.9%	11.0%	7.9%	1.8%	5.1%	39.3%

< REHABILITATION DATA >

Rehabilitation Method

Protect.	Reinfor.	Reconst.	Widening
0	0	1	1

	Rehabilitation Cost($)	Standard Const. Cost ($/m²)	Standard Const. Period (days)
financial	843,424	2,500	130
C/F	0.8	0.8	
economic	674,739	2,000	

< Vehicle Operation Cost ($/km) >

	Cars&Taxi	S.Vans&Ut	Med.lorry	Heavy lorr	Buses	M'cycles
regular rt	0.184	0.498	0.785	1.059	1.517	0.046
detour rt.	0.220	0.632	0.911	1.147	1.859	0.055
before wid	0.266	0.867	1.248	1.579	2.761	0.066

< ECONOMIC EVALUATION >

Evaluation Period (20 years) from	Discount Rate	Indicator	IRR	NPV	BCR
1994	11.0%		48.74%	2,078,562	3.99

<PROVABILITY DENSITY OF BRIDGE UNSERVICEABILITY >

	EQUIVALENT AGE 20 WITHOUT	PROTECT	REINF.	RECONST.	EQUIVALENT AGE 30 WITHOUT	PROTECT	REINF.	RECONST.	EQUIVALENT AGE 40 WITHOUT	PROTECT	REINF.	RECONST.	EQUIVALENT AGE 45 WITHOUT	PROTECT	REINF.	RECONST.
1994	0.493%	0.468%	0.122%	0.027%	1.312%	1.234%	0.590%	0.027%	2.720%	2.400%	1.953%	0.027%	3.638%	3.086%	2.536%	0.027%
1995	0.546%	0.482%	0.122%	0.032%	1.407%	1.234%	0.590%	0.032%	2.815%	2.400%	1.953%	0.032%	3.697%	3.086%	2.536%	0.032%
1996	0.607%	0.482%	0.122%	0.038%	1.503%	1.234%	0.590%	0.038%	2.902%	2.400%	1.953%	0.038%	3.744%	3.086%	2.536%	0.038%
1997	0.670%	0.482%	0.122%	0.046%	1.601%	1.234%	0.590%	0.046%	2.981%	2.400%	1.953%	0.046%	3.778%	3.086%	2.536%	0.046%
1998	0.737%	0.482%	0.122%	0.054%	1.698%	1.234%	0.590%	0.054%	3.051%	2.400%	1.953%	0.054%	3.788%	3.086%	2.536%	0.054%
1999	0.807%	0.482%	0.122%	0.063%	1.795%	1.234%	0.590%	0.063%	3.112%	2.400%	1.953%	0.063%	3.805%	3.086%	2.536%	0.063%
2000	0.882%	0.536%	0.137%	0.074%	1.691%	1.323%	0.636%	0.074%	3.162%	2.483%	2.010%	0.074%	3.788%	3.137%	2.574%	0.074%
2001	0.959%	0.594%	0.153%	0.087%	1.985%	1.414%	0.684%	0.087%	3.202%	2.560%	2.065%	0.087%	3.776%	3.176%	2.607%	0.087%
2002	1.040%	0.655%	0.171%	0.101%	2.076%	1.505%	0.734%	0.101%	3.231%	2.630%	2.117%	0.101%	3.744%	3.205%	2.634%	0.101%
2003	1.123%	0.721%	0.190%	0.117%	2.163%	1.597%	0.785%	0.117%	3.249%	2.692%	2.164%	0.117%	3.697%	3.222%	2.655%	0.117%
2004	1.209%	0.790%	0.211%	0.136%	2.246%	1.688%	0.839%	0.136%	3.254%	2.746%	2.208%	0.136%	3.638%	3.228%	2.671%	0.136%
2005	1.296%	0.862%	0.234%	0.156%	2.324%	1.776%	0.894%	0.156%	3.249%	2.790%	2.247%	0.156%	3.567%	3.222%	2.680%	0.156%
2006	1.385%	0.938%	0.258%	0.179%	2.396%	1.867%	0.951%	0.179%	3.231%	2.826%	2.282%	0.179%	3.485%	3.205%	2.683%	0.179%
2007	1.475%	1.017%	0.285%	0.205%	2.461%	1.952%	1.008%	0.205%	3.202%	2.851%	2.312%	0.205%	3.393%	3.176%	2.680%	0.205%
2008	1.565%	1.098%	0.313%	0.234%	2.519%	2.034%	1.067%	0.234%	3.162%	2.866%	2.337%	0.234%	3.291%	3.137%	2.673%	0.234%
2009	1.654%	1.182%	0.344%	0.266%	2.569%	2.112%	1.127%	0.266%	3.112%	2.872%	2.357%	0.266%	3.180%	3.086%	2.656%	0.266%
2010	1.742%	1.267%	0.376%	0.301%	2.611%	2.185%	1.187%	0.301%	3.051%	2.866%	2.372%	0.301%	3.053%	3.026%	2.635%	0.301%
2011	1.829%	1.354%	0.411%	0.339%	2.644%	2.253%	1.248%	0.339%	2.981%	2.851%	2.381%	0.339%	2.939%	2.956%	2.608%	0.335%
2012	1.913%	1.442%	0.448%	0.381%	2.668%	2.315%	1.309%	0.381%	2.902%	2.826%	2.385%	0.381%	2.810%	2.878%	2.575%	0.381%
2013	1.993%	1.530%	0.487%	0.427%	2.682%	2.369%	1.370%	0.427%	2.815%	2.790%	2.384%	0.427%	2.678%	2.792%	2.537%	0.427%

< COST BENEFIT FLOW >

No.	YEAR	A.A.D.T. (VPD)	fo-fe	REHABIL. COST (WITH)	MAINT. COST (WITH)	I.COST STREAM	BENEFIT FROM PROTECTION OR REINFORCEMENT OR RECONSTRUCTION CARS & TAXIES	S.VANS & UTILITIES	MED. LORRIES	HEAVY LORRIES	BUSES	M'CYCLE	BENEFIT FR WIDENING	MAINT. COST (WITHOUT)	BENEFIT STREAM
1	1994	3,552		674,739		674,739								1,687	1,687
2	1995	3,604	2.782%			0	65,692	60,669	60,932	17,031	81,798	18,494	142	1,687	305,445
3	1996	3,655	2.863%			0	68,577	63,333	63,608	17,779	85,390	19,306	144	1,687	319,823
4	1997	3,707	2.935%			0	71,298	65,845	66,132	18,484	88,778	20,072	146	1,687	332,441
5	1998	3,759	2.997%			0	73,822	68,177	68,473	19,139	91,922	20,782	148	1,687	344,151
6	1999	3,811	3.049%		16,868	16,868	76,120	70,299	70,605	19,734	94,783	21,429	150	1,687	354,807
7	2000	3,863	3.088%			0	78,160	72,183	72,496	20,263	97,323	22,003	152	1,687	364,266
8	2001	3,915	3.116%			0	79,912	73,800	74,121	20,717	99,504	22,497	154	1,687	372,392
9	2002	3,966	3.130%			0	81,348	75,127	75,454	21,090	101,293	22,901	156	1,687	379,055
10	2003	4,018	3.131%			0	82,443	76,138	76,470	21,374	102,656	23,209	158	1,687	384,135
11	2004	4,070	3.119%		16,868	16,868	83,173	76,813	77,147	21,563	103,566	23,415	160	1,687	387,524
12	2005	4,122	3.092%			0	83,518	77,131	77,467	21,652	103,995	23,512	162	1,687	389,124
13	2006	4,174	3.052%			0	83,459	77,077	77,412	21,637	103,922	23,495	164	1,687	388,854
14	2007	4,225	2.997%			0	82,983	76,637	76,970	21,513	103,328	23,361	166	1,687	386,646
15	2008	4,278	2.929%			0	82,077	75,801	76,130	21,279	102,201	23,106	168	1,687	382,449
16	2009	4,329	2.846%		16,868	16,868	80,735	74,561	74,886	20,931	100,538	22,729	170	1,687	376,229
17	2010	4,381	2.759%			0	78,954	72,916	73,233	20,469	98,311	22,227	172	1,687	367,969
18	2011	4,433	2.642%			0	76,732	70,864	71,172	19,893	95,544	21,601	174	1,687	357,667
19	2012	4,485	2.521%			0	74,073	68,409	68,706	19,204	92,235	20,853	176	1,687	345,343
20	2013	4,537	2.388%			0	70,986	65,558	65,843	18,403	88,391	19,984	178	1,687	331,031
	TOTAL			674,739	50,605	725,345	1,474,063	1,361,338	1,367,256	382,154	1,835,469	414,976	3,038	33,747	6,872,041

< CALCULATION FOR INDICATORS >

d : discount rate(%) NPV3= 1 NPVo= 30,238 NPV1= 35

		DISCOUNT 11.0%	COST	BENEFIT	di 48.74%	COST	BENEFIT	do 48.74%	COST	BENEFIT	di 48.74%	COST	BENEFIT
1	1994	1.000	674,739	1,687	1.000	674,739	1,687	1.000	674,739	1,687	1.000	674,739	1,687
2	1995	0.901	0	276,077	0.672	0	206,024	0.681	0	208,835	0.672	0	206,027
3	1996	0.812	0	259,576	0.452	0	144,557	0.464	0	148,529	0.452	0	144,562
4	1997	0.731	0	243,078	0.304	0	101,021	0.316	0	105,213	0.304	0	101,026
5	1998	0.659	0	226,703	0.204	0	70,309	0.216	0	74,228	0.204	0	70,313
6	1999	0.593	10,011	210,561	0.137	2,317	48,733	0.147	2,479	52,149	0.137	2,317	48,736
7	2000	0.535	0	194,752	0.092	0	33,637	0.100	0	36,486	0.092	0	33,640
8	2001	0.482	0	179,366	0.062	0	23,118	0.068	0	25,419	0.062	0	23,121
9	2002	0.434	0	164,482	0.042	0	15,821	0.047	0	17,633	0.042	0	15,823
10	2003	0.391	0	150,168	0.028	0	10,779	0.032	0	12,177	0.028	0	10,780
11	2004	0.352	5,941	136,480	0.019	318	7,311	0.022	364	8,372	0.019	318	7,312
12	2005	0.317	0	123,462	0.013	0	4,935	0.015	0	5,729	0.013	0	4,936
13	2006	0.286	0	111,150	0.009	0	3,316	0.010	0	3,901	0.009	0	3,316
14	2007	0.258	0	99,567	0.006	0	2,216	0.007	0	2,644	0.006	0	2,217
15	2008	0.232	0	88,726	0.004	0	1,474	0.005	0	1,782	0.004	0	1,474
16	2009	0.209	3,526	78,634	0.003	44	975	0.003	54	1,195	0.003	44	975
17	2010	0.188	0	69,286	0.002	0	641	0.002	0	796	0.002	0	641
18	2011	0.170	0	60,672	0.001	0	419	0.001	0	527	0.001	0	419
19	2012	0.153	0	52,776	0.001	0	272	0.001	0	347	0.001	0	272
20	2013	0.138	0	45,576	0.001	0	175	0.001	0	227	0.001	0	175
			694,216	2,772,778		677,418	677,418		677,636	707,625		677,418	677,454
			BCR	3.994									
			NPV	2,078,562		NPV3=	1		NPVo=	30,238		NPV1=	35

Appendix-S4 Example of Calculation for Economic Indicators (4)

< BRIDGE DATA >

No.	Key	State	District	Year Built	Length (m)	Carriageway Width (m)	Rating from safety V.P.	Equivalent Axe	Detour Route (km) Ds	Db
44	317000	Pahang	Rompin	1974	397.32	7.3	2.4	20	308.0	98.0

< TRAFFIC CENSUS DATA >

Traffic Census station State	District	Stn. Index	Year	16-Hours Traffic	Growth (%/Yr)	Vehicle Composition (%) CARS & TAXIES	S.VANS & UTILITIES	MED. LORRIES	HEAVY LORRIES	BUSES	M'CYCLE
Pahang	Rompin	J19	1988	2054	7.6%	37.6%	19.0%	8.6%	7.0%	2.2%	25.6%

< REHABILITATION DATA >

Rehabilitation Method

Protect.	Reinfor.	Reconst.	Widening
0	1	0	0

	Rehabilitation Cost ($)	Standard Const. Cost ($/m2)	Standard Const. Period (days)
finansial	3,449,112	2,500	1630
C/F	0.8	0.8	
economic	2,759,290	2,000	

< Vehicle Operation Cost ($/km) >

	Cars&Taxi	S.Vans&Ut	Med.Lorry	Heavy lorr	Buses	M'cycles
regular rt	0.184	0.498	0.785	1.059	1.517	0.046
detour rt.	0.220	0.632	0.911	1.147	1.859	0.055
before wid	0.268	0.867	1.248	1.579	2.761	0.066

< ECONOMIC EVALUATION >

Evaluation Period (20 years) from	Discount Rate		IRR	NPV	BCR
1994	11.0%	Indicator	71.49%	27,306,677	10.36

<PROVABILITY DENSITY OF BRIDGE UNSERVICEABILITY >

	EQUIVALENT AGE 20				EQUIVALENT AGE 30				EQUIVALENT AGE 40				EQUIVALENT AGE 45			
	WITHOUT	PROTECT	REINF.	RECONST.	WITHOUT	PROTECT	REINF.	RECONST.	WITHOUT	PROTECT	REINF.	RECONST.	WITHOUT	PROTECT	REINF.	RECO
1994	0.493%	0.482%	0.122%	0.027%	1.312%	1.234%	0.590%	0.027%	2.720%	2.400%	1.953%	0.027%	3.638%	3.086%	2.536%	0
1995	0.548%	0.482%	0.122%	0.032%	1.407%	1.234%	0.590%	0.032%	2.815%	2.400%	1.953%	0.032%	3.697%	3.086%	2.536%	0
1996	0.607%	0.482%	0.122%	0.038%	1.503%	1.234%	0.590%	0.038%	2.902%	2.400%	1.953%	0.038%	3.744%	3.086%	2.536%	0
1997	0.670%	0.482%	0.122%	0.046%	1.601%	1.234%	0.590%	0.046%	2.981%	2.400%	1.953%	0.046%	3.778%	3.086%	2.536%	0
1998	0.737%	0.482%	0.122%	0.054%	1.698%	1.234%	0.590%	0.054%	3.051%	2.400%	1.953%	0.054%	3.798%	3.086%	2.536%	0
1999	0.807%	0.482%	0.122%	0.063%	1.795%	1.234%	0.590%	0.063%	3.112%	2.400%	1.953%	0.063%	3.805%	3.086%	2.536%	0
2000	0.882%	0.536%	0.137%	0.074%	1.891%	1.323%	0.636%	0.074%	3.162%	2.483%	2.010%	0.074%	3.798%	3.137%	2.574%	0
2001	0.959%	0.594%	0.153%	0.087%	1.985%	1.414%	0.684%	0.087%	3.202%	2.568%	2.069%	0.087%	3.778%	3.176%	2.607%	0
2002	1.040%	0.655%	0.171%	0.101%	2.076%	1.505%	0.734%	0.101%	3.231%	2.630%	2.117%	0.101%	3.744%	3.205%	2.634%	0
2003	1.123%	0.721%	0.190%	0.117%	2.163%	1.597%	0.785%	0.117%	3.249%	2.692%	2.164%	0.117%	3.697%	3.222%	2.655%	0
2004	1.209%	0.790%	0.211%	0.136%	2.246%	1.688%	0.839%	0.136%	3.254%	2.748%	2.208%	0.136%	3.638%	3.228%	2.671%	0
2005	1.296%	0.862%	0.234%	0.156%	2.324%	1.776%	0.894%	0.156%	3.249%	2.790%	2.247%	0.156%	3.567%	3.222%	2.680%	0
2006	1.385%	0.938%	0.258%	0.179%	2.396%	1.857%	0.951%	0.179%	3.231%	2.826%	2.282%	0.179%	3.485%	3.205%	2.683%	0
2007	1.475%	1.017%	0.285%	0.205%	2.461%	1.932%	1.008%	0.205%	3.202%	2.851%	2.312%	0.205%	3.393%	3.176%	2.680%	0
2008	1.565%	1.098%	0.313%	0.234%	2.519%	2.034%	1.067%	0.234%	3.162%	2.866%	2.337%	0.234%	3.291%	3.137%	2.671%	0
2009	1.654%	1.182%	0.344%	0.266%	2.569%	2.112%	1.127%	0.266%	3.112%	2.872%	2.357%	0.266%	3.180%	3.086%	2.656%	0
2010	1.742%	1.267%	0.376%	0.301%	2.611%	2.185%	1.187%	0.301%	3.051%	2.866%	2.372%	0.301%	3.063%	3.025%	2.635%	0
2011	1.829%	1.354%	0.411%	0.339%	2.644%	2.253%	1.248%	0.339%	2.981%	2.851%	2.381%	0.339%	2.939%	2.956%	2.608%	0
2012	1.913%	1.442%	0.448%	0.381%	2.668%	2.315%	1.309%	0.381%	2.902%	2.826%	2.385%	0.381%	2.810%	2.878%	2.575%	0
2013	1.993%	1.530%	0.487%	0.427%	2.682%	2.369%	1.370%	0.427%	2.815%	2.790%	2.384%	0.427%	2.678%	2.792%	2.537%	0

< COST BENEFIT FLOW >

No.	YEAR	A.A.D.T. (VPD)	fo-fw	REHABIL. COST (WITH)	MAINT. COST (WITH)	E.COST STREAM	BENEFIT FROM PROTECTION OR REINFORCEMENT OR RECONSTRUCTION CARS & TAXIES	S.VANS & UTILITIES	MED. LORRIES	HEAVY LORRIES	BUSES	M'CYCLE	BENEFIT FR WIDENING	MAINT. COST (WITHOUT)	BENEFIT STREAM
1	1994	3,306		2,759,290		2,759,290								58,809	58,809
2	1995	3,478	0.426%			0	285,227	422,735	267,179	266,416	142,264	48,549	0	58,809	1,490,380
3	1996	3,651	0.485%			0	340,848	505,171	319,280	318,369	170,006	58,017	0	58,809	1,769,699
4	1997	3,823	0.546%			0	403,290	597,715	377,771	376,692	201,150	68,645	0	58,809	2,083,271
5	1998	3,996	0.614%			0	472,894	700,876	442,971	441,706	235,867	80,493	0	58,809	2,432,814
6	1999	4,168	0.685%		137,964	137,964	549,955	815,087	515,155	513,684	274,303	93,609	0	58,809	2,819,801
7	2000	4,341	0.744%			0	622,395	922,450	583,011	581,347	310,434	105,940	0	58,809	3,183,585
8	2001	4,514	0.806%			0	700,473	1,038,171	656,149	654,276	349,378	119,229	0	58,809	3,575,685
9	2002	4,686	0.869%			0	784,046	1,162,037	734,436	732,339	391,063	133,455	0	58,809	3,995,387
10	2003	4,859	0.933%			0	872,874	1,293,685	817,641	815,306	435,366	148,574	0	58,809	4,441,455
11	2004	5,031	0.998%		137,964	137,964	965,591	1,432,583	905,428	902,842	482,110	164,526	0	58,809	4,912,089
12	2005	5,204	1.062%			0	1,064,721	1,578,022	997,349	994,501	531,055	181,229	0	58,809	5,404,856
13	2006	5,376	1.127%			0	1,166,661	1,729,107	1,092,838	1,089,718	581,900	198,581	0	58,809	5,916,814
14	2007	5,549	1.190%			0	1,271,679	1,884,754	1,191,211	1,187,810	634,280	216,456	0	58,809	6,444,199
15	2008	5,721	1.251%			0	1,378,913	2,043,685	1,291,659	1,287,971	687,765	234,709	0	58,809	6,982,712
16	2009	5,894	1.310%		137,964	137,964	1,487,373	2,204,434	1,393,256	1,389,278	741,862	253,170	0	58,809	7,527,382
17	2010	6,067	1.366%			0	1,595,946	2,365,350	1,494,959	1,490,691	796,016	271,650	0	58,809	8,072,620
18	2011	6,239	1.418%			0	1,703,402	2,524,610	1,595,616	1,591,060	849,612	289,941	0	58,809	8,612,250
19	2012	6,412	1.464%			0	1,808,406	2,680,237	1,693,975	1,689,139	901,985	307,814	0	58,809	9,139,565
20	2013	6,584	1.506%			0	1,909,530	2,830,112	1,788,700	1,783,593	952,423	325,026	0	58,809	9,647,395
	TOATL			2,759,290	413,893	0,173,183	29,385,227	26,730,822	18,156,584	18,106,736	5,666,838	3,295,613	0	1,160,174	86,509,697

< CALCULATION FOR INDICATORS > d : discount rate(%) NPV3= 2 NPVo= 97,915 NPV1= 70

	DISCOUNT 11.0%	COST	BENEFIT	d3 71.49%	COST	BENEFIT	do 69.49%	COST	BENEFIT	d1 71.49%	COST	BENEFIT
1	1994	1.000	2,759,290	58,009	1.000	2,759,290	58,009	1.000	2,759,290	58,009	1.000	2,759,290	58,009
2	1995	0.901	0	1,342,684	0.583	0	869,069	0.590	0	879,332	0.583	0	869,077
3	1996	0.812	0	1,436,327	0.340	0	601,748	0.348	0	616,043	0.340	0	601,758
4	1997	0.731	0	1,523,270	0.198	0	413,065	0.205	0	427,872	0.198	0	413,075
5	1998	0.659	0	1,602,570	0.116	0	281,280	0.121	0	294,803	0.116	0	281,290
6	1999	0.593	81,875	1,673,415	0.067	9,302	190,111	0.071	9,864	201,604	0.067	9,302	190,119
7	2000	0.535	0	1,702,075	0.039	0	125,159	0.042	0	134,293	0.039	0	125,165
8	2001	0.482	0	1,722,259	0.023	0	81,971	0.025	0	88,992	0.023	0	81,976
9	2002	0.434	0	1,733,704	0.013	0	53,410	0.015	0	58,669	0.013	0	53,413
10	2003	0.391	0	1,736,275	0.008	0	34,621	0.009	0	38,479	0.008	0	34,624
11	2004	0.352	48,589	1,729,961	0.005	627	22,328	0.005	705	25,109	0.005	627	22,329
12	2005	0.317	0	1,714,880	0.003	0	14,326	0.003	0	16,301	0.003	0	14,327
13	2006	0.285	0	1,691,267	0.002	0	9,145	0.002	0	10,528	0.002	0	9,146
14	2007	0.258	0	1,659,473	0.001	0	5,808	0.001	0	6,765	0.001	0	5,809
15	2008	0.232	0	1,619,953	0.001	0	3,670	0.001	0	4,325	0.001	0	3,670
16	2009	0.209	28,835	1,573,256	0.000	42	2,307	0.000	50	2,751	0.000	42	2,307
17	2010	0.188	0	1,520,011	0.000	0	1,443	0.000	0	1,711	0.000	0	1,443
18	2011	0.170	0	1,460,919	0.000	0	897	0.000	0	1,096	0.000	0	898
19	2012	0.153	0	1,396,728	0.000	0	555	0.000	0	686	0.000	0	555
20	2013	0.138	0	1,328,231	0.000	0	342	0.000	0	427	0.000	0	342
			2,918,589	30,225,266		2,769,261	2,769,263		2,769,909	2,867,824		2,769,261	2,769,331
			BCR	10.356									
			NPV	27,306,877		NPV3=	2		NPVo=	97,915		NPV1=	70

Append-S

JICA