

NAME OF LINK
NAME OF SEGMENT
ALTERNATIVE : A.I.T 3-5

EASTERN ROUTE OF KHULNA BYPASS
SECTION : CANTONMENT - KHULNA-MONGLA ROAD
STA 0+000 - STA 20+100

AT 1998 PRICES

ITEM NO	DESCRIPTION	UNIT	QUANTITY	UNIT COST (Tk.)	COST (Tk.)
2.01	Site Clearing	M2	661,264	29	19,176,656
2.02	Borrow Material	M3	537,310	169	90,805,390
2.03	Free-Draining Material	M3	321,764	258	83,015,112
2.04	Permeable Backfill	M3	6,485	1,286	8,339,710
2.05	Structure Excavation Up To 2m	M3	5,665	88	498,520
2.06	Structure Excavation Over 2m	M3	6,143	3,524	21,647,932
3.01	R.C. Pipe D=30cm	M	0	2,587	0
3.02	R.C. Pipe D=60cm	M	5,933	6,469	38,380,577
3.03	R.C. Pipe D=120cm	M	565	14,232	8,041,080
3.04	U-Ditch	M	17,450	2,198	38,355,100
3.05	Inlet	EACH	349	17,980	6,275,020
3.06	RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	432	55,194	23,843,808
3.07	RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	104	183,980	19,133,920
3.08	RC Box Culvert, 5.0m (H) x 10.0m (w)	M	26	367,960	9,566,960
3.09	Tributary Bridge	M2	0	43,700	0
3.10	Mortared Rubble Paved Waterway	M2	14,940	1,402	20,945,880
3.11	River Revetment	M2	204,000	1,669	340,476,000
4.01	Subgrade Preparation	M2	402,749	12	4,832,988
4.02	Granular Subbase	M3	85,429	2,167	185,124,643
4.03	Mechanical Stabilized Base	M3	64,010	3,308	211,745,080
4.04	Diluminous Prime Coat/Tack Coat	Litre	823,901	33	27,188,733
4.05	Asphalt Treated Base Course (t=10cm)	M2	313,645	772	242,133,940
4.06	Asphalt Concrete Surface (t=6cm)	M2	255,128	473	120,675,544
4.07	Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
5.01	Asphalt Concrete on Bridge Surface (t=6cm)	M2	41,075	506	20,783,950
5.02	Offshore Temporary Staging	M2	1,815	40,738	73,939,470
5.03	Cofferdam Construction and Dismantling	M2	7,411	68,466	507,401,526
5.04	Structure Excavation	M3	8,230	3,524	29,002,520
5.05	Cast - In - Place Concrete Pile (D = 2,000mm)	M	0	138,570	0
5.06	Cast - In - Place Concrete Pile (D = 1,500mm)	M	12,401	78,112	968,666,912
5.07	Cast - In - Place Concrete Pile (D = 1,000mm)	M	14,196	35,385	502,325,460
5.08	Structural Concrete (High Design Strength)	M3	21,428	18,463	395,625,164
5.09	Structural Concrete (Low Design Strength)	M3	39,380	10,626	418,451,880
5.10	Reinforcing Steel, Deformed	TON	9,355	51,155	478,555,025
5.11	Prestressing Steel	TON	1,562	125,000	195,250,000
5.12	Structural Concrete in PC I-Girder	M3	7,889	18,995	149,851,555
5.13	Ancillary Works on Bridge	L.S		74,797,069	74,797,069
6.01	Structural Members	TON	0	46,529	0
7.01	Solid Sodding	M2	140,354	23	3,228,142
7.02	Guardrail	M	1,860	2,107	3,919,020
7.03	Regulatory & Warning Sign	EACH	140	5,841	817,740
7.04	Guide Sign	EACH	44	257,016	11,308,704
7.05	Road Marking	M2	10,470	294	3,078,180
7.06	Concrete Curb	M	34,900	304	10,609,600
7.07	Brick Paving	M2	76,292	143	10,909,756
7.08	Concrete Barrier	M	17,450	3,663	63,919,350
7.09	Street Tree	EACH	9,300	467	4,343,100
7.10	Street Lighting Unit	EACH	133	46,730	6,215,090
7.11	Street Lighting Control Panel	EACH	3	58,413	175,239
7.12	Traffic Signal Unit	EACH	11	35,048	385,528
7.13	Traffic Signal Control Panel	EACH	5	414,373	2,071,865
8.01	Toll Gate	EACH	2	934,603	1,869,206
8.02	Toll Office	EACH	1	1,331,128	1,331,128
TOTAL.					5,468,120,572

Khuina Bypass (Eastern Route)
 Operation and Maintenance Costs
 Section : ALT 3-5 L=20.1 KM

Unit : x 1,000 Tk

	Initial Investment		Annual Running Cost	Maintenance Cost		Remarks
	Quantity	Unit Cost		Cost	Routine	
1. Operation Cost						
1.1 Facilities Construction						
1) Toll Collection Office	1	1,811		1,811		
2) Toll Plaza	2	5,497		10,994		
3) Toll Gate	2	1,131		2,262		
Sub-total				14,866		
1.2 Office Expenditure						
1) Personnel Expenses			1,140			Refer to Buckup-01
2) Transportation Fuel			180			
3) Power Charge			90			
4) Water Supply			30			
Sub-total			1,440			
1.3 Traffic Control/Surveillance						
1) Control/Surveillance System						
2) Data/Information Processing System						
3) Information Transmission System						
4) Telecommunication System						
5) Highway Patrol/Towage			0			
Sub-total			0			
1.4 Toll Levying Expenses						
1) Subletting			2,078			Subletting-01
2) Equipment Maintenance			0			Subletting-01
Sub-total			2,078			
Total of 1			3,519	14,866		
2. Maintenance Cost						
2.1 Inspection						
1) Periodic				491		
2) Routine				1,146		
Sub-total				1,637		
2.2 Road & Drainage Cleaning				1,515		
2.3 Mowing				323		
2.4 Repair of Traffic Safety Facilities				605		
2.5 Pavement						
1) Routine Maintenance				1,863		
2) Marking				713		
3) Overlay				2,375	60,338	7 years interval
Sub-total				11,444		
2.6 Bridge				670		
2.7 Embankment				124		
2.8 Street Lighting						
Total of 2			3,519	18,893.3	60,337.8	
Grand Total				14,866	18,893.3	60,338

NAME OF LINK
 NAME OF SEGMENT
 STATION
 ALTERNATIVE

EASTERN ROUTE OF KHULNA BYPASS
 SECTION : CANTONMENT - KHULNA-MONGLA ROAD
 STA 0+000 - STA 20+100
 ALT 3-6 (I=1%)

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	10,606.4
1) General	964.2
2) Earthwork	204.6
3) Drainage	177.1
4) Pavement	421.3
5) Bridge	8,769.0
6) Structural Steel	0.0
7) Incidental Work	58.0
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	1,060.6
3. Construction Cost (total of 1. & 2.)	11,667.0
4. Land Acquisition and Compensation	275.2
5. Engineering Services	350.0
6. Supervisory Services	466.7
Total	12,758.9

NAME OF LINK
NAME OF SEGMENT
ALTERNATIVE : ALT 3-6 (I = 1%)

EASTERN ROUTE OF KIRIUNA BYPASS
SECTION : CANTONMENT - KIRIUNA-MONGLA ROAD
STA 0+000 - STA 20+100

AT 1998 PRICES

ITEM NO	DESCRIPTION	UNIT	QUANTITY	UNIT COST (Tk.)	COST (Tk.)
2.01	Site Clearing	M2	643,465	29	18,660,485
2.02	Borrow Material	M3	533,001	169	90,077,169
2.03	Free-Draining Material	M3	307,912	258	79,441,296
2.04	Pre-mixable Backfill	M3	6,099	1,286	7,843,314
2.05	Structure Excavation Up To 2m	M3	8,914	88	784,432
2.06	Structure Excavation Over 2m	M3	2,201	3,524	7,756,324
3.01	R.C. Pipe D=30cm	M	0	2,587	0
3.02	R.C. Pipe D=60cm	M	4,383	6,469	28,353,627
3.03	R.C. Pipe D=120cm	M	685	14,232	9,748,920
3.04	U-Ditch	M	12,890	2,198	28,332,220
3.05	Inlet	EACH	258	17,980	4,638,840
3.06	RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	680	55,194	37,531,920
3.07	RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	52	183,980	9,566,960
3.08	RC Box Culvert, 5.0m (H) x 10.0m (w)	M	26	367,960	9,566,960
3.09	Tributary Bridge	M2	0	43,700	0
3.10	Mortared Rubble Paved Waterway	M2	14,940	1,402	20,945,880
3.11	River Revetment	M2	17,000	1,669	28,373,000
4.01	Subgrade Preparation	M2	257,548	12	3,090,576
4.02	Granular Subbase	M3	49,129	2,167	106,462,543
4.03	Mechanical Stabilized Base	M3	35,345	3,308	116,921,260
4.04	Bituminous Prime Coat/Tack Coat	Litre	381,404	33	12,586,332
4.05	Asphalt Treated Base Course (t=10cm)	M2	171,880	772	132,691,360
4.06	Asphalt Concrete Surface (t=6cm)	M2	104,762	473	49,552,426
4.07	Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
5.01	Asphalt Concrete on Bridge Surface (t=6cm)	M2	61,285	506	31,010,210
5.02	Offshore Temporary Staging	M2	1,815	40,738	73,939,470
5.03	Cofferdam Construction and Dismantling	M2	8,056	68,466	551,562,096
5.04	Structure Excavation	M3	45,705	3,524	161,064,420
5.05	Cast - In - Place Concrete Pile (D = 2,000mm)	M	0	138,570	0
5.06	Cast - In - Place Concrete Pile (D = 1,500mm)	M	13,478	78,112	1,052,793,536
5.07	Cast - In - Place Concrete Pile (D = 1,000mm)	M	77,688	35,385	2,748,989,880
5.08	Structural Concrete (High Design Strength)	M3	23,291	18,463	430,021,733
5.09	Structural Concrete (Low Design Strength)	M3	106,080	10,626	1,127,206,080
5.10	Reinforcing Steel, Deformed	TON	22,592	51,155	1,155,693,760
5.11	Prestressing Steel	TON	3,461	125,000	432,625,000
5.12	Structural Concrete in PC I-Girder	M3	43,808	18,995	832,132,960
5.13	Ancillary Works on Bridge	L.S		171,940,783	171,940,783
6.01	Structural Members	TON	0	46,529	0
7.01	Solid Sodding	M2	138,232	23	3,179,336
7.02	Guardrail	M	2,220	2,107	4,677,540
7.03	Regulatory & Warning Sign	EACH	103	5,841	601,623
7.04	Guide Sign	EACH	44	257,016	11,308,704
7.05	Road Marking	M2	7,734	294	2,273,796
7.06	Concrete Curb	M	0	304	0
7.07	Brick Paving	M2	76,292	143	10,909,756
7.08	Concrete Barrier	M	0	3,663	0
7.09	Street Tree	EACH	11,328	467	5,290,176
7.10	Street Lighting Unit	EACH	361	46,730	16,869,530
7.11	Street Lighting Control Panel	EACH	7	58,413	408,891
7.12	Traffic Signal Unit	EACH	11	35,048	385,528
7.13	Traffic Signal Control Panel	EACH	5	414,373	2,071,865
8.01	Toll Gate	EACH	2	934,603	1,869,206
8.02	Toll Office	EACH	1	1,331,128	1,331,128
	TOTAL				9,642,168,651

NAME OF LINK KHULNA - MONGLA RAILWAY EXTENSION
 NAME OF SEGMENT SECTION I : KHULNA - MONGLA
 ALTERNATIVE : ALT R-1(Eastern route) STA 0+000 - STA 52+500

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	5,731.9
1) General	521.1
2) Earthwork	269.1
3) Drainage	429.1
4) Bridge	3,909.1
5) Structural Steel	0.0
6) Incidental Work	603.6
2. Physical Contingency (10% of 1.)	573.2
Sub-total	6,305.1
3. Land Acquisition and Compensation	336.7
4. Engineering Services	189.2
5. Supervisory Services	252.2
Total	7,083.1

Million Taka

Year	Financial Cost
2000	357.5
2001	824.1
2002	1,967.2
2003	1,967.2
2004	1,967.2
Total	7,083.1

NAME OF LINK
NAME OF SEGMENT
ALTERNATIVE : ALT R-1(Eastern Route)

KHULNA - MONGLA RAILWAY EXTENSION
SECTION I: KHULNA - MONGLA
STA 0+000 - STA 52+500

AT 1998 PRICES

ITEM NO	DESCRIPTION	UNIT	QUANTITY	UNIT COST (Tk.)	COST (Tk.)
2.01	Site Clearing	M2	1,050,000	29	30,450,000
2.02	Borrow Material	M3	974,922	169	164,761,818
2.03	Free-Draining Material	M3	260,260	258	67,147,080
2.04	Preneable Backfill	M3	3,297	1,286	4,239,942
2.05	Structure Excavation Up To 2m	M3	27,874	88	2,452,912
2.06	Structure Excavation Over 2m	M3	0	3,524	0
3.01	R.C. Pipe D=30cm	M	5,020	2,587	12,986,740
3.02	R.C. Pipe D=60cm	M	0	6,469	0
3.03	R.C. Pipe D=120cm	M	0	14,232	0
3.04	U-Ditch	M	26,600	2,198	58,466,800
3.05	Inlet	EACH	502	17,980	9,025,960
3.06	RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	147	55,194	8,113,518
3.07	RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	0	183,980	0
3.08	RC Box Culvert, 5.0m (H) x 10.0m (w)	M	0	367,960	0
3.09	Tributary Bridge	M2	0	43,700	0
3.10	Mortared Rubble Paved Waterway	M2	0	1,402	0
3.11	River Revetment	M2	204,000	1,669	340,476,000
4.01	Subgrade Preparation	M2	0	12	0
4.02	Granular Subbase	M3	0	2,167	0
4.03	Mechanical Stabilized Base	M3	0	3,308	0
4.04	Bituminous Prime Coat/Tack Coat	litre	0	33	0
4.05	Asphalt Treated Base Course (t=10cm)	M2	0	772	0
4.06	Asphalt Concrete Surface (t=6cm)	M2	0	473	0
4.07	Concrete Pavement (t=30cm)	M2	0	3,188	0
5.01	Asphalt Concrete on Bridge Surface (t=6cm)	M2	0	506	0
5.02	Offshore Temporary Staging	M2	657	40,738	26,764,866
5.03	Cofferdam Construction and Dismantling	M2	5,089	68,466	348,423,474
5.04	Structure Excavation	M3	26,451	3,524	93,213,324
5.05	Cast - In - Place Concrete Pile (D = 2,000mm)	M	0	138,570	0
5.06	Cast - In - Place Concrete Pile (D = 1,500mm)	M	7,920	78,112	618,647,040
5.07	Cast - In - Place Concrete Pile (D = 1,000mm)	M	42,960	35,385	1,520,139,600
5.08	Structural Concrete (High Design Strength)	M3	8,636	18,463	159,446,468
5.09	Structural Concrete (Low Design Strength)	M3	60,274	10,626	640,471,524
5.1	Reinforcing Steel, Deformed	TON	7,259	51,155	371,334,145
5.11	Prestressing Steel	TON	432	125,000	54,000,000
5.12	Structural Concrete in PC I-Girder	M3	0	18,995	0
5.13	Ancillary Works on Bridge	L.S		76,648,809	76,648,809
6.01	Structural Members	TON	0	46,529	0
7.01	Solid Sodding	M2	472,500	23	10,867,500
7.02	Guardrail	M	0	2,107	0
7.03	Regulatory & Warning Sign	EACH	0	5,841	0
7.04	Guide Sign	EACH	0	257,016	0
7.05	Road Marking	M2	0	294	0
7.06	Concrete Curb	M	0	304	0
7.07	Interlocking Concrete Paving	M2	0	143	0
7.08	Concrete Barrier	M	0	3,663	0
7.09	Street Tree	EACH	0	467	0
7.10	Street Lighting Unit	EACH	0	46,730	0
7.11	Street Lighting Control Panel	EACH	0	58,413	0
7.12	Traffic Signal Unit	EACH	0	35,048	0
7.13	Traffic Signal Control Panel	EACH	0	414,373	0
8.01	Toll Gate	EACH	0	934,603	0
8.02	Toll Office	EACH	0	1,331,128	0
9.01	Ballast	M3	60,375	1,909	115,255,875
9.02	Local Sand	M3	37,149	344	12,779,256
9.03	Wooden Sleeper	EACH	77,910	3,245	252,817,950
9.04	Rail	M	52,500	3,109	163,222,500
9.05	Fish Plate	EACH	8,295	1,396	11,579,820
9.06	Fastening (Elastic Clips)	EACH	311,640	119	37,085,160
	TOTAL				5,210,818,081

NAME OF LINK KHULNA - MONGLA RAILWAY EXTENSION
 NAME OF SEGMENT SECTION I : KHULNA - MONGLA
 ALTERNATIVE : ALT R-3 (Western Route STA 0+000 - STA 53+000)

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	3,963.1
1) General	360.3
2) Earthwork	311.5
3) Drainage	204.1
4) Bridge	2,476.5
5) Structural Steel	0.0
6) Incidental Work	610.8
2. Physical Contingency (10% of 1.)	396.3
Sub-total	4,359.4
3. Land Acquisition and Compensation	295.8
4. Engineering Services	130.8
5. Supervisory Services	174.4
Total	4,960.4

Million Taka

Year	Financial Cost
2000	278.7
2001	601.3
2002	1,360.1
2003	1,360.1
2004	1,360.1
Total	4,960.4

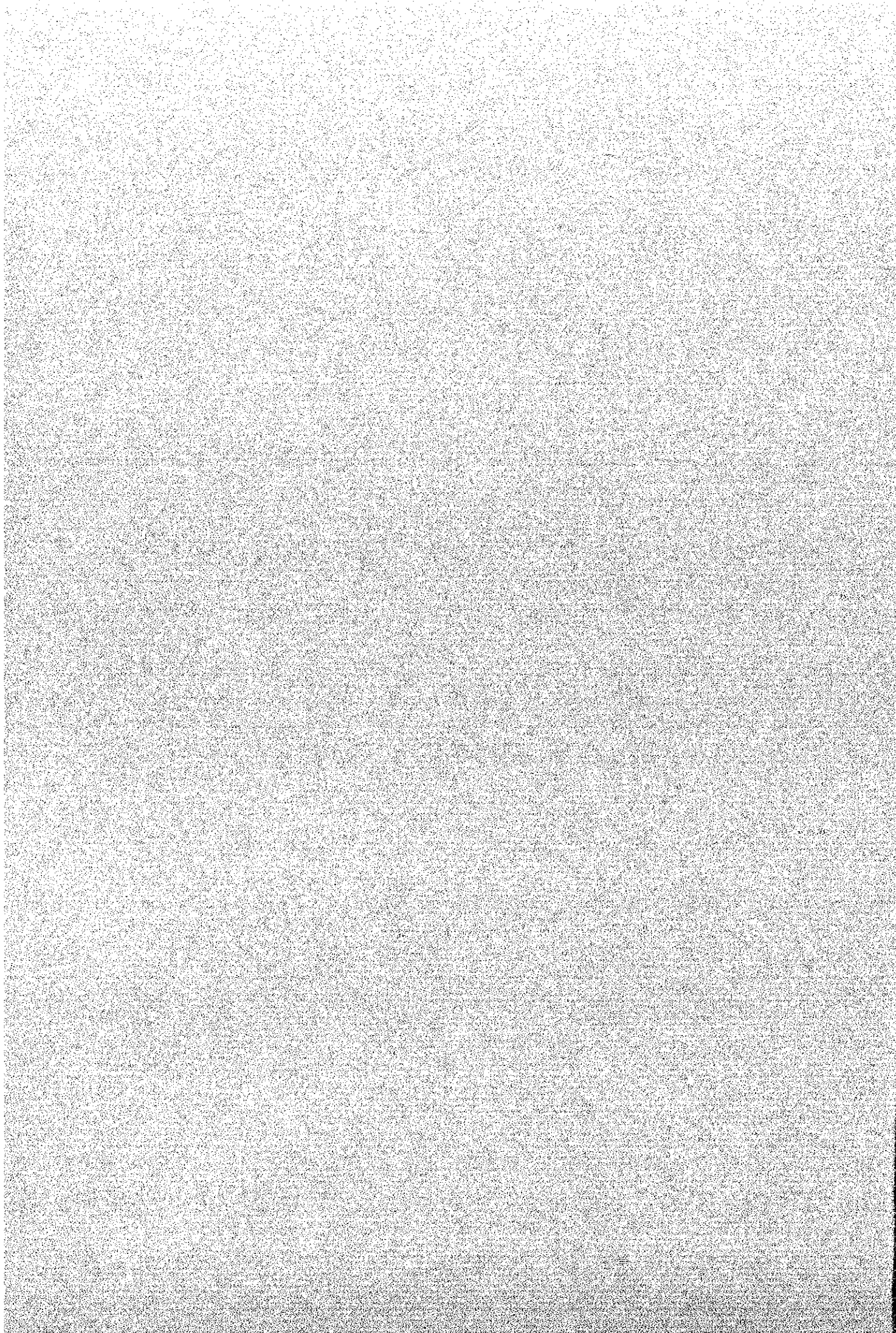
NAME OF LINK
NAME OF SEGMENT
ALTERNATIVE : ALT R-3 (Western Route)

KHULNA - MONGLA RAILWAY EXTENSION
SECTION I : KHULNA - MONGLA
STA 0+000 - STA 53+000

AT 1998 PRICES

ITEM NO	DESCRIPTION	UNIT	QUANTITY	UNIT COST (Tk.)	COST (Tk.)
2.01	Site Clearing	M2	1,060,000	29	30,740,000
2.02	Borrow Material	M3	1,153,323	169	194,911,587
2.03	Free-Draining Material	M3	308,354	258	79,555,332
2.04	Premeable Backfill	M3	3,518	1,286	4,524,148
2.05	Structure Excavation Up To 2m	M3	19,637	88	1,728,056
2.06	Structure Excavation Over 2m	M3	0	3,524	0
3.01	R.C. Pipe D=30cm	M	5,020	2,587	12,986,740
3.02	R.C. Pipe D=60cm	M	0	6,469	0
3.03	R.C. Pipe D=120cm	M	0	14,232	0
3.04	U-Ditch	M	26,600	2,198	58,466,800
3.05	Inlet	EACH	502	17,980	9,025,960
3.06	RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	183	55,194	10,100,502
3.07	RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	0	183,980	0
3.08	RC Box Culvert, 5.0m (H) x 10.0m (w)	M	0	367,960	0
3.09	Tributary Bridge	M2	0	43,700	0
3.10	Mortared Rubble Paved Waterway	M2	0	1,402	0
3.11	River Revetment	M2	68,000	1,669	113,492,000
4.01	Subgrade Preparation	M2	0	12	0
4.02	Granular Subbase	M3	0	2,167	0
4.03	Mechanical Stabilized Base	M3	0	3,308	0
4.04	Bituminous Prime Coat/Tack Coat	Litre	0	33	0
4.05	Asphalt Treated Base Course (t=10cm)	M2	0	772	0
4.06	Asphalt Concrete Surface (t=6cm)	M2	0	473	0
4.07	Concrete Pavement (t=30cm)	M2	0	3,188	0
5.01	Asphalt Concrete on Bridge Surface (t=6cm)	M2	0	506	0
5.02	Offshore Temporary Staging	M2	440	40,738	17,924,720
5.03	Cofferdam Construction and Dismantling	M2	2,833	68,466	193,964,178
5.04	Structure Excavation	M3	12,675	3,524	44,666,700
5.05	Cast - In - Place Concrete Pile (D = 2,000mm)	M	0	138,570	0
5.06	Cast - In - Place Concrete Pile (D = 1,500mm)	M	3,840	78,112	299,950,080
5.07	Cast - In - Place Concrete Pile (D = 1,000mm)	M	30,000	35,385	1,061,550,000
5.08	Structural Concrete (High Design Strength)	M3	4,753	18,463	87,754,639
5.09	Structural Concrete (Low Design Strength)	M3	42,402	10,626	450,563,652
5.1	Reinforcing Steel, Deformed	TON	4,728	51,155	241,860,840
5.11	Prestressing Steel	TON	238	125,000	29,750,000
5.12	Structural Concrete in PC I-Girder	M3	0	18,995	0
5.13	Ancillary Works on Bridge	L.S		48,559,696	48,559,696
6.01	Structural Members	TON	0	46,529	0
7.01	Solid Sodding	M2	477,000	23	10,971,000
7.02	Guardrail	M	0	2,107	0
7.03	Regulatory & Warning Sign	EACH	0	5,841	0
7.04	Guide Sign	EACH	0	257,016	0
7.05	Road Marking	M2	0	294	0
7.06	Concrete Curb	M	0	304	0
7.07	Interlocking Concrete Paving	M2	0	143	0
7.08	Concrete Barrier	M	0	3,663	0
7.09	Street Tree	EACH	0	467	0
7.10	Street Lighting Unit	EACH	0	46,730	0
7.11	Street Lighting Control Panel	EACH	0	58,413	0
7.12	Traffic Signal Unit	EACH	0	35,048	0
7.13	Traffic Signal Control Panel	EACH	0	414,373	0
8.01	Toll Gate	EACH	0	934,603	0
8.02	Toll Office	EACH	0	1,331,128	0
9.01	Ballast	M3	60,950	1,909	116,353,550
9.02	Local Sand	M3	41,616	344	14,315,904
9.03	Wooden Sleeper	EACH	78,652	3,245	255,225,740
9.04	Rail	M	53,000	3,109	164,777,000
9.05	Fish Plate	EACH	8,372	1,396	11,687,312
9.06	Fastening (Elastic Clips)	EACH	314,608	119	37,438,352
	TOTAL				3,602,844,488

APPENDIX I
ECONOMIC AND FINACIAL ANALYSIS



RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 1-1

Tk.in million

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	Total Benefit	Net Benefit
1	2000	129.9		126.5			0	-126.5
2	2001	335.6		300.6			0	-300.6
3	2002	867.6		762.5			0	-762.5
4	2003	867.6		762.5			0	-762.5
5	2004	867.6		762.5			0	-762.5
6	2005		7.9	6.32	804	253	1,057	1,051
7	2006		7.9	6.32	853	269	1,122	1,116
8	2007		7.9	6.32	905	284	1,189	1,183
9	2008		7.9	6.32	961	299	1,260	1,254
10	2009		7.9	6.32	1,020	316	1,336	1,329
11	2010		7.9	6.32	1,083	333	1,416	1,409
12	2011		24.4	19.52	1,148	353	1,501	1,481
13	2012		7.9	6.32	1,217	374	1,591	1,585
14	2013		7.9	6.32	1,290	397	1,686	1,680
15	2014		7.9	6.32	1,367	421	1,787	1,781
16	2015		7.9	6.32	1,449	446	1,895	1,888
17	2016		7.9	6.32	1,492	459	1,952	1,945
18	2017		7.9	6.32	1,537	473	2,010	2,004
19	2018		24.4	19.52	1,583	487	2,070	2,051
20	2019		7.9	6.32	1,631	502	2,133	2,126
NPV@12%				Tk.1,841.86			Tk.5,552.50	

EIRR= 30.5%

NPV= Tk.3,710.64

B/C= 3.01

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 CASE: VOC Benefit Only
 ALTERNATIVE : ALT 1-1

Tk.in million

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	VOC Benefit Only	Net Benefit
1	2000	129.9		126.5			0	-126.5
2	2001	335.6		300.6			0	-300.6
3	2002	867.6		762.5			0	-762.5
4	2003	867.6		762.5			0	-762.5
5	2004	867.6		762.5			0	-762.5
6	2005		7.9	6.32	804	253	804	798
7	2006		7.9	6.32	853	269	853	847
8	2007		7.9	6.32	905	284	905	899
9	2008		7.9	6.32	961	299	961	955
10	2009		7.9	6.32	1,020	316	1,020	1,014
11	2010		7.9	6.32	1,083	333	1,083	1,076
12	2011		24.4	19.52	1,148	353	1,148	1,128
13	2012		7.9	6.32	1,217	374	1,217	1,210
14	2013		7.9	6.32	1,290	397	1,290	1,283
15	2014		7.9	6.32	1,367	421	1,367	1,361
16	2015		7.9	6.32	1,449	446	1,449	1,443
17	2016		7.9	6.32	1,492	459	1,492	1,486
18	2017		7.9	6.32	1,537	473	1,537	1,531
19	2018		24.4	19.52	1,583	487	1,583	1,564
20	2019		7.9	6.32	1,631	502	1,631	1,625
NPV@12%				Tk.1,841.86			Tk.4,238.75	

EIRR= 25.2%

NPV= Tk.2,396.88

B/C= 2.30

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 CASE: ASSUMING 90% OF TOTAL BENEFIT
 ALTERNATIVE : ALT 1-1

Tk.in million

Serial	Year	Capital Cost	Main t.	Total Cost	1.1 x Total Cost	VOC Benefit	TTC Benefit	Total Benefit	0.9 x Total Benefit	Net Benefi
1	2000	129.9		126.5	139.2			0	0	-139
2	2001	335.6		300.6	330.7			0	0	-331
3	2002	867.6		762.5	838.7			0	0	-839
4	2003	867.6		762.5	838.7			0	0	-839
5	2004	867.6		762.5	838.7			0	0	-839
6	2005		7.9	6.3	7.0	804	253	1,057	951	944
7	2006		7.9	6.3	7.0	853	269	1,122	1,010	1003
8	2007		7.9	6.3	7.0	905	284	1,189	1,070	1063
9	2008		7.9	6.3	7.0	961	299	1,260	1,134	1127
10	2009		7.9	6.3	7.0	1,020	316	1,336	1,202	1195
11	2010		7.9	6.3	7.0	1,083	333	1,416	1,274	1267
12	2011		24.4	19.5	21.5	1,148	353	1,501	1,351	1329
13	2012		7.9	6.3	7.0	1,217	374	1,591	1,432	1425
14	2013		7.9	6.3	7.0	1,290	397	1,686	1,518	1511
15	2014		7.9	6.3	7.0	1,367	421	1,787	1,609	1602
16	2015		7.9	6.3	7.0	1,449	446	1,895	1,705	1698
17	2016		7.9	6.3	7.0	1,492	459	1,952	1,756	1749
18	2017		7.9	6.3	7.0	1,537	473	2,010	1,809	1802
19	2018		24.4	19.5	21.5	1,583	487	2,070	1,863	1842
20	2019		7.9	6.3	7.0	1,631	502	2,133	1,919	1912
NPV@12%				Tk.2,026				Tk.4,997		

EIRR= 26.5%

NPV= Tk.2,971

B/C= 2.47

NAME OF LINK
STATION
ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
STA 17+600 - STA 27+700
ALT 1-1

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	2,527.9
1) Highway	1,173.7
2) Bridge	1,340.8
3) Toll Facilities	13.5
2. Physical Contingency (10% of 1.)	252.8
3. Construction Cost	2,780.7
4. Land Acquisition and Compensation	92.9
5. Engineering Services	83.4
6. Supervisory Services	111.2
Total	3,068.3

Description	Economic Cost (Million Taka)
1. Direct Construction Cost	2,224.3
1) Highway	994.9
2) Bridge	1,229.4
3) Toll Facilities	0.0
2. Physical Contingency (10% of 1.)	222.4
3. Construction Cost	2,446.8
4. Land Acquisition and Compensation	92.9
5. Engineering Services	80.1
6. Supervisory Services	94.8
Total	2,714.5

Year	Million Taka	
	Financial Cost	Economic Cost
2000	129.9	126.5
2001	335.6	300.6
2002	867.6	762.5
2003	867.6	762.5
2004	867.6	762.5
Total	3,068.3	2,714.5

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 3-1

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	Total Benefit	Net Benefit
1	2000	271.2		265.9			0	-265.9
2	2001	600.8		549.0			0	-549.0
3	2002	1,389.5		1,234.2			0	-1,234.2
4	2003	1,389.5		1,234.2			0	-1,234.2
5	2004	1,389.5		1,234.2			0	-1,234.2
6	2005		12.6	10.08	608.9	30.6	639.5	629.4
7	2006		12.6	10.08	646.3	32.3	678.6	668.5
8	2007		12.6	10.08	686.0	34.0	720.1	710.0
9	2008		12.6	10.08	728.2	35.9	764.1	754.0
10	2009		12.6	10.08	773.0	37.9	810.9	800.8
11	2010		12.6	10.08	820.6	40.0	860.6	850.5
12	2011		44.9	35.92	869.8	42.4	912.2	876.3
13	2012		12.6	10.08	922.0	44.9	966.9	956.9
14	2013		12.6	10.08	977.3	47.6	1,024.9	1,014.9
15	2014		12.6	10.08	1,036.0	50.5	1,086.4	1,076.4
16	2015		12.6	10.08	1,098.1	53.5	1,151.6	1,141.5
17	2016		12.6	10.08	1,128.2	55.1	1,183.3	1,173.2
18	2017		12.6	10.08	1,162.1	56.7	1,218.8	1,208.7
19	2018		44.9	35.92	1,196.9	58.4	1,255.4	1,219.5
20	2019		12.6	10.08	1,232.8	60.2	1,293.0	1,283.0
NPV@12%		Tk.3,086.8					Tk.3,368.2	

EIRR= 13.2%

NPV= Tk.281.5

B/C= 1.09

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 3-1

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	VOC Benefit Only	Net Benefit
1	2000	271.2		265.9			0	-265.9
2	2001	600.8		549.0			0	-549.0
3	2002	1,389.5		1,234.2			0	-1,234.2
4	2003	1,389.5		1,234.2			0	-1,234.2
5	2004	1,389.5		1,234.2			0	-1,234.2
6	2005		12.6	10.08	608.9	30.6	608.9	598.8
7	2006		12.6	10.08	646.3	32.3	646.3	636.2
8	2007		12.6	10.08	686.0	34.0	686.0	675.9
9	2008		12.6	10.08	728.2	35.9	728.2	718.1
10	2009		12.6	10.08	773.0	37.9	773.0	762.9
11	2010		12.6	10.08	820.6	40.0	820.6	810.5
12	2011		44.9	35.92	869.8	42.4	869.8	833.9
13	2012		12.6	10.08	922.0	44.9	922.0	911.9
14	2013		12.6	10.08	977.3	47.6	977.3	967.2
15	2014		12.6	10.08	1,036.0	50.5	1,036.0	1,025.9
16	2015		12.6	10.08	1,098.1	53.5	1,098.1	1,088.0
17	2016		12.6	10.08	1,128.2	55.1	1,128.2	1,118.2
18	2017		12.6	10.08	1,162.1	56.7	1,162.1	1,152.0
19	2018		44.9	35.92	1,196.9	58.4	1,196.9	1,161.0
20	2019		12.6	10.08	1,232.8	60.2	1,232.8	1,222.8
NPV@12%		Tk.3,086.8					Tk.3,210.5	

EIRR= 12.5%

NPV= Tk.123.7

B/C= 1.04

RUPSA BRIDGE ON KIJULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 3-1

Serial	Year	Capital Cost	Maint. Cost	Total Cost	1.1 x Total Cost	VOC Benefit	TTC Benefit	Total Benefit	0.9 x Total Benefit	Net Benefit
1	2000	271.2		265.9	292.5			0	0	-292.5
2	2001	600.8		549.0	603.9			0	0	-603.9
3	2002	1,389.5		1,234.2	1,357.6			0	0	-1,357.6
4	2003	1,389.5		1,234.2	1,357.6			0	0	-1,357.6
5	2004	1,389.5		1,234.2	1,357.6			0	0	-1,357.6
6	2005		12.6	10.1	11.1	608.9	30.6	639.5	575.6	564.5
7	2006		12.6	10.1	11.1	646.3	32.3	678.6	610.7	599.6
8	2007		12.6	10.1	11.1	686.0	34.0	720.1	648.1	637.0
9	2008		12.6	10.1	11.1	728.2	35.9	764.1	687.7	676.6
10	2009		12.6	10.1	11.1	773.0	37.9	810.9	729.8	718.7
11	2010		12.6	10.1	11.1	820.6	40.0	860.6	774.5	763.5
12	2011		44.9	35.9	39.5	869.8	42.4	912.2	821.0	781.5
13	2012		12.6	10.1	11.1	922.0	44.9	966.9	870.2	859.2
14	2013		12.6	10.1	11.1	977.3	47.6	1,024.9	922.4	911.4
15	2014		12.6	10.1	11.1	1,036.0	50.5	1,086.4	977.8	966.7
16	2015		12.6	10.1	11.1	1,098.1	53.5	1,151.6	1,036.5	1,025.4
17	2016		12.6	10.1	11.1	1,128.2	55.1	1,183.3	1,065.0	1,053.9
18	2017		12.6	10.1	11.1	1,162.1	56.7	1,218.8	1,096.9	1,085.8
19	2018		44.9	35.9	39.5	1,196.9	58.4	1,255.4	1,129.8	1,090.3
20	2019		12.6	10.1	11.1	1,232.8	60.2	1,293.0	1,163.7	1,152.6
NPV@12%					Tk.3,395.5			Tk.3,031.4		

EIRR= 10.5%

NPV= -Tk.364.1

B/C= 0.89

NAME OF LINK
STATION
ALTERNATIVE

EASTERN ROUTE OF KHULNA BYPASS
STA 0+000 - STA 20+100
ALT 3-1

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	4,048.7
1) Highway	1,454.3
2) Bridge	2,580.9
3) Toll Facilities	13.5
2. Physical Contingency (10% of 1.)	404.9
3. Construction Cost	4,453.6
4. Land Acquisition and Compensation	275.2
5. Engineering Services	133.6
6. Supervisory Services	178.1
Total	5,040.6

Description	Economic Cost (Million Taka)
1. Direct Construction Cost	3,602.0
1) Highway	1,225.5
2) Bridge	2,376.6
3) Toll Facilities	0.0
2. Physical Contingency (10% of 1.)	360.2
3. Construction Cost	3,962.2
4. Land Acquisition and Compensation	275.2
5. Engineering Services	128.3
6. Supervisory Services	151.8
Total	4,517.5

Million Taka

Year	Financial Cost	Economic Cost
2000	271.2	265.9
2001	600.8	549.0
2002	1,389.5	1,234.2
2003	1,389.5	1,234.2
2004	1,389.5	1,234.2
Total	5,040.6	4,517.5

Toll Bridge Case (ALT 1-1) : Financial IRR

(Taka in million)

Year	Capital expenditure	Periodic Maint.	O & M	Total Costs	Total revenue	Net cash flow	Total Costs 10% up	Revenue 10% down	Cash Flow
2000	129.9			129.9		-129.9	142.86	0	-142.9
2001	335.6			335.6		-335.6	369.21	0	-369.2
2002	867.6			867.6		-867.6	954.35	0	-954.3
2003	867.6			867.6		-867.6	954.35	0	-954.3
2004	867.6			867.6		-867.6	954.35	0	-954.3
2005			11.5	11.5	279.2	267.7	12.65	251.2	238.6
2006			11.5	11.5	296.1	284.6	12.65	266.5	253.9
2007			11.5	11.5	314.3	302.8	12.65	282.8	270.2
2008			11.5	11.5	333.4	321.9	12.65	300.1	287.4
2009			11.5	11.5	353.8	342.3	12.65	318.4	305.8
2010			11.5	11.5	375.4	363.9	12.65	337.9	325.2
2011		16.3	11.5	27.8	397.9	370.1	30.58	358.1	327.5
2012			11.5	11.5	421.8	410.3	12.65	379.6	367.0
2013			11.5	11.5	447.1	435.6	12.65	402.4	389.7
2014			11.5	11.5	473.9	462.4	12.65	426.6	413.9
2015			11.5	11.5	503.9	492.4	12.65	453.5	440.9

FIRR=

4%

FIRR2 =

1%

Year	Truck	Bus	Car	Auto-Rick	M. Cycle	Total Revenue
2000						
2001						
2002						
2003						
2004						
2005	1565	1973	638	1444	636	310.2
2006	1671	2081	673	1523	671	329.0
2007	1785	2196	710	1607	708	349.2
2008	1906	2317	749	1696	747	370.5
2009	2036	2444	790	1789	788	393.1
2010	2174	2579	833	1887	831	417.1
2011	2304	2733	883	2000	881	442.1
2012	2443	2897	936	2120	934	468.7
2013	2589	3071	993	2248	990	496.8
2014	2745	3255	1052	2383	1049	526.6
2015	2915	3465	1120	2536	1117	559.9
Tariff	250	200	50	20	5	

Railway Case (ALT R-1) : Financial IRR

(Taka in million)

Year	Capital expenditure	Rolling Stock	Rolling Stock	O & M	Total Costs	Freight Ton	Freight Revenue	Net Cash Flow	Cash Flow W/O RS
	Civil Work	Locos	Wagons						
2000	357.50				357.5027			-357.503	-357.5027
2001	824.08				824.0793			-824.079	-824.0793
2002	1,967.19				1967.188			-1967.19	-1967.188
2003	1,967.19				1967.188			-1967.19	-1967.188
2004	1,967.19	120.75	811.44		2899.378			-2899.38	-1967.188
2005		0	0	35.19	35.19	267000	114.81	79.62	79.62
2006		120.75	811.44	37.3	969.49	283000	121.69	-847.8	84.39
2007		0	0	39.54	39.54	300000	129	89.46	89.46
2008		120.75	811.44	41.91	974.1	318000	136.74	-837.36	94.83
2009		0	0	44.41	44.41	337000	144.91	100.5	100.5
2010		120.75	811.44	47.05	979.24	357000	153.51	-825.73	106.46
2011		0	0	49.95	49.95	379000	162.97	113.02	113.02
2012		120.75	811.44	52.85	985.04	401000	172.43	-812.61	119.58
2013				56.14	56.14	426000	183.18	127.04	127.04
2014				59.44	59.44	451000	193.93	134.49	134.49
2015				63	63	478000	205.54	142.54	142.54

Financial Internal Return =

-40%

FIRR Sensitivity =

-18%

NAME OF LINK KHULNA - MONGLA RAILWAY EXTENSION
 NAME OF SEGMENT SECTION I : KHULNA - MONGLA
 ALTERNATIVE : ALT R-1(Eastern route) STA 0+000 - STA 52+500

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	5,731.9
1) General	521.1
2) Earthwork	269.1
3) Drainage	429.1
4) Bridge	3,909.1
5) Structural Steel	0.0
6) Incidental Work	603.6
2. Physical Contingency (10% of 1.)	573.2
Sub-total	6,305.1
3. Land Acquisition and Compensation	336.7
4. Engineering Services	189.2
5. Supervisory Services	252.2
Total	7,083.1

Million Taka

Year	Financial Cost
2000	357.5
2001	824.1
2002	1,967.2
2003	1,967.2
2004	1,967.2
Total	7,083.1

Railway Case (ALT R-3) : Financial IRR

(Taka in million)

Year	Capital expenditure	Rolling Stock	Rolling Stock	O & M	Total Costs	Freight Ton	Freight Revenue	Net Cash Flow	Cash Flow W/O RS
	Civil Work	Locos	Wagons						
2000	278.68				278.6833			-278.683	-278.6833
2001	601.28				601.282			-601.282	-601.282
2002	1,360.15				1360.146			-1360.15	-1360.146
2003	1,360.15				1360.146			-1360.15	-1360.146
2004	1,360.15	120.75	811.44		2292.336			-2292.34	-1360.146
2005		0	0	35.19	35.19	267000	114.81	79.62	79.62
2006		120.75	811.44	37.3	969.49	283000	121.69	-847.8	84.39
2007		0	0	39.54	39.54	300000	129	89.46	89.46
2008		120.75	811.44	41.91	974.1	318000	136.74	-837.36	94.83
2009		0	0	44.41	44.41	337000	144.91	100.5	100.5
2010		120.75	811.44	47.05	979.24	357000	153.51	-825.73	106.46
2011		0	0	49.85	49.85	379000	162.97	113.02	113.02
2012		120.75	811.44	52.85	985.04	401000	172.43	-812.61	119.58
2013				56.14	56.14	428000	183.18	127.04	127.04
2014				59.44	59.44	451000	193.93	134.49	134.49
2015				63	63	478000	205.54	142.54	142.54

Financial Internal Return =

-40%

FIRR Sensitivity =

-15%

NAME OF LINK

KHULNA - MONGLA RAILWAY EXTENSION

NAME OF SEGMENT

SECTION I : KHULNA - MONGLA

ALTERNATIVE : ALT R-3 (Western Rout STA 0+000 - STA 53+000)

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	3,963.1
1) General	360.3
2) Earthwork	311.5
3) Drainage	204.1
4) Bridge	2,476.5
5) Structural Steel	0.0
6) Incidental Work	610.8
2. Physical Contingency (10% of 1.)	396.3
Sub-total	4,359.4
3. Land Acquisition and Compensation	295.8
4. Engineering Services	130.8
5. Supervisory Services	174.4
Total	4,960.4

Million Taka

Year	Financial Cost
2000	278.7
2001	601.3
2002	1,360.1
2003	1,360.1
2004	1,360.1
Total	4,960.4

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 1-2

Tk.in million

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	Total Banefit	Net Benefit
1	2000	142.6		138.7			0	-138.7
2	2001	379.8		340.8			0	-340.8
3	2002	999.9		883.1			0	-883.1
4	2003	999.9		883.1			0	-883.1
5	2004	999.9		883.1			0	-883.1
6	2005		9.1	7.28	804	253	1,057	1,050
7	2006		9.1	7.28	853	269	1,122	1,115
8	2007		9.1	7.28	905	284	1,189	1,182
9	2008		9.1	7.28	961	299	1,260	1,253
10	2009		9.1	7.28	1,020	316	1,336	1,328
11	2010		9.1	7.28	1,083	333	1,416	1,409
12	2011		25.6	20.48	1,148	353	1,501	1,480
13	2012		9.1	7.28	1,217	374	1,591	1,584
14	2013		9.1	7.28	1,290	397	1,686	1,679
15	2014		9.1	7.28	1,367	421	1,787	1,780
16	2015		9.1	7.28	1,449	446	1,895	1,887
17	2016		9.1	7.28	1,492	459	1,952	1,944
18	2017		9.1	7.28	1,537	473	2,010	2,003
19	2018		25.6	20.48	1,583	487	2,070	2,050
20	2019		9.1	7.28	1,631	502	2,133	2,125
NPV@12%				Tk.2,119.63			Tk.5,552.50	

EIRR= 27.7%

NPV= Tk.3,432.87

B/C= 2.62

NAME OF LINK
STATION
ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
STA 17+600 - STA 27+700
ALT 1-2

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	2,913.5
1) Highway	1,181.7
2) Bridge	1,718.2
3) Toll Facilities	13.5
2. Physical Contingency (10% of 1.)	291.3
3. Construction Cost	3,204.8
4. Land Acquisition and Compensation	92.9
5. Engineering Services	96.1
6. Supervisory Services	128.2
Total	3,522.1

Description	Economic Cost (Million Taka)
1. Direct Construction Cost	2,576.9
1) Highway	1,001.7
2) Bridge	1,575.2
3) Toll Facilities	0.0
2. Physical Contingency (10% of 1.)	257.7
3. Construction Cost	2,834.6
4. Land Acquisition and Compensation	92.9
5. Engineering Services	92.3
6. Supervisory Services	109.2
Total	3,129.0

Year	Million Taka	
	Financial Cost	Economic Cost
2000	142.6	138.7
2001	379.8	340.8
2002	999.9	883.1
2003	999.9	883.1
2004	999.9	883.1
Total	3,522.1	3,129.0

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 1-3

Tk.in million

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	Total Banefit	Net Benefit
1	2000	147.6		143.6			0	-143.6
2	2001	397.2		356.8			0	-356.8
3	2002	1,052.2		931.0			0	-931.0
4	2003	1,052.2		931.0			0	-931.0
5	2004	1,052.2		931.0			0	-931.0
6	2005		9.6	7.68	804	253	1,057	1,049
7	2006		9.6	7.68	853	269	1,122	1,114
8	2007		9.6	7.68	905	284	1,189	1,181
9	2008		9.6	7.68	961	299	1,260	1,253
10	2009		9.6	7.68	1,020	316	1,336	1,328
11	2010		9.6	7.68	1,083	333	1,416	1,408
12	2011		26.1	20.88	1,148	353	1,501	1,480
13	2012		9.6	7.68	1,217	374	1,591	1,583
14	2013		9.6	7.68	1,290	397	1,686	1,679
15	2014		9.6	7.68	1,367	421	1,787	1,780
16	2015		9.6	7.68	1,449	446	1,895	1,887
17	2016		9.6	7.68	1,492	459	1,952	1,944
18	2017		9.6	7.68	1,537	473	2,010	2,002
19	2018		26.1	20.88	1,583	487	2,070	2,050
20	2019		9.6	7.68	1,631	502	2,133	2,125
NPV@12%				Tk.2,229.85			Tk.5,552.50	

EIRR= 26.7%

NPV= Tk.3,322.65

B/C= 2.49

NAME OF LINK
STATION
ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
STA 17+600 - STA 27+700
ALT 1-3

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	3,065.9
1) Highway	1,178.0
2) Bridge	1,874.3
3) Toll Facilities	13.5
2. Physical Contingency (10% of 1.)	306.6
3. Construction Cost	3,372.5
4. Land Acquisition and Compensation	92.9
5. Engineering Services	101.2
6. Supervisory Services	134.9
Total	3,701.4

Description	Economic Cost (Million Taka)
1. Direct Construction Cost	2,716.8
1) Highway	998.6
2) Bridge	1,718.1
3) Toll Facilities	0.0
2. Physical Contingency (10% of 1.)	271.7
3. Construction Cost	2,988.4
4. Land Acquisition and Compensation	92.9
5. Engineering Services	97.1
6. Supervisory Services	114.9
Total	3,293.4

Million Taka

Year	Financial Cost	Economic Cost
2000	147.6	143.6
2001	397.2	356.8
2002	1,052.2	931.0
2003	1,052.2	931.0
2004	1,052.2	931.0
Total	3,701.4	3,293.4

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 1-4

Tk.in million

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	Total Banefit	Net Benefit
1	2000	167.0		162.1			0	-162.1
2	2001	464.2		417.9			0	-417.9
3	2002	1,253.3		1,114.4			0	-1114.4
4	2003	1,253.3		1,114.4			0	-1114.4
5	2004	1,253.3		1,114.4			0	-1114.4
6	2005		11.3	9.04	804	253	1,057	1,048
7	2006		11.3	9.04	853	269	1,122	1,113
8	2007		11.3	9.04	905	284	1,189	1,180
9	2008		11.3	9.04	961	299	1,260	1,251
10	2009		11.3	9.04	1,020	316	1,336	1,327
11	2010		11.3	9.04	1,083	333	1,416	1,407
12	2011		27.1	21.68	1,148	353	1,501	1,479
13	2012		11.3	9.04	1,217	374	1,591	1,582
14	2013		11.3	9.04	1,290	397	1,686	1,677
15	2014		11.3	9.04	1,367	421	1,787	1,778
16	2015		11.3	9.04	1,449	446	1,895	1,886
17	2016		11.3	9.04	1,492	459	1,952	1,943
18	2017		11.3	9.04	1,537	473	2,010	2,001
19	2018		27.1	21.68	1,583	487	2,070	2,049
20	2019		11.3	9.04	1,631	502	2,133	2,123
NPV@12%				Tk.2,651.44			Tk.5,552.50	

EIRR= 23.5%

NPV= Tk.2,901.06

B/C= 2.09

NAME OF LINK
STATION
ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
STA 17+600 - STA 27+700
ALT 1-4

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	3,295.5
1) Highway	1,155.0
2) Bridge	2,126.9
3) Toll Facilities	13.5
2. Physical Contingency (10% of 1.)	329.5
3. Construction Cost	3,625.0
4. Land Acquisition and Compensation	92.9
5. Engineering Services	108.8
6. Supervisory Services	145.0
Total	3,971.7

Description	Economic Cost (Million Taka)
1. Direct Construction Cost	2,921.1
1) Highway	979.1
2) Bridge	1,942.0
3) Toll Facilities	0.0
2. Physical Contingency (10% of 1.)	292.1
3. Construction Cost	3,213.2
4. Land Acquisition and Compensation	92.9
5. Engineering Services	104.4
6. Supervisory Services	123.5
Total	3,534.1

Million Taka

Year	Financial Cost	Economic Cost
2000	155.2	150.9
2001	423.5	380.1
2002	1,131.0	1,001.0
2003	1,131.0	1,001.0
2004	1,131.0	1,001.0
Total	3,971.7	3,534.1

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 1-5

Tk.in million

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	Total Banefit	Net Benefit
1	2000	163.0		158.3			0	-158.32
2	2001	450.4		404.6			0	-404.57
3	2002	1,211.9		1,074.4			0	-1074.4
4	2003	1,211.9		1,074.4			0	-1074.4
5	2004	1,211.9		1,074.4			0	-1074.4
6	2005		11.0	8.8	804	253	1,057	1,048
7	2006		11.0	8.8	853	269	1,122	1,113
8	2007		11.0	8.8	905	284	1,189	1,180
9	2008		11.0	8.8	961	299	1,260	1,251
10	2009		11.0	8.8	1,020	316	1,336	1,327
11	2010		11.0	8.8	1,083	333	1,416	1,407
12	2011		41.8	33.44	1,148	353	1,501	1,467
13	2012		11.0	8.8	1,217	374	1,591	1,582
14	2013		11.0	8.8	1,290	397	1,686	1,677
15	2014		11.0	8.8	1,367	421	1,787	1,779
16	2015		11.0	8.8	1,449	446	1,895	1,886
17	2016		11.0	8.8	1,492	459	1,952	1,943
18	2017		11.0	8.8	1,537	473	2,010	2,001
19	2018		41.8	33.44	1,583	487	2,070	2,037
20	2019		11.0	8.8	1,631	502	2,133	2,124
NPV@12%				Tk.2,564.18			Tk.5,552.50	

EIRR= 24.1%

NPV= Tk.2,988.32

B/C= 2.17

NAME OF LINK
STATION
ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
STA 17+600 - STA 27+700
ALT 1-5

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	3,531.2
1) Highway	1,337.5
2) Bridge	2,180.2
3) Toll Facilities	13.5
2. Physical Contingency (10% of 1.)	353.1
3. Construction Cost	3,884.3
4. Land Acquisition and Compensation	92.9
5. Engineering Services	116.5
6. Supervisory Services	155.4
Total	4,249.1

Description	Economic Cost (Million Taka)
1. Direct Construction Cost	3,135.3
1) Highway	1,137.0
2) Bridge	1,998.3
3) Toll Facilities	0.0
2. Physical Contingency (10% of 1.)	313.5
3. Construction Cost	3,448.8
4. Land Acquisition and Compensation	92.9
5. Engineering Services	111.9
6. Supervisory Services	132.4
Total	3,786.0

Year	Million Taka	
	Financial Cost	Economic Cost
2000	163.0	158.3
2001	450.4	404.6
2002	1,211.9	1,074.4
2003	1,211.9	1,074.4
2004	1,211.9	1,074.4
Total	4,249.1	3,786.0

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 3-2

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	Total Bancfit	Net Benefit
1	2000	297.6		291.2			0	-291.2
2	2001	692.3		632.4			0	-632.4
3	2002	1,664.2		1,484.5			0	-1,484.5
4	2003	1,664.2		1,484.5			0	-1,484.5
5	2004	1,664.2		1,484.5			0	-1,484.5
6	2005		15.1	12.08	608.9	30.6	639.5	627.4
7	2006		15.1	12.08	646.3	32.3	678.6	666.5
8	2007		15.1	12.08	686.0	34.0	720.1	708.0
9	2008		15.1	12.08	728.2	35.9	764.1	752.0
10	2009		15.1	12.08	773.0	37.9	810.9	798.8
11	2010		15.1	12.08	820.6	40.0	860.6	848.5
12	2011		48.6	38.88	869.8	42.4	912.2	873.3
13	2012		15.1	12.08	922.0	44.9	966.9	954.9
14	2013		15.1	12.08	977.3	47.6	1,024.9	1,012.9
15	2014		15.1	12.08	1,036.0	50.5	1,086.4	1,074.4
16	2015		15.1	12.08	1,098.1	53.5	1,151.6	1,139.5
17	2016		15.1	12.08	1,128.2	55.1	1,183.3	1,171.2
18	2017		15.1	12.08	1,162.1	56.7	1,218.8	1,206.7
19	2018		48.6	38.88	1,196.9	58.4	1,255.4	1,216.5
20	2019		15.1	12.08	1,232.8	60.2	1,293.0	1,281.0
NPV@12%		Tk.3,663.3					Tk.3,368.2	

EIRR= 10.9%

NPV= -Tk.295.0

B/C= 0.92

NAME OF LINK
STATION
ALTERNATIVE

EASTERN ROUTE OF KHULNA BYPASS
STA 0+000 - STA 20+100
ALT 3-2

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	4,849.1
1) Highway	1,528.3
2) Bridge	3,307.2
3) Toll Facilities	13.5
2. Physical Contingency (10% of 1.)	484.9
3. Construction Cost	5,334.0
4. Land Acquisition and Compensation	275.2
5. Engineering Services	160.0
6. Supervisory Services	213.4
Total	5,982.6

Description	Economic Cost (Million Taka)
1. Direct Construction Cost	4,333.2
1) Highway	1,288.5
2) Bridge	3,044.8
3) Toll Facilities	0.0
2. Physical Contingency (10% of 1.)	433.3
3. Construction Cost	4,766.6
4. Land Acquisition and Compensation	275.2
5. Engineering Services	153.6
6. Supervisory Services	181.8
Total	5,377.2

Year	Million Taka	
	Financial Cost	Economic Cost
2000	297.6	291.2
2001	692.3	632.4
2002	1,664.2	1,484.5
2003	1,664.2	1,484.5
2004	1,664.2	1,484.5
Total	5,982.6	5,377.2

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 3-3

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	Total Banefit	Net Benefit
1	2000	306.5		299.7			0	-299.7
2	2001	723.1		660.9			0	-660.9
3	2002	1,756.5		1,569.9			0	-1,569.9
4	2003	1,756.5		1,569.9			0	-1,569.9
5	2004	1,756.5		1,569.9			0	-1,569.9
6	2005		15.9	12.72	608.9	30.6	639.5	626.8
7	2006		15.9	12.72	646.3	32.3	678.6	665.8
8	2007		15.9	12.72	686.0	34.0	720.1	707.3
9	2008		15.9	12.72	728.2	35.9	764.1	751.4
10	2009		15.9	12.72	773.0	37.9	810.9	798.2
11	2010		15.9	12.72	820.6	40.0	860.6	847.9
12	2011		48.2	38.56	869.8	42.4	912.2	873.6
13	2012		15.9	12.72	922.0	44.9	966.9	954.2
14	2013		15.9	12.72	977.3	47.6	1,024.9	1,012.2
15	2014		15.9	12.72	1,036.0	50.5	1,086.4	1,073.7
16	2015		15.9	12.72	1,098.1	53.5	1,151.6	1,138.9
17	2016		15.9	12.72	1,128.2	55.1	1,183.3	1,170.6
18	2017		15.9	12.72	1,162.1	56.7	1,218.8	1,206.1
19	2018		48.2	38.56	1,196.9	58.4	1,255.4	1,216.8
20	2019		15.9	12.72	1,232.8	60.2	1,293.0	1,280.3
NPV@12%		Tk.3,859.2					Tk.3,368.2	

EIRR= 10.2%

NPV= -Tk.491.0

B/C= 0.87

NAME OF LINK
STATION
ALTERNATIVE

EASTERN ROUTE OF KHULNA BYPASS
STA 0+000 - STA 20+100
ALT 3-3

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	5,118.1
1) Highway	1,497.4
2) Bridge	3,607.2
3) Toll Facilities	13.5
2. Physical Contingency (10% of 1.)	511.8
3. Construction Cost	5,629.9
4. Land Acquisition and Compensation	275.2
5. Engineering Services	168.9
6. Supervisory Services	225.2
Total	6,299.2

Description	Economic Cost (Million Taka)
1. Direct Construction Cost	4,582.9
1) Highway	1,262.1
2) Bridge	3,320.8
3) Toll Facilities	0.0
2. Physical Contingency (10% of 1.)	458.3
3. Construction Cost	5,041.2
4. Land Acquisition and Compensation	275.2
5. Engineering Services	162.1
6. Supervisory Services	191.9
Total	5,670.4

Year	Million Taka	
	Financial Cost	Economic Cost
2000	306.5	299.7
2001	723.1	660.9
2002	1,756.5	1,569.9
2003	1,756.5	1,569.9
2004	1,756.5	1,569.9
Total	6,299.2	5,670.4

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 3-4

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	Total Banefit	Net Benefit
1	2000	318.2		311.0			0	-311.0
2	2001	763.8		698.7			0	-698.7
3	2002	1,878.7		1,683.2			0	-1,683.2
4	2003	1,878.7		1,683.2			0	-1,683.2
5	2004	1,878.7		1,683.2			0	-1,683.2
6	2005		17.0	13.6	608.9	30.6	639.5	625.9
7	2006		17.0	13.6	646.3	32.3	678.6	665.0
8	2007		17.0	13.6	686.0	34.0	720.1	706.5
9	2008		17.0	13.6	728.2	35.9	764.1	750.5
10	2009		17.0	13.6	773.0	37.9	810.9	797.3
11	2010		17.0	13.6	820.6	40.0	860.6	847.0
12	2011		49.3	39.44	869.8	42.4	912.2	872.8
13	2012		17.0	13.6	922.0	44.9	966.9	953.3
14	2013		17.0	13.6	977.3	47.6	1,024.9	1,011.3
15	2014		17.0	13.6	1,036.0	50.5	1,086.4	1,072.8
16	2015		17.0	13.6	1,098.1	53.5	1,151.6	1,138.0
17	2016		17.0	13.6	1,128.2	55.1	1,183.3	1,169.7
18	2017		17.0	13.6	1,162.1	56.7	1,218.8	1,205.2
19	2018		49.3	39.44	1,196.9	58.4	1,255.4	1,215.9
20	2019		17.0	13.6	1,232.8	60.2	1,293.0	1,279.4
NPV@12%		Tk.4,119.7			Tk.3,368.2			

EIRR= 9.4%

NPV= -Tk.751.4

B/C= 0.82

NAME OF LINK
STATION
ALTERNATIVE

EASTERN ROUTE OF KHULNA BYPASS
STA 0+000 - STA 20+100
ALT 3-4

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	5,474.2
1) Highway	1,449.0
2) Bridge	4,011.7
3) Toll Facilities	13.5
2. Physical Contingency (10% of 1.)	547.4
3. Construction Cost	6,021.6
4. Land Acquisition and Compensation	275.2
5. Engineering Services	180.6
6. Supervisory Services	240.9
Total	6,718.3

Description	Economic Cost (Million Taka)
1. Direct Construction Cost	4,914.0
1) Highway	1,221.2
2) Bridge	3,692.8
3) Toll Facilities	0.0
2. Physical Contingency (10% of 1.)	491.4
3. Construction Cost	5,405.4
4. Land Acquisition and Compensation	275.2
5. Engineering Services	173.4
6. Supervisory Services	205.2
Total	6,059.2

Million Taka

Year	Financial Cost	Economic Cost
2000	318.2	311.0
2001	763.8	698.7
2002	1,878.7	1,683.2
2003	1,878.7	1,683.2
2004	1,878.7	1,683.2
Total	6,718.3	6,059.2

RUPSA BRIDGE ON KHULNA-MONGLA HIGHWAY
 CASHFLOW ANALYSIS
 BASE CASE: ASSUMING 15% WORKING TIME
 ALTERNATIVE : ALT 3-5

Serial	Year	Capital Cost	Maint. Cost	Total Cost	VOC Benefit	TTC Benefit	Total Banefit	Net Benefit
1	2000	336.1		328.2			0	-328.2
2	2001	825.7		753.3			0	-753.3
3	2002	2,064.3		1,847.0			0	-1,847.0
4	2003	2,064.3		1,847.0			0	-1,847.0
5	2004	2,064.3		1,847.0			0	-1,847.0
6	2005		18.7	14.96	608.9	30.6	639.5	624.6
7	2006		18.7	14.96	646.3	32.3	678.6	663.6
8	2007		18.7	14.96	686.0	34.0	720.1	705.1
9	2008		18.7	14.96	728.2	35.9	764.1	749.2
10	2009		18.7	14.96	773.0	37.9	810.9	796.0
11	2010		18.7	14.96	820.6	40.0	860.6	845.6
12	2011		79.0	63.2	869.8	42.4	912.2	849.0
13	2012		18.7	14.96	922.0	44.9	966.9	952.0
14	2013		18.7	14.96	977.3	47.6	1,024.9	1,010.0
15	2014		18.7	14.96	1,036.0	50.5	1,086.4	1,071.5
16	2015		18.7	14.96	1,098.1	53.5	1,151.6	1,136.7
17	2016		18.7	14.96	1,128.2	55.1	1,183.3	1,168.4
18	2017		18.7	14.96	1,162.1	56.7	1,218.8	1,203.9
19	2018		79.0	63.2	1,196.9	58.4	1,255.4	1,192.2
20	2019		18.7	14.96	1,232.8	60.2	1,293.0	1,278.1
NPV@12%					Tk.4,505.7		Tk.3,368.2	

EIRR= 8.2%

NPV= -Tk.1,137.5

B/C= 0.75

NAME OF LINK
STATION
ALTERNATIVE

EASTERN ROUTE OF KHULNA BYPASS
STA 0+000 - STA 20+100
ALT 3-5

AT 1998 PRICES

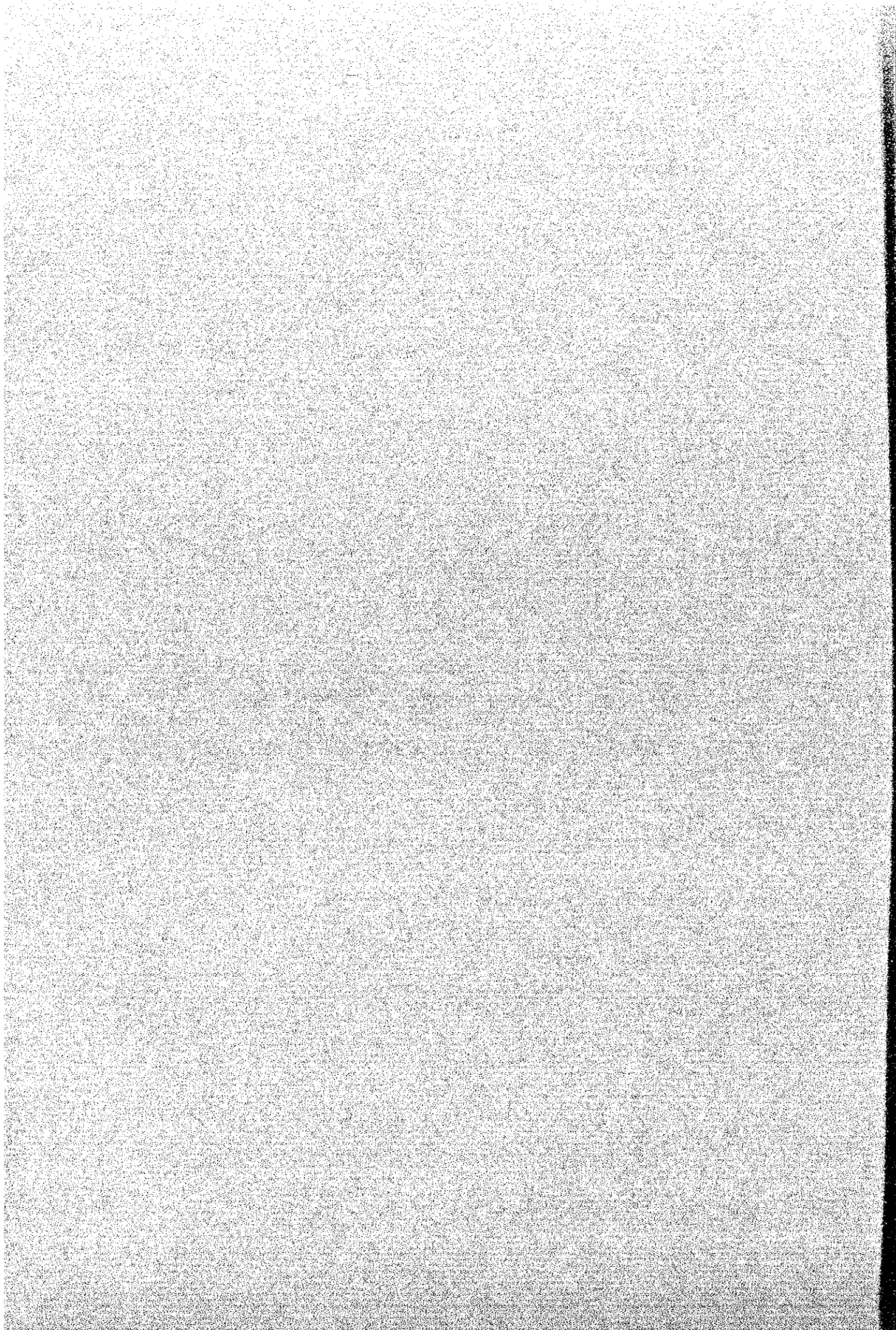
Description	Financial Cost (Million Taka)
1. Direct Construction Cost	6,014.9
1) Highway	1,805.3
2) Bridge	4,196.1
3) Toll Facilities	13.5
2. Physical Contingency (10% of 1.)	601.5
3. Construction Cost	6,616.4
4. Land Acquisition and Compensation	275.2
5. Engineering Services	198.5
6. Supervisory Services	264.7
Total	7,354.8

Description	Economic Cost (Million Taka)
1. Direct Construction Cost	5,391.9
1) Highway	1,529.5
2) Bridge	3,862.4
3) Toll Facilities	0.0
2. Physical Contingency (10% of 1.)	539.2
3. Construction Cost	5,931.1
4. Land Acquisition and Compensation	275.2
5. Engineering Services	190.6
6. Supervisory Services	225.5
Total	6,622.3

Year	Financial Cost	Economic Cost
2000	336.1	328.2
2001	825.7	753.3
2002	2,064.3	1,847.0
2003	2,064.3	1,847.0
2004	2,064.3	1,847.0
Total	7,354.8	6,622.3

APPENDIX J

INSTITUTIONAL ASPECTS AND GROSS BORDER TRADE ARRANGEMENTS



1. Inland Water Transport (IWT)

- 1) Under the World Bank's IWT III Project, BIWTA and BIWTC have implemented recovery action plans but their financial condition remains grave. Their problems include: weak cost controls; over-manning; inadequate accounting systems; and ineffective revenue collection. In 1997, the World Bank launched an IWT Sector Policy and Strategy Study. The thrust of the Study is to explore ways by which the Government could gradually roll back its role in IWT operations and concentrate on regulation, policy and planning. The formulation of the World Bank's IWT IV Project will endeavor to reflect the "roll back" concept by promoting an enabling environment for greater private sector participation. Among others, the "landlord" concept will be pursued by which selected facilities (e.g. inland ports) will be leased out to the private sector. Also, a solution needs to be found for addressing BIWTA's poor performance in dredging operations (ideally, BIWTA should exit the dredging business and concentrate on regulation and safety).
- 2) Cross border activity between Bangladesh and India in the IWT mode falls into two categories: Indian transit traffic (from one part of India to another via Bangladesh), and trade (imports/exports from/to India). There are eight protocol routes: Calcutta, via Chandpur and Chilmari in Bangladesh, to Dhubri in India, and the reverse route; Calcutta, via Chandpur and Zakiganj in Bangladesh, to Karimganj in India, and the reverse route; Rajshahi, via Godagari in Bangladesh, to Dhulian in India, and the reverse route; and Bhairab Bazar, via Sunamganj and Chhatak, to India, and the reverse route. The protocols cover trade by IWT from Calcutta to Narayanganj via Khulna, and the reverse route (on the Bangladesh side, customs formalities are handled at Narayanganj). For the transit traffic customs formalities, the goods are sealed at origin with the seal being checked twice by the Bangladeshi side (i.e., on entering and leaving Bangladesh territory).
- 3) For the trade traffic, the dominant activity is the import of goods from Calcutta to Narayanganj (mainly general cargo and some cement). The imports are carried on both Indian and Bangladeshi vessels. Transit traffic is only carried on Indian vessels. Based on BIWTA's latest available annual traffic report (1994/95), the scale of the IWT cross border activity is indicated in the following tables.

Imports from India by IWT 1994/95 (tons)

Route	Bangladeshi Vessels	Indian Vessels	Total Tons
Calcutta to Narayanganj	6,842	22,450	29,292
Other		6,350	6,350
Total	6,842	28,800	35,642

Note: In 1994/95 exports by IWT were zero. This trend started in the early 1990s.

IWT Transit Traffic 1994/95 (tons)

Route	Main Cargo	Tons
Calcutta - Dhubri	foodgrain	7,400
Dhubri - Calcutta	limestone	4,140
Calcutta - Karimganj	foodgrain	7,100
Karimganj - Calcutta	general cargo	2,300
Total		20,940

2. Rail Transport

- 1) The Government is considering the transformation of Bangladesh Railway (BR) into a separate corporate entity, either a public corporation or a state-owned company under the Companies Act. This initiative is under the umbrella of the policy component of ADB's Jamuna Bridge Railway Link Project. Under the Railway Recovery Program promoted by ADB, BR is gradually improving its operational and financial performance. There is still a long way to go, however, as demonstrated by the fact that BR's very small operational profit is recorded **before** depreciation.
- 2) Cross border activity between Bangladesh and India in the rail mode currently involves three crossing points: Darsana, Rohanpur and Birol. Wagons are permitted to cross the border points but not the locomotives. Imports from India by rail greatly exceed rail exports to India. This results in a wagon imbalance (about 500 – 1,000 Indian wagons are in Bangladesh every day, year round).
- 3) The route through Darsana is the main cross border corridor for rail, with 2 – 3 trains per day arriving from India (each train has about 60 wagons). The Rohanpur route is mainly used for returning Indian wagons to India and for the occasional import of stones/boulders. The Birol route is used for imports coming from India's meter gauge system, as well as for returning wagons to India. A fourth rail crossing point is currently under discussion (at Shahbajpur in north-east Bangladesh).
- 4) When goods cross the border into Bangladesh from India by rail, there are three choices for onward transportation after customs formalities have been completed: the goods can be loaded onto Bangladeshi trucks, or transferred from Indian wagons to BR wagons or the goods continue their journey in the Indian wagons. The choice depends on customer preference and economics (e.g. BR offers discounts to attract the utilization of its own wagons).
- 5) BR's Benapol train station was recently re-opened, and following completion of a modest investment project (ongoing) the rail line between Benapol and Jessore will be re-opened around mid-1999, mainly for local traffic. On completion of the Jamuna Bridge Railway Link Project, it is considered that cross border trade by rail will gradually increase.

3. Road Transport

- 1) Under the World Bank's RRMP III Project, institutional strengthening of RHD will be stepped up. Also, it is likely that the UK's DFID will continue its institutional strengthening program with RHD. The institutional issues facing RHD include the following:
 - i) RHD tends to be run by engineers, and thus its financial management practices are not strong.
 - ii) The demarcation line between routine maintenance and periodic maintenance /development expenditure is blurred. Sometimes, recurrent maintenance funds (revenue budget) are diverted to development works.
 - iii) For recurrent maintenance work undertaken by private sector contractors, RHD's value for money and quality assurance controls need to be strengthened.
 - iv) RHD routinely rents out its equipment to private contractors but RHD's internal controls are weak. The rental rates are below costs and contractors frequently keep equipment beyond the rental period without penalty.
- 2) Cross border activity between Bangladesh and India in the road mode involves many crossing points (in all about 25 points in western, northern and eastern parts of Bangladesh). The operational status of the some 25 points varies from fully operational with all facilities, operational but without some facilities, and not in operation. Also, in southern Bangladesh there is a road crossing point with Myanmar. In common with IWT and rail, imports from India by road greatly exceed road exports to India (in terms of value of goods the imbalance ratio is about 14 : 1). Customs formalities fall under the National Bureau of Revenue (NBR).
- 3) Benapol Dry Port is currently the dominant road gateway, but some other road crossing points in western Bangladesh are experiencing an increase in business due to the fact that customs formalities in these locations tend to be less strict than at Benapol. Now that the Jamuna Bridge is open, an increase in cross border activity can be expected in the north west of Bangladesh for imported goods not originating in Calcutta.
- 4) At the road crossing points, Indian trucks do not cross into Bangladesh and Bangladesh trucks do not enter India. At the border point, the originating Indian trucks unload at a designated area where the goods are then reloaded to Bangladeshi trucks. The same procedure applies for the reverse direction.
- 5) The reasons for trucks not crossing the Indian/Bangladeshi border are several: the absence of a bilateral agreement; concerns about smuggling; and since the Indian trucks are more experienced with long hauls, there is a feeling that Indian truck owners would dominate the freight carrying market in the event that trucks were allowed to cross the border.
- 6) Based on NBR data for 1997/98, import value at the Benapol road gateway amounted to crore taka 1,390 compared with crore taka 390 for Darsana rail gateway.



JICA