

4. UNIT CONSTRUCTION COSTS

- (1) Unit Construction Cost of Bifurcation
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Table IX-4-1 Unit Construction Cost of Bifurcation

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
1. Type A						
- R.C.C.	m3	81.0	2,416	119	77	196
- C.C.	m3	4.2	1,829	5	3	8
- Form	m2	267	167	45	-	45
- Rein. bar	ton	6.5	24,610	78	82	160
- Brick masonry	m3	15.0	1,341	20	-	20
- Brick pitching	m2	242	171	41	-	41
- R.C.C. pile (300x300x5.0m)	nos	24	4,300	73	30	103
- Sheet pile	m2	30	3,977	11	108	119
- Gate (1.5x1.8m)	nos	2	108,000	173	43	216
- Miscel. work (15%)				85	51	136
(Total)				<u>650</u>	<u>394</u>	<u>1,044</u>
2. Type B						
- R.C.C.	m3	16.8	2,416	25	16	41
- C.C.	m3	2.2	1,829	3	1	4
- Form	m2	70.0	167	12	-	12
- Rein. bar	ton	1.4	24,610	17	17	34
- Brick masonry	m3	10.7	1,341	14	-	14
- Brick pitching	m2	150	171	26	-	26
- R.C.C. pile (300x300x5.0m)	nos	8	4,300	24	10	34
- Sheet pile	m2	15	3,977	6	54	60
- Gate (1.5x1.8m)	nos	1	108,000	86	22	108
- Miscel. work (15%)				32	18	50
(Total)				<u>245</u>	<u>138</u>	<u>383</u>

(continued)

<u>Work Item</u>	<u>Unit</u>	<u>Q'ty</u>	<u>Unit Price</u> (TK)	<u>Cost (× 1,000 Tk.)</u>		
				<u>L.C</u>	<u>F.C</u>	<u>Total</u>
3. Type C						
- R.C.C.	m3	1.9	2,416	3	2	5
- C.C.	m3	2.4	1,829	3	1	4
- Form	m2	15.0	167	3	-	3
- Rein. bar	ton	0.1	24,610	1	1	2
- Brick masonry	m3	4.2	1,341	6	-	6
- Brick pitching	m2	20.0	106	2	-	2
- R.C.C. pipe (φ800)	m	4.4	1,349	3	3	6
- Gate (1.0x1.0m)	nos	1	20,000	16	4	20
- Miscel. work (15%)				6	1	7
(Total)				<u>43</u>	<u>12</u>	<u>55</u>

Table IX-4-2

Unit Construction Cost of Check

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
1. Type A-1						
- R.C.C.	m3	530	2,416	776	504	1,280
- C.C.	m3	64.0	1,829	76	41	117
- Form	m2	815	167	136	-	136
- Reinf. bar	ton	37.1	24,610	446	467	913
- C.C. block	m3	57.6	1,900	80	29	109
- Brick masonry	m3	260	1,475	384	-	384
- Brick pitching	m2	650	171	111	-	111
- Sheet pile	m2	240	3,977	90	864	954
- R.C.C. pile (300x300x5.0m)	nos	70	4,300	214	87	301
- Gate(3.0x3.0m)	nos	4	1,080,000	3,456	864	4,320
- Miscel. work (15%)				865	428	1,293
(Total)				<u>6,634</u>	<u>3,284</u>	<u>9,918</u>
2. Type A-2						
- R.C.C.	m3	414	2,416	606	394	1,000
- C.C.	m3	52.8	1,829	63	34	97
- Form	m2	640	167	107	-	107
- Reinf. bar	ton	29.0	24,610	348	366	714
- C.C. block	m3	50.4	1,900	71	25	96
- Brick masonry	m3	180	1,475	266	-	266
- Brick pitching	m2	575	171	98	-	98
- Sheet pile	m2	192	3,977	73	691	764
- R.C.C. pile (300x300x5.0m)	nos	63	4,300	192	79	271
- Gate(2.5x2.0m)	nos	4	600,000	1,920	480	2,400
- Miscel. work (15%)				562	310	872
(Total)				<u>4,306</u>	<u>2,379</u>	<u>6,685</u>

(continued)

<u>Work Item</u>	<u>Unit</u>	<u>Q'ty</u>	<u>Unit Price</u> (TK)	<u>Cost (× 1,000 Tk)</u>		
				<u>L.C</u>	<u>F.C</u>	<u>Total</u>
3. Type B						
- R.C.C.	m3	86.5	2,416	127	82	209
- C.C.	m3	10.2	1,829	12	7	19
- Form	m2	260	167	43	-	43
- Reinf. bar	ton	6.1	24,610	73	77	150
- C.C. block	m3	21.0	1,900	29	11	40
- Brick masonry	m3	22.0	1,475	32	-	32
- Brick pitching	m2	242	171	41	-	41
- Sheet pile	m2	108	3,977	41	389	430
- R.C.C. pile (300x300x4.0m)	nos	24	3,440	59	24	83
- Gate(2.0x2.0m)	nos	2	480,000	768	192	960
- Miscel. work (15%)				184	117	301
(Total)				<u>1,409</u>	<u>899</u>	<u>2,308</u>

Table IX-4-3

Unit Construction Cost of Syphon

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
1.Type A						
- R.C.C.	m3	1,179	2,416	1,726	1,122	2,848
- Form(1)	m2	1,978	214	423	-	423
- Form(2)	m2	1,345	167	225	-	225
- Reinf. bar	ton	94.3	24,610	1,133	1,188	2,321
- Brick pitching	m2	1,128	171	193	-	193
- Dewatering	hrs	14,400	38	547	-	547
- Miscel.works (15%)				637	346	983
(Total)				<u>4,884</u>	<u>2,656</u>	<u>7,540</u>
2.Type B						
- R.C.C.	m3	993	2,416	1,454	945	2,299
- Form(1)	m2	1,688	214	361	-	361
- Form(2)	m2	1,317	167	219	-	219
- Reinf. bar	ton	79.4	24,610	954	1,000	1,954
- Brick pitching	m2	1,064	171	182	-	182
- Dewatering	hrs	14,400	38	547	-	547
- Miscel.works (15%)				557	292	849
(Total)				<u>4,274</u>	<u>2,237</u>	<u>6,511</u>
3.Type C						
- R.C.C.	m3	231	2,416	338	220	558
- Form(1)	m2	428	214	92	-	92
- Form(2)	m2	528	167	88	-	88
- Reinf. bar	ton	18.5	24,610	222	233	455
- Brick pitching	m2	363	171	62	-	62
- Dewatering	hrs	4,800	38	182	-	182
- Miscel.works (15%)				148	68	216
(Total)				<u>1,132</u>	<u>521</u>	<u>1,653</u>

Table-IX-4-4

Unit Construction Cost of Aqueduct

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
1.Type-A						
- R.C.C.(1)	m3	100	2,897	195	95	290
- R.C.C.(2)	m3	97.5	2,416	143	93	236
- C.C.	m3	57.9	1,974	77	37	114
- Form(1)	m2	490	323	158	-	158
- Form(2)	m2	457	167	76	-	76
- Reinf. bar	ton	19.8	24,610	238	249	487
- Brick masonry	m3	44.8	1,475	66	-	66
- Brick pitching	m2	242	171	41	-	41
- Miscel.works (25%)				249	118	367
(Total)				<u>1,243</u>	<u>592</u>	<u>1,835</u>
2.Type B-1						
- R.C.C.(1)	m3	51.1	2,897	99	49	148
- R.C.C.(2)	m3	66.8	2,416	98	63	161
- C.C.	m3	41.6	1,974	56	26	82
- Form(1)	m2	254	323	82	-	82
- Form(2)	m2	333	167	56	-	56
- Reinf. bar	ton	11.4	24,610	137	144	281
- Brick masonry	m3	28.0	1,475	41	-	41
- Brick pitching	m2	198	171	34	-	34
- Miscel.works (25%)				151	70	221
(Total)				<u>754</u>	<u>352</u>	<u>1,106</u>
3.Type B-2						
- R.C.C.(1)	m3	97.4	2,897	190	92	282
- R.C.C.(2)	m3	105	2,416	153	100	253
- C.C.	m3	46.6	1,974	62	30	92
- Form(1)	m2	483	323	156	-	156
- Form(2)	m2	440	167	73	-	73
- Reinf. bar	ton	20.1	24,610	242	253	495
- Brick masonry	m3	44.8	1,475	66	-	66

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
- Brick pitching	m2	184	171	31	-	31
- Miscel. works	(25%)			243	119	362
(Total)				<u>1,216</u>	<u>594</u>	<u>1,810</u>
4.Type B-3						
- R.C.C.(1)	m3	48.7	2,897	95	46	141
- R.C.C.(2)	m3	63.9	2,416	93	61	154
- C.C.	m3	41.6	1,974	56	26	82
- Form(1)	m2	242	323	78	-	78
- Form(2)	m2	322	167	54	-	54
- Reinf. bar	ton	10.9	24,610	131	137	268
- Brick masonry	m3	28.0	1,475	41	-	41
- Brick pitching	m2	184	171	31	-	31
- Miscel. works	(25%)			145	67	212
(Total)				<u>724</u>	<u>337</u>	<u>1,061</u>
5.Type B-4						
- R.C.C.(1)	m3	17.9	2,897	35	17	52
- R.C.C.(2)	m3	35.0	2,416	52	33	85
- C.C.	m3	36.9	1,974	49	23	72
- Form(1)	m2	105	323	34	-	34
- Form(2)	m2	218	167	36	-	36
- Reinf. bar	ton	4.9	24,610	59	62	121
- Brick masonry	m3	28.0	1,475	41	-	41
- Brick pitching	m2	154	171	26	-	26
- Miscel. works	(25%)			83	34	117
(Total)				<u>415</u>	<u>169</u>	<u>584</u>
6.Type B-5						
- R.C.C.(1)	m3	53.7	2,897	105	51	156
- R.C.C.(2)	m3	71.1	2,416	104	68	172
- C.C.	m3	41.9	1,974	56	27	83

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
- Form(1)	m2	315	323	102	-	102
- Form(2)	m2	322	167	54	-	54
- Reinf. bar	ton	12.1	24,610	145	153	298
- Brick masonry	m3	44.8	1,475	66	-	66
- Brick pitching	m2	154	171	26	-	26
- Miscel.works (25%)				165	74	239
(Total)				<u>823</u>	<u>373</u>	<u>1,196</u>
7.Type B-6						
- R.C.C.(1)	m3	15.6	2,897	30	15	45
- R.C.C.(2)	m3	14.2	2,416	21	13	34
- C.C.	m3	20.8	1,974	28	13	41
- Form(1)	m2	113	323	36	-	36
- Form(2)	m2	107	167	18	-	18
- Reinf. bar	ton	3.1	24,610	37	39	76
- Brick masonry	m3	28.0	1,475	41	-	41
- Brick pitching	m3	56.0	171	10	-	10
- Miscel.works (25%)				55	20	75
(Total)				<u>276</u>	<u>100</u>	<u>376</u>
8. Type B-7						
- R.C.C.(1)	m3	7.8	2,897	15	8	23
- R.C.C.(2)	m3	8.6	2,416	13	8	21
- C.C.	m3	20.8	1,974	28	13	41
- Form(1)	m2	56.6	323	18	-	18
- Form(2)	m2	91.6	167	15	-	15
- Reinf. bar	ton	1.6	24,610	19	20	39
- Brick masonry	m3	28.0	1,475	41	-	41
- Brick pitching	m2	56.0	171	10	-	10
- Miscel.works (25%)				40	12	52
(Total)				<u>199</u>	<u>61</u>	<u>260</u>

Table-IX-4-5

Unit Construction Cost of Escape

<u>Work Item</u>	<u>Unit</u>	<u>Q'ty</u>	<u>Unit Price</u> (TK)	<u>Cost (× 1,000 Tk)</u>		
				L.C	F.C	Total
1. Type A-1						
- R.C.C.	m3	196	2,416	287	187	474
- C.C.	m3	38.1	1,829	46	24	70
- Form	m2	450	167	75	-	75
- Reinf. bar	ton	13.7	24,610	164	173	337
- C.C. block	m3	48.6	1,900	68	24	92
- Brick masonry	m3	142	1,475	209	-	209
- Brick pitching	m2	230	171	39	-	39
- Brick mattress	m2	80.0	588	47	-	47
- Sheet pile	m2	216	3,977	82	777	859
- R.C.C. pile (300x300x5.0m)	nos	35	4,300	107	44	151
- Gate(2.5x2.5m)	nos	2	750,000	1,200	300	1,500
- Miscel. work (25%)				581	382	963
(Total)				<u>2,905</u>	<u>1,911</u>	<u>4,816</u>
2. Type A-2						
- R.C.C.	m3	96.2	2,416	141	91	232
- C.C.	m3	22.9	1,829	27	15	42
- Form	m2	250	167	42	-	42
- Reinf. bar	ton	6.7	24,610	81	84	165
- C.C. block	m3	20.5	1,900	29	10	39
- Brick masonry	m3	96.1	1,475	142	-	142
- Brick pitching	m2	153	171	26	-	26
- Brick mattress	m2	40.0	588	24	-	24
- Sheet pile	m2	162	3,977	61	583	644
- R.C.C. pile (300x300x5.0m)	nos	21	4,300	64	26	90
- Gate(2.5x2.0m)	nos	1	600,000	480	120	600
- Miscel. work (25%)				279	232	511
(Total)				<u>1,396</u>	<u>1,161</u>	<u>2,557</u>

(continued)

<u>Work Item</u>	<u>Unit</u>	<u>Q'ty</u>	<u>Unit Price</u> (TK)	<u>Cost(× 1,000 Tk)</u>		
				<u>L.C</u>	<u>F.C</u>	<u>Total</u>
3. Type B						
- R.C.C.	m3	2.2	2,416	3	2	5
- C.C.	m3	4.7	1,829	6	3	9
- Form	m2	30.0	167	5	-	5
- Reinf. bar	ton	0.1	24,610	1	1	2
- Brick masonry	m3	8.4	1,475	12	-	12
- Brick pitching	m2	30.0	106	3	-	3
- Brick mattress	m2	7.5	588	4	-	4
- R.C.C. pipe (φ 800)	m	5.0	1,349	4	3	7
- Gate(1.0x1.0m)	nos	1	20,000	16	4	20
- Miscel. work (25%)				14	3	17
(Total)				<u>68</u>	<u>16</u>	<u>84</u>

Table IX-4-6 Unit Construction Cost of Road Crossing

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
(1) Bridge type						
1. Type A-1						
- R.C.C.(1)	m3	73.7	2,897	144	70	214
- R.C.C.(2)	m3	33.0	2,416	48	32	80
- C.C.(1)	m3	11.0	1,987	15	7	22
- C.C.(2)	m3	126	1,974	169	80	249
- Form (1)	m2	434	323	140	-	140
- Form (2)	m2	253	167	42	-	42
- Rein. bar	ton	11.1	24,610	133	140	273
- Brick masonry	m3	66.0	1,475	97	-	97
- Brick pitching	m2	264	171	45	-	45
- R.C.C. pile (350x350x5.0m)	nos	96	5,075	344	143	487
- Miscel. work (20%)				235	95	330
(Total)				<u>1,412</u>	<u>567</u>	<u>1,979</u>
2. Type A-2						
- R.C.C.(1)	m3	52.6	2,897	102	50	152
- R.C.C.(2)	m3	29.8	2,416	44	28	72
- C.C.(1)	m3	8.3	1,987	12	5	17
- C.C.(2)	m3	100	1,974	134	63	197
- Form (1)	m2	312	323	101	-	101
- Form (2)	m2	224	167	37	-	37
- Rein. bar	ton	8.4	24,610	101	106	207
- Brick masonry	m3	54.6	1,475	81	-	81
- Brick pitching	m2	180	171	31	-	31
- R.C.C. pile (350x350x5.0m)	nos	72	5,075	258	107	365
- Miscel. work (20%)				180	72	252
(Total)				<u>1,081</u>	<u>431</u>	<u>1,512</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
3. Type A-3						
- R.C.C.(1)	m3	26.3	2,897	51	25	76
- R.C.C.(2)	m3	-	-	-	-	-
- C.C.(1)	m3	4.1	1,987	5	3	8
- C.C.(2)	m3	84.4	1,974	113	54	167
- Form (1)	m2	156	323	50	-	50
- Form (2)	m2	147	167	25	-	25
- Rein. bar	ton	3.2	24,610	39	40	79
- Brick masonry	m3	41.8	1,475	62	-	62
- Brick pitching	m2	152	171	26	-	26
- R.C.C. pile (350x350x5.0m)	nos	48	5,075	172	72	244
- Miscel. work (20%)				108	39	147
(Total)				<u>651</u>	<u>233</u>	<u>884</u>
4. Type B-1						
- R.C.C.(1)	m3	69.1	2,897	134	66	200
- R.C.C.(2)	m3	47.7	2,416	70	45	115
- C.C.(1)	m3	8.5	1,987	12	5	17
- C.C.(2)	m3	27.7	1,974	37	18	55
- Form (1)	m2	487	323	157	-	157
- Form (2)	m2	158	167	26	-	26
- Rein. bar	ton	11.6	24,610	139	146	285
- Brick masonry	m3	158	1,475	233	-	233
- Brick pitching	m2	376	171	64	-	64
- R.C.C. pile (300x300x4.0m)	nos	80	3,440	195	80	275
- Miscel. work (20%)				213	72	285
(Total)				<u>1,280</u>	<u>432</u>	<u>1,712</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
5. Type B-2						
- R.C.C.(1)	m3	46.1	2,897	90	44	134
- R.C.C.(2)	m3	20.6	2,416	30	20	50
- C.C.(1)	m3	5.7	1,987	7	4	11
- C.C.(2)	m3	25.9	1,974	35	16	51
- Form (1)	m2	324	323	105	-	105
- Form (2)	m2	89.9	167	15	-	15
- Rein. bar	ton	6.9	24,610	83	87	170
- Brick masonry	m3	127	1,475	187	-	187
- Brick pitching	m2	264	171	45	-	45
- R.C.C. pile (300x300x4.0m)	nos	60	3,440	146	60	206
- Miscel. work (20%)				149	46	195
(Total)				<u>892</u>	<u>277</u>	<u>1,169</u>
6. Type B-3						
- R.C.C.(1)	m3	34.6	2,897	67	33	100
- R.C.C.(2)	m3	18.6	2,416	27	18	45
- C.C.(1)	m3	4.3	1,987	6	3	9
- C.C.(2)	m3	24.9	1,974	33	16	49
- Form (1)	m2	244	323	79	-	79
- Form (2)	m2	84.0	167	14	-	14
- Rein. bar	ton	5.4	24,610	65	68	133
- Brick masonry	m3	108	1,475	159	-	159
- Brick pitching	m2	180	171	31	-	31
- R.C.C. pile (300x300x4.0m)	nos	45	3,440	110	45	155
- Miscel. work (20%)				118	37	155
(Total)				<u>709</u>	<u>220</u>	<u>929</u>

(continued)

<u>Work Item</u>	<u>Unit</u>	<u>Q'ty</u>	<u>Unit Price</u> (TK)	<u>Cost (× 1,000 Tk)</u>		
				<u>L.C</u>	<u>F.C</u>	<u>Total</u>
7. Type B-4						
- R.C.C.(1)	m3	17.3	2,897	34	16	50
- R.C.C.(2)	m3	-	-	-	-	-
- C.C.(1)	m3	2.1	1,987	3	1	4
- C.C.(2)	m3	23.1	1,974	31	15	46
- Form (1)	m2	122	323	39	-	39
- Form (2)	m2	38.2	167	6	-	6
- Rein. bar	ton	2.1	24,610	25	27	52
- Brick masonry	m3	88.4	1,475	130	-	130
- Brick pitching	m2	152	171	26	-	26
- R.C.C. pile (300x300x4.0m)	nos	30	3,440	73	30	103
- Miscel. work (20%)				73	18	91
(Total)				<u>440</u>	<u>107</u>	<u>547</u>
8. Type C-1						
- R.C.C.(1)	m3	49.3	2,897	96	47	143
- R.C.C.(2)	m3	32.8	2,416	48	31	79
- C.C.(1)	m3	4.9	1,987	7	3	10
- C.C.(2)	m3	23.8	1,974	32	15	47
- Form (1)	m2	356	323	115	-	115
- Form (2)	m2	124	167	21	-	21
- Rein. bar	ton	8.2	24,610	99	103	202
- Brick masonry	m3	135	1,475	199	-	199
- Brick pitching	m2	376	171	64	-	64
- R.C.C. pile (300x300x4.0m)	nos	64	3,440	156	64	220
- Miscel. work (20%)				167	53	220
(Total)				<u>1,004</u>	<u>316</u>	<u>1,320</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
9. Type C-2						
- R.C.C.(1)	m3	30.1	2,897	58	29	87
- R.C.C.(2)	m3	14.1	2,416	21	13	34
- C.C.(1)	m3	3.0	1,987	4	2	6
- C.C.(2)	m3	32.2	1,974	30	14	44
- Form (1)	m2	217	323	70	-	70
- Form (2)	m2	73.2	167	12	-	12
- Rein. bar	ton	4.6	24,610	55	58	113
- Brick masonry	m3	108	1,475	159	-	159
- Brick pitching	m2	252	171	43	-	43
- R.C.C. pile (300x300x4.0m)	nos	48	3,440	117	48	165
- Miscel. work (20%)				114	33	147
(Total)				<u>683</u>	<u>197</u>	<u>880</u>
10. Type C-3						
- R.C.C.(1)	m3	24.7	2,897	48	24	72
- R.C.C.(2)	m3	12.7	2,416	19	12	31
- C.C.(1)	m3	2.4	1,987	3	2	5
- C.C.(2)	m3	21.4	1,974	28	14	42
- Form (1)	m2	178	323	58	-	58
- Form (2)	m2	68.7	167	12	-	12
- Rein. bar	ton	3.9	24,610	47	49	96
- Brick masonry	m3	91.6	1,475	135	-	135
- Brick pitching	m2	180	171	31	-	31
- R.C.C. pile (300x300x4.0m)	nos	36	3,440	88	36	124
- Miscel. work (20%)				94	27	121
(Total)				<u>563</u>	<u>164</u>	<u>727</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
11. Type C-4						
- R.C.C.(1)	m3	16.4	2,897	32	16	48
- R.C.C.(2)	m3	-	-	-	-	-
- C.C.(1)	m3	1.6	1,987	2	1	3
- C.C.(2)	m3	20.8	1,974	28	13	41
- Form (1)	m2	119	323	38	-	38
- Form (2)	m2	35.6	167	6	-	6
- Rein. bar	ton	2.0	24,610	24	25	49
- Brick masonry	m3	82.6	1,475	122	-	122
- Brick pitching	m2	156	171	27	-	27
- R.C.C. pile (300x300x4.0m)	nos	24	3,440	59	24	83
- Miscel. work (20%)				67	16	83
(Total)				<u>405</u>	<u>95</u>	<u>500</u>
12. Type C-5						
- R.C.C.(1)	m3	12.3	2,897	24	12	36
- R.C.C.(2)	m3	-	-	-	-	-
- C.C.(1)	m3	1.2	1,987	1	1	2
- C.C.(2)	m3	19.8	1,974	26	13	39
- Form (1)	m2	89.0	323	29	-	29
- Form (2)	m2	34.8	167	6	-	6
- Rein. bar	ton	1.5	24,610	18	19	37
- Brick masonry	m3	73.8	1,475	109	-	109
- Brick pitching	m2	152	171	26	-	26
- R.C.C. pile (300x300x4.0m)	nos	24	3,440	59	2	83
- Miscel. work (20%)				59	14	73
(Total)				<u>357</u>	<u>83</u>	<u>440</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
13. Type D-1						
- R.C.C.(1)	m3	28.0	2,897	54	27	81
- R.C.C.(2)	m3	-	-	-	-	-
- C.C.(1)	m3	3.2	1,987	4	2	6
- C.C.(2)	m3	70.3	1,974	94	45	139
- Form (1)	m2	88.0	323	28	-	28
- Form (2)	m2	147	167	25	-	25
- Rein. bar	ton	3.6	24,610	43	46	89
- Brick masonry	m3	36.0	1,475	53	-	53
- Brick pitching	m2	128	171	22	-	22
- R.C.C. pile (350x350x5.0m)	nos	48	5,075	172	72	244
- Miscel. work (20%)				99	38	137
(Total)				<u>594</u>	<u>230</u>	<u>824</u>
14. Type E-1						
- R.C.C.(1)	m3	35.0	2,897	68	33	101
- R.C.C.(2)	m3	17.2	2,416	25	17	42
- C.C.(1)	m3	3.3	1,987	5	2	7
- C.C.(2)	m3	24.2	1,974	33	15	48
- Form (1)	m2	133	323	43	-	43
- Form (2)	m2	80.4	167	13	-	13
- Rein. bar	ton	5.8	24,610	70	73	143
- Brick masonry	m3	98.4	1,475	145	-	145
- Brick pitching	m2	160	171	27	-	27
- R.C.C. pile (300x300x4.0m)	nos	45	3,440	110	45	155
- Miscel. work (20%)				108	37	145
(Total)				<u>647</u>	<u>222</u>	<u>869</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
15. Type E-2						
- R.C.C.(1)	m3	22.0	2,897	43	21	64
- R.C.C.(2)	m3	-	-	-	-	-
- C.C.(1)	m3	1.9	1,987	3	1	4
- C.C.(2)	m3	23.1	1,974	31	15	46
- Form (1)	m2	77.0	323	25	-	25
- Form (2)	m2	38.2	167	6	-	6
- Rein. bar	ton	2.9	24,610	35	36	71
- Brick masonry	m3	88.4	1,475	130	-	130
- Brick pitching	m2	136	171	23	-	23
- R.C.C. pile (300x300x4.0m)	nos	30	3,440	73	30	103
- Miscel. work (20%)				74	20	94
(Total)				<u>443</u>	<u>123</u>	<u>566</u>
16. Type E-3						
- R.C.C.(1)	m3	17.5	2,897	34	17	51
- R.C.C.(2)	m3	-	-	-	-	-
- C.C.(1)	m3	1.7	1,987	2	1	3
- C.C.(2)	m3	21.3	1,974	28	14	42
- Form (1)	m2	66.0	323	21	-	21
- Form (2)	m2	36.0	167	6	-	6
- Rein. bar	ton	2.3	24,610	28	29	57
- Brick masonry	m3	86.6	1,475	128	-	128
- Brick pitching	m2	128	171	22	-	22
- R.C.C. pile (300x300x4.0m)	nos	20	3,440	49	20	69
- Miscel. work (20%)				64	16	80
(Total)				<u>382</u>	<u>97</u>	<u>479</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk.)		
				L.C	F.C	Total
17. Type F-1						
- R.C.C.(1)	m3	22.1	2,897	43	21	64
- R.C.C.(2)	m3	11.8	2,416	18	11	29
- C.C.(1)	m3	1.9	1,987	3	1	4
- C.C.(2)	m3	20.8	1,974	28	13	41
- Form (1)	m2	105	323	34	-	34
- Form (2)	m2	66.2	167	11	-	11
- Rein. bar	ton	3.7	24,610	44	47	91
- Brick masonry	m3	82.6	1,475	122	-	122
- Brick pitching	m2	160	171	27	-	27
- R.C.C. pile (300x300x4.0m)	nos	36	3,440	88	36	124
- Miscel. work (20%)				83	26	109
(Total)				<u>501</u>	<u>155</u>	<u>656</u>
18. Type F-2						
- R.C.C.(1)	m3	14.1	2,897	28	13	41
- R.C.C.(2)	m3	-	-	-	-	-
- C.C.(1)	m3	1.1	1,987	1	1	2
- C.C.(2)	m3	19.8	1,974	26	13	39
- Form (1)	m2	61.0	323	20	-	20
- Form (2)	m2	34.8	167	6	-	6
- Rein. bar	ton	1.8	24,610	21	23	44
- Brick masonry	m3	73.8	1,475	109	-	109
- Brick pitching	m2	136	171	23	-	23
- R.C.C. pile (300x300x4.0m)	nos	24	3,440	59	24	83
- Miscel. work (20%)				58	15	73
(Total)				<u>351</u>	<u>89</u>	<u>440</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
19. Type F-3						
- R.C.C.(1)	m3	11.1	2,897	22	10	32
- R.C.C.(2)	m3	-	-	-	-	-
- C.C.(1)	m3	1.0	1,987	1	1	2
- C.C.(2)	m3	18.5	1,974	25	12	37
- Form (1)	m2	53.0	323	17	-	17
- Form (2)	m2	33.2	167	6	-	6
- Rein. bar	ton	1.4	24,610	17	18	35
- Brick masonry	m3	72.6	1,475	107	-	107
- Brick pitching	m2	128	171	22	-	22
- R.C.C. pile (300x300x4.0m)	nos	16	3,440	39	16	55
- Miscel. work (20%)				52	11	63
(Total)				<u>308</u>	<u>68</u>	<u>376</u>
(2) Box culvert type						
1. Type A-1						
- R.C.C.	m3	25.3	2,416	37	24	61
- C.C.	m3	1.2	1,974	1	1	2
- Form	m2	106	198	21	-	21
- Rein. bar	ton	2.0	24,610	24	25	49
- Brick pitching	m2	59.0	106	6	-	6
- Miscel. work (20%)				18	10	28
(Total)				<u>107</u>	<u>60</u>	<u>167</u>
2. Type A-2						
- R.C.C.	m3	18.2	2,416	27	17	44
- C.C.	m3	0.8	1,974	1	1	2
- Form	m2	81.9	198	16	-	16
- Rein. bar	ton	1.5	24,610	18	19	37
- Brick pitching	m2	59.0	106	6	-	6
- Miscel. work (20%)				14	7	21
(Total)				<u>82</u>	<u>44</u>	<u>126</u>

(continued)

<u>Work Item</u>	<u>Unit</u>	<u>Q'ty</u>	<u>Unit Price</u> (TK)	<u>Cost (× 1,000 Tk)</u>		
				<u>L.C</u>	<u>F.C</u>	<u>Total</u>
3. Type A-3						
- R.C.C.	m3	14.0	2,416	21	13	34
- C.C.	m3	0.5	1,974	1	-	1
- Form	m2	67.4	198	13	-	13
- Rein. bar	ton	1.1	24,610	13	14	27
- Brick pitching	m2	59.0	106	6	-	6
- Miscel. work (20%)				11	5	16
(Total)				<u>65</u>	<u>32</u>	<u>97</u>
4. Type C-2						
- R.C.C.	m3	10.6	2,416	16	10	26
- C.C.	m3	0.5	1,974	1	-	1
- Form	m2	57.9	198	11	-	11
- Rein. bar	ton	0.9	24,610	11	11	22
- Brick pitching	m2	40.0	106	4	-	4
- Miscel. work (20%)				9	4	13
(Total)				<u>52</u>	<u>25</u>	<u>77</u>
5. Type C-3						
- R.C.C.	m3	8.1	2,416	12	8	20
- C.C.	m3	0.4	1,974	1	-	1
- Form	m2	46.9	198	9	-	9
- Rein. bar	ton	0.7	24,610	8	9	17
- Brick pitching	m2	40.0	106	4	-	4
- Miscel. work (20%)				7	3	10
(Total)				<u>41</u>	<u>20</u>	<u>61</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
(3) Pipe culvert type						
1. Type A-2						
- C.C.	m3	5.0	1,829	6	3	9
- Form	m2	28.3	167	5	-	5
- Brick masonry	m3	8.5	1,341	11	-	11
- Brick pitching	m2	28.0	106	3	-	3
- R.C.C. pipe (φ1,000)	m	5.0	2,077	5	5	10
- Miscel. work (20%)				6	2	8
(Total)				<u>36</u>	<u>10</u>	<u>46</u>
2. Type A-3						
- C.C.	m3	4.4	1,829	5	3	8
- Form	m2	18.2	167	3	-	3
- Brick masonry	m3	8.5	1,341	11	-	11
- Brick pitching	m2	28.0	106	3	-	3
- R.C.C. pipe (φ1,000)	m	3.5	2,077	4	3	7
- Miscel. work (20%)				5	1	6
(Total)				<u>31</u>	<u>7</u>	<u>38</u>
3. Type B-1						
- C.C.	m3	4.4	1,829	5	3	8
- Form	m2	28.4	167	5	-	5
- Brick masonry	m3	6.1	1,341	8	-	8
- Brick pitching	m2	22.0	106	2	-	2
- R.C.C. pipe (φ800)	m	7.5	1,349	7	3	10
- Miscel. work (20%)				5	1	6
(Total)				<u>32</u>	<u>7</u>	<u>39</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
4. Type B-2						
- C.C.	m3	3.4	1,829	4	2	6
- Form	m2	19.3	167	3	-	3
- Brick masonry	m3	6.1	1,341	8	-	8
- Brick pitching	m2	22.0	106	2	-	2
- R.C.C. pipe (φ800)	m	5.0	1,349	5	2	7
- Miscel. work (20%)				4	1	5
(Total)				<u>26</u>	<u>5</u>	<u>31</u>
5. Type B-3						
- C.C.	m3	3.1	1,829	4	2	6
- Form	m2	16.3	167	3	-	3
- Brick masonry	m3	6.1	1,341	8	-	8
- Brick pitching	m2	22.0	106	2	-	2
- R.C.C. pipe (φ800)	m	3.5	1,349	4	1	5
- Miscel. work (20%)				4	1	5
(Total)				<u>25</u>	<u>4</u>	<u>29</u>

Table IX-4-7 Unit Construction Cost of Drainage Crossing

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000Tk)		
				L.C	F.C	Total
(1) Box culvert type						
1. Type A-1						
- R.C.C.	m3	206	2,416	302	196	498
- Form	m2	974	167	163	-	163
- Rein. bar	ton	16.2	24,610	195	204	399
- Brick pitching	m2	340	106	36	-	36
- Miscel. work	(25%)			174	100	274
(Total)				<u>870</u>	<u>500</u>	<u>1,370</u>
2. Type A-2						
- R.C.C.	m3	126	2,416	184	120	304
- Form	m2	589	167	98	-	98
- Rein. bar	ton	9.9	24,610	119	125	244
- Brick pitching	m2	340	106	36	-	36
- Miscel. work	(25%)			110	61	171
(Total)				<u>547</u>	<u>306</u>	<u>853</u>
3. Type A-3						
- R.C.C.	m3	105	2,416	154	100	254
- Form	m2	490	167	82	-	82
- Rein. bar	ton	8.3	24,610	100	104	35
- Brick pitching	m2	340	106	36	-	36
- Miscel. work	(25%)			93	51	144
(Total)				<u>465</u>	<u>255</u>	<u>720</u>
4. Type A-4						
- R.C.C.	m3	84	2,416	123	80	203
- Form	m2	391	167	65	-	65
- Rein. bar	ton	6.7	24,610	81	84	165
- Brick pitching	m2	340	106	36	-	36
- Miscel. work	(25%)			76	41	117
(Total)				<u>381</u>	<u>205</u>	<u>586</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
5. Type A-5						
- R.C.C.	m3	72.9	2,416	107	69	176
- Form	m2	336	167	56	-	56
- Rein. bar	ton	5.8	24,610	70	73	143
- Brick pitching	m2	340	106	36	-	36
- Miscel. work	(25%)			67	36	103
(Total)				<u>336</u>	<u>178</u>	<u>514</u>
6. Type A-6						
- R.C.C.	m3	61.4	2,416	90	58	148
- Form	m2	281	167	47	-	47
- Rein. bar	ton	4.9	24,610	59	62	121
- Brick pitching	m2	340	106	36	-	36
- Miscel. work	(25%)			58	30	88
(Total)				<u>290</u>	<u>150</u>	<u>440</u>
7. Type A-7						
- R.C.C.	m3	47.6	2,416	70	45	115
- Form	m2	215	167	36	-	36
- Rein. bar	ton	3.8	24,610	46	48	94
- Brick pitching	m2	340	106	36	-	36
- Miscel. work	(25%)			47	23	70
(Total)				<u>235</u>	<u>116</u>	<u>351</u>
8. Type B-1						
- R.C.C.	m3	208	2,416	305	198	503
- Form	m2	865	167	144	-	144
- Rein. bar	ton	16.5	24,610	198	208	406
- Brick pitching	m2	350	106	37	-	37
- Miscel. work	(25%)			171	102	273
(Total)				<u>855</u>	<u>508</u>	<u>1,363</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
9. Type B-2						
- R.C.C.	m3	161	2,416	236	153	389
- Form	m2	661	167	110		110
- Rein. bar	ton	12.8	24,610	154	161	315
- Brick pitching	m2	350	106	37	-	37
- Miscel. work (25%)				134	79	213
(Total)				<u>671</u>	<u>393</u>	<u>1,064</u>
10. Type B-3						
- R.C.C.	m3	106	2,416	155	101	256
- Form	m2	423	167	71	-	71
- Rein. bar	ton	8.5	24,610	102	107	209
- Brick pitching	m2	350	106	37	-	37
- Miscel. work (25%)				91	52	143
(Total)				<u>456</u>	<u>260</u>	<u>716</u>
11. Type B-4						
- R.C.C.	m3	90.6	2,416	133	86	219
- Form	m2	355	167	59	-	59
- Rein. bar	ton	7.2	24,610	86	91	177
- Brick pitching	m2	350	106	37	-	37
- Miscel. work (25%)				79	44	123
(Total)				<u>394</u>	<u>221</u>	<u>615</u>
(2) Pipe culvert type						
1. Type A-1						
- C.C.	m3	16.6	1,829	20	10	30
- Form	m2	105	167	18	-	18
- Brick masonry	m3	7.0	1,341	9	-	9
- Brick pitching	m2	140	106	15	-	15
- R.C.C. pipe	m	20.0	1,349	14	13	27
- Miscel. work (25%)				19	6	25
(Total)				<u>95</u>	<u>29</u>	<u>124</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
2. Type A-2						
- C.C.	m3	15.4	1,829	18	10	28
- Form	m2	95.6	167	16	-	16
- Brick masonry	m3	7.0	1,341	9	-	9
- Brick pitching	m2	140	106	15	-	15
- R.C.C. pipe	m	18.0	1,349	13	11	24
- Miscel. work (25%)				18	5	23
(Total)				<u>89</u>	<u>26</u>	<u>115</u>
3. Type A-3						
- C.C.	m3	14.2	1,829	17	9	26
- Form	m2	86.0	167	14	-	14
- Brick masonry	m3	7.0	1,341	9	-	9
- Brick pitching	m2	140	106	15	-	15
- R.C.C. pipe	m	16.0	1,349	12	10	22
- Miscel. work (25%)				17	5	22
(Total)				<u>84</u>	<u>24</u>	<u>108</u>
4. Type A-4						
- C.C.	m3	12.4	1,829	15	8	23
- Form	m2	72.0	167	12	-	12
- Brick masonry	m3	7.0	1,341	9	-	9
- Brick pitching	m2	140	106	15	-	15
- R.C.C. pipe	m	13.0	1,349	10	8	18
- Miscel. work (25%)				15	4	19
(Total)				<u>76</u>	<u>20</u>	<u>96</u>
5. Type A-5						
- C.C.	m3	10.0	1,829	12	6	18
- Form	m2	52.4	167	9	-	9
- Brick masonry	m3	7.0	1,341	9	-	9
- Brick pitching	m2	140	106	15	-	15
- R.C.C. pipe	m	9.0	1,349	6	6	12
- Miscel. work (25%)				13	3	16
(Total)				<u>64</u>	<u>15</u>	<u>79</u>

(continued)

<u>Work Item</u>	<u>Unit</u>	<u>Q'ty</u>	<u>Unit Price</u> (TK)	<u>Cost (× 1,000 Tk)</u>		
				<u>L.C</u>	<u>F.C</u>	<u>Total</u>
6. Type B-1						
- C.C.	m3	26.6	1,829	32	17	49
- Form	m2	156	167	26	-	26
- Brick masonry	m3	9.6	1,341	13	-	13
- Brick pitching	m2	134	106	14	-	14
- R.C.C. pipe	m	18.0	2,698	26	23	49
- Miscel. work (25%)				28	10	38
(Total)				<u>139</u>	<u>50</u>	<u>189</u>
7. Type B-2						
- C.C.	m3	24.4	1,829	29	16	45
- Form	m2	140	167	23	-	23
- Brick masonry	m3	9.6	1,341	13	-	13
- Brick pitching	m2	134	106	14	-	14
- R.C.C. pipe	m	16.0	2,698	23	20	43
- Miscel. work (25%)				26	9	35
(Total)				<u>128</u>	<u>45</u>	<u>173</u>
8. Type B-3						
- C.C.	m3	16.7	1,829	20	11	31
- Form	m2	84.0	167	14	-	14
- Brick masonry	m3	9.6	1,341	13	-	13
- Brick pitching	m2	134	106	14	-	14
- R.C.C. pipe	m	9.0	2,698	13	11	24
- Miscel. work (25%)				19	5	24
(Total)				<u>93</u>	<u>27</u>	<u>120</u>

Table IX-4-8

Unit Construction Cost of Flood Embankment

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× Tk/m)		
				L.C	F.C	Total
1. Type A-1						
- Earth filling	m3	41.6	18	749	-	749
- Gunny bags	m3	6.0	78	468	-	468
- Turfing	m2	18.0	2	36	-	36
- Miscel. work	(10%)			125	-	125
(Total)				<u>1,378</u>		<u>1,378</u>
2. Type A-2						
- Earth filling	m3	84.0	18	1,512	-	1,512
- Gunny bags	m3	9.0	78	702	-	702
- Turfing	m2	29.0	2	58	-	58
- Miscel. work	(10%)			227	-	227
(Total)				<u>2,499</u>		<u>2,499</u>
3. Type B-1						
- Earth filling	m3	43.6	18	784	-	784
- Turfing	m2	18.0	2	36	-	36
- Miscel. work	(10%)			82	-	82
(Total)				<u>902</u>		<u>902</u>
4. Type B-2						
- Earth filling	m3	91.0	18	1,638	-	1,638
- Turfing	m2	30.0	2	60	-	60
- Miscel. work	(10%)			169	-	169
(Total)				<u>1,867</u>		<u>1,867</u>

Table IX-4-9 Unit Construction Cost of Drainage Regulator

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
1. Type A						
- Excavation	m3	3,400	16	54	-	54
- Back filling	m3	990	11	10	-	10
- Sand filling	m3	790	104	82	-	82
- R.C.C.	m3	306	2,446	457	291	748
- Form	m2	915	167	152	-	152
- Reinf. bar	ton	27.5	24,610	330	346	676
- S.C.block	m3	83.0	1,606	72	61	133
- Sheet pile	m2	100	3,977	38	359	397
- Gate (1.52x1.83m)	nos	2	108,000	173	43	216
- Dewatering	hr	5,800	38	220		220
- Bailing waterout	hr	600	86	51		51
- Miscel. work (20%)				327	220	547
(Total)				<u>1,966</u>	<u>1,320</u>	<u>3,286</u>
1. Type B						
- Excavation	m3	4,250	16	68	-	68
- Back filling	m3	1,240	11	13	-	13
- Sand filling	m3	990	104	102	-	102
- R.C.C.	m3	383	2,446	572	364	936
- Form	m2	1,144	167	191	-	191
- Reinf. bar	ton	34.4	24,610	413	433	846
- S.C.block	m3	92.3	1,606	80	68	148
- Sheet pile	m2	111	3,977	42	399	441
- Gate (1.52x1.83m)	nos	3	108,000	259	65	324
- Dewatering	hr	7,200	38	273		273
- Bailing waterout	hr	700	86	60		60
- Miscel. work (20%)				415	265	680
(Total)				<u>2,488</u>	<u>1,594</u>	<u>4,082</u>

(continued)

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× 1,000 Tk)		
				L.C	F.C	Total
1. Type C						
- Excavation	m3	5,310	16	84	-	84
- Back filling	m3	1,550	11	17	-	17
- Sand filling	m3	1,240	104	128	-	128
- R.C.C.	m3	536	2,446	801	510	1,311
- Form	m2	1,600	167	267	-	267
- Reinf. bar	ton	48.2	24,610	579	607	1,186
- S.C.block	m3	110	1,606	95	81	176
- Sheet pile	m2	133	3,977	50	478	528
- Gate	nos	4	108,000	346	86	432
(1.52x1.83m)						
- Dewatering	hr	8,600	38	326	-	326
- Bailing waterout out	hr	800	86	68	-	68
- Miscel. work	(20%)			552	352	904
(Total)				<u>3,313</u>	<u>2,114</u>	<u>5,427</u>
1. Type F						
- Excavation	m3	27,200	16	435	-	435
- Back filling	m3	7,920	11	87	-	87
- Sand filling	m3	6,320	104	657	-	657
- R.C.C.	m3	2,450	2,446	3,661	2,331	5,992
- Form	m2	7,320	167	1,222	-	1,222
- Reinf. bar	ton	220	24,610	2,642	2,772	5,414
- S.C.block	m3	415	1,606	359	307	666
- Sheet pile	m2	550	3,977	208	1,979	2,187
- Gate	nos	18	108,000	1,555	389	1,944
(1.52x1.83m)						
- Dewatering	hr	24,000	38	912	-	912
- Bailing waterout out	hr	2,400	86	206	-	206
- Miscel. work	(20%)			2,389	1,556	3,945
(Total)				<u>14,333</u>	<u>9,334</u>	<u>23,667</u>

Table IX-4-10(1) Unit Construction Cost of On-farm Facilities

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (× Tk/ha)		
				L.C	F.C	Total
1. Farm turnout	nos/ha	1/25	3,675	122	25	147
2. Farm ditch	m/ha	64	23	1,472	-	1,472
3. Check	nos/ha	1	1,416	1,081	335	1,416
4. Miscel. (20%)				535	72	607
(Total)				<u>3,210</u>	<u>432</u>	<u>3,642</u>

Table IX-4-10(2) Unit Cost of Farm Turnout, Farm Ditch & Check

Work Item	Unit	Q'ty	Unit Price (TK)	Cost (Tk)		
				L.C	F.C	Total
1. Farm turnout						
- C.C.	m3	0.43	1,829	512	274	786
- Form	m2	3.32	167	554	-	554
- Brick masonry	m3	0.56	1,341	750	-	750
- Brick pitching	m2	4.50	106	477	-	477
- R.C.C. pipe (φ300)	m	1.83	344	349	280	629
- Miscel. work (15%)				396	83	479
(Total)				<u>3,038</u>	<u>637</u>	<u>3,675</u>
2. Farm ditch						
- Earth work	m3	1.32	8	<u>23</u>	-	<u>23</u>
3. Check						
- R.C.C.	m3	0.22	2,416	322	209	531
- Form	m2	3.83	167	639	-	639
- Reinf. bar	ton	0.01	24,610	120	126	246
(Total)				<u>1,081</u>	<u>335</u>	<u>1,416</u>

Table IX-4-11

Unit Construction Cost of Road

<u>Work Item</u>	<u>Unit</u>	<u>Q'ty</u>	<u>Unit Price</u> (TK)	<u>Cost (× 1,000 Tk)</u>		
				<u>L.C</u>	<u>F.C</u>	<u>Total</u>
- Embankment	m3/m	18.0	18	324	-	324
- Brick	m2/m	3.7	177	655	-	655
- Turfing	m2/m	6.5	2	13	-	13
(Total)				<u>992</u>		<u>992</u>

5. OPERATION AND MAINTENANCE COSTS

- (1) Summary of Operation and Maintenance Cost
- (2) Breakdown of Operation and Maintenance Cost

Table IX-5-1 Summary of Operation and Maintenance Cost

Unit: × 1,000 Tk

Description	Main Pump Area	Reversible Pump Area	Total
1. Pump Station			
a. Civil work	120	240	360
b. Mechanical	8,144	3,320	11,464
c. electricity	42,041	6,867	48,908
d. Dredging	252	362	614
Sub-total	50,557	10,789	61,346
2. Irrigation and Drainage Facilities			
a. Irrigation canal	4,300	385	4,685
b. On-farm	2,654	294	2,948
c. Hydraulic structure	1,392	132	1,524
d. Embankment	1,260	141	1,401
e. Regulator	72	30	102
Sub-total	9,678	982	10,660
3. Miscellaneous	3,011	588	3,599
4. Administration	4,584	-	4,584
5. Total	67,830	12,359	80,189

Table-IX-5-2 Breakdown of Operation and Maintenance Cost

(1) Main Pump Area

		(× 1,000 Tk)
1.	Pump station	
a.	Civil work for pump station	
	10 persons × 1 place × 20 days × 12 months × 50 Tk =	120
b.	Maintenance work for pump and electrical facility	
	407,200 × 1,000 Tk × 0.02 =	8,144
c.	Electricity	
-	Service charge 350 Tk/month × 12 months =	4
-	Basic charge 40 Tk/Kw/month × 12m × 5,000 Kw =	2,400
-	Utility charge 4.25 Tk/Kw/hr × 0.25 × 3,286 hr × 5,000 Kw + 1.8 Tk/Kw/hr × 0.75 × 3,286 × 5,000 Kw =	39,637
	(Sub-total)	42,041
d.	Dredging	
-	Man power: 8,000 m ³ /year × 29 Tk/m ³ =	232
-	Sand pump: 15 days × 24 hrs × 11Kw × 2 × 2.5 Tk/Kw/hr =	20
	Sub-total	50,557
2.	Irrigation and drainage facilities	
a.	Irrigation canal	
	511.9 Km × 1 person × 20 days × 12 months × 35 Tk =	4,300
b.	On-farm	
	31,600 ha/100ha × 1 person × 20 days × 12 months × 35 Tk =	2,654
c.	Hydraulic structure	
	232 places × 1 person × 20 days × 6 months × 50 Tk =	1,392
d.	Embankment	
	75 Km × 2 persons × 20 days × 12 months × 35 Tk =	1,260
e.	Regulator	
	12 places × 1 person × 20 days × 6 months × 50 Tk =	72
	Sub-total	<u>9,678</u>
3.	Miscellaneous work (× 5%)	<u>3,011</u>

Continued

(2) Reversible Pump Area

		(× 1,000 Tk)
1.	Pump station	
a.	Civil work for pump station	
	10 persons × 2 places × 20 days × 12 months × 50 Tk =	240
b.	Maintenance work for pump and electrical facility	
	(87,500 + 78,500) × 1,000 Tk × 0.02 =	3,320
c.	Electricity	
-	Service charge	350 Tk/month × 12 months × 2 = 8
-	Basic charge	40 Tk/Kw/month × 12m × 900 Kw = 432
-	Utility charge	{4.25 Tk/Kw × 0.25 × 4,080 hr × 600 Kw + 1.8 Tk/Kw/hr × 0.75 × 4,080 hr × 600 Kw} + {4.25 × 0.25 × 720 × 300 Kw + 1.8 × 0.75 × 720 × 300 Kw} = 6,427
	(Sub-total)	6,867
d.	Dredging	
	(10,000 m ³ + 2,500m ³) × 29 Tk/m ³ =	362
	Sub-total	<u>10,789</u>
2.	Irrigation and drainage facilities	
a.	Irrigation canal	
	45.8 Km × 1 person × 20 days × 12 months × 35 Tk =	385
b.	On-farm	
	3,500 ha/100 ha × 1 person × 20 days × 12 months × 35 Tk =	294
c.	Hydraulic structure	
	22 places × 1 person × 20 days × 6 months × 50 Tk =	132
d.	Embankment	
	8.4 Km × 2 persons × 20 days × 12 months × 35 Tk =	141
g.	Regulator	
	5 places × 1 person × 20 days × 6 months × 50 Tk =	30
	Sub-total	<u>982</u>
3.	Miscellaneous work (× 5%)	<u>588</u>

Continued

(3) Administration

1. Personnel cost		(× 1,000 Tk)
- Superintending eng.	7,000 Tk × 12 months =	84
- Executive eng.	5,700 Tk × 12 months × 2 persons =	137
- Sub-divisional eng.	4,300 Tk × 12 months × 5 persons =	258
- Asistant eng.	2,700 Tk × 12 months × 7 persons =	227
- Sub-divisional office staff	39,600 × 12 months × 5 nos =	2,376
- Superintending engineer's office stuff	39,600 Tk × 12 months × 1 no. =	475
Sub-total		<u>3,557</u>
2. Repair and Maintenance		
- Vehicle repair & parts	3,700,000 Tk × 20% =	740
- Vehicle Fuel	7.2 Tk/1 × 15 1/day × 300 days × 6 nos. =	194
- Office supply (10%)		93
Sub-total		<u>1,027</u>
3. Total		<u>4,584</u>

- Dimensions of Sand Pump for Dredging

- Pump type ; Submerged sand pump
- Pump bore ; ϕ 150mm
- Pump capacity; Q : 2.2 m³ /min.
- Pump power ; P : 11 kw
- Pump number ; 2 nos.

- Pumping Ability of Sediment

- $V_{\text{day}} = 2.2 \text{ m}^3 / \text{min} \times 0.3^*) \times 60 \text{ min} \times 12 \text{ hrs} \times 2 \text{ nos.}$
 $= 950 \text{ m}^3 / \text{day}$
- $V_{\text{15 days}} = 950 \text{ m}^3 / \text{day} \times 15 \text{ days}$
 $= 14,250 \text{ m}^3$

*) Sand content in the water (30%)

6. ANNUAL DISBURSEMENT SCHEDULE

The annual disbursement schedule of the project is based on the project implementation schedule which is shown in Fig. IX-6-1.

The summary of the annual disbursement schedule is presented in the following table (Table IX-6-1).

Table IX 6-1 Summary of Annual Disbursement Schedule

(Unit: 1,000 taka)

Year	L/C	F/C	Tax	Total
1st	17,558	55,675	-	73,233
2nd	78,371	105,105	34,134	217,610
3rd	238,690	323,016	111,724	673,430
4th	416,635	395,403	121,857	933,895
5th	398,968	342,537	112,382	853,887
6th	257,224	95,891	790	353,905
7th	99,161	54,856	1,240	155,257
Total	1,506,607	1,372,483	382,127	3,261,217

Details of annual disbursement schedule are shown in Table IX-6-2.

Table IX-6-2 Annual Disbursement Schedule (1/3) (Unit: 1,000TK)

Cost Item	Year		Total						1st. Year			2nd. Year		
			L/C	F/C	TAX	Total	L/C	F/C	TAX	Total	L/C	F/C	TAX	Total
1. Construction Work														
a. Pumping station														
— Main Pump station	154,166	69,835	—	224,001	—	—	—	—	—	—	—	—	—	—
— Reversible Pump station	55,755	29,163	—	84,918	—	—	—	—	—	—	—	—	—	—
— Dranage Pump station	27,265	12,828	—	40,093	—	—	—	—	—	—	—	—	—	—
b. Civil work														
— Main pump area	479,591	103,481	—	583,072	—	—	—	—	—	8,383	2,592	—	10,975	
— Reversible pump area	60,073	9,810	—	69,883	—	—	—	—	—	3,630	618	—	4,248	
c. Transmission & tel. line	4,805	17,530	7,997	30,332	—	—	—	—	—	—	—	—	—	
Sub-total	781,655	242,647	7,997	1,032,299	—	—	—	—	—	12,013	3,210	—	15,223	
2. Procurement of Const. Machine and Pump Equipment	7,191	630,458	288,349	925,998	—	—	—	—	—	3,201	57,258	27,519	87,978	
Total 1~2	788,846	873,105	296,346	1,958,297	—	—	—	—	—	15,214	60,468	27,519	103,201	
3. Agricultural Extension	12,765	6,605	1,865	21,235	—	—	—	—	—	—	—	—	—	
4. Land Acquisition	146,674	—	—	146,674	—	—	—	—	—	36,670	—	—	36,670	
5. Consulting Service	36,608	199,207	—	235,815	—	—	—	—	—	17,138	55,675	—	72,813	
6. Administration	87,986	11,552	1,630	101,168	—	—	—	—	—	420	7,792	1,630	24,017	
Total 1~6	1,072,879	1,090,469	298,841	2,463,189	—	—	—	—	—	17,558	55,675	23,149	191,055	
7. Physical Contingency	78,884	87,311	29,635	195,830	—	—	—	—	—	—	—	—	—	
Total 1~7	1,151,763	1,177,780	329,476	2,659,019	—	—	—	—	—	17,558	55,675	31,901	201,376	
8. Price Escalation	354,844	194,703	52,651	602,198	—	—	—	—	—	—	—	—	—	
9. Grand Total	1,506,607	1,372,483	382,127	3,261,217	—	—	—	—	—	17,558	55,675	34,134	217,610	

(Unit: 1,000TK)

Annual Disbursement Schedule (2/3)

Cost Item	Year			3rd. Year			4th. Year			5th. Year		
	L/C	F/C	TAX	Total	L/C	F/C	TAX	Total	L/C	F/C	TAX	Total
1. Construction Work												
a. Pumping station												
-- Main Pump station	51,388	23,278	-	74,666	77,083	34,917	-	112,000	25,695	11,640	-	37,335
-- Reversible Pump station	-	-	-	-	-	-	-	-	13,939	7,291	-	21,230
-- Dranage Pump station	-	-	-	-	-	-	-	-	-	-	-	-
b. Civil work												
-- Main pump area	72,795	11,643	-	84,438	160,589	36,279	-	196,868	160,589	36,279	-	196,868
-- Reversible pump area	7,260	1,236	-	8,496	7,260	1,236	-	8,496	11,288	1,838	-	13,126
c. Transmission & tel. line	-	-	-	-	2,402	8,765	3,998	15,165	2,403	8,765	3,999	15,167
Sub-total	131,443	36,157	-	167,600	247,334	81,197	3,998	332,529	213,914	65,813	3,999	283,726
2. Procurment of Const. Machine and Pump Equipment	1,350	203,600	90,685	295,635	1,350	203,600	90,685	295,635	1,290	166,000	79,460	246,750
Total 1~2	132,793	239,759	90,685	463,235	248,684	284,797	94,683	628,164	215,204	231,813	83,459	530,476
3. Agricultural Extension	-	-	-	-	-	-	-	-	2,128	1,100	311	3,539
4. Land Acquisition	36,668	-	-	36,668	36,668	-	-	36,668	36,668	-	-	36,668
5. Consulting Service	3,245	23,922	-	27,167	3,245	23,922	-	27,167	3,245	23,922	-	27,167
6. Administration	14,595	752	-	15,347	14,594	752	-	15,346	14,594	752	-	15,346
Total 1~6	187,301	264,431	90,685	542,417	308,191	309,471	94,683	707,345	271,839	257,587	83,770	613,196
7. Physical Contingency	13,279	23,976	9,069	46,324	24,868	28,480	9,468	62,816	21,520	23,181	8,346	53,047
Total 1~7	200,580	288,407	99,754	588,741	328,059	337,951	104,151	770,161	293,359	280,768	92,116	666,243
8. Price Escalation	38,110	34,609	11,970	84,689	88,576	57,452	17,706	163,734	105,609	61,769	20,266	187,644
9. Grand Total	238,690	323,016	111,724	673,430	416,635	395,403	121,857	933,895	398,968	342,537	112,382	853,887

(Unit: 1,000TK)

Annual Disbursement Schedule (3/3)

Cost Item	Year			6th. Year			7th. Year			Year		
	L/C	F/C	TAX	Total	L/C	F/C	TAX	Total	L/C	F/C	TAX	Total
1. Construction Work												
a. Pumping station												
— Main Pump station	—	—	—	—	—	—	—	—	—	—	—	—
— Reversible Pump station	41,816	21,872	—	63,688	—	—	—	—	—	—	—	—
— Drainage Pump station	6,816	3,207	—	10,023	20,449	9,621	—	30,070				
b. Civil work												
— Main pump area	77,235	16,688	—	93,923	—	—	—	—	—	—	—	—
— Reversible pump area	15,317	2,441	—	17,758	15,318	2,441	—	17,759				
c. Transmission & tel. line	—	—	—	—	—	—	—	—	—	—	—	—
Sub-total	141,184	44,208	—	185,392	35,767	12,062	—	47,829				
2. Procurement of Const. Machine and Pump Equipment	—	—	—	—	—	—	—	—	—	—	—	—
Total 1~2	141,184	44,208	—	185,392	35,767	12,062	—	47,829				
3. Agricultural Extension	4,255	2,202	622	7,079	6,382	3,303	932	10,617				
4. Land Acquisition	—	—	—	—	—	—	—	—	—	—	—	—
5. Consulting Service	3,245	23,922	—	27,167	3,245	23,922	—	27,167				
6. Administration	14,594	752	—	15,346	14,594	752	—	15,346				
Total 1~6	163,278	71,084	622	234,984	59,988	40,039	932	100,959				
7. Physical Contingency	14,118	4,421	—	18,539	3,577	1,206	—	4,783				
Total 1~7	177,396	75,505	622	253,523	63,565	41,245	932	105,742				
8. Price Escalation	79,828	20,386	168	100,382	35,396	13,611	308	49,515				
9. Grand Total	257,224	95,891	790	353,905	99,161	54,856	1,240	155,257				

Fig. IX-6-1 Project Implementation Schedule

Items	1st. Year		2nd. Year		3rd. Year		4th. Year		5th. Year		6th. Year		7th. Year		
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
I. Detailed Design															
II. Tendering															
III. Loan Procedure															
IV. Construction															
1. Land Acquisition															
2. Equipment Procuring															
3. Main Pump Area															
(1) Pump Station															
(2) Irrigation Canal															
(3) Irrigation Facilities															
(4) Road															
(5) On-Farm															
(6) Transmission Line															
4. Reversible Pump Area															
(1) Pump Station															
(2) Irrigation Canal															
(3) Irrigation Facilities															
(4) Road															
(5) On-Farm															
(6) Transmission Line															
5. Flood Embankment															
6. Drainage Regulator															
7. Drainage Pump Station															
8. Agricultural Extension															
V. Consulting Service															

APPENDIX X

PROJECT JUSTIFICATION

APPENDIX X

PROJECT JUSTIFICATION

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Table X-1 Investment Cost of the Project (Financial)

Million TAKA

Item	Local			Foreign			Tax	Total	Remark
	Q'ty	unit price	Value	Q'ty	unit price	Value			
I. Land acquisition	ha	TK	146.7			-	-	146.7	
for construction	1600	91000	146.1			-	-	146.1	
for extension	7	91000	0.6			-	-	0.6	
II. Construction cost			785.6			815.8	268.8	1870.3	
(1) Pump station			241.2			685.0	260.8	1187.0	
Facilities			-			573.2	260.8	834.0	
Inland freight			4.0			-	-	4.0	
Material			208.6			94.1	-	302.7	
Man power:			28.6	man/day		17.7	-	46.3	
foreign			-	700		17.7	-	17.7	
local:	man/day	per/day	28.6			-	-	28.6	
managerial	5,400	264	1.4			-	-	1.4	
skilled	282,000	50	14.1			-	-	14.1	
unskilled	410,100	30	13.1			-	-	13.1	
(2) Irrigation canal			146.6			-	-	146.6	
Material			25.4			-	-	25.4	
Man power			121.2			-	-	121.2	
local:	man/day	per/day	121.2			-	-	121.2	
managerial	23,000	264	6.1			-	-	6.1	
skilled	364,000	50	18.2			-	-	18.2	
unskilled	3,230,000	30	96.9			-	-	96.9	
(3) Irrigation facilities			190.9			74.7	-	265.6	
Material			171.8			74.7	-	246.5	
Man power			19.1			-	-	19.1	
local:			19.0			-	-	19.1	
managerial	3,400	264	0.9			-	-	0.9	
skilled	212,000	50	10.6			-	-	10.6	
unskilled	253,300	30	7.6			-	-	7.6	
(4) Drainage facilities			88.9			24.4	-	113.3	
Material			63.8			24.4	-	88.2	
Man power			25.1			-	-	25.1	
local:	man/day	per/day	25.1			-	-	25.1	
managerial	4,600	264	1.2			-	-	1.2	
skilled	126,000	50	6.3			-	-	6.3	
unskilled	586,700	30	17.6			-	-	17.6	
(5) Road construction			8.1			-	-	8.1	
Material			6.5			-	-	6.5	
Man power			1.6			-	-	1.6	
local:	man/day	per/day	1.6			-	-	1.6	
managerial	400	264	0.1			-	-	0.1	
skilled	16,000	50	0.8			-	-	0.8	
unskilled	23,300	30	0.7			-	-	0.7	
(6) On farm facilities			105.3			14.1	-	119.4	
Material			58.4			14.1	-	92.5	
Man power			46.9			-	-	46.9	
local:	man/day	per/day	46.9			-	-	46.9	
managerial	376,000	50	-			-	-	-	
skilled	936,700	30	18.8			-	-	18.8	
unskilled			28.1			-	-	30.3	
(7) Transmission line			4.8			17.5	8.0	30.3	
Material			4.5			17.5	8.0	30.0	

Item	Local			Foreign			Tax	Total	Remark
	Q'ty	unit price	Value	Q'ty	unit price	Value			
Man power:			0.3			-	-	0.3	
local:			0.3			-	-	0.3	
managerial	man/day	per/day	-			-	-	-	
skilled	4,000	50	0.2			-	-	0.2	
unskilled	3,300	30	0.1			-	-	0.1	
III. Associated cost:			140.6			274.6	30.9	446.1	
(1)Construction									
machine			3.2			57.3	27.5	88.0	
Machines			-			57.3	27.5	84.8	
Inland freight			0.3			-	-	0.3	
Man power			2.9			-	-	2.9	
local	man/day	per/day							
managerial	4,900	264	1.3			-	-	1.3	
skilled	32,000	50	1.6			-	-	1.6	
unskilled	-	-	-			-	-	-	
(2)Agricultural									
extension			12.8			6.6	1.8	21.2	
Material			7.0			-	-	7.0	
Vehicle and equipment			2.2			6.6	1.8	10.6	
Man power			3.6			-	-	3.6	
local	man/day	per/day							
skilled	44,000	50	2.2			-	-	2.2	
unskilled	47,600	30	1.4			-	-	1.4	
(3)Administrations									
cost			88.0			11.5	1.6	101.1	
Equipment			-			7.0	1.6	8.6	
Repair and maintenance			5.7			-	-	5.7	
Training cost			0.5			4.5	-	5.0	
Man power			32.6			-	-	32.6	
local:			32.6			-	-	32.6	
managerial	56,000	264	14.7			-	-	14.7	
skilled	358,000	50	17.9			-	-	17.9	
unskilled	-	-	-			-	-	-	
Over head			49.2			-	-	49.2	
(4)Consulting									
service			36.6			199.2	-	235.8	
IV Total			1072.9			1084.7	297.8	2463.2	

Source: The project cost estimation (Appendix IX)

Table X-2 Investment Cost of the Project (Economic)
Million TAKA

Item	Local	Foreign	Total
I. Construction cost	672.9	815.7	1488.6
(1) Pump station	195.1	685.0	880.1
facilities	-	573.2	573.2
inland freight	3.3	-	3.3
material	171.0	94.1	265.1
man power:	20.8	17.7	38.5
foreign	-	17.7	17.7
local:	20.8	-	20.8
(2) Irrigation canal	100.3	-	100.3
material	20.8	-	20.8
man power (Local)	79.5	-	79.5
(3) Irrigation facilities	155.0	74.7	229.7
material	140.9	74.7	215.5
man power (Local)	14.1	-	14.1
(4) Drainage facilities	73.0	24.4	97.4
material	56.0	24.4	80.4
man power (Local)	17.0	-	17.0
(5) Road construction	6.5	-	6.5
material	5.3	-	5.3
man power (Local)	1.2	-	1.2
(6) On-farm facilities	80.6	14.1	94.7
material	47.9	14.1	62.0
man power (Local)	32.7	-	32.7
(7) Transmission line	3.9	17.5	21.4
material	3.7	17.5	21.2
man power (Local)	0.2	-	0.2
II. Associated cost	114.8	274.6	389.4
(1) Construction machine	2.6	57.3	59.9
machines	-	57.3	57.3
inland freight	0.2	-	0.2
man power (local)	2.4	-	2.4
(2) Agricultural extension	10.1	6.6	16.7
material	5.7	-	5.7
vehicle and equipment	1.8	6.6	8.4
man Power (Local)	2.6	-	2.6
(3) Administration Cost	72.1	11.5	83.6
equipment	-	7.0	7.0
repair and maintenance	4.7	-	4.7
training Cost	0.4	4.5	4.9
man power (Local)	26.7	-	26.7
over Head	40.3	-	40.3
(4) Consulting service	30.0	199.2	229.2
III. Total cost	787.7	1090.3	1878.0

Source: same as Table X-1
The figure based on accounting (economic) prices.

Table X-3 Annual Operating/Recurring Expenditure of the Project(Financial)

Million Taka

Item	Local			Foreigh Exchange			Tax	Total	Remark
	Q' ty	unit price	Value	Q' ty	unit price	Value			
I. Raw material and supplies		T.K.	5.73			3.82	1.91	11.46	
Imported spares and supplies			-			3.82	1.91	5.73	
Locally produced raw material			5.73			-	-	5.73	
II. Fuel and power			47.19			-	1.93	49.12	
Electricity			47.00			-	1.91	48.91	
Fuel			0.19			-	0.02	0.21	
III. Man power			15.19					15.19	
Foreign personal			-			-	-	-	
Local personal:	333,200		15.19			-	-	15.19	
managerial	13,500	264	3.56			-	-	3.56	
labour:	319,700		11.63			-	-	11.63	
skilled	37,400	50	1.87			-	-	1.87	
semiskilled	258,000	35	9.03			-	-	9.03	
unskilled	24,300	30	0.73			-	-	0.73	
IV. Repair and maintenance			0.41			0.27	0.14	0.82	
Vehicle repair			0.41			0.27	0.14	0.82	
V. Miscellaneous			3.60			-	-	3.60	
VI. Total			72.12			4.09	3.98	80.19	

Note: The unit of Q' ty of Man power and price are Man day.

Source Table XIII The project cost estimation

Table X-4 Annual Operating/Recurring Expenditure of the Project(Economic)
Million Taka

Items	Local	Foreign	Total
I. Raw material and supplies	4.70	3.82	8.52
Imported spares and and supplies	-	3.82	3.82
Locally produced raw material	4.70	-	4.70
II. Fuel and power	38.69	-	38.69
Electricity	38.54	-	38.54
Fuel	0.15	-	0.15
III. Man power	12.30	-	12.30
Foreign personal	-	-	-
Local personal:	12.30	-	12.30
managerial	2.92	-	2.92
labour:	9.38	-	9.38
skilled	1.53	-	1.53
semiskilled	7.40	-	7.40
unskilled	0.45	-	0.45
IV. Repair and mentenance	0.34	0.27	0.61
Vehicle repair	0.34	0.27	0.61
V. Miscellaneous	2.95	-	2.95
VI. Total	58.98	4.09	63.07

Remark:

Economic value are estimated as folows:

(1)Local 0.82% of SCF are used

however: unskilled labour is estimated with opportunity cost fo Labour

(2)Foreign used Boader price or international price,

(3)Import tax and internal tax are excluded

Table X-5. Crop production Without and With Project

crop	Without Project			With project		
	acreage	yield	production	acreage	yield	production
	ha.	ton	ton	ha.	ton	ton
B. Aus local	13,242	0.83	10,991	3,075	2.0	6,150
T Aus HYV	2,756	2.13	5,870	12,450	3.0	37,350
B Aman local	453	1.21	548	-	-	-
T Aman local	14,474	1.57	22,724	1,975	2.8	5,530
T Aman Pajam	3,066	2.48	7,604	-	-	-
T Aman HYV	7,879	2.75	21,667	1,0475	4.0	41,900
Late T Aman HYV	-	-	-	4,800	3.0	14,400
Boro HYV	5,745	3.09	17,752	7,100	4.5	31,950
T Aus/Boro Local	1,872	1.32	2,471	-	-	-
Aus Aman Mixed	1,296	1.77	2,294	-	-	-
Sub total	5,0783		91,921	30,875		137,280
Jute local	2,795	1.45	4,053	-	-	-
Jute HYV	1,962	1.69	3,316	7,875	2.3	18,112
Mustard	601	0.88	529	7,650	1.3	9,945
Kaun	1,175	0.79	928	-	-	-
Wheat local	1,140	1.64	1,870	-	-	-
Wheat HYV	2,156	2.25	4,851	7,875	3.5	27,562
Poteto	660	10.22	6,745	1,425	20.0	28,500
Sweet poteto	200	7.75	1,550	-	-	-
Summer vegetables	200	10.00	2,000	875	15.0	13,125
Winter vegetables	300	18.00	5,400	225	20.0	4,500
Pulses	250	0.90	225	-	-	-
Khesari	-	-	-	7,100	1.0	7,100
Mungbean	-	-	-	5,675	0.9	5,107
Forder maize	-	-	-	1,525	90.0	137,250
Dhaincha	-	-	-	1,975	30.0	59,250
Sub-total	11,439		31,467	42,200		310,451
G. Total	62,222		123,388	82,075		447,731

Source: Appendix v, crop budget

Table X-6 Gross Crop Production Value

crop	Without Condition					With Condition				
	Produc- tion ton	Price		Value		Produc- tion ton	Price		Value	
		Finan- cial	Econo- mic	Finan- cial	Econo- mic		Finan- cial	Econo- mic	Finan- cial	Econo- mic
B. Aus local	10,991	5.83	6.10	64,077	67,049	6,150	5.83	6.10	35,854	37,515
T Aus HYV	5,870	5.47	6.10	32,109	33,367	37,350	5.47	6.10	204,304	227,835
B Aman local	548	5.83	6.10	3,195	3,343	-	-	-	-	-
T Aman local	22,724	5.83	6.10	132,481	138,616	5,530	5.83	6.10	32,240	33,733
T Aman pajam	7,604	5.47	6.10	41,594	46,384	-	-	-	-	-
T Aman HYV	21,667	5.47	6.10	118,518	132,169	41,900	5.47	6.10	229,193	255,590
Late T aman HYV	-	-	-	-	-	14,400	5.47	6.10	78,768	87,840
Boro HYV	17,752	5.47	6.10	97,103	108,287	31,950	5.47	6.10	174,766	194,895
T Aus/Boro Local	2,471	5.83	6.10	14,406	15,073	-	-	-	-	-
Aus Aman Mixed	2,294	5.83	6.10	13,374	13,993	-	-	-	-	-
Sub total	91,921	-	-	516,857	558,281	137,280	-	-	755,125	837,408
Jute local	4,053	5.00	9.20	20,265	37,288	-	-	-	-	-
Jute HYV	3,316	5.50	9.20	18,238	30,507	18,112	5.50	9.20	99,616	166,630
Mastard	529	11.50	9.43	6,083	4,988	9,945	11.50	9.43	114,367	93,781
Kaun	928	7.00	5.74	6,496	5,327	-	-	-	-	-
Wheat Local	1,870	4.80	7.00	8,976	130,900	-	-	-	-	-
Wheat HYV	4,851	5.30	7.00	25,710	33,957	27,562	5.30	7.00	146,079	192,934
Poteto	6,745	2.50	2.10	16,862	14,164	28,500	2.50	2.10	71,250	59,850
Sweet poteto	1,550	1.50	1.38	2,325	2,139	-	-	-	-	-
Summer vegetables	2,000	2.00	1.64	4,000	3,280	13,125	2.00	1.64	26,260	21,525
Winter vegetables	5,400	2.00	1.64	10,800	8,856	4,500	2.00	1.64	9,000	7,380
Pulses	225	11.00	9.00	2,475	2,025	-	-	-	-	-
Khesari	-	-	-	-	-	7,100	11.00	9.02	78,100	65,320
Mungbean	-	-	-	-	-	5,107	15.00	12.30	76,605	62,816
Forder maize	-	-	-	-	-	137,250	0.10	0.08	13,725	10,980
Dhaincha	-	-	-	-	-	59,250	0.10	0.08	5,925	4,740
Sub-total	31,467	-	-	122,230	155,621	310,451	-	-	640,927	685,956
G. Total	123,388	-	-	639,087	713,902	447,731	-	-	1,396,052	1,523,364

Source: calculated from above data.

Table X-7 Gross by-Products Without and With project

crop	(1) Without Project						
	Acreage ha.	Q' ty of per ha ton	By-products Total Amount ton	Price		Value 1000TK	
				Finan- cial	Econo- mic	Financial	Economic
				TK	TK		
B. Aus local	13,242	1.00	13,242	600	492	7,945	6,515
T Aus HYV	2,756	2.13	5,870	600	492	3,522	2,888
B Aman local	453	1.45	657	500	410	328	269
T Aman local	14,474	2.04	29,257	500	410	14,628	11,995
T Aman pajam	3,066	2.48	7,604	500	410	3,802	3,118
T Aman HYV	7,879	2.75	21,667	500	410	10,833	8,883
Boro HYV	5,745	3.09	17,752	500	410	8,876	7,278
T Aus/Boro local	1,872	1.58	2,958	500	410	1,479	1,213
Aus Aman mixed	1,296	2.12	2,747	500	410	1,373	1,126
Jute local	2,795	2.61	7,295	1,150	943	8,389	6,879
Jute HYV	1,962	2.96	5,807	1,150	943	6,678	5,476
Kaun	1,175	0.96	1,128	400	328	451	370
Wheat local	1,140	2.58	2,941	500	410	1,470	1,206
Wheat HYV	2,156	3.54	7,632	500	410	3,816	3,129
Sweet poteto	1,770	3.00	5,310	100	82	531	435
Total	60,881		131,867			74,121	60,780

Price unit: per ton

crop	(2) With Project						
	Acreage ha.	Q' ty of per ha ton	By-products Total Amount ton	Price		Value 1000TK	
				Finan- cial	Econo- mic	Financial	Economic
				TK	TK		
B. Aus local	3,075	2.4	7,380	600	492	4,428	3,631
T Aus HYV	12,450	3.0	37,350	600	492	22,410	18,376
B Aman HYV	10,475	4.0	41,900	500	410	20,950	17,179
T Aman local	1,975	3.3	65,517	500	410	3,258	2,672
Late T Aman HYV.	4,800	3.0	14,400	500	410	7,200	5,904
Boro HYV	7,100	4.0	28,400	500	410	14,200	11,644
Wheat HYV	7,875	5.5	43,312	500	410	21,656	17,758
Jute HYV	7,875	5.7	44,887	1150	943	51,620	42,328
Khesari	7,100	2.3	16,330	350	287	5,715	4,687
Total	62,725		201,476			151,437	124,179

Price unit: per ton

Source: Appendix V Crop budget

Table X-8 Inputs for Crop Cultivation

Inputs Item	Without condition					With condition				
	Quantity used	Price TK		Value 1000TK		Quantity used	Price TK		Value 1000TK	
		Finan- cial	Econo- mic	Finan- cial	Econo- mic		Finan- cial	Econo- mic	Finan- cial	Econo- mic
Labour	1,000 man day 8,282	per day 24.0	19.68	196,368	162,989	1,000 man day 9,436	24.0	19.68	226,464	185,700
Bullock Seed/Seedling	1,000 hour 5,179	per hour 6.0	4.92	31,074	25,481	21,733	6.0	4.92	130,398	106,926
Urea	ton 5,950	per kg 4.8	3.5	28,560	20,825	9,856	4.8	3.5	47,309	34,496
T. S. P. 1/	3,646	per kg 5.0	7.4	18,230	26,980	6,664	5.0	7.4	33,320	49,314
M. P. 2/ Other chemicals3/	2,005	per kg 4.0	5.5	8,020	11,027	3,616	4.0	5.5	14,464	19,888
Manue Pesticides	95,292	per kg 0.2	0.16	19,058	15,246	307,325	0.2	0.16	61,465	49,172
Farm implement				27,186	22,292				48,610	39,860
Irrigation4/				12,465	10,221				16,222	13,302
Imputed cost5/				25,110	-				106,179	-
Total				239,245	-				278,502	-
				648,744	330,672				1,027,826	551,870

Note: 1/ Triple super phosphate

2/ Muriate of potash

3/ included Gypsum and Zinc Sulphate

4/ Irrigation charge

5/ Interest on own capital and rental value of own land

6/ Economic prices of urea, T. S. P and M. P are accounted from boader price, while other inputs economic prices are converted from market price with SCF of 0.82.

Source: Appendix V. Crop budget without and with project estimated by field survey and cost of cultivation data of AER.

Table X-9 Estimation of Economic Price of Paddy, Wheat, Jute,
and, Urea, PTS, NP.

(1) Economic Price of paddy (import parity)	
	1990 year
1. Rice(Thai) 5% broken, Feb. Bangkok Constant 1985 us\$ per tonne	197. \$
(multiplier to 1990 price)	1.444
2. Constant 1990 us\$ per tonne (exchange rate = TK per us\$)	285. \$ 33.88TK
3. Constant 1990 Taka per tonne (adjustment factor for quality) ^{2/}	9,656TK 0.9
4. Cif chittagong / khulna (handling and transport between Khulna and Kurrigram) ^{3/}	8,690TK 732TK
5. Market price (processing cost)	9,422TK 200TK
6. Ex-Mill price of Rice ^{4/} (processing Ratio)	9,222TK 0.67
7. Equivalent Price of Paddy (handling and transport between mill and farmgate) ^{5/}	6,179TK 40TK
8. Farmgate price of paddy TK/tonne	6,139
9. Farmgate price of paddy per Kg	6.1TK

Note. 1/ World Bank, International Economics Department, International Commodity
Market division Jan. 19. 1990

2/ Based on relationship between import unit prices and reference quality
prices

3/ Based on schedule of rates of the Department of Food, GoB, Feb. 1989
-90 from Khulna port to Kurrigram and adjust for by SCF or 0.82.

4/ Based on local rates, net of value of by-products adjusted for by SCF
of 0.82.

5/ Assuming average distance of 5 km-s between mill and farmgate.

(2) Economic Price of Wheat (import parity)

	1990 year
1. CWRS Wheat, in store Thunder Bay ^{1/}	
Constant 1985, us\$ per tonne	128
(multiplier to 1990 price)	1.444
2. Constant 1990 us\$ per tonne	185
(exchange rate TK per tonne)	33.88TK
3. Constant 1990 TK, per tonne	6,268
(adjusment factor for quality) ^{2/}	1.0
4. CIF Chittagong / Khulna	6,228
(handling and transport between Khulna and Kurigram) ^{3/}	732
5. Market Price at Kurigram	7,000
(processing ratio)	1.0
6. Equivalent Price of wheat	7,000
(handling and transport between market and farmgate) ^{4/}	40
7. Farmgate price of wheat per tonne	6,960
8. Farmgate price of wheat per Kg	7.0TK

Note. 1/ World Bank, International Economics Department, International Commodity Market Division Jan. 19, 1990

2/ Based on relationship between import unit prices and reference quality prices.

3/ Based on schedul of rates of the Department of Food, GoB. for 1989-90, from Khulna port to Kurigram and adjusted for by SCF of 0.82.

4/ Assumming average distance between market and farmgate.

(3) Economic Price of Jute (export parity)

	1990 year
1. Constant 1985 us\$ per tonne for Bangladesh White D FoB Chittagong/Khulna (multiplier to 1990 price)	270 1.444
2. Constant 1990 us\$ per tonne (exchange rate (TK per us\$))	390 33.88TK
3. Constant 1990 TK per tonne (adjustment factors for quality)2/	13,213 1.0
4. FoB price at chittagong/Khulna (handling and transport between port and market)3/	13,213 732
5. Market price (processing ratio)	12,481 0.90
6. Equivalent price of Jute (processing, handling and transport between mill and farmgate)4/	11,233 2,000
7. Farmgate price TK per tonne	9,233
8. Farmgate price TK per Kg.	9.2TK

Note: 1/ World Bank, International Economic Department, International Commodity market Division Jan. 19 1990

2/ Based on relationship between export unit price and reference quality price.

3/ Based on schedule of rates of Department of Food GoB. for 1989-90 from Khulna port to Kurigram adjusted for by SCF 0.82.

4/ Assuming average distance between mill and farmgate.

(4) Economic Price of Urea (export parity)

	1990 year
1. Urea, Bagged, FoB Europe	
Constant 1985 us\$ per tonne1/ (Multiplier to 1990 price)	87 1.444
2. Constant 1990 us\$ per tonne (exchange rate (TK per us\$))	126 33.88TK
3. Constant 1990 TK per tonne	4269
4. FoB chitfagong/Khulna (handling and transport between port and market)3/	4,269 732
5. Market Price (handling and transport between market and farmgate)3/	35.37 40
6. Farmgate price TK per tonne	3,497
7. Farmgate price TK per Kg	3.5TK

Note: 1/ World Bank, International Economics Department International commodity
Market Division Jan. 19 1890.

2/ Based on schedule of rates of the Department of Food, GoB, for 1989
-90 from Khulna port to Krigram and adjusted for gy SCF OF 0.82.

3/ Assuming average distance between market and farmgate.

(5) Economic Price of Triple Super Phosphate(import parity)

1990 year

1. Triple Super Phosphate, FOB US Gulf ^{1/}	
Constant 1985 us\$ per tonne	97
(multiplier to 1990 prices	1.444
2. Constant 1990 us\$ per tonne	140
exchange Rate (TK per us\$)	33.88
3. Constant 1990 TKper tonne	4,743
(adjustment factor for quality) ^{2/}	1.4
4. CIF chittagong/Khulna	6,640
(handling and transport between port and market) ^{3/}	732
5. Market Price	7,372
(handling and transport between market and farmgate) ^{4/}	40
6. Farmgate price TK per tonne	7,412
7. Farmgate price TK per Kg	7.4TK

Note: 1/ World Bank, International Economic Department, International Commodity
Market Division Jan. 19, 1990

2/ Based on relationship between import unit prices and reference quality
price.

3/ Based on schedule of rates of the Department of Food, GOB, for 1989
-90 from Khulna port to Kurigram and adjusted for by SCE of 0.82.

4/ Based on local rates, assuming average distance between market and
farmgate.

(6) Economic Price of Muriati of Potash (import Parity)

	1990 year
1. Muriat, of Potash, FoB Vancouver ^{1/}	
Constant 1985 us\$ per tonne	69
(multiplier to 1990 prices	1.444
2. Constant 1990 us\$ per tonne	100
(exchange rate (TK/per us\$))	33.88
3. Constant 1990 TK per tonne	3,388
(adjusment factor) ^{2/}	1.4
4. CIF Chittagong/Khulna	4,743
(handling and transport between	
market and port) ^{3/}	732
5. Market price	5,475
(handling and transport between	
market and farmgate) ^{4/}	40
6. Farmgate price per tonne	5,525
7. Farmgate price per Kg	5.51K

Note: 1/ World Bank, International Economics Department Commodity Market Division Jan. 19, 1990.

2/ Based on relationship between import unit price and reference quality price.

3/ Based on schedule of rates of the Department of Food, GoB. for 1989-90, from Khulna port to Kurigram adjusted for by SCF of 0.82.

4/ Based on local rates assuming average distance between market and farmgate.

Table X-10 Whole Production Inputs

Without project

Crop	Acreage		Labour Input		Bullock Input		Seed/Seedling		Urea		T. S. P.		M. P.		Other Chemicals		Manure		Pesticidies		Farm Implement	
	ha	per/ha	man/day	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total
B. Aus local	13.242	120	1.589	874	66	874	700	9,269	25	331	10	132	-	-	-	-	-	-	-	-	180	2,384
T. Aus Hyv	2.756	144	397	198	72	198	130	358	110	303	80	220	40	110	265	730	-	2,756	685	1,888	225	620
B. Aman. local	453	140	63	33	72	33	1,000	453	30	13	10	4	-	-	-	-	-	-	-	-	186	81
T. Aman. local	14.474	100	1,447	1,448	100	1,448	350	5,066	100	1,447	60	968	40	579	250	3,619	1.0	14,474	685	9,915	225	3,257
T. Aman. pajam	3.066	150	460	307	100	307	350	1,073	170	521	100	307	50	153	280	859	4.0	12,264	1,250	3,832	225	690
T. Aman Hyv	7.879	150	1,182	662	84	662	200	1,576	150	1,182	100	788	50	394	265	2,088	1.5	11,818	685	5,397	225	1,773
Boro Hyv	5.747	156	896	517	90	517	200	1,149	170	977	120	689	50	287	265	1,522	1.5	8,617	685	3,935	225	1,293
T. Aus/Boro local	1.872	162	303	230	123	230	300	562	60	112	30	56	-	-	-	-	1.0	1,872	-	-	225	421
Aus. Aman mixed	1.296	140	181	93	72	93	400	518	80	104	60	78	40	52	250	324	1.5	1,944	-	-	225	292
Jute local	2.795	200	559	134	48	134	120	335	50	140	8	22	12	33	30	84	5.0	13,975	-	-	160	447
Jute Hyv	1.962	225	441	118	60	118	110	216	60	118	10	20	12	23	45	88	6.0	11,772	300	589	160	314
Mustard	601	115	69	43	72	43	135	81	60	36	40	24	30	18	75	45	1.5	901	175	105	120	72
Kaun	1.175	96	113	56	48	56	50	59	60	70	40	47	-	-	-	-	1.0	1,175	-	-	160	188
Wheat local	1.140	100	114	55	48	55	1,500	1,710	60	68	40	46	12	14	45	51	2.0	2,280	-	-	120	137
Wheat Hyv	2.156	110	237	129	60	129	1,800	3,881	85	183	50	108	25	54	185	399	1.5	3,234	325	701	120	259
Sweet potato	200	100	20	8	40	8	4,500	900	20	4	8	2	50	10	-	-	1.0	200	-	-	120	24
Poteto Hyv	660	128	84	198	300	198	9,000	5,940	250	165	180	119	250	165	-	-	6.0	3,960	915	604	150	99
S. Vegetables	200	160	32	16	80	16	60	12	320	64	220	44	230	46	295	59	5.0	1,000	800	160	120	24
W. Vegetables	300	250	75	51	170	51	800	240	375	112	225	67	225	67	295	88	6.0	1,800	200	60	200	60
Pulses	250	80	20	10	40	10	300	75	-	-	20	5	-	-	-	-	5.0	1,250	-	-	120	30
Total			8,282	5,179		5,179		33,473		5,950		3,646		2,005		9,955		95,292		27,186		12,465

Source: Appendix V Crop budget

Table X-11 Whole Production Inputs

With project

Crop	Acreage ha	Labour input		Bullock input		Seed/seedling		Urea		T. S. P.		M. P.		Other Chemicals		Manure		Pesticidies		Farm Implement	
		per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total	per/ha	Total
		man/day	1000	hours	1000	value T.K.	per/ha	kg	ton	kg	ton	kg	ton	kg	ton	value T.K.	1000	ton	ton	value T.K.	1000
B. Aus local	3.075	130	399.7	250	768.7	1.000	3.075.0	100	307.5	20	61.5	20	61.5	-	-	5.0	15.375	200	615.0	225	691.9
T. Aus Hyv	12.450	125	1,556.2	280	3,486.0	160	1,992.0	150	1,867.5	30	373.5	30	373.5	175	2,183.1	5.0	62.375	370	4,615.7	225	2,806.9
T. Aman Hyv	10.475	150	1,571.2	270	2,828.2	195	2,042.6	190	1,990.2	120	1,257.0	30	314.2	175	1,833.1	-	-	640	6,704.0	225	2,356.9
T. Aman local	1.975	140	276.5	280	553.0	400	790.0	110	217.2	40	79.0	-	-	-	-	5.0	9.875	200	395.0	225	444.4
Late T. A. Hyv	4.800	120	576.0	260	1,248.0	105	504.0	140	672.0	100	480.0	30	144.0	175	840.0	-	-	200	960.0	225	1,080.0
Boro Hyv	7.100	200	1,420.0	280	1,988.0	160	1,136.0	210	1,491.0	140	994.0	40	284.0	175	1,242.5	-	-	470	3,337.0	225	1,597.5
Wheat Hyv	7.875	150	1,181.2	280	2,205.0	910	7,166.2	130	1,023.7	120	945.0	75	590.6	310	2,441.2	4.0	31.500	1,140	8,977.5	200	1,575.0
Jute Hyv	7.875	250	1,968.5	400	3,150.0	190	1,496.2	130	1,023.7	30	236.2	60	472.5	175	1,378.1	4.0	31.500	450	3,622.5	200	1,575.0
Potato Hyv	1.425	200	285.0	400	570.0	15,000	21,375.0	100	142.5	230	327.7	300	427.5	565	805.1	8.0	11.400	4,225	6,020.6	200	285.0
Mustard	7.650	50	382.5	375	2,868.7	170	1,300.5	70	595.5	160	1,224.0	50	382.5	370	2,830.5	8.0	45.900	750	5,737.5	150	1,147.5
Khesari	7.100	80	568.0	60	426.0	300	2,130.0	-	-	30	213.0	20	142.0	175	1,242.5	8.0	56.800	840	5,964.0	150	1,065.0
Mungbean	5.675	125	709.4	240	1,362.0	340	1,929.5	45	255.4	40	227.0	20	113.5	175	993.1	6.0	34.050	160	908.0	150	851.2
S. Vegetables	875	360	315.0	150	131.2	600	525.0	170	148.7	90	78.7	220	192.5	370	323.7	5.0	4.375	810	708.7	200	175.0
W. Vegetables	225	310	81.0	150	33.7	800	180.0	250	56.2	150	33.7	190	42.7	295	66.4	5.0	1.125	200	45.0	200	45.0
Fodder crop	1,525	50	62.5	60	75.0	500	625.0	100	125.0	60	75.0	60	75.0	310	472.7	2.0	3.050	-	-	150	228.7
Dhoincha	1,975	20	39.5	20	39.5	1,000	1,975.0	-	-	30	59.2	-	-	-	-	-	-	-	-	150	296.2
Total	82,075		8,436.3		21,733.0		48,242.0		9,856.1		6,664.5		3,616.0		1,665.1		307,325		48,610.5		16,221.7

Source: Appendix V Crop budget

Table X-12 Some Indicators for Evaluation

1. Land price for acquisition. 91.0 thousand TAKA per ha.

2. Local labour charge (market price) per day.

unskilled	30 TAKA	} without meal
Semi skilled	35	
Skilled	50	

3. Local labour charge (economic price) per day.

unskilled	18.5 TAKA	} without meal
Semi skilled	28.7	
Skilled	41.0	

4. Official Rate of TAKA

1\$ = 33.88 , 1990.

5. Exchange shadow rate of TAKA

34.50TK. = 1US\$

6. Internal Freight per ton include road tax.

Kurigram	↔	Khuina	893TK
Kurigram	↔	Mongla	944TK
Kurigram	↔	Chittagony	1,357TK

Source: The field survey in Kurigram of Bangladesh, 1989,
and, BRDB.

Table X-13 Monthly Labour Requirement for Crop Production
— without project condition —

(unit: 1,000 man day)

Acreage	Total	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
B. Aus local	13,242	-	265	398	66	66	331	397	66	-	-	-	-
T. Aus Hyv	2,756	-	14	55	135	14	14	132	33	-	-	-	-
B. Aman local	453	-	-	-	-	4	23	5	2	2	18	9	-
T. Aman local	14,474	-	-	-	-	-	-	145	362	362	72	72	434
T. Aman pajam	3,066	-	-	-	-	-	31	123	92	15	15	153	31
T. Aman Hyv	7,879	-	-	-	-	-	79	394	79	39	39	473	79
Boro Hyv	5,745	115	230	161	29	103	258	-	-	-	-	-	-
T. Aus Boro local	1,872	75	65	9	51	84	-	-	-	-	-	-	19
Aus Aman mixed	1,296	13	39	26	7	6	39	6	39	6	-	-	-
Jute local	2,795	-	42	168	14	14	84	139	56	42	-	-	-
Jute Hyv	1,962	-	29	118	10	10	69	118	39	29	19	-	-
Mustard	601	3	15	21	18	-	-	-	-	-	-	3	9
Kaun	1,175	12	27	12	6	38	12	-	-	-	-	-	6
Wheat local	1,140	6	6	40	6	-	-	-	-	-	-	45	11
Wheat Hyv	2,156	11	11	86	-	-	-	-	-	-	-	86	43
Sweet potato	200	1	1	1	1	8	-	-	-	-	1	4	3
Poteto Hyv	660	16	16	-	-	-	-	-	-	-	16	33	3
S. Vegetables	200	-	-	-	-	-	-	4	8	3	12	5	-
W. Vegetables	300	30	6	-	-	-	-	-	-	-	6	15	18
Pulses	250	1	8	1	-	-	-	-	-	-	-	2	8
Total	62,222	283	774	1,096	343	347	940	1,463	776	498	198	900	664
per ha. man/day		113.1	12.4	17.6	5.5	5.6	15.1	23.5	12.5	8.0	3.2	14.5	10.7

Source: The field survey is Kurigiam of Bangladesh, 1989.

Table X-14 Monthly Labour Requirements for Crop Production
 — with project condition —

(unit: 1,000 man day)

Acreage	Total	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
		ha.	input 1000 man/day										
B. Aus local	2,975	-	60	89	15	15	89	104	15	-	-	-	-
T. Aus Hyv	11,175	-	-	167	503	56	56	503	112	-	-	-	-
T. Aman Hyv	11,175	-	-	-	-	-	112	558	112	56	56	670	112
T. Aman local	2,125	21	-	-	-	-	-	-	53	106	11	11	95
Late T. Aman Hyv	5,125	-	-	-	-	-	-	-	77	256	26	26	230
Boro Hyv	10,050	251	704	101	100	151	603	100	-	-	-	-	-
Wheat Hyv	8,425	42	42	548	42	-	-	-	-	-	-	421	169
Jute Hyv	8,425	-	211	506	84	84	379	590	168	84	-	-	-
Potato	1,525	92	15	-	-	-	-	-	-	15	76	92	15
Mustard	8,175	41	163	41	-	-	-	-	-	-	-	41	123
Khesari	7,600	38	38	304	-	-	-	-	-	-	-	152	76
Mungbean	6,050	-	-	-	-	-	-	91	212	60	61	272	60
S. Vegetables	925	-	-	-	-	-	-	46	83	37	130	37	-
W. Vegetables	250	30	5	-	-	-	-	-	-	-	5	15	20
Fodder Crop	1,625	33	8	-	-	-	-	-	-	-	-	8	32
Dholncha	2,475	-	-	-	25	12	12	-	-	-	-	-	-
Total	88,100	548	1,246	1,756	769	318	1,251	1,992	832	614	365	1,745	932
per ha. man/day		6.2	141	199	8.7	3.6	14.2	22.6	9.4	7.0	41	19.8	10.6

Source: The same as above table.

Table X-15 NPV and BCR in the case of 10% discount rate — Financial —

	Investment cost of the project	Q & R	Total cost	Discount factor 10%	Discount total cost	Benefit of the project	Discount factor 10%	Discount benefit
1990~91	73.23	-	73.23	0.909	66.57	-	0.909	-
91~92	217.60	-	217.60	0.826	179.74	-	0.826	-
92~93	673.43	-	673.43	0.751	505.75	-	0.751	-
93~94	933.89	-	933.89	0.683	637.85	-	0.683	-
94~95	853.89	26.46	880.35	0.621	546.70	136.56	0.621	84.80
95~96	353.90	48.92	402.84	0.564	227.20	273.12	0.564	154.04
96~97	155.25	71.37	226.62	0.513	116.26	409.68	0.513	210.16
97~98	-	80.19	80.19	0.467	37.45	455.20	0.467	212.58
98~99	-	80.19	80.19	0.424	34.00	455.20	0.424	193.00
99~2000	-	80.19	80.19	0.386	30.95	455.20	0.386	175.71
2000~01	-	"	"	0.350	28.07	"	0.350	159.32
01~02	-	"	"	0.319	25.58	"	0.319	145.21
02~03	-	"	"	0.290	23.25	"	0.290	132.01
03~04	-	"	"	0.263	21.09	"	0.263	119.72
04~05	-	"	"	0.239	19.16	"	0.239	108.79
05~06	-	"	"	0.218	17.48	"	0.218	99.24
06~07	-	"	"	0.198	15.88	"	0.198	90.13
07~08	-	"	"	0.180	14.43	"	0.180	81.94
08~09	-	"	"	0.164	13.15	"	0.164	74.65
09~10	-	"	"	0.149	11.95	"	0.149	67.82
10~11	-	"	"	0.135	10.82	"	0.135	61.45
11~12	-	"	"	0.123	9.86	"	0.123	55.99
12~13	-	"	"	0.112	8.98	"	0.112	50.98
13~14	-	"	"	0.102	8.18	"	0.102	46.43
14~15	-	"	"	0.092	7.38	"	0.092	41.88
15~16	-	"	"	0.084	6.73	"	0.084	38.24
16~17	-	"	"	0.076	6.09	"	0.076	34.59
17~18	-	"	"	0.069	5.53	"	0.069	31.41
18~19	-	"	"	0.063	5.05	"	0.063	28.68
19~20	-	"	"	0.057	4.57	"	0.057	22.76
Σ					2,645.70			2,521.53

NPV $2,521.53 - 2,645.70 = \Delta 124.17$

BCR $2,521.53 \div 2,645.70 = 0.9531$

Table X-16 NPV and BCR in the case of 10% discount rate — Economic —

	Investment of project	Q & R	Total cost	Discount factor 10%	Discount total cost	Benefit of the project	Discount factor 10%	Discount total benefit
1990~91	70.02	-	70.02	0.909	63.65	-	0.909	-
91~92	136.74	-	136.74	0.826	112.95	-	0.826	-
92~93	484.98	-	484.98	0.751	364.22	-	0.751	-
93~94	711.25	-	711.25	0.683	485.78	-	0.683	-
94~95	640.82	20.81	661.63	0.621	410.87	195.50	0.621	121.40
95~96	314.80	38.47	353.27	0.564	199.24	391.00	0.564	220.52
96~97	138.84	56.13	194.97	0.513	100.02	586.49	0.513	300.87
97~98	-	63.07	63.07	0.467	29.45	651.66	0.467	304.32
98~99	-	63.07	63.07	0.424	26.74	651.66	0.424	276.30
99~2000	-	63.07	63.07	0.386	24.34	651.66	0.386	251.54
2000~01	-	63.07	63.07	0.350	22.07	651.66	0.350	228.08
01~02	-	"	"	0.319	20.12	"	0.319	207.88
02~03	-	"	"	0.290	18.29	"	0.290	188.98
03~04	-	"	"	0.263	16.59	"	0.263	171.39
04~05	-	"	"	0.239	15.07	"	0.239	155.75
05~06	-	"	"	0.218	13.75	"	0.218	142.06
06~07	-	"	"	0.198	12.49	"	0.198	129.03
07~08	-	"	"	0.180	11.35	"	0.180	117.30
08~09	-	"	"	0.164	10.34	"	0.164	106.87
09~10	-	"	"	0.149	9.40	"	0.149	97.10
10~11	-	"	"	0.135	8.51	"	0.135	87.97
11~12	-	"	"	0.123	7.75	"	0.123	80.15
12~13	-	"	"	0.112	7.06	"	0.112	72.98
13~14	-	"	"	0.102	6.43	"	0.102	66.47
14~15	-	"	"	0.092	5.80	"	0.092	59.95
15~16	-	"	"	0.084	5.30	"	0.084	54.74
16~17	-	"	"	0.076	4.79	"	0.076	49.53
17~18	-	"	"	0.069	4.35	"	0.069	44.96
18~19	-	"	"	0.063	3.97	"	0.063	41.05
19~20	-	"	"	0.057	3.59	"	0.057	37.14
Σ					2,024.21			3,614.33

NPV $3,614.33 - 2,024.21 = 1,590.12$

BCR $3,614.33 \div 2,024.21 = 1.785$

Table X-17 NPV and BCR in the case of 15% discount rate — Financial —

	Investment cost of the project	Q & R	Total cost	Discount factor 15%	Discount total cost	Benefit of the project	Discount factor 15%	Discount benefit
1990~91	73.23	-	73.23	0.870	63.71	-	-	-
91~92	217.60	-	217.60	0.756	164.50	-	-	-
92~93	673.43	-	673.43	0.658	443.12	-	-	-
93~94	933.89	-	933.89	0.572	534.18	-	-	-
94~95	853.89	26.46	880.35	0.497	437.53	136.56	0.497	67.87
95~96	353.90	48.91	402.84	0.432	174.03	273.12	0.432	117.99
96~97	155.25	71.37	226.62	0.376	85.21	409.68	0.376	154.04
97~98	-	80.19	80.19	0.327	26.22	455.20	0.327	148.85
98~99	-	80.19	80.19	0.284	22.77	455.20	0.284	129.28
99~2000	-	80.19	80.19	0.247	19.81	455.20	0.247	112.43
2000~01	-	"	"	0.215	17.24	"	0.215	97.87
01~02	-	"	"	0.187	14.99	"	0.187	85.12
02~03	-	"	"	0.163	13.07	"	0.163	74.20
03~04	-	"	"	0.141	11.31	"	0.141	64.18
04~05	-	"	"	0.123	9.86	"	0.123	55.99
05~06	-	"	"	0.107	8.58	"	0.107	48.71
06~07	-	"	"	0.093	7.46	"	0.093	43.33
07~08	-	"	"	0.081	6.49	"	0.081	36.87
08~09	-	"	"	0.070	5.61	"	0.070	31.86
09~10	-	"	"	0.061	4.89	"	0.061	27.77
10~11	-	"	"	0.053	4.25	"	0.053	24.12
11~12	-	"	"	0.046	3.69	"	0.046	20.94
12~13	-	"	"	0.040	3.21	"	0.040	18.21
13~14	-	"	"	0.035	2.81	"	0.035	15.93
14~15	-	"	"	0.030	2.40	"	0.030	13.66
15~16	-	"	"	0.026	2.08	"	0.026	11.84
16~17	-	"	"	0.023	1.84	"	0.023	10.47
17~18	-	"	"	0.020	1.60	"	0.020	9.10
18~19	-	"	"	0.017	1.36	"	0.017	7.74
19~20	-	"	"	0.015	1.20	"	0.015	6.83
Σ					2,095.02			1,435.20

NPV $1,435.20 - 2,095.02 = \Delta 659.82$

BCR $1,435.20 \div 2,095.02 = 0.6851$

Table X-18 NPV and BCR in the case of 15% discount rate — Economic —

	Investment of project	Q & R	Total cost	Discount factor 15%	Discount total cost	Benefit of the project	Discount factor 15%	Discount total benefit
1990~91	70.02	-	70.02	0.870	60.92	-	-	-
91~92	136.74	-	136.74	0.756	103.37	-	-	-
92~93	484.98	-	484.98	0.658	319.12	-	-	-
93~94	711.25	-	711.25	0.572	406.84	-	-	-
94~95	640.82	20.81	661.63	0.497	328.83	195.50	0.497	97.16
95~96	314.80	38.47	353.27	0.432	152.61	391.00	0.432	168.91
96~97	138.84	56.13	194.97	0.376	73.31	586.49	0.376	220.52
97~98	-	63.07	63.07	0.327	20.62	651.66	0.327	213.09
98~99	-	63.07	63.07	0.284	17.91	651.66	0.284	185.07
99~2000	-	63.07	63.07	0.247	15.58	651.66	0.247	160.96
2000~01	-	63.07	63.07	0.215	13.56	651.66	0.215	140.11
01~02	-	"	"	0.187	11.79	"	0.187	121.86
02~03	-	"	"	0.163	10.28	"	0.163	106.22
03~04	-	"	"	0.141	8.89	"	0.141	91.88
04~05	-	"	"	0.123	7.76	"	0.123	80.15
05~06	-	"	"	0.107	6.75	"	0.107	69.73
06~07	-	"	"	0.093	5.86	"	0.093	60.60
07~08	-	"	"	0.081	5.11	"	0.081	52.78
08~09	-	"	"	0.070	4.41	"	0.070	45.62
09~10	-	"	"	0.061	3.85	"	0.061	39.75
10~11	-	"	"	0.053	3.34	"	0.053	34.54
11~12	-	"	"	0.046	2.90	"	0.046	29.98
12~13	-	"	"	0.040	2.52	"	0.040	26.07
13~14	-	"	"	0.035	2.21	"	0.035	22.81
14~15	-	"	"	0.030	1.89	"	0.030	19.55
15~16	-	"	"	0.026	1.64	"	0.026	16.94
16~17	-	"	"	0.023	1.45	"	0.023	14.99
17~18	-	"	"	0.020	1.26	"	0.020	13.03
18~19	-	"	"	0.017	1.07	"	0.017	11.08
19~20	-	"	"	0.015	0.95	"	0.015	9.77
Σ					1,596.60			2,053.07

NPV $2,053.07 - 1,596.60 = 456.47$

BCR $2,053.07 \div 1,596.60 = 1.286$

Table X-19 Internal Rate of Return — Financial —

	Benefit (with- without)	Total cost	Net benefit	Discount factor	NTV	Discount factor	NTV
	(1)	(2)	(1)-(2)=(3)	(4)=5%	(5)	(6)=10%	(7)
1990~91	-	73.23	△ 73.23	0.952	△ 69.71	0.909	△ 66.57
91~92	-	217.60	△217.60	0.907	△197.36	0.826	△179.74
92~93	-	673.43	△673.43	0.864	△581.84	0.751	△505.75
93~94	-	933.89	△933.89	0.823	△768.59	0.683	△637.85
94~95	136.56	880.35	△743.79	0.784	△583.13	0.621	△461.89
95~96	273.12	402.84	△129.72	0.746	△ 96.77	0.564	△ 73.16
96~97	499.68	226.62	183.06	0.711	130.16	0.513	93.91
97~98	455.20	80.19	375.01	0.677	253.88	0.467	175.13
98~99	455.20	80.19	375.01	0.645	241.88	0.424	159.00
99~2000	"	"	"	0.614	230.26	0.386	144.75
2000~01	"	"	"	0.585	219.38	0.350	131.25
01~02	"	"	"	0.557	208.88	0.319	119.63
02~03	"	"	"	0.530	198.75	0.290	108.75
03~04	"	"	"	0.505	189.38	0.263	98.63
04~05	"	"	"	0.481	180.38	0.239	89.63
05~06	"	"	"	0.458	171.75	0.218	81.75
06~07	"	"	"	0.436	163.50	0.198	74.26
07~08	"	"	"	0.416	156.00	0.180	67.51
08~09	"	"	"	0.396	148.50	0.164	61.50
09~10	"	"	"	0.377	141.38	0.149	55.88
10~11	"	"	"	0.359	134.63	0.135	50.63
11~12	"	"	"	0.342	128.25	0.123	46.13
12~13	"	"	"	0.326	122.25	0.112	42.00
13~14	"	"	"	0.310	116.25	0.102	38.25
14~15	"	"	"	0.295	110.63	0.092	34.50
15~16	"	"	"	0.281	105.38	0.084	31.50
16~17	"	"	"	0.268	100.50	0.076	28.50
17~18	"	"	"	0.255	95.63	0.069	25.87
18~19	"	"	"	0.243	91.13	0.063	23.62
19~20	"	"	"	0.231	86.63	0.057	21.37
Σ					1,427.96		△121.01

$$\begin{aligned}
 \text{IRR} &= 5 + \left(\frac{1,427.96}{121.01 + 1,427.96} \times (10-5) \right) \\
 &= 5 + (0.922 \times 5) = 5 + 4.61 = 9.61
 \end{aligned}$$

Table X-20. Internal Rate of Return. — Economic. — proto-type

	Benefit (with - without)	Total cost	Net benefit	Discount factor	NTV	Discount factor	NTV
	(1)	(2)	(1)-(2)=(3)	(4)=15%	(5)	(6)=20%	(7)
1990~91	-	70.02	△ 70.02	0.870	△ 60.92	0.833	△ 58.33
91~92	-	36.74	△136.74	0.756	△103.37	0.694	△ 94.90
92~93	-	484.98	△484.98	0.658	△319.12	0.579	△280.80
93~94	-	711.25	△711.25	0.572	△406.83	0.482	△342.82
94~95	195.50	661.63	△466.13	0.497	△231.67	0.402	△187.38
95~96	391.00	353.27	37.73	0.432	16.30	0.335	12.64
96~97	586.49	194.97	391.52	0.376	147.21	0.279	109.23
97~98	651.66	63.07	588.59	0.327	192.47	0.233	137.14
98~99	651.66	63.07	588.59	0.284	167.16	0.194	114.19
99~2000	651.66	63.07	588.59	0.247	145.38	0.162	95.35
2000~01	"	"	"	0.215	126.55	0.135	79.46
01~02	"	"	"	0.187	110.06	0.112	65.92
02~03	"	"	"	0.163	95.94	0.093	54.74
03~04	"	"	"	0.141	82.99	0.078	45.91
04~05	"	"	"	0.123	72.40	0.065	38.26
05~06	"	"	"	0.107	62.97	0.054	31.78
06~07	"	"	"	0.093	54.74	0.045	26.49
07~08	"	"	"	0.081	47.67	0.038	22.37
08~09	"	"	"	0.070	41.20	0.031	18.25
09~10	"	"	"	0.061	35.90	0.026	15.30
10~11	"	"	"	0.053	31.19	0.022	12.95
11~12	"	"	"	0.046	27.07	0.018	10.59
12~13	"	"	"	0.040	23.54	0.015	8.83
13~14	"	"	"	0.035	20.60	0.013	7.65
14~15	"	"	"	0.030	17.66	0.010	5.88
15~16	"	"	"	0.026	15.30	0.009	5.30
16~17	"	"	"	0.023	13.54	0.007	4.12
17~18	"	"	"	0.020	11.77	0.006	3.53
18~19	"	"	"	0.017	10.00	0.005	2.94
19~20	"	"	"	0.015	8.33	0.004	2.35
Σ					456.53		△ 33.06

$$IRR = 15 + \left(\frac{456.53}{33.06 + 456.53} \times (20 - 15) \right)$$

$$= 15 + 0.932 \times 5 = 19.66$$

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