

DRILLING LOG

Project: THE STUDY ON CONSTRUCTION OF THE BRIDGE OVER THE RIVER RUPSA IN KHULNA (Phase 1)

Location: Left (South) Bank of the River Atherobaki (Khulna city)

Hole Number: Atherobaki

Elevation: PWD 3.45m

Date: 01 SEP. 1998-03 SEP. 1998

Water table: GL- 1.70m

Type of Drilling: Wash Boring

Driller:

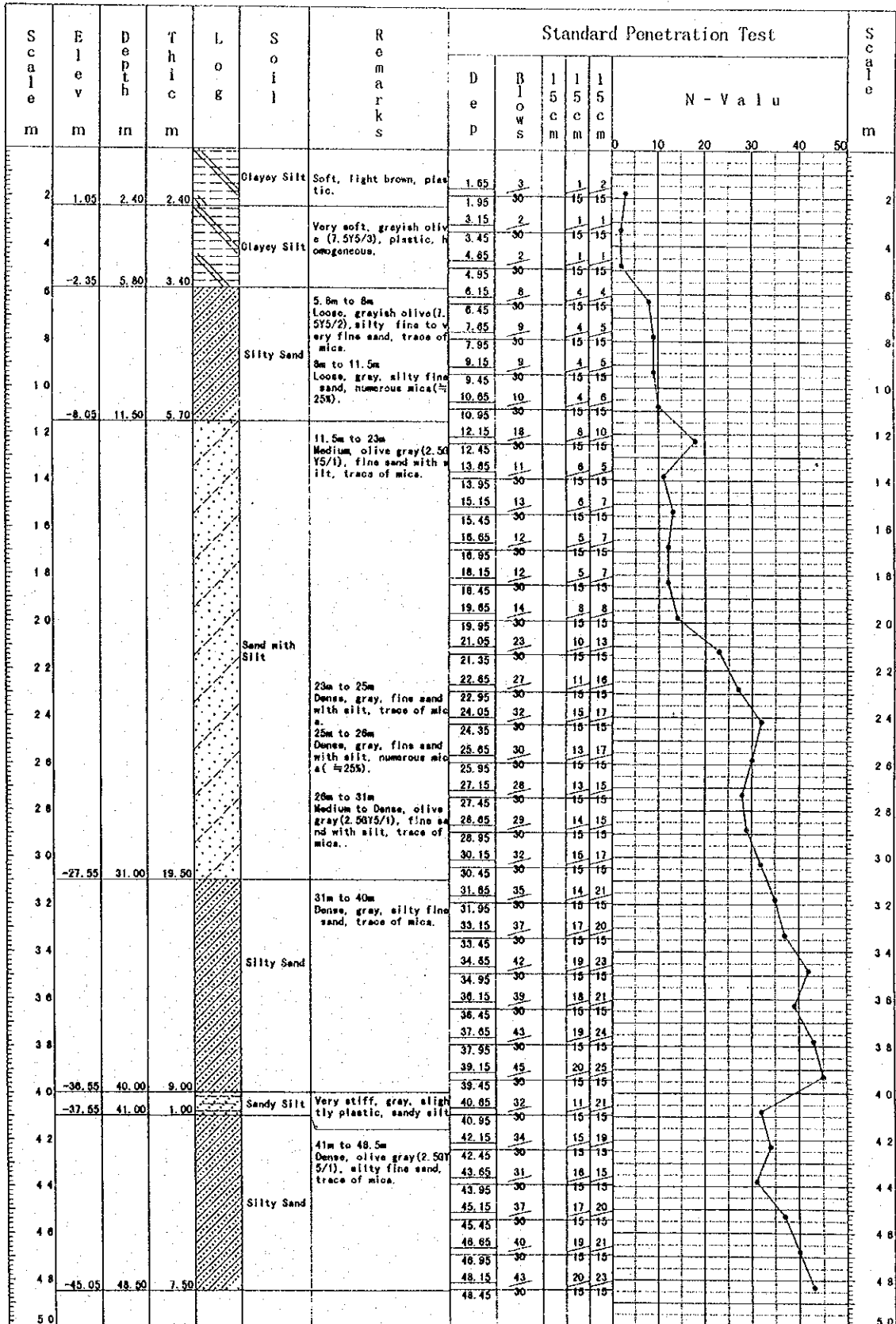


Fig. G-9.3.2 Drilling Log Map at Atherobaki Bridge Site

DRILLING LOG

Project: THE STUDY ON CONSTRUCTION OF THE BRIDGE OVER THE RIVER RUPSA IN KHULNA (Phase 1)

Location: Right (North) Bank of the River Atai (Khulna city)

Hole Number: Atai

Elevation: PWD 4.32m

Date: 30 AUG. 1998 ~ 31 AUG. 1998

Water table: GL- 2.00m

Type of Drilling: Wash Boring

Driller:

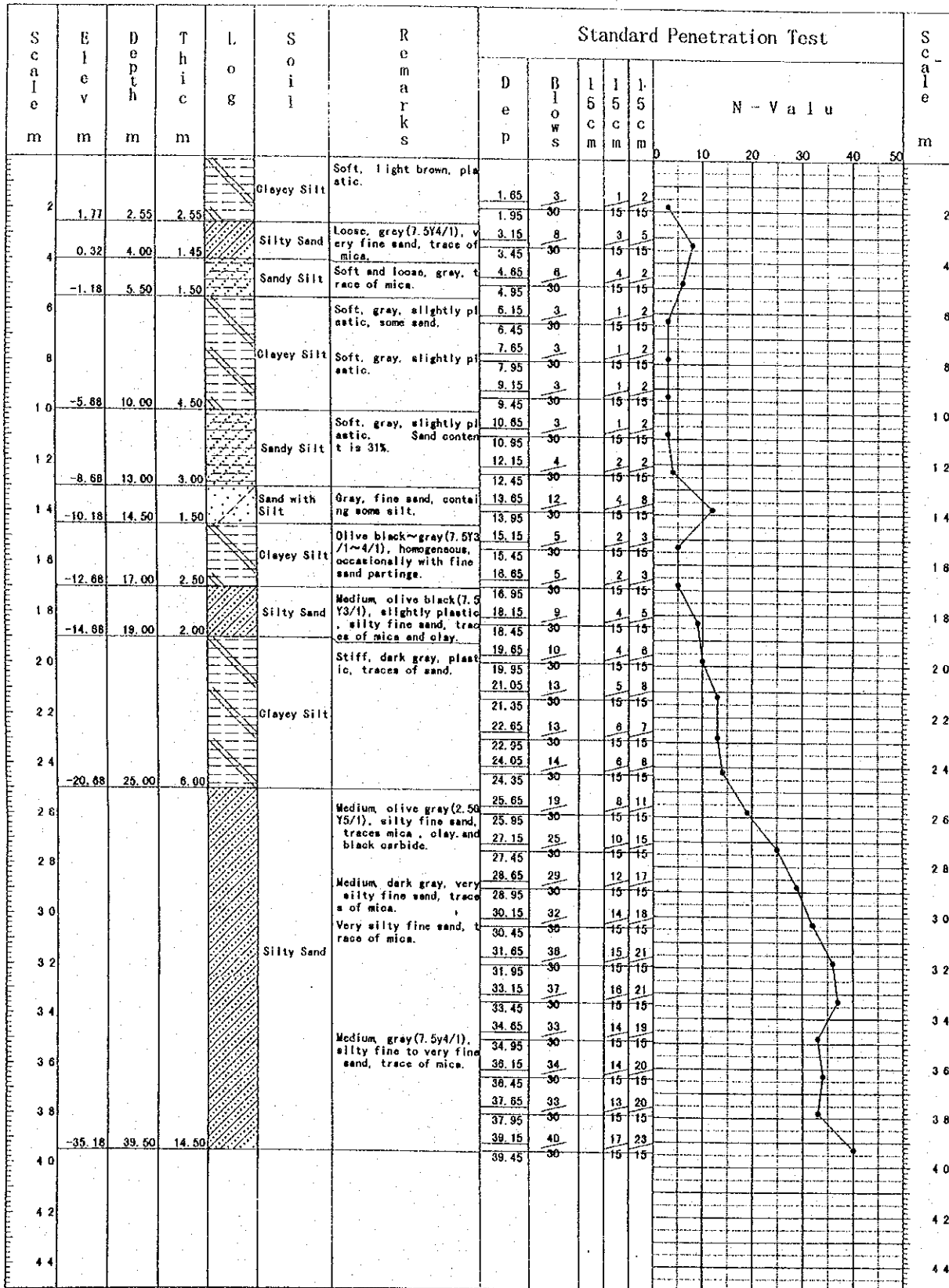


Fig. G-9.3.3 Drilling Log Map at Atai Bridge Site

D R I L L I N G L O G

Project: THE STUDY ON CONSTRUCTION OF THE BRIDGE OVER THE RIVER RUPSA IN KHULNA(Phase 1)

Location: Right(West)Bank of the River Bhairab (Khulna city)

Hole Number: Bhairab

Elevation: PWD 4.45m

Date : 27 AUG. 1998~29 AUG. 1998

Water table: GL- 2.00m

Type of Drilling: Wash Boring

Driller:

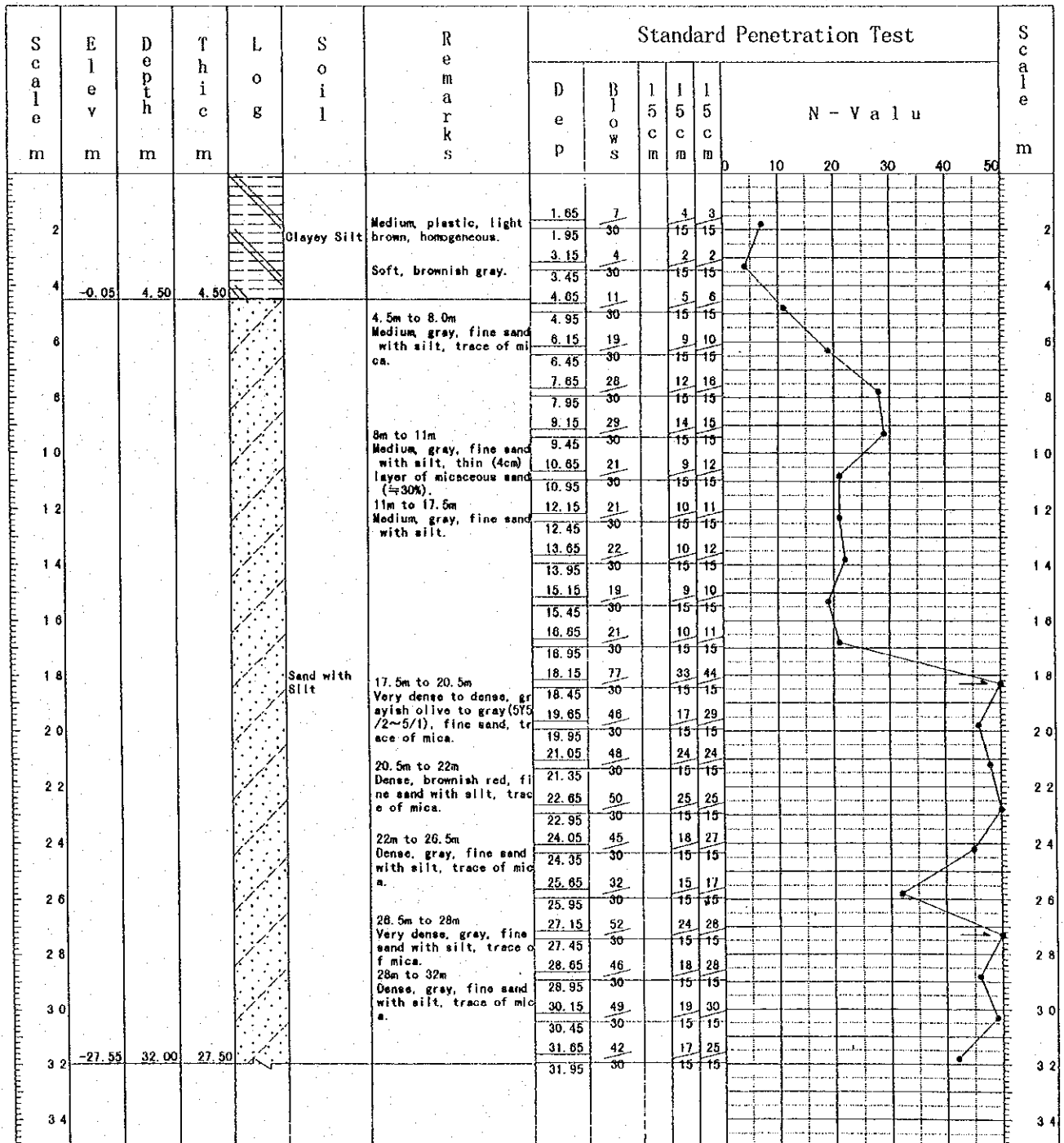


Fig. G-9.3.4 Drilling Log Map at Bhairab Bridge Site

Table G-9.4.1 List of TBM's Installed

Name of Bridge	Station No.	Elevation (m) PWD		Structure	Remarks
		Right Bank Side	Left Bank Side		
Atheroba ki Bridge	-	-	-	-	No placement of TBM as area is in submerged zone. No building is available.
	TBM1 TBM2	-	3.919 3.303	On concrete foundation of a building	Foundation of a religious building & Foundation of a supervisory cottage near survey line.
Atai Bridge	TBM2	3.135	-	On concrete Draining board of waterworks.	Community well of the Village.
	TBM1	-	3.203	On concrete foundation of transmission line.	On foundation of transmission tower on road side.
Bairab Bridge	TBM1 TBM2	4.848 4.570	-	On concrete foundation of a building & electric pole.	Primary school building & electric pole near the river bank.
	TBM3	-	4.498	On concrete foundation of a building.	At the entrance of a mosque on the left bank side.

Table G-9.4.2 List of Existing Bench Marks with Elevations

Station	River	Reduced level PWD	Landmark	Specification
No. 31 At Giralatola	Bhairab River	16.05 ft (4.893 m)	Behind the Giralatola Bazaar inner court of a building along the river.	Concrete stake with metal rivet on top.
No. 241 At Khulna	Rupsa River	14.06 ft (4.287 m)	Approx. 200 m up- stream of Jail Ghat, Hospital & by the road along the river	Concrete stake with metal rivet on top.
<p>[Source] WAPDA BENCH MARKS EAST PAKISTAN Water and Power Development Authority Hydrology Directorate DACCA December – 1967 Bangladesh Water Development Board Hydrology / Khulna Phone: 760465</p>				

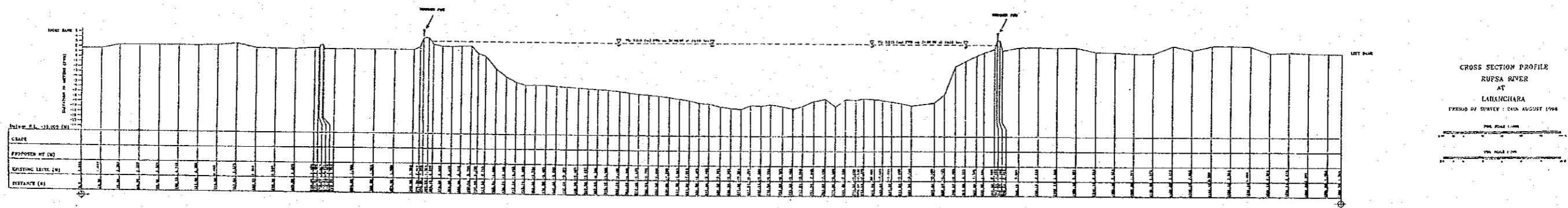


Fig. G-9.4.1 River Cross Section (1) Rupsa Bridge

CROSS SECTION PROFILE
 ATHEROBAKI RIVER
 AT
 RAMNAGAR
 PERIOD OF SURVEY : 25th AUGUST 1988

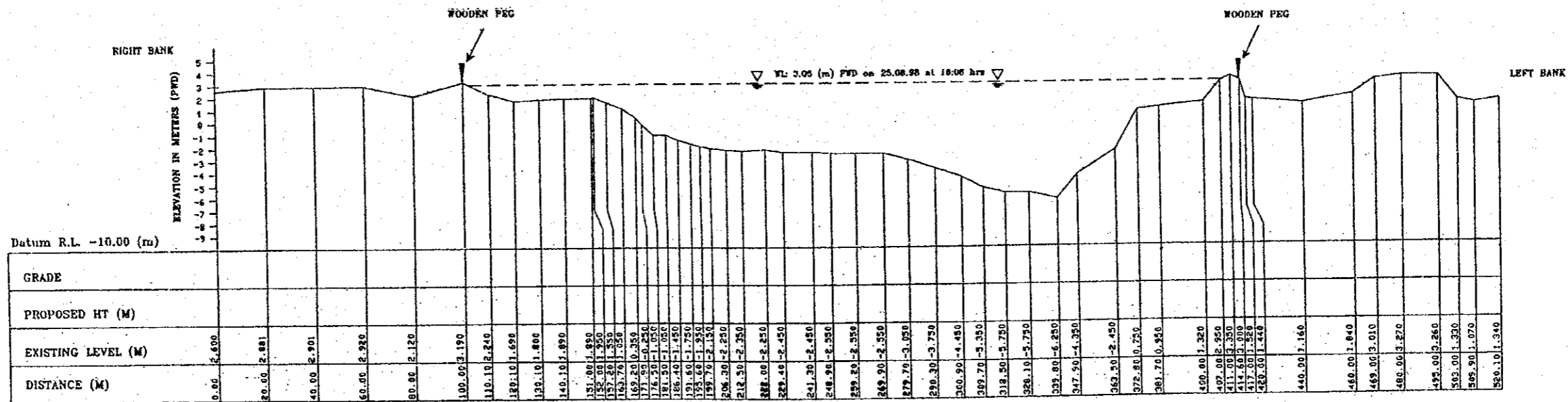
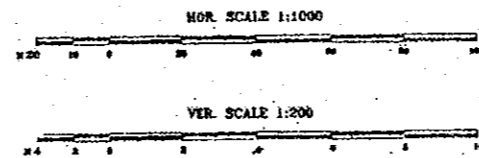


Fig. G-9.4.1 River Cross Section (2) Atherobaki Bridge

CROSS SECTION PROFILE
 ATAI RIVER
 AT
 SOLPUR
 PERIOD OF SURVEY : 25th AUGUST 1998

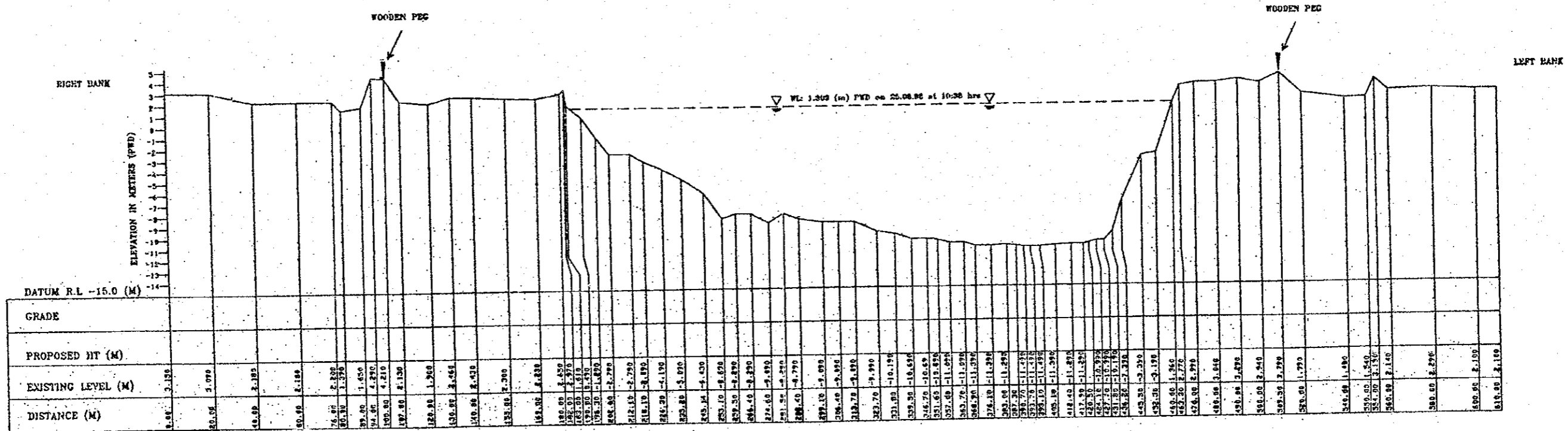
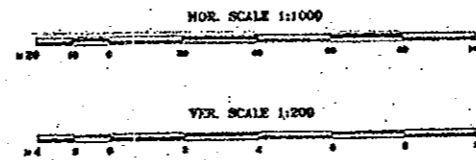


Fig. G-9.4.1 River Cross Section (3) Atai Bridge

CROSS SECTION PROFILE
 BHAIKAB RIVER
 AT
 GILATALA

PERIOD OF SURVEY : 23rd AUGUST 1998

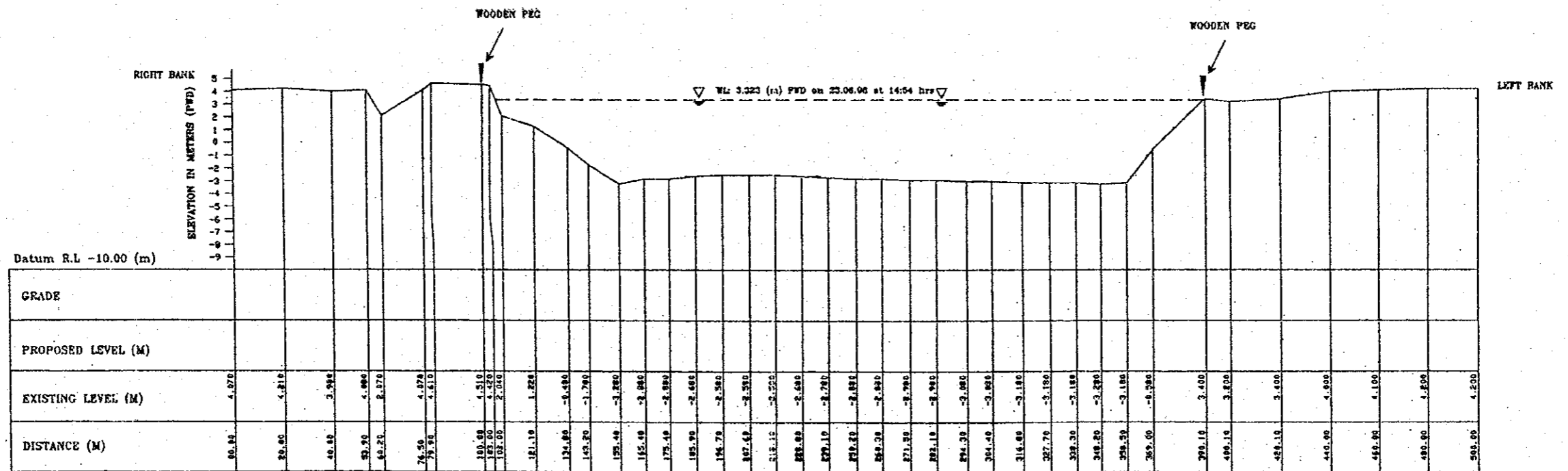
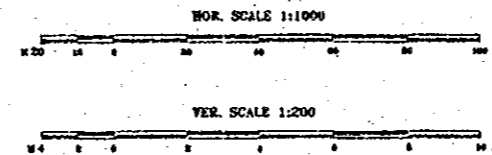


Fig. G-9.4.1 River Cross Section (4) Bhairab Bridge

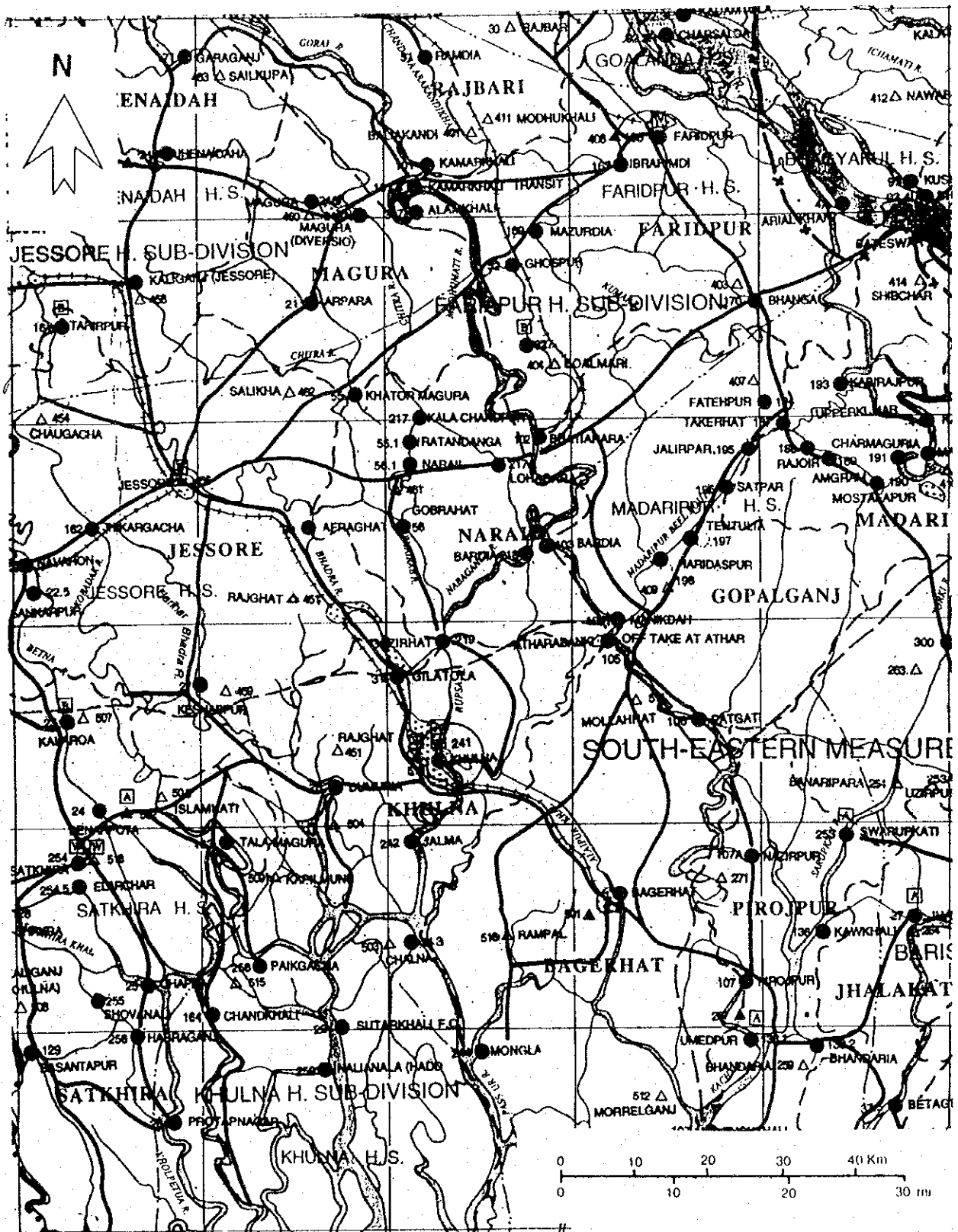


Fig. G-9.5.1 Hydrological Network
(Bangladesh Water Development Board)

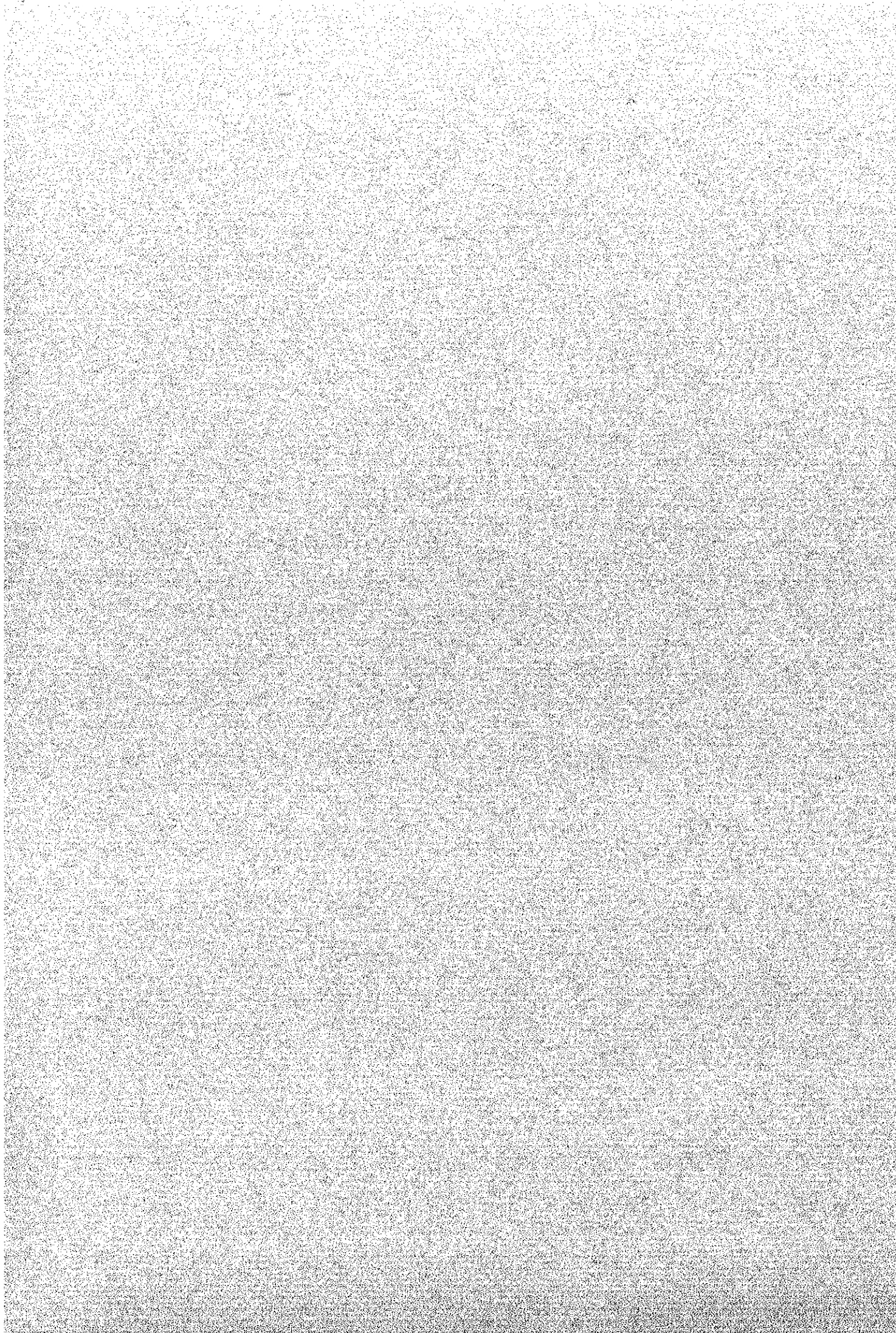
Table G-9.5.1 Source of Data Related to River Water Level, Precipitation and Salinity

Director
 Processing and Flood Forecasting Circle
 Bangladesh Water Development Board
 72 Green Road, Dhaka
 Tel : 88-02-326313 (office)
 FAX : 88-02-9557386
 E-mail : ffwc@mail.cirechco.net

Table G-9.5.2 The Results of the Measurement of Current Velocity

River name		Current Velocity (m/sec)										
		1	2	3	4	5	6	7	8	9	10	11
Rupsa	Distance(m)	20	68	116	164	212	260	308	356	404	452	500
	Velocity	0.49	1.24	1.44	1.63	1.94	1.93	2.38	1.98	1.87	1.58	0.67
	Velocity	0	0.24	0.38	0.57	1.71	1.73	1.77	1.72	0.86	0.35	0
Atherobaki	Distance(m)	25	55	85	115	145	175					
	Velocity	0.51	0.82	0.88	0.87	0.87	0.67					
Atai	Distance(m)	20	70	120	170	220	270					
	Velocity	0.75	1.15	2.25	1.7	1.51	0.73					
Bhairab	Distance(m)	25	68	110	155	200	240					
	Velocity	0.98	1.45	1.29	1.24	1.24	0.98					

APPENDIX H
COST ESTIMATES



NAME OF LINK
NAME OF SEGMENT
STATION
ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
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) General	229.8
2) Earthwork	270.5
3) Drainage	483.3
4) Pavement	284.7
5) Bridge	1,218.9
6) Structural Steel	0.0
7) Incidental Work	28.5
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	252.8
3. Construction Cost (total of 1. & 2.)	2,780.7
4. Land Acquisition and Compensation	92.9
5. Engineering Services	83.4
6. Supervisory Services	111.2
Total	3,068.3

NAME OF LINK
NAME OF SEGMENT
ALTERNATIVE : ALT 1-1

SOUTHERN SECTION OF KHULNA BYPASS
SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
STA 17+600 - STA 27+700

AT 1998 PRICES

ITEM NO	DESCRIPTION	UNIT	QUANTITY	UNIT COST (Tk.)	COST (Tk.)
2.01	Site Clearing	M2	346,645	29	10,052,705
2.02	Borrow Material	M3	584,491	169	98,778,979
2.03	Free-Draining Material	M3	168,727	258	43,531,566
2.04	Preneable Backfill	M3	15,645	1,286	20,119,470
2.05	Structure Excavation Up To 2m	M3	341	88	30,008
2.06	Structure Excavation Over 2m	M3	27,808	3,524	97,995,392
3.01	R.C. Pipe D=30cm	M	0	2,587	0
3.02	R.C. Pipe D=60cm	M	2,910	6,469	18,824,790
3.03	R.C. Pipe D=120cm	M	34	14,232	483,888
3.04	U-Ditch	M	8,560	2,198	18,814,880
3.05	Inlet	EACH	171	17,980	3,074,580
3.06	RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	26	55,194	1,435,044
3.07	RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	182	183,980	33,484,360
3.08	RC Box Culvert, 5.0m (H) x 10.0m (w)	M	234	367,960	86,102,640
3.09	Tributary Bridge	M2	4,680	43,700	204,516,000
3.10	Mortared Rubble Paved Waterway	M2	2,200	1,402	3,084,400
3.11	River Revetment	M2	68,000	1,669	113,492,000
4.01	Subgrade Preparation	M2	161,157	12	1,933,884
4.02	Granular Subbase	M3	32,836	2,167	71,155,612
4.03	Mechanical Stabilized Base	M3	24,149	3,308	79,884,892
4.04	Bituminous Prime Coat/Tack Coat	Litre	255,166	33	8,420,478
4.05	Asphalt Treated Base Course (t=10cm)	M2	117,480	772	90,694,560
4.06	Asphalt Concrete Surface (t=6cm)	M2	68,843	473	32,562,739
4.07	Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
5.01	Asphalt Concrete on Bridge Surface (t=6cm)	M2	11,560	506	5,849,360
5.02	Offshore Temporary Staging	M2	960	40,738	39,108,480
5.03	Cofferdam Construction and Dismantling	M2	2,451	68,466	167,810,166
5.04	Structure Excavation	M3	2,451	3,524	8,637,324
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	3,392	78,112	264,955,904
5.07	Cast - In - Place Concrete Pile (D = 1,000mm)	M	4,320	35,385	152,863,200
5.08	Structural Concrete (High Design Strength)	M3	6,966	18,463	128,613,258
5.09	Structural Concrete (Low Design Strength)	M3	14,140	10,626	150,251,640
5.10	Reinforcing Steel, Deformed	TON	3,230	51,155	165,230,650
5.11	Prestressing Steel	TON	523	125,000	65,375,000
5.12	Structural Concrete in PC I-Girder	M3	2,436	18,995	46,271,820
5.13	Ancillary Works on Bridge	L.S		23,899,336	23,899,336
6.01	Structural Members	TON	0	46,529	0
7.01	Solid Sodding	M2	124,719	23	2,868,537
7.02	Guardrail	M	1,720	2,107	3,624,040
7.03	Regulatory & Warning Sign	EACH	68	5,841	397,188
7.04	Guide Sign	EACH	24	257,016	6,168,384
7.05	Road Marking	M2	5,136	294	1,509,984
7.06	Concrete Curb	M	0	304	0
7.07	Brick Paving	M2	37,264	143	5,328,752
7.08	Concrete Barrier	M	0	3,663	0
7.09	Street Tree	EACH	6,473	467	3,022,891
7.10	Street Lighting Unit	EACH	77	46,730	3,598,210
7.11	Street Lighting Control Panel	EACH	2	58,413	116,826
7.12	Traffic Signal Unit	EACH	6	35,048	210,288
7.13	Traffic Signal Control Panel	EACH	4	414,373	1,657,492
8.01	Toll Gate	EACH	2	934,603	1,869,206
8.02	Toll Office	EACH	1	1,331,128	1,331,128
TOTAL					2,298,127,731

Southern Section of Khulna Bypass
 Operation and Maintenance Costs
 Section : ALT 1-1 L=10.1 KM

Unit : x 1,000 Tk.

	Initial Investment		Annual Running Cost	Maintenance Cost		Remarks
	Quantity	Unit Cost		Routine	Periodic	
1. Operation Cost						
1.1 Facilities Construction						
1) Toll Collection Office	1	1,611				
2) Toll Plaza	2	5,497				
3) Toll Gate	2	1,131				
Sub-total		14,866				
1.2 Office Expenditure						
1) Personnel Expenses			1,140			Refer to Backup-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						
Sub-total		0	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			
2. Maintenance Cost						
2.1 Inspection						
1) Periodic				207		
2) Routine				483		
Sub-total				689		
2.2 Road & Drainage Cleaning				1,450		
2.3 Mowing				287		
2.4 Repair of Traffic Safety Facilities				143		
2.5 Pavement						
1) Routine Maintenance				598		
2) Marking				256		
3) Overlay				854	16,281	7 years interval
Sub-total				3,657		
2.6 Bridge				812		
2.7 Embankment				72		
2.8 Street Lighting						
Total of 2				7,962.8	16,281.4	
Grand Total		14,866	3,519	7,963	16,281	

NAME OF LINK
NAME OF SEGMENT
STATION
ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
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) General	264.9
2) Earthwork	270.9
3) Drainage	486.2
4) Pavement	288.9
5) Bridge	1,562.0
6) Structural Steel	0.0
7) Incidental Work	28.3
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	291.3
3. Construction Cost (total of 1. & 2.)	3,204.8
4. Land Acquisition and Compensation	92.9
5. Engineering Services	96.1
6. Supervisory Services	128.2
Total	3,522.1

NAME OF LINK
NAME OF SEGMENT
ALTERNATIVE : ALT 1-2

SOUTHERN SECTION OF KHUJANA BYPASS
SECTION : SATKHIRA ROAD - KHUJANA-MONGLA ROAD
STA 17+600 - STA 27+700

AT 1998 PRICES

ITEM NO	DESCRIPTION	UNIT	QUANTITY	UNIT COST (Tk.)	COST (Tk.)
2.01	Site Clearing	M2	346,645	29	10,052,705
2.02	Borrow Material	M3	583,405	169	98,595,445
2.03	Free-Draining Material	M3	168,727	258	43,531,566
2.04	Pre-mixed Backfill	M3	16,014	1,286	20,594,004
2.05	Structure Excavation Up To 2m	M3	1,023	88	90,024
2.06	Structure Excavation Over 2m	M3	27,808	3,524	97,995,392
3.01	R.C. Pipe D=30cm	M	0	2,587	0
3.02	R.C. Pipe D=60cm	M	2,910	6,469	18,824,790
3.03	R.C. Pipe D=120cm	M	34	14,232	483,888
3.04	U-Ditch	M	8,560	2,198	18,814,880
3.05	Inlet	EACH	171	17,980	3,074,580
3.06	RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	78	55,194	4,305,132
3.07	RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	182	183,980	33,484,360
3.08	RC Box Culvert, 5.0m (H) x 10.0m (w)	M	234	367,960	86,102,640
3.09	Tributary Bridge	M2	4,680	43,700	204,516,000
3.10	Mortared Rubble Paved Waterway	M2	2,200	1,402	3,084,400
3.11	River Revetment	M2	68,000	1,669	113,492,000
4.01	Subgrade Preparation	M2	163,101	12	1,957,212
4.02	Granular Subbase	M3	33,322	2,167	72,208,774
4.03	Mechanical Stabilized Base	M3	24,509	3,308	81,075,772
4.04	Bituminous Prime Coat/Tack Coat	litre	258,966	33	8,545,878
4.05	Asphalt Treated Base Course (t=10cm)	M2	119,230	772	92,045,560
4.06	Asphalt Concrete Surface (t=6cm)	M2	69,924	473	33,074,052
4.07	Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
5.01	Asphalt Concrete on Bridge Surface (t=6cm)	M2	11,560	506	5,849,360
5.02	Offshore Temporary Staging	M2	960	40,738	39,108,480
5.03	Cofferdam Construction and Dismantling	M2	3,186	68,466	218,132,676
5.04	Structure Excavation	M3	3,233	3,524	11,393,092
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	4,410	78,112	344,473,920
5.07	Cast - In - Place Concrete Pile (D = 1,000mm)	M	5,495	35,385	194,440,575
5.08	Structural Concrete (High Design Strength)	M3	9,055	18,463	167,182,465
5.09	Structural Concrete (Low Design Strength)	M3	18,261	10,626	194,041,386
5.10	Reinforcing Steel, Deformed	TON	4,170	51,155	213,316,350
5.11	Prestressing Steel	TON	677	125,000	84,625,000
5.12	Structural Concrete in PC I-Girder	M3	3,098	18,995	58,846,510
5.13	Ancillary Works on Bridge	L.S		30,628,196	30,628,196
6.01	Structural Members	TON	0	46,529	0
7.01	Solid Sodding	M2	117,710	23	2,707,330
7.02	Guardrail	M	1,720	2,107	3,624,040
7.03	Regulatory & Warning Sign	EACH	68	5,841	397,188
7.04	Guide Sign	EACH	24	257,016	6,168,384
7.05	Road Marking	M2	5,136	294	1,509,984
7.06	Concrete Curb	M	0	304	0
7.07	Brick Paving	M2	37,264	143	5,328,752
7.08	Concrete Barrier	M	0	3,663	0
7.09	Street Tree	EACH	6,473	467	3,022,891
7.10	Street Lighting Unit	EACH	77	46,730	3,598,210
7.11	Street Lighting Control Panel	EACH	2	58,413	116,826
7.12	Traffic Signal Unit	EACH	6	35,048	210,288
7.13	Traffic Signal Control Panel	EACH	4	414,373	1,657,492
8.01	Toll Gate	EACH	2	934,603	1,869,206
8.02	Toll Office	EACH	1	1,331,128	1,331,128
	TOTAL				2,648,614,583

Southern Section of Khulna Bypass
 Operation and Maintenance Costs
 Section : ALT 1-2 L=10.1 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	1,611		1,611		
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 Backup-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				14,866		
2. Maintenance Cost						
2.1 Inspection						
1) Periodic				237		
2) Routine				554		
Sub-total				791		
2.2 Road & Drainage Cleaning				1,459		
2.3 Mowing				271		
2.4 Repair of Traffic Safety Facilities				142		
2.5 Pavement						
1) Routine Maintenance				607		
2) Marking				260		
3) Overlay					16,537	7 years interval
Sub-total				867		
2.6 Bridge				4,686		
2.7 Embankment				813		
2.8 Street Lighting				72		
Total of 2				9,099.3	16,537.0	
Grand Total				14,866	3,519	16,537

NAME OF LINK
NAME OF SEGMENT
STATION
ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
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) General	278.7
2) Earthwork	266.4
3) Drainage	483.3
4) Pavement	289.6
5) Bridge	1,703.9
6) Structural Steel	0.0
7) Incidental Work	31.6
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	306.6
3. Construction Cost (total of 1. & 2.)	3,372.5
4. Land Acquisition and Compensation	92.9
5. Engineering Services	101.2
6. Supervisory Services	134.9
Total	3,701.4

NAME OF LINK
NAME OF SEGMENT
ALTERNATIVE : ALT 1-3

SOUTHERN SECTION OF KHULNA BYPASS
SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
STA 17+600 - STA 27+700

AT 1998 PRICES

ITEM NO	DESCRIPTION	UNIT	QUANTITY	UNIT COST (Tk.)	COST (Tk.)
2.01	Site Clearing	M2	346,476	29	10,047,804
2.02	Borrow Material	M3	562,222	169	95,015,518
2.03	Free-Draining Material	M3	167,487	258	43,211,646
2.04	Pre-mixable Backfill	M3	15,645	1,286	20,119,470
2.05	Structure Excavation Up To 2m	M3	341	88	30,008
2.06	Structure Excavation Over 2m	M3	27,808	3,524	97,995,392
3.01	R.C. Pipe D=30cm	M	0	2,587	0
3.02	R.C. Pipe D=60cm	M	2,910	6,469	18,824,790
3.03	R.C. Pipe D=120cm	M	34	14,232	483,888
3.04	U-Ditch	M	8,560	2,198	18,814,880
3.05	Inlet	EACH	171	17,980	3,074,580
3.06	RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	26	55,194	1,435,044
3.07	RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	182	183,980	33,484,360
3.08	RC Box Culvert, 5.0m (H) x 10.0m (w)	M	234	367,960	86,102,640
3.09	Tributary Bridge	M2	4,680	43,700	204,516,000
3.10	Mortared Rubble Paved Waterway	M2	2,200	1,402	3,084,400
3.11	River Revetment	M2	68,000	1,669	113,492,000
4.01	Subgrade Preparation	M2	163,493	12	1,961,916
4.02	Granular Subbase	M3	33,420	2,167	72,421,140
4.03	Mechanical Stabilized Base	M3	24,581	3,308	81,313,948
4.04	Bituminous Prime Coat/Tack Coat	Litre	259,585	33	8,566,305
4.05	Asphalt Treated Base Course (t=10cm)	M2	119,585	772	92,319,620
4.06	Asphalt Concrete Surface (t=6cm)	M2	69,886	473	33,056,078
4.07	Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
5.01	Asphalt Concrete on Bridge Surface (t=6cm)	M2	11,560	506	5,849,360
5.02	Offshore Temporary Staging	M2	960	40,738	39,108,480
5.03	Cofferdam Construction and Dismantling	M2	3,494	68,466	239,220,204
5.04	Structure Excavation	M3	3,505	3,524	12,351,620
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	4,837	78,112	377,827,744
5.07	Cast - In - Place Concrete Pile (D = 1,000mm)	M	5,957	35,385	210,788,445
5.08	Structural Concrete (High Design Strength)	M3	9,933	18,463	183,392,979
5.09	Structural Concrete (Low Design Strength)	M3	19,961	10,626	212,105,586
5.10	Reinforcing Steel, Deformed	TON	4,566	51,155	233,573,730
5.11	Prestressing Steel	TON	740	125,000	92,500,000
5.12	Structural Concrete in PC I-Girder	M3	3,359	18,995	63,804,205
5.13	Ancillary Works on Bridge	L.S		33,410,447	33,410,447
6.01	Structural Members	TON	0	46,529	0
7.01	Solid Sodding	M2	113,356	23	2,607,188
7.02	Guardrail	M	1,000	2,107	2,107,000
7.03	Regulatory & Warning Sign	EACH	68	5,841	397,188
7.04	Guide Sign	EACH	24	257,016	6,168,384
7.05	Road Marking	M2	5,136	294	1,509,984
7.06	Concrete Curb	M	0	304	0
7.07	Brick Paving	M2	37,264	143	5,328,752
7.08	Concrete Barrier	M	1,320	3,663	4,835,160
7.09	Street Tree	EACH	6,473	467	3,022,891
7.10	Street Lighting Unit	EACH	77	46,730	3,598,210
7.11	Street Lighting Control Panel	EACH	2	58,413	116,826
7.12	Traffic Signal Unit	EACH	6	35,048	210,288
7.13	Traffic Signal Control Panel	EACH	4	414,373	1,657,492
8.01	Toll Gate	EACH	2	934,603	1,869,206
8.02	Toll Office	EACH	1	1,331,128	1,331,128
TOTAL					2,787,149,724

Southern Section of Khuina Bypass
 Operation and Maintenance Costs
 Section : ALT 1-3 L=10.1 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	1,611		1,611		
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 Backup-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				250		
2) Routine				583		
Sub-total				832		
2.2 Road & Drainage Cleaning				1,450		
2.3 Mowing				261		
2.4 Repair of Traffic Safety Facilities				158		
2.5 Pavement						
1) Routine Maintenance				608		
2) Marking				261		
3) Overlay					16,528	7 years interval
Sub-total				869		
2.6 Bridge				5,112		
2.7 Embankment				799		
2.8 Street Lighting				72		
Total of 2			3,519	9,552.9	16,528.0	
Grand Total				14,866	9,553	16,528

NAME OF LINK
 NAME OF SEGMENT
 STATION
 ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
 SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
 STA 17+600 - STA 27+700
 ALT I-4

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	3,295.5
1) General	299.6
2) Earthwork	264.9
3) Drainage	484.4
4) Pavement	271.7
5) Bridge	1,933.6
6) Structural Steel	0.0
7) Incidental Work	29.0
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	329.5
3. Construction Cost (total of 1. & 2.)	3,625.0
4. Land Acquisition and Compensation	92.9
5. Engineering Services	108.8
6. Supervisory Services	145.0
Total	3,971.7

SOUTHERN SECTION OF KHULNA BYPASS
SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
STA 17+600 - STA 27+700

ALTERNATIVE : ALT 1-4

AT 1998 PRICES

DESCRIPTION	UNIT	QUANTITY	AT 1998 PRICES	
			UNIT COST (Tk.)	COST (Tk.)
Site Clearing	M2	339,785	29	9,853,765
Borrow Material	M3	554,314	169	93,679,066
Free-Draining Material	M3	165,395	258	42,671,910
Permeable Backfill	M3	16,014	1,286	20,594,004
Structure Excavation Up To 2m	M3	1,023	88	90,024
Structure Excavation Over 2m	M3	27,808	3,524	97,995,392
R.C. Pipe D=30cm	M	0	2,587	0
R.C. Pipe D=60cm	M	2,781	6,469	17,990,289
R.C. Pipe D=120cm	M	34	14,232	483,888
U-Ditch	M	8,180	2,198	17,979,640
Inlet	EACH	164	17,980	2,948,720
RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	78	55,194	4,305,132
RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	182	183,980	33,484,360
RC Box Culvert, 5.0m (H) x 10.0m (w)	M	234	367,960	86,102,640
Tributary Bridge	M2	4,680	43,700	204,516,000
Mortared Rubble Paved Waterway	M2	2,200	1,402	3,084,400
River Revetment	M2	68,000	1,669	113,492,000
Subgrade Preparation	M2	155,217	12	1,862,604
Granular Subbase	M3	31,351	2,167	67,937,617
Mechanical Stabilized Base	M3	22,977	3,308	76,007,916
Bituminous Prime Coat/Tack Coat	Litre	245,255	33	8,093,415
Asphalt Treated Base Course (t=10cm)	M2	111,715	772	86,243,980
Asphalt Concrete Surface (t=6cm)	M2	66,770	473	31,582,210
Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
Asphalt Concrete on Bridge Surface (t=6cm)	M2	11,560	506	5,849,360
Offshore Temporary Staging	M2	960	40,738	39,108,480
Cofferdam Construction and Dismantling	M2	4,411	68,466	302,093,526
Structure Excavation	M3	2,542	3,524	8,958,008
Cast - In - Place Concrete Pile (D = 2,000mm)	M	0	138,570	0
Cast - In - Place Concrete Pile (D = 1,500mm)	M	6,106	78,112	476,951,872
Cast - In - Place Concrete Pile (D = 1,000mm)	M	4,320	35,385	152,863,200
Structural Concrete (High Design Strength)	M3	12,538	18,463	231,489,094
Structural Concrete (Low Design Strength)	M3	22,009	10,626	233,867,634
Reinforcing Steel, Deformed	TON	5,724	51,155	292,811,220
Prestressing Steel	TON	844	125,000	105,500,000
Structural Concrete in PC I-Girder	M3	2,436	18,995	46,271,820
Ancillary Works on Bridge	L.S		37,913,484	37,913,484
Structural Members	TON	0	46,529	0
Solid Sodding	M2	113,163	23	2,602,749
Guardrail	M	1,720	2,107	3,624,040
Regulatory & Warning Sign	EACH	65	5,841	379,665
Guide Sign	EACH	24	257,016	6,168,384
Road Marking	M2	4,908	294	1,442,952
Concrete Curb	M	0	304	0
Brick Paving	M2	37,264	143	5,328,752
Concrete Barrier	M	0	3,663	0
Street Tree	EACH	6,444	467	3,009,348
Street Lighting Unit	EACH	96	46,730	4,486,080
Street Lighting Control Panel	EACH	2	58,413	116,826
Traffic Signal Unit	EACH	6	35,048	210,288
Traffic Signal Control Panel	EACH	4	414,373	1,657,492
Toll Gate	EACH	2	934,603	1,869,206
Toll Office	EACH	1	1,331,128	1,331,128
TOTAL				2,995,899,380

Southern Section of Khuina Bypass
 Operation and Maintenance Costs
 Section : ALT 1-4 L=10.1 KM

Unit : x 1,000 Tk.

	Initial Investment		Annual Running Cost	Maintenance Cost		Remarks
	Quantity	Unit Cost		Routine	Periodic	
1. Operation Cost						
1.1 Facilities Construction						
1) Toll Collection Office	1	1,611				
2) Toll Plaza	2	5,497				
3) Toll Gate	2	1,131				
Sub-total		14,866				
1.2 Office Expenditure						
1) Personnel Expenses			1,140			Refer to Backup-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			
2. Maintenance Cost						
2.1 Inspection						
1) Periodic				269		
2) Routine				627		
Sub-total				896		
2.2 Road & Drainage Cleaning						
Sub-total				1,453		
2.3 Mowing				260		
Sub-total				145		
2.4 Repair of Traffic Safety Facilities						
2.5 Pavement						
1) Routine Maintenance				571		
2) Marking				245		
3) Overlay					15,791	7 years interval
Sub-total				815		
2.6 Bridge				5,801		
2.7 Embankment				795		
2.8 Street Lighting				90		
Total of 2			3,519	10,254.7	15,791.1	
Grand Total		14,866	3,519	10,255	15,791	

NAME OF LINK
NAME OF SEGMENT
STATION
ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
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) General	321.0
2) Earthwork	263.8
3) Drainage	483.3
4) Pavement	405.4
5) Bridge	1,982.0
6) Structural Steel	0.0
7) Incidental Work	63.3
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	353.1
3. Construction Cost (total of 1. & 2.)	3,884.3
4. Land Acquisition and Compensation	92.9
5. Engineering Services	116.5
6. Supervisory Services	155.4
Total	4,249.1

NAME OF LINK
NAME OF SEGMENT
ALTERNATIVE : ALT 1-5

SOUTHERN SECTION OF KHULNA BYPASS
SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
STA 17+600 - STA 27+700

AT 1998 PRICES

ITEM NO	DESCRIPTION	UNIT	QUANTITY	AT 1998 PRICES	
				UNIT COST (Tk.)	COST (Tk.)
2.01	Site Clearing	M2	349,641	29	10,139,589
2.02	Borrow Material	M3	544,036	169	91,942,084
2.03	Free-Draining Material	M3	169,070	258	43,620,060
2.04	Pre-cable Backfill	M3	15,645	1,286	20,119,470
2.05	Structure Excavation Up To 2m	M3	341	88	30,008
2.06	Structure Excavation Over 2m	M3	27,808	3,524	97,995,392
3.01	R.C. Pipe D=30cm	M	0	2,587	0
3.02	R.C. Pipe D=60cm	M	2,910	6,469	18,824,790
3.03	R.C. Pipe D=120cm	M	34	14,232	483,888
3.04	U-Ditch	M	8,560	2,198	18,814,880
3.05	Inlet	EACH	171	17,980	3,074,580
3.06	RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	26	55,194	1,435,044
3.07	RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	182	183,980	33,484,360
3.08	RC Box Culvert, 5.0m (H) x 10.0m (w)	M	234	367,960	86,102,640
3.09	Tributary Bridge	M2	4,680	43,700	204,516,000
3.10	Mortared Rubble Paved Waterway	M2	2,200	1,402	3,084,400
3.11	River Revetment	M2	68,000	1,669	113,492,000
4.01	Subgrade Preparation	M2	204,768	12	2,457,216
4.02	Granular Subbase	M3	43,738	2,167	94,780,246
4.03	Mechanical Stabilized Base	M3	32,835	3,308	108,618,180
4.04	Bituminous Prime Coat/Tack Coat	Litre	420,977	33	13,892,241
4.05	Asphalt Treated Base Course (t=10cm)	M2	160,855	772	124,180,060
4.06	Asphalt Concrete Surface (t=6cm)	M2	130,061	473	61,518,853
4.07	Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
5.01	Asphalt Concrete on Bridge Surface (t=6cm)	M2	21,080	506	10,666,480
5.02	Offshore Temporary Staging	M2	960	40,738	39,108,480
5.03	Cofferdam Construction and Dismantling	M2	4,058	68,466	277,835,028
5.04	Structure Excavation	M3	4,115	3,524	14,501,260
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	5,617	78,112	438,755,104
5.07	Cast - In - Place Concrete Pile (D = 1,000mm)	M	6,994	35,385	247,482,690
5.08	Structural Concrete (High Design Strength)	M3	11,535	18,463	212,970,705
5.09	Structural Concrete (Low Design Strength)	M3	23,256	10,626	247,118,256
5.10	Reinforcing Steel, Deformed	TON	5,318	51,155	272,042,290
5.11	Prestressing Steel	TON	862	125,000	107,750,000
5.12	Structural Concrete in PC I-Girder	M3	3,944	18,995	74,916,280
5.13	Ancillary Works on Bridge	L.S		38,862,931	38,862,931
6.01	Structural Members	TON	0	46,529	0
7.01	Solid Sodding	M2	113,356	23	2,607,188
7.02	Guardrail	M	1,000	2,107	2,107,000
7.03	Regulatory & Warning Sign	EACH	68	5,841	397,188
7.04	Guide Sign	EACH	24	257,016	6,168,384
7.05	Road Marking	M2	5,136	294	1,509,984
7.06	Concrete Curb	M	17,120	304	5,204,480
7.07	Brick Paving	M2	37,264	143	5,328,752
7.08	Concrete Barrier	M	8,560	3,663	31,355,280
7.09	Street Tree	EACH	6,473	467	3,022,891
7.10	Street Lighting Unit	EACH	77	46,730	3,598,210
7.11	Street Lighting Control Panel	EACH	2	58,413	116,826
7.12	Traffic Signal Unit	EACH	6	35,048	210,288
7.13	Traffic Signal Control Panel	EACH	4	414,373	1,657,492
8.01	Toll Gate	EACH	2	934,603	1,869,206
8.02	Toll Office	EACH	1	1,331,128	1,331,128
	TOTAL				3,210,185,582

Southern Section of Khuina Bypass
 Operation and Maintenance Costs
 Section : ALT 1-5 L=10.1 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	1,611	1,611			
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			14,866			
2. Maintenance Cost						
2.1 Inspection						
1) Periodic				288		
2) Routine				672		
Sub-total				959		
2.2 Road & Drainage Cleaning				1,450		
2.3 Mowing				261		
2.4 Repair of Traffic Safety Facilities				316		
2.5 Pavement						
1) Routine Maintenance				851		
2) Marking				365		
3) Overlay					30,759	7 years interval
Sub-total				1,216		
2.6 Bridge				5,948		
2.7 Embankment				782		
2.8 Street Lighting				72		
Total of 2				11,012.3		30,759.4
Grand Total			14,866	11,012.3		30,759.4

NAME OF LINK
NAME OF SEGMENT
STATION
ALTERNATIVE

SOUTHERN SECTION OF KHULNA BYPASS
SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
STA 17+600 - STA 27+700
ALT 1-6 (I=1%)

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	6,063.7
1) General	551.2
2) Earthwork	248.1
3) Drainage	342.6
4) Pavement	211.4
5) Bridge	4,665.3
6) Structural Steel	0.0
7) Incidental Work	32.7
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	606.4
3. Construction Cost (total of 1. & 2.)	6,670.1
4. Land Acquisition and Compensation	92.9
5. Engineering Services	200.1
6. Supervisory Services	266.8
Total	7,229.9

SOUTHERN SECTION OF KHULNA BYPASS
SECTION : SATKHIRA ROAD - KHULNA-MONGLA ROAD
STA 17+600 - STA 27+700

ALTERNATIVE : ALT 1-6 (I = 1%)

AT 1998 PRICES

DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
			(Tk.)	(Tk.)
Site Clearing	M2	377,277	29	10,941,033
Borrow Material	M3	654,432	169	110,599,008
Free-Draining Material	M3	184,053	258	47,485,674
Premeable Backfill	M3	10,497	1,286	13,499,142
Structure Excavation Up To 2m	M3	341	88	30,008
Structure Excavation Over 2m	M3	18,610	3,524	65,581,640
R.C. Pipe D=30cm	M	0	2,587	0
R.C. Pipe D=60cm	M	2,088	6,469	13,507,272
R.C. Pipe D=120cm	M	34	14,232	483,888
U-Ditch	M	6,140	2,198	13,495,720
Inlet	EACH	123	17,980	2,211,540
RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	26	55,194	1,435,044
RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	130	183,980	23,917,400
RC Box Culvert, 5.0m (H) x 10.0m (w)	M	156	367,960	57,401,760
Tributary Bridge	M2	2,600	43,700	113,620,000
Mortared Rubble Paved Waterway	M2	2,200	1,402	3,084,400
River Revetment	M2	68,000	1,669	113,492,000
Subgrade Preparation	M2	128,187	12	1,538,244
Granular Subbase	M3	24,594	2,167	53,295,198
Mechanical Stabilized Base	M3	17,714	3,308	58,597,912
Bituminous Prime Coat/Tack Coat	Litre	188,299	33	6,213,867
Asphalt Treated Base Course (t=10cm)	M2	88,215	772	68,101,980
Asphalt Concrete Surface (t=6cm)	M2	50,042	473	23,669,866
Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
Asphalt Concrete on Bridge Surface (t=6cm)	M2	32,470	506	16,429,820
Offshore Temporary Staging	M2	960	40,738	39,108,480
Cofferdam Construction and Dismantling	M2	4,411	68,466	302,003,526
Structure Excavation	M3	24,224	3,524	85,365,376
Cast - In - Place Concrete Pile (D = 2,000mm)	M	0	138,570	0
Cast - In - Place Concrete Pile (D = 1,500mm)	M	6,106	78,112	476,951,872
Cast - In - Place Concrete Pile (D = 1,000mm)	M	41,175	35,385	1,456,977,375
Structural Concrete (High Design Strength)	M3	12,538	18,463	231,489,094
Structural Concrete (Low Design Strength)	M3	58,822	10,626	625,042,572
Reinforcing Steel, Deformed	TON	12,979	51,155	663,940,745
Prestressing Steel	TON	1,884	125,000	235,500,000
Structural Concrete in PC I-Girder	M3	23,218	18,995	441,025,910
Ancillary Works on Bridge	L.S		91,476,695	91,476,695
Structural Members	TON	0	46,529	0
Solid Sodding	M2	112,589	23	2,589,547
Guardrail	M	1,720	2,107	3,624,040
Regulatory & Warning Sign	EACH	49	5,841	286,209
Guide Sign	EACH	24	257,016	6,168,384
Road Marking	M2	3,684	294	1,083,096
Concrete Curb	M	0	304	0
Brick Paving	M2	37,264	143	5,328,752
Concrete Barrier	M	0	3,663	0
Street Tree	EACH	4,836	467	2,258,412
Street Lighting Unit	EACH	198	46,730	9,252,540
Street Lighting Control Panel	EACH	4	58,413	233,652
Traffic Signal Unit	EACH	6	35,048	210,288
Traffic Signal Control Panel	EACH	4	414,373	1,657,492
Toll Gate	EACH	2	934,603	1,869,206
Toll Office	EACH	1	1,331,128	1,331,128
TOTAL				5,512,492,607

Southern Section of Khulna Bypass
Operation and Maintenance Costs
Section : ALT 1-6 L=10.1 KM

Unit : x 1,000 Tk.

	Initial Investment		Annual Running Cost	Maintenance Cost		Remarks
	Quantity	Unit Cost		Routine	Periodic	
1. Operation Cost						
1.1 Facilities Construction						
1) Toll Collection Office	1	1,611				
2) Toll Plaza	2	5,497				
3) Toll Gate	2	1,131				
Sub-total		14,866				
1.2 Office Expenditure						
1) Personnel Expenses			1,140			Refer to Backup-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						
Sub-total		0	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			
2. Maintenance Cost						
2.1 Inspection						
1) Periodic				495		
2) Routine				1,156		
Sub-total				1,651		
2.2 Road & Drainage Cleaning						
2.3 Mowing				1,028		
2.4 Repair of Traffic Safety Facilities				259		
2.5 Pavement				163		
1) Routine Maintenance				444		
2) Marking				190		
3) Overlay					11,835	7 years interval
Sub-total				634		
2.6 Bridge				13,996		
2.7 Embankment				744		
2.8 Street Lighting				185		
Total of 2			3,519	18,660.8	11,834.9	
Grand Total		14,866	3,519	18,661	11,835	

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 3-1

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	4,048.7
1) General	368.1
2) Earthwork	218.7
3) Drainage	505.0
4) Pavement	552.0
5) Bridge	2,346.3
6) Structural Steel	0.0
7) Incidental Work	46.5
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	404.9
3. Construction Cost (total of 1. & 2.)	4,453.6
4. Land Acquisition and Compensation	275.2
5. Engineering Services	133.6
6. Supervisory Services	178.1
Total	5,040.6

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

ALTERNATIVE : ALT 3-1

AT 1998 PRICES

DESCRIPTION	UNIT	QUANTITY	COST	
			UNIT COST (Tk.)	COST (Tk.)
Site Clearing	M2	621,098	29	18,011,842
Borrow Material	M3	546,306	169	92,325,714
Free-Draining Material	M3	301,680	258	77,833,440
Preneable Backfill	M3	6,485	1,286	8,339,710
Structure Excavation Up To 2m	M3	5,665	88	498,520
Structure Excavation Over 2m	M3	6,143	3,524	21,647,932
R.C. Pipe D=30cm	M	0	2,587	0
R.C. Pipe D=60cm	M	5,933	6,469	38,380,577
R.C. Pipe D=120cm	M	565	14,232	8,041,080
U-Ditch	M	17,450	2,198	38,355,100
Inlet	EACH	349	17,980	6,275,020
RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	432	55,194	23,843,808
RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	104	183,980	19,133,920
RC Box Culvert, 5.0m (H) x 10.0m (w)	M	26	367,960	9,566,960
Tributary Bridge	M2	0	43,700	0
Mortared Rubble Paved Waterway	M2	14,940	1,402	20,945,880
River Revetment	M2	204,000	1,669	340,476,000
Subgrade Preparation	M2	315,654	12	3,787,848
Granular Subbase	M3	63,655	2,167	137,940,385
Mechanical Stabilized Base	M3	46,591	3,308	154,123,028
Bituminous Prime Coat/Tack Coat	Litre	500,116	33	16,503,828
Asphalt Treated Base Course (t=10cm)	M2	226,550	772	174,896,600
Asphalt Concrete Surface (t=6cm)	M2	136,783	473	64,698,359
Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
Asphalt Concrete on Bridge Surface (t=6cm)	M2	22,525	506	11,397,650
Offshore Temporary Staging	M2	1,815	40,738	73,939,470
Cofferdam Construction and Dismantling	M2	4,476	68,466	306,453,816
Structure Excavation	M3	5,083	3,524	17,912,492
Cast - In - Place Concrete Pile (D = 2,000mm)	M	0	138,570	0
Cast - In - Place Concrete Pile (D = 1,500mm)	M	7,488	78,112	584,902,656
Cast - In - Place Concrete Pile (D = 1,000mm)	M	8,768	35,385	310,255,680
Structural Concrete (High Design Strength)	M3	12,939	18,463	238,892,757
Structural Concrete (Low Design Strength)	M3	23,963	10,626	254,630,838
Reinforcing Steel, Deformed	TON	5,686	51,155	290,867,330
Prestressing Steel	TON	948	125,000	118,500,000
Structural Concrete in PC I-Girder	M3	4,872	18,995	92,543,640
Ancillary Works on Bridge	L.S		46,005,927	46,005,927
Structural Members	TON	0	46,529	0
Solid Sodding	M2	140,354	23	3,228,142
Guardrail	M	1,860	2,107	3,919,020
Regulatory & Warning Sign	EACH	140	5,841	817,740
Guide Sign	EACH	44	257,016	11,308,704
Road Marking	M2	10,470	294	3,078,180
Concrete Curb	M	0	304	0
Brick Paving	M2	76,292	143	10,909,756
Concrete Barrier	M	0	3,663	0
Street Tree	EACH	9,300	467	4,343,100
Street Lighting Unit	EACH	133	46,730	6,215,090
Street Lighting Control Panel	EACH	3	58,413	175,239
Traffic Signal Unit	EACH	11	35,048	385,528
Traffic Signal Control Panel	EACH	5	414,373	2,071,865
Toll Gate	EACH	2	934,603	1,869,206
Toll Office	EACH	1	1,331,128	1,331,128
TOTAL				3,680,666,305

Khulna Bypass (Eastern Route)
Operation and Maintenance Costs
Section : ALT 3-1 L=20.1 KM

Unit : x 1,000 Tk.

	Initial Investment		Annual Running Cost	Maintenance Cost		Remarks
	Quantity	Unit Cost		Routine	Periodic	
1. Operation Cost						
1.1 Facilities Construction						
1) Toll Collection Office	1	1,611				
2) Toll Plaza	2	5,497				
3) Toll Gate	2	1,131				
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						
Sub-total		0	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			
2. Maintenance Cost						
2.1 Inspection						
1) Periodic				330		
2) Routine				770		
Sub-total				1,101		
2.2 Road & Drainage Cleaning				1,515		
2.3 Mowing				323		
2.4 Repair of Traffic Safety Facilities				232		
2.5 Pavement						
1) Routine Maintenance				1,159		
2) Marking				497		
3) Overlay					32,349	7 years interval
Sub-total				1,656		
2.6 Bridge				7,039		
2.7 Embankment				656		
2.8 Street Lighting				124		
Total of 2				12,645.7		
Grand Total			3,519	12,646		
						32,349.2
						32,349

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 3-2

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	4,849.1
1) General	440.8
2) Earthwork	237.4
3) Drainage	513.6
4) Pavement	586.8
5) Bridge	3,006.6
6) Structural Steel	0.0
7) Incidental Work	51.5
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	484.9
3. Construction Cost (total of 1. & 2.)	5,334.0
4. Land Acquisition and Compensation	275.2
5. Engineering Services	160.0
6. Supervisory Services	213.4
Total	5,982.6

NAME OF LINK
NAME OF SEGMENT
ALTERNATIVE : ALT 3-2

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.)
1	2.01 Site Clearing	M2	661,447	29	19,181,963
2	2.02 Borrow Material	M3	625,002	169	105,625,338
3	2.03 Free-Draining Material	M3	311,988	258	80,492,904
4	2.04 Premeable Backfill	M3	7,594	1,286	9,765,884
5	2.05 Structure Excavation Up To 2m	M3	7,711	88	678,568
6	2.06 Structure Excavation Over 2m	M3	6,143	3,524	21,647,932
7	3.01 R.C. Pipe D=30cm	M	0	2,587	0
8	3.02 R.C. Pipe D=60cm	M	5,933	6,469	38,380,577
9	3.03 R.C. Pipe D=120cm	M	565	14,232	8,041,080
10	3.04 U-Ditch	M	17,450	2,198	38,355,100
11	3.05 Inlet	EACH	349	17,980	6,275,020
12	3.06 RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	588	55,194	32,454,072
13	3.07 RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	104	183,980	19,133,920
14	3.08 RC Box Culvert, 5.0m (H) x 10.0m (w)	M	26	367,960	9,566,960
15	3.09 Tributary Bridge	M2	0	43,700	0
16	3.10 Mortarcd Rubble Paved Waterway	M2	14,940	1,402	20,945,880
17	3.11 River Revetment	M2	204,000	1,669	340,476,000
18	4.01 Subgrade Preparation	M2	331,644	12	3,979,728
19	4.02 Granular Subbase	M3	67,653	2,167	146,604,051
20	4.03 Mechanical Stabilized Base	M3	49,812	3,308	164,778,096
21	4.04 Bituminous Prime Coat/Tack Coat	Litre	525,690	33	17,347,770
22	4.05 Asphalt Treated Base Course (t=10cm)	M2	242,410	772	187,140,520
23	4.06 Asphalt Concrete Surface (t=6cm)	M2	141,640	473	66,995,720
24	4.07 Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
25	5.01 Asphalt Concrete on Bridge Surface (t=6cm)	M2	22,525	506	11,397,650
26	5.02 Offshore Temporary Staging	M2	1,815	40,738	73,939,470
27	5.03 Cofferdam Construction and Dismantling	M2	5,818	68,466	398,335,188
28	5.04 Structure Excavation	M3	6,466	3,524	22,786,184
29	5.05 Cast - In - Place Concrete Pile (D = 2,000mm)	M	0	138,570	0
30	5.06 Cast - In - Place Concrete Pile (D = 1,500mm)	M	9,734	78,112	760,342,208
31	5.07 Cast - In - Place Concrete Pile (D = 1,000mm)	M	11,153	35,385	394,648,905
32	5.08 Structural Concrete (High Design Strength)	M3	16,822	18,463	310,584,586
33	5.09 Structural Concrete (Low Design Strength)	M3	30,923	10,626	328,587,798
34	5.10 Reinforcing Steel, Deformed	TON	7,346	51,155	375,784,630
35	5.11 Prestressing Steel	TON	1,228	125,000	153,500,000
36	5.12 Structural Concrete in PC I-Girder	M3	6,197	18,995	117,712,015
37	5.13 Ancillary Works on Bridge	L.S		58,952,373	58,952,373
38	6.01 Structural Members	TON	0	46,529	0
39	7.01 Solid Sodding	M2	162,891	23	3,746,493
40	7.02 Guardrail	M	4,020	2,107	8,470,140
41	7.03 Regulatory & Warning Sign	EACH	140	5,841	817,740
42	7.04 Guide Sign	EACH	44	257,016	11,308,704
43	7.05 Road Marking	M2	10,470	294	3,078,180
44	7.06 Concrete Curb	M	0	304	0
45	7.07 Brick Paving	M2	76,292	143	10,909,756
46	7.08 Concrete Barrier	M	0	3,663	0
47	7.09 Street Tree	EACH	9,300	467	4,343,100
48	7.10 Street Lighting Unit	EACH	133	46,730	6,215,090
49	7.11 Street Lighting Control Panel	EACH	3	58,413	175,239
50	7.12 Traffic Signal Unit	EACH	11	35,048	385,528
51	7.13 Traffic Signal Control Panel	EACH	5	414,373	2,071,865
52	8.01 Toll Gate	EACH	2	934,603	1,869,206
53	8.02 Toll Office	EACH	1	1,331,128	1,331,128
	TOTAL				4,408,246,059

Khulna Bypass (Eastern Route)
 Operation and Maintenance Costs
 Section : ALT 3-2 L=20.1 KM

Unit : x 1,000 Tk

	Initial Investment		Annual Running Cost	Maintenance Cost		Remarks
	Quantity	Unit Cost		Routine	Periodic	
1. Operation Cost.						
1.1 Facilities Construction						
1) Toll Collection Office	1	1,611				
2) Toll Plaza	2	5,497				
3) Toll Gate	2	1,131				
Sub-total		14,866				
1.2 Office Expenditure						
1) Personnel Expenses			1,140			Refer to Backup-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		14,866	3,519			
2. Maintenance Cost						
2.1 Inspection						
1) Periodic				396		
2) Routine				923		
Sub-total				1,319		
2.2 Road & Drainage Cleaning						
2.3 Mowing						
2.4 Repair of Traffic Safety Facilities						
2.5 Pavement						
1) Routine Maintenance				1,232		
2) Marking				528		
3) Overlay						7 years interval
Sub-total				1,761		
2.6 Bridge						
2.7 Embankment						
2.8 Street Lighting						
Sub-total				9,020		
Sub-total				712		
Sub-total				124		
Sub-total				15,108.7		
Total of 2		14,866	3,519	15,109	33,498	
Grand Total						

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 3-3

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	5,118.1
1) General	465.3
2) Earthwork	227.3
3) Drainage	505.0
4) Pavement	567.7
5) Bridge	3,279.3
6) Structural Steel	0.0
7) Incidental Work	61.2
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	511.8
3. Construction Cost (total of 1. & 2.)	5,629.9
4. Land Acquisition and Compensation	275.2
5. Engineering Services	168.9
6. Supervisory Services	225.2
Total	6,299.2

NAME OF LINK
NAME OF SEGMENT
ALTERNATIVE : ALT 3-3

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

AT 1998 PRICES

ITEM NO	DESCRIPTION	UNIT	QUANTITY	COST	
				UNIT COST (Tk.)	COST (Tk.)
2.01	Site Clearing	M2	647,875	29	18,788,375
2.02	Borrow Material	M3	572,687	169	96,784,103
2.03	Free-Draining Material	M3	315,069	258	81,287,802
2.04	Pre-mix 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	323,454	12	3,881,448
4.02	Granular Subbase	M3	65,605	2,167	142,166,035
4.03	Mechanical Stabilized Base	M3	48,151	3,308	159,283,508
4.04	Bituminous Prime Coat/Tack Coat	Litre	507,916	33	16,761,228
4.05	Asphalt Treated Base Course (t=10cm)	M2	234,350	772	180,918,200
4.06	Asphalt Concrete Surface (t=6cm)	M2	136,783	473	64,698,359
4.07	Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
5.01	Asphalt Concrete on Bridge Surface (t=6cm)	M2	22,525	506	11,397,650
5.02	Offshore Temporary Staging	M2	1,815	40,738	73,939,470
5.03	Cofferdam Construction and Dismantling	M2	6,383	68,466	437,018,478
5.04	Structure Excavation	M3	7,010	3,524	24,703,240
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	10,678	78,112	834,079,936
5.07	Cast - In - Place Concrete Pile (D = 1,000mm)	M	12,092	35,385	427,875,420
5.08	Structural Concrete (High Design Strength)	M3	18,451	18,463	340,660,813
5.09	Structural Concrete (Low Design Strength)	M3	33,785	10,626	358,999,410
5.10	Reinforcing Steel, Deformed	TON	8,031	51,155	410,825,805
5.11	Prestressing Steel	TON	1,343	125,000	167,875,000
5.12	Structural Concrete in PC I-Girder	M3	6,718	18,995	127,608,410
5.13	Ancillary Works on Bridge	L.S		64,299,673	64,299,673
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	0	304	0
7.07	Brick Paving	M2	76,292	143	10,909,756
7.08	Concrete Barrier	M	4,020	3,663	14,725,260
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					4,652,820,628

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

Unit : x 1,000 Tk.

	Initial Investment		Annual Running Cost	Maintenance Cost		Remarks
	Quantity	Unit Cost		Routine	Periodic	
1. Operation Cost						
1.1 Facilities Construction						
1) Toll Collection Office	1	1,611				
2) Toll Plaza	2	5,497				
3) Toll Gate	2	1,131				
Sub-total		14,866				
1.2 Office Expenditure						
1) Personnel Expenses			1,140			Refer to Backup-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						
Sub-total		0	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			
2. Maintenance Cost						
2.1 Inspection						
1) Periodic				418		
2) Routine				975		
Sub-total				1,392		
2.2 Road & Drainage Cleaning				1,515		
2.3 Mowing				323		
2.4 Repair of Traffic Safety Facilities				306		
2.5 Pavement						
1) Routine Maintenance				1,192		
2) Marking				511		7 years interval
3) Overlay				1,703	32,349	
Sub-total				9,838		
2.6 Bridge				682		
2.7 Embankment				124		
2.8 Street Lighting						
Total of 2						
			3,519	15,883.2	32,349.2	
Grand Total				15,883	32,349	

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 3-4

AT 1998 PRICES

Description	Financial Cost (Million Taka)
1. Direct Construction Cost	5,474.2
1) General	497.7
2) Earthwork	207.9
3) Drainage	510.0
4) Pavement	551.6
5) Bridge	3,647.0
6) Structural Steel	0.0
7) Incidental Work	47.7
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	547.4
3. Construction Cost (total of 1. & 2.)	6,021.6
4. Land Acquisition and Compensation	275.2
5. Engineering Services	180.6
6. Supervisory Services	240.9
Total	6,718.3

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

ALTERNATIVE : ALT 3-4

AT 1998 PRICES

DESCRIPTION	UNIT	QUANTITY	COST	
			UNIT COST (Tk.)	COST (Tk.)
Site Clearing	M2	624,286	29	18,104,294
Borrow Material	M3	479,722	169	81,073,018
Free-Draining Material	M3	297,356	258	76,717,848
Preneable Backfill	M3	7,552	1,286	9,711,872
Structure Excavation Up To 2m	M3	7,632	88	671,616
Structure Excavation Over 2m	M3	6,143	3,524	21,647,932
R.C. Pipe D=30cm	M	0	2,587	0
R.C. Pipe D=60cm	M	5,709	6,469	36,931,521
R.C. Pipe D=120cm	M	557	14,232	7,927,224
U-Ditch	M	16,770	2,198	36,860,460
Inlet	EACH	336	17,980	6,041,280
RC Box Culvert 2.5 m (H) x 3.0 m (w)	M	582	55,194	32,122,908
RC Box Culvert 5.0 m (H) x 5.0 m (w)	M	104	183,980	19,133,920
RC Box Culvert, 5.0m (H) x 10.0m (w)	M	26	367,960	9,566,960
Tributary Bridge	M2	0	43,700	0
Mortared Rubble Paved Waterway	M2	14,940	1,402	20,945,880
River Revetment	M2	204,000	1,669	340,476,000
Subgrade Preparation	M2	315,268	12	3,783,216
Granular Subbase	M3	63,559	2,167	137,732,353
Mechanical Stabilized Base	M3	46,577	3,308	154,076,716
Bituminous Prime Coat/Tack Coat	Litre	499,964	33	16,498,812
Asphalt Treated Base Course (t=10cm)	M2	226,480	772	174,842,560
Asphalt Concrete Surface (t=6cm)	M2	136,742	473	64,678,966
Concrete Pavement (t=30cm)	M2	2,850	3,188	9,085,800
Asphalt Concrete on Bridge Surface (t=6cm)	M2	22,525	506	11,397,650
Offshore Temporary Staging	M2	1,815	40,738	73,939,470
Cofferdam Construction and Dismantling	M2	8,056	68,466	551,562,096
Structure Excavation	M3	5,083	3,524	17,912,492
Cast - In - Place Concrete Pile (D = 2,000mm)	M	0	138,570	0
Cast - In - Place Concrete Pile (D = 1,500mm)	M	13,478	78,112	1,052,793,536
Cast - In - Place Concrete Pile (D = 1,000mm)	M	8,768	35,385	310,255,680
Structural Concrete (High Design Strength)	M3	23,291	18,463	430,021,733
Structural Concrete (Low Design Strength)	M3	36,619	10,626	389,113,494
Reinforcing Steel, Deformed	TON	8,930	51,155	456,814,150
Prestressing Steel	TON	1,513	125,000	189,125,000
Structural Concrete in PC I-Girder	M3	4,872	18,995	92,543,640
Ancillary Works on Bridge	L.S		71,509,579	71,509,579
Structural Members	TON	0	46,529	0
Solid Sodding	M2	138,630	23	3,188,490
Guardrail	M	1,860	2,107	3,919,020
Regulatory & Warning Sign	EACH	134	5,841	782,694
Guide Sign	EACH	44	257,016	11,308,704
Road Marking	M2	10,062	294	2,958,228
Concrete Curb	M	0	304	0
Brick Paving	M2	76,292	143	10,909,756
Concrete Barrier	M	0	3,663	0
Street Tree	EACH	9,106	467	4,252,502
Street Lighting Unit	EACH	166	46,730	7,757,180
Street Lighting Control Panel	EACH	3	58,413	175,239
Traffic Signal Unit	EACH	11	35,048	385,528
Traffic Signal Control Panel	EACH	5	414,373	2,071,865
Toll Gate	EACH	2	934,603	1,869,206
Toll Office	EACH	1	1,331,128	1,331,128
TOTAL				4,976,529,216

Khulna Bypass (Eastern Route)
Operation and Maintenance Costs
Section : ALT 3-4 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	1,611	1,611			
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						
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			14,866			
2. Maintenance Cost						
2.1 Inspection						
1) Periodic				510		
2) Routine				1,190		
Sub-total				1,700		
2.2 Road & Drainage Cleaning				1,530		
2.3 Mowing				372		
2.4 Repair of Traffic Safety Facilities				284		
2.5 Pavement						
1) Routine Maintenance				1,186		
2) Marking				508		
3) Overlay					32,231	7 years interval
Sub-total				1,694		
2.6 Bridge				12,868		
2.7 Embankment				715		
2.8 Street Lighting				155		
Total of 2				19,327.6		
Grand Total			14,866	19,328		32,231

NAME OF LINK
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ALTERNATIVE

EASTERN ROUTE OF KHULNA BYPASS
SECTION : CANTONMENT - KHULNA-MONGLA ROAD
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) General	546.8
2) Earthwork	223.5
3) Drainage	505.0
4) Pavement	791.7
5) Bridge	3,814.7
6) Structural Steel	0.0
7) Incidental Work	121.0
8) Toll Facilities	12.3
2. Physical Contingency (10% of 1.)	601.5
3. Construction Cost (total of 1. & 2.)	6,616.4
4. Land Acquisition and Compensation	275.2
5. Engineering Services	198.5
6. Supervisory Services	264.7
Total	7,354.8