

	Excavation, weathered rock	m3	9,000	6.00	54,000	
	Excavation, hard rock	m3	12,000	10.00	120,000	
	Concrete, substructure	m3	8,600	250.00	2,150,000	
	Concrete, second stage	m3	2,200	140.00	308,000	
	Reinforcement	ton	560	1,500.00	840,000	
	Others (20%)	L.S.			700,700	
	Subtotal					4,204,200
2.70	TAIL RACE					
	Excavation					
	Excavation, common	m3	1,200	3.50	4,200	
	Excavation, weathered rock	m3	1,200	6.00	7,200	
	Excavation, hard rock	m3	1,800	10.00	18,000	
	Concrete, structure	m3	900	140.00	126,000	
	Reinforcement	ton	30	1,500.00	45,000	
	Others (20%)	L.S.			40,080	
	Subtotal					240,480
2.80	ARCHITECTURAL BUILDINGS	m2	1,200	1,100.00	1,320,000	1,320,000
2.90	ACCESS ROAD					
	New construction	km	0	600,000.00	0	
	Upgraded	km	79	50,000.00	3,950,000	
	Subtotal					3,950,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	400	5,000.00	2,000,000	
	Gates	ton	60	7,000.00	420,000	
	Subtotal					2,420,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	230	18,700.00	4,301,000	
	Generators	ton	330	20,400.00	6,732,000	
	Transformers	MVA	62	4,500.00	279,000	
	Subtotal					11,312,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	2	46,000.00	92,000	92,000
	Total of Direct Cost					96,145,629
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	4,807,281
7.00	ADMINISTRATION EXPENSES	LS			0	961,436
8.00	ENGINEERING SERVICES	LS			0	6,730,194
9.00	PHYSICAL CONTINGENCY	LS			0	9,614,563
	GRAND TOTAL				118,259,123	118,259,123

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			8,685,177
2.00	CIVIL WORKS				
2.10	DIVERSION TUNNEL				
	Open Excavation of Inlet & Outlet				
	Open excavation, common	m3	2,400	3.50	8,400
	Open excavation, weathered rock	m3	2,400	6.00	14,400
	Open excavation, hard rock	m3	4,000	10.00	40,000
	Concrete of Inlet & Outlet	m3	1,600	140.00	224,000
	Tunnel Excavation	m3	50,900	55.00	2,799,500
	Tunnel Concrete	m3	16,100	160.00	2,576,000
	Reinforcement bar	m3	360	1,500.00	540,000
	Plug Concrete	m3	2,300	160.00	368,000
	Others (20%)	L.S.			1,314,060
	Subtotal				7,884,360
2.20	COFFER DAM				
	Excavation				
	Excavation, common	m3	47,900	3.50	167,650
	Embankment				
	Embankment, core	m3	73,400	5.00	367,000
	Embankment, filter	m3	18,700	10.00	187,000
	Embankment, rock	m3	383,900	6.00	2,303,400
	Others (20%)	L.S.			605,010
	Subtotal				3,630,060
2.30	MAIN DAM				
	Excavation				
	Excavation, common	m3	237,300	3.50	830,550
	Excavation, weathered rock	m3	91,600	6.00	549,600
	Excavation, hard	m3	188,500	10.00	1,885,000
	Embankment				
	Embankment, core	m3	904,400	5.00	4,522,000
	Embankment, filter	m3	206,300	10.00	2,063,000
	Embankment, rock	m3	5,384,400	6.00	32,306,400
	Curtain Grouting	m	24,700	70.00	1,729,000
	Consolidation Grouting	m	5,200	90.00	468,000
	Others (10%)	L.S.			4,435,355
	Subtotal				48,788,905
2.40	SPILLWAY				
	Excavation				
	Excavation, common	m3	105,800	3.50	370,300
	Excavation, weathered rock	m3	148,600	6.00	891,600
	Excavation, hard rock	m3	564,000	10.00	5,640,000
	Concrete	m3	31,800	140.00	4,452,000
	Reinforcement bars	ton	950	1,500.00	1,425,000
	Others (20%)	L.S.			2,555,780
	Subtotal				15,334,680
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	4,600	3.50	16,100
	Excavation, weathered rock	m3	4,600	6.00	27,600
	Excavation, hard rock	m3	6,100	10.00	61,000
	Concrete, open structure	m3	6,900	140.00	966,000
	Reinforcement	ton	210	1,500.00	315,000
	Others (20%)	L.S.			277,140
	Subtotal				1,662,840
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	16,500	55.00	907,500
	Concrete, tunnel	m3	5,250	160.00	840,000
	Reinforcement	ton	55	1,500.00	82,500
	Consolidation grout	m	1,200	90.00	108,000
	Curtain grout	m	400	70.00	28,000
	Backfill grout	m3	120	200.00	24,000
	Others (20%)	L.S.			398,000
	Subtotal				2,388,000
2.54	PENSTOCK				
	Excavation, tunnel	m3	7,900	55.00	434,500
	Concrete, tunnel	m3	2,750	160.00	440,000
	Reinforcement	ton	55	1,500.00	82,500
	Curtain grout	m	0	70.00	0
	Backfill grout	m3	110	200.00	22,000
	Others (20%)	L.S.			195,800
	Subtotal				1,174,800
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	12,300	3.50	43,050

	Excavation, weathered rock	m3	12,300	6.00	73,800	
	Excavation, hard rock	m3	16,400	10.00	164,000	
	Concrete, substructure	m3	11,700	250.00	2,925,000	
	Concrete, second stage	m3	3,000	140.00	420,000	
	Reinforcement	ton	760	1,500.00	1,140,000	
	Others (20%)	L.S.			953,170	
	Subtotal					5,719,020
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	1,500	3.50	5,250	
	Excavation, weathered rock	m3	1,500	6.00	9,000	
	Excavation, hard rock	m3	2,500	10.00	25,000	
	Concrete, structure	m3	1,000	140.00	140,000	
	Reinforcement	ton	30	1,500.00	45,000	
	Others (20%)	L.S.			44,850	
	Subtotal					269,100
2.80	ARCHITECTURAL BUILDINGS	m2	1,400	1,100.00	1,540,000	1,540,000
2.90	ACCESS ROAD					
	New construction	km	0	600,000.00	0	
	Upgraded	km	79	50,000.00	3,950,000	
	Subtotal					3,950,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	510	5,000.00	2,550,000	
	Gates	ton	70	7,000.00	490,000	
	Subtotal					3,040,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	260	18,700.00	4,862,000	
	Generators	ton	400	20,400.00	8,160,000	
	Transformers	MVA	77	4,300.00	331,100	
	Subtotal					13,353,100
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	2	46,000.00	92,000	92,000
	Total of Direct Cost					117,512,042
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	5,875,602
7.00	ADMINISTRATION EXPENSES	LS			0	1,175,120
8.00	ENGINEERING SERVICES	LS			0	8,225,843
9.00	PHYSICAL CONTINGENCY	LS			0	11,751,204
	GRAND TOTAL				144,539,811	144,539,811

B/Q of TR-1 (Draft Rate 0.33)

Item No.	Work Item	Unit	Quantity	Unit price P.C.(US\$)	Amount P.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			8,406,348
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	14,600	3.50	51,100
	Open excavation,weathered rock	m3	14,600	6.00	87,600
	Open excavation,hard rock	m3	19,400	10.00	194,000
	Concrete				
	Mass concrete	m3	26,300	90.00	2,367,000
	Reinforced concrete	m3	67,600	140.00	9,464,000
	Reinforcement bar	ton	2,100	1,500.00	3,150,000
	Curtain grouting	m	3,900	70.00	273,000
	Consolidation grouting	m	2,300	90.00	207,000
	Others (20%)	L.S.			3,158,740
	Subtotal				18,952,440
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	156,800	55.00	8,629,500
	Concrete, tunnel	m3	37,800	160.00	6,048,000
	Reinforcement bars	ton	380	1,500.00	570,000
	Others (20%)	L.S.			3,049,500
	Subtotal				18,297,000
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	2,100	3.50	7,350
	Excavation,weathered rock	m3	2,100	6.00	12,600
	Excavation,hard rock	m3	2,800	10.00	28,000
	Concrete,open structure	m3	3,100	140.00	434,000
	Reinforcement	ton	90	1,500.00	135,000
	Others (20%)	L.S.			123,390
	Subtotal				740,340
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	220,700	55.00	12,138,500
	Concrete, tunnel	m3	71,400	160.00	11,424,000
	Reinforcement	ton	720	1,500.00	1,080,000
	Consolidation grout	m	19,900	90.00	1,791,000
	Curtain grout	m	350	70.00	24,500
	Backfill grout	m3	1,500	200.00	300,000
	Others (20%)	L.S.			5,355,600
	Subtotal				32,133,600
2.53	SURGE TANK				
	Excavation, shaft	m3	20,600	55.00	1,133,000
	Concrete, shaft	m3	6,000	160.00	960,000
	Reinforcement	ton	180	1,500.00	270,000
	Consolidation grout	m	300	90.00	27,000
	Others (20%)	L.S.			478,000
	Subtotal				2,868,000
2.54	PENSTOCK				
	Excavation,tunnel	m3	12,000	55.00	660,000
	Concrete,tunnel	m3	4,800	160.00	768,000
	Reinforcement	ton	100	1,500.00	150,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	150	200.00	30,000
	Others (20%)	L.S.			325,800
	Subtotal				1,954,800
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	18,000	3.50	63,000
	Excavation,weathered rock	m3	18,000	6.00	108,000
	Excavation,hard rock	m3	24,000	10.00	240,000
	Concrete, substructure	m3	17,100	250.00	4,275,000
	Concrete, second stage	m3	4,300	140.00	602,000
	Reinforcement	ton	1,200	1,500.00	1,800,000

	Others (20%)	L.S.			1,417,600	
	Subtotal					8,503,600
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	4,500	3.50	15,750	
	Excavation, weathered rock	m3	4,500	6.00	27,000	
	Excavation, hard rock	m3	6,800	10.00	68,000	
	Concrete, structure	m3	2,100	140.00	294,000	
	Reinforcement	ton	70	1,500.00	105,000	
	Others (20%)	L.S.			101,950	
	Subtotal					611,700
2.80	ARCHITECTURAL BUILDINGS	m2	7,000	1,100.00	7,700,000	7,700,000
2.90	ACCESS ROAD					
	New construction	m	162	600,000.00	97,200,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					101,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	5,200	5,000.00	26,000,000	
	Gates	ton	270	7,000.00	1,890,000	
	Subtotal					27,890,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	850	18,700.00	15,895,000	
	Generators	ton	1,800	20,400.00	36,720,000	
	Transformers	MVA	193	3,400.00	656,200	
	Subtotal					53,271,200
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	81	46,000.00	3,726,000	3,726,000
	Total of Direct Cost					286,207,028
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,862,070
7.00	ADMINISTRATION EXPENSES	LS			0	2,862,070
8.00	ENGINEERING SERVICES	LS			0	20,034,492
9.00	PHYSICAL CONTINGENCY	LS			0	28,620,703
	GRAND TOTAL				340,586,363	340,586,363

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			6,170,958
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation, common	m3	13,200	3.50	46,200
	Open excavation, weathered rock	m3	13,200	6.00	79,200
	Open excavation, hard rock	m3	17,600	10.00	176,000
	Concrete				
	Mass concrete	m3	24,500	90.00	2,205,000
	Reinforced concrete	m3	62,900	140.00	8,806,000
	Reinforcement bar	ton	1,900	1,500.00	2,850,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	2,300	90.00	207,000
	Others (20%)	L.S.			2,924,280
	Subtotal				17,545,680
2.40	DESANDING BASIN				
	Excavation, tunnel	m3	104,600	55.00	5,753,000
	Concrete, tunnel	m3	25,200	160.00	4,032,000
	Reinforcement bars	ton	250	1,500.00	375,000
	Others (20%)	L.S.			2,032,000
	Subtotal				12,192,000
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	1,700	3.50	5,950
	Excavation, weathered rock	m3	1,700	6.00	10,200
	Excavation, hard rock	m3	2,200	10.00	22,000
	Concrete, open structure	m3	2,500	140.00	350,000
	Reinforcement	ton	80	1,500.00	120,000
	Others (20%)	L.S.			101,630
	Subtotal				609,780
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	143,600	55.00	7,898,000
	Concrete, tunnel	m3	48,100	160.00	7,696,000
	Reinforcement	ton	480	1,500.00	720,000
	Consolidation grout	m	16,000	90.00	1,440,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	1,400	200.00	280,000
	Others (20%)	L.S.			3,611,000
	Subtotal				21,666,000
2.53	SURGE TANK				
	Excavation, shaft	m3	13,700	55.00	753,500
	Concrete, shaft	m3	4,000	160.00	640,000
	Reinforcement	ton	120	1,500.00	180,000
	Consolidation grout	m	250	90.00	22,500
	Others (20%)	L.S.			319,200
	Subtotal				1,915,200
2.54	PENSTOCK				
	Excavation, tunnel	m3	9,500	55.00	522,500
	Concrete, tunnel	m3	4,200	160.00	672,000
	Reinforcement	ton	90	1,500.00	135,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	120	200.00	24,000
	Others (20%)	L.S.			274,200
	Subtotal				1,645,200
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	12,000	3.50	42,000
	Excavation, weathered rock	m3	12,000	6.00	72,000
	Excavation, hard rock	m3	16,000	10.00	160,000
	Concrete, substructure	m3	11,500	250.00	2,875,000
	Concrete, second stage	m3	2,900	140.00	406,000
	Reinforcement	ton	750	1,500.00	1,125,000

	Others (20%)	L.S.			936,000	
	Subtotal					5,616,000
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	3,800	3.50	13,300	
	Excavation, weathered rock	m3	3,800	6.00	22,800	
	Excavation, hard rock	m3	5,500	10.00	55,000	
	Concrete, structure	m3	1,800	140.00	252,000	
	Reinforcement	ton	80	1,500.00	90,000	
	Others (20%)	L.S.			86,620	
	Subtotal					519,720
2.80	ARCHITECTURAL BUILDINGS	m2	6,000	1,100.00	6,600,000	6,600,000
2.90	ACCESS ROAD					
	New construction	m	162	600,000.00	97,200,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					101,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	4,000	5,000.00	20,000,000	
	Gates	ton	180	7,000.00	1,260,000	
	Subtotal					21,260,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	600	18,700.00	11,220,000	
	Generators	ton	1,500	20,400.00	30,600,000	
	Transformers	MVA	129	3,800.00	490,200	
	Subtotal					42,310,200
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	81	46,000.00	3,726,000	3,726,000
	Total of Direct Cost					242,926,738
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,429,267
7.00	ADMINISTRATION EXPENSES	LS			0	2,429,267
8.00	ENGINEERING SERVICES	LS			0	17,004,872
9.00	PHYSICAL CONTINGENCY	LS			0	24,292,674
	GRAND TOTAL				289,082,818	289,082,818

B/Q of TR-1 (Draft Rate 0.67)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			5,072,016
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	11,800	3.50	41,300
	Open excavation,weathered rock	m3	11,800	6.00	70,800
	Open excavation,hard rock	m3	15,800	10.00	158,000
	Concrete				
	Mass concrete	m3	22,800	90.00	2,052,000
	Reinforced concrete	m3	58,800	140.00	8,204,000
	Reinforcement bar	ton	1,800	1,500.00	2,700,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	2,300	90.00	207,000
	Others (20%)	L.S.			2,734,220
	Subtotal				16,405,320
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	78,500	55.00	4,317,500
	Concrete, tunnel	m3	18,900	160.00	3,024,000
	Reinforcement bars	ton	180	1,500.00	285,000
	Others (20%)	L.S.			1,525,300
	Subtotal				9,151,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,400	3.50	4,900
	Excavation,weathered rock	m3	1,400	6.00	8,400
	Excavation,hard rock	m3	1,900	10.00	19,000
	Concrete,open structure	m3	2,100	140.00	294,000
	Reinforcement	ton	70	1,500.00	105,000
	Others (20%)	L.S.			86,260
	Subtotal				517,560
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	111,300	55.00	6,121,500
	Concrete, tunnel	m3	38,200	160.00	6,112,000
	Reinforcement	ton	390	1,500.00	585,000
	Consolidation grout	m	14,000	90.00	1,260,000
	Curtain grout	m	270	70.00	18,900
	Backfill grout	m3	1,250	200.00	250,000
	Others (20%)	L.S.			2,869,480
	Subtotal				17,216,880
2.53	SURGE TANK				
	Excavation, shaft	m3	10,300	55.00	566,500
	Concrete, shaft	m3	3,000	160.00	480,000
	Reinforcement	ton	90	1,500.00	135,000
	Consolidation grout	m	200	90.00	18,000
	Others (20%)	L.S.			239,900
	Subtotal				1,439,400
2.54	PENSTOCK				
	Excavation,tunnel	m3	7,300	55.00	401,500
	Concrete,tunnel	m3	3,600	160.00	576,000
	Reinforcement	ton	70	1,500.00	105,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	100	200.00	20,000
	Others (20%)	L.S.			223,300
	Subtotal				1,339,800
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	9,000	3.50	31,500
	Excavation,weathered rock	m3	9,000	6.00	54,000
	Excavation,hard rock	m3	12,000	10.00	120,000
	Concrete, substructure	m3	8,600	250.00	2,150,000
	Concrete, second stage	m3	2,200	140.00	308,000
	Reinforcement	ton	570	1,500.00	855,000

	Others (20%)	L.S.			703,700	
	Subtotal					4,222,200
2.70	TAILRACE					
	Excavation					
	Excavation,common	m3	3,000	3.50	10,500	
	Excavation,weathered rock	m3	3,000	6.00	18,000	
	Excavation,hard rock	m3	5,000	10.00	50,000	
	Concrete, structure	m3	1,500	140.00	210,000	
	Reinforcement	ton	45	1,500.00	67,500	
	Others (20%)	L.S.			71,200	
	Subtotal					427,200
2.80	ARCHITECTURAL BUILDINGS	m2	5,000	1,100.00	5,500,000	5,500,000
2.90	ACCESS ROAD					
	New construction	m	182	600,000.00	97,200,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					101,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	2,900	5,000.00	14,500,000	
	Gates	ton	140	7,000.00	980,000	
	Subtotal					15,480,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	480	18,700.00	8,976,000	
	Generators	ton	1,150	20,400.00	23,460,000	
	Transformers	MVA	97	4,100.00	397,700	
	Subtotal					32,833,700
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	81	46,000.00	3,726,000	3,726,000
	Total of Direct Cost					214,481,876
6.00	LAND AQUISITION AND COMPENSATION	LS			0	2,144,819
7.00	ADMINISTRATION EXPENSES	LS			0	2,144,819
8.00	ENGINEERING SERVICES	LS			0	15,013,731
9.00	PHYSICAL CONTINGENCY	LS			0	21,448,188
	GRAND TOTAL				255,233,432	255,233,432

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			5,903,718
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	13,800	3.50	48,300
	Open excavation,weathered rock	m3	13,800	6.00	82,800
	Open excavation,hard rock	m3	18,400	10.00	184,000
	Concrete				
	Mass concrete	m3	25,500	90.00	2,295,000
	Reinforced concrete	m3	66,700	140.00	9,338,000
	Reinforcement bar	ton	2,000	1,500.00	3,000,000
	Curtain grouting	m	2,900	70.00	203,000
	Consolidation grouting	m	2,300	90.00	207,000
	Others (20%)	L.S.			3,071,620
	Subtotal				18,429,720
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	127,100	55.00	6,990,500
	Concrete, tunnel	m3	30,600	160.00	4,896,000
	Reinforcement bars	ton	310	1,500.00	465,000
	Others (20%)	L.S.			2,470,300
	Subtotal				14,821,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,900	3.50	6,650
	Excavation,weathered rock	m3	1,900	6.00	11,400
	Excavation,hard rock	m3	2,500	10.00	25,000
	Concrete,open structure	m3	2,800	140.00	392,000
	Reinforcement	ton	90	1,500.00	135,000
	Others (20%)	L.S.			114,010
	Subtotal				684,060
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	92,400	55.00	5,082,000
	Concrete, tunnel	m3	30,400	160.00	4,864,000
	Reinforcement	ton	310	1,500.00	465,000
	Consolidation grout	m	9,200	90.00	828,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	780	200.00	156,000
	Others (20%)	L.S.			2,283,200
	Subtotal				13,699,200
2.53	SURGE TANK				
	Excavation, shaft	m3	14,100	55.00	775,500
	Concrete, shaft	m3	4,100	160.00	656,000
	Reinforcement	ton	130	1,500.00	195,000
	Consolidation grout	m	250	90.00	22,500
	Others (20%)	L.S.			329,800
	Subtotal				1,978,800
2.54	PENSTOCK				
	Excavation,tunnel	m3	5,100	55.00	280,500
	Concrete,tunnel	m3	2,200	160.00	352,000
	Reinforcement	ton	45	1,500.00	67,500
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	80	200.00	16,000
	Others (20%)	L.S.			146,700
	Subtotal				880,200
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	17,000	3.50	59,500
	Excavation,weathered rock	m3	17,000	6.00	102,000
	Excavation,hard rock	m3	23,000	10.00	230,000
	Concrete, substructure	m3	16,200	250.00	4,050,000
	Concrete, second stage	m3	4,100	140.00	574,000
	Reinforcement	ton	1,100	1,500.00	1,650,000

	Others (20%)	L.S.			1,333,100	
	Subtotal					7,998,600
2.70	TAILRACE					
	Excavation					
	Excavation,common	m3	4,000	3.50	14,000	
	Excavation,weathered rock	m3	4,000	6.00	24,000	
	Excavation,hard rock	m3	6,000	10.00	60,000	
	Concrete, structure	m3	1,900	140.00	266,000	
	Reinforcement	ton	80	1,500.00	90,000	
	Others (20%)	L.S.			90,800	
	Subtotal					544,800
2.80	ARCHITECTURAL BUILDINGS	m2	6,000	1,100.00	6,600,000	6,600,000
2.90	ACCESS ROAD					
	New construction	m	197	600,000.00	118,200,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					122,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	2,550	5,000.00	12,750,000	
	Gates	ton	220	7,000.00	1,540,000	
	Subtotal					14,290,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	780	18,700.00	14,586,000	
	Generators	ton	1,800	20,400.00	36,720,000	
	Transformers	MVA	196	3,400.00	666,400	
	Subtotal					51,972,400
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	100	46,000.00	4,600,000	4,600,000
	Total of Direct Cost					264,553,298
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,645,533
7.00	ADMINISTRATION EXPENSES	LS			0	2,645,533
8.00	ENGINEERING SERVICES	LS			0	18,518,731
9.00	PHYSICAL CONTINGENCY	LS			0	26,455,330
	GRAND TOTAL				314,818,425	314,818,425

B/Q of TR-2 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			4,434,810
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	12,500	3.50	43,750
	Open excavation,weathered rock	m3	12,500	6.00	75,000
	Open excavation,hard rock	m3	16,600	10.00	166,000
	Concrete				
	Mass concrete	m3	23,800	90.00	2,142,000
	Reinforced concrete	m3	82,100	140.00	8,694,000
	Reinforcement bar	ton	1,900	1,500.00	2,850,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	2,200	90.00	198,000
	Others (20%)	L.S.			2,884,150
	Subtotal				17,304,900
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	84,800	55.00	4,664,000
	Concrete, tunnel	m3	20,400	160.00	3,264,000
	Reinforcement bars	ton	210	1,500.00	315,000
	Others (20%)	L.S.			1,648,600
	Subtotal				9,891,600
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,500	3.50	5,250
	Excavation,weathered rock	m3	1,500	6.00	9,000
	Excavation,hard rock	m3	2,000	10.00	20,000
	Concrete,open structure	m3	2,200	140.00	308,000
	Reinforcement	ton	65	1,500.00	97,500
	Others (20%)	L.S.			87,950
	Subtotal				527,700
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	57,100	55.00	3,140,500
	Concrete, tunnel	m3	19,800	160.00	3,168,000
	Reinforcement	ton	200	1,500.00	300,000
	Consolidation grout	m	7,200	90.00	648,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	700	200.00	140,000
	Others (20%)	L.S.			1,476,400
	Subtotal				8,853,400
2.53	SURGE TANK				
	Excavation, shaft	m3	9,400	55.00	517,000
	Concrete, shaft	m3	2,800	160.00	448,000
	Reinforcement	ton	80	1,500.00	120,000
	Consolidation grout	m	200	90.00	18,000
	Others (20%)	L.S.			220,600
	Subtotal				1,323,600
2.54	PENSTOCK				
	Excavation,tunnel	m3	3,900	55.00	214,500
	Concrete,tunnel	m3	1,900	160.00	304,000
	Reinforcement	ton	40	1,500.00	60,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	60	200.00	12,000
	Others (20%)	L.S.			120,900
	Subtotal				725,400
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	11,300	3.50	39,550
	Excavation,weathered rock	m3	11,300	6.00	67,800
	Excavation,hard rock	m3	15,100	10.00	151,000
	Concrete, substructure	m3	10,800	250.00	2,700,000
	Concrete, second stage	m3	2,700	140.00	378,000
	Reinforcement	ton	700	1,500.00	1,050,000

	Others (20%)	L.S.			877,270	
	Subtotal					5,263,620
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	3,200	3.50	11,200	
	Excavation, weathered rock	m3	3,200	6.00	19,200	
	Excavation, hard rock	m3	4,800	10.00	48,000	
	Concrete, structure	m3	1,600	140.00	224,000	
	Reinforcement	ton	50	1,500.00	75,000	
	Others (20%)	L.S.			75,480	
	Subtotal					452,880
2.80	ARCHITECTURAL BUILDINGS	m2	5,000	1,100.00	5,500,000	5,500,000
2.90	ACCESS ROAD					
	New construction	m	197	600,000.00	118,200,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					122,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,800	5,000.00	9,000,000	
	Gates	ton	145	7,000.00	1,015,000	
	Subtotal					10,015,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	560	18,700.00	10,472,000	
	Generators	ton	1,350	20,400.00	27,540,000	
	Transformers	MVA	130	3,800.00	494,000	
	Subtotal					38,506,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	100	46,000.00	4,600,000	4,600,000
	Total of Direct Cost					229,553,910
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,295,539
7.00	ADMINISTRATION EXPENSES	LS			0	2,295,539
8.00	ENGINEERING SERVICES	LS			0	16,068,774
9.00	PHYSICAL CONTINGENCY	LS			0	22,955,391
	GRAND TOTAL				273,169,153	273,169,153

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			3,685,806
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	11,200	3.50	39,200
	Open excavation,weathered rock	m3	11,200	6.00	67,200
	Open excavation,hard rock	m3	14,900	10.00	149,000
	Concrete				
	Mass concrete	m3	22,100	90.00	1,989,000
	Reinforced concrete	m3	57,800	140.00	8,092,000
	Reinforcement bar	ton	1,800	1,500.00	2,700,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	2,200	90.00	198,000
	Others (20%)	L.S.			2,694,480
	Subtotal				16,166,880
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	63,600	55.00	3,498,000
	Concrete, tunnel	m3	15,300	160.00	2,448,000
	Reinforcement bars	ton	180	1,500.00	240,000
	Others (20%)	L.S.			1,237,200
	Subtotal				7,423,200
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,300	3.50	4,550
	Excavation,weathered rock	m3	1,300	6.00	7,800
	Excavation,hard rock	m3	1,700	10.00	17,000
	Concrete,open structure	m3	1,900	140.00	266,000
	Reinforcement	ton	55	1,500.00	82,500
	Others (20%)	L.S.			75,570
	Subtotal				453,420
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	42,800	55.00	2,343,000
	Concrete, tunnel	m3	15,200	160.00	2,432,000
	Reinforcement	ton	150	1,500.00	225,000
	Consolidation grout	m	6,200	90.00	558,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	650	200.00	130,000
	Others (20%)	L.S.			1,140,400
	Subtotal				6,842,400
2.53	SURGE TANK				
	Excavation, shaft	m3	7,100	55.00	390,500
	Concrete, shaft	m3	2,100	160.00	336,000
	Reinforcement	ton	60	1,500.00	90,000
	Consolidation grout	m	150	90.00	13,500
	Others (20%)	L.S.			166,000
	Subtotal				996,000
2.54	PENSTOCK				
	Excavation,tunnel	m3	3,300	55.00	181,500
	Concrete,tunnel	m3	1,700	160.00	272,000
	Reinforcement	ton	35	1,500.00	52,500
	Curtain grout	m	150	70.00	10,500
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			105,300
	Subtotal				631,800
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	8,500	3.50	29,750
	Excavation,weathered rock	m3	8,500	6.00	51,000
	Excavation,hard rock	m3	11,300	10.00	113,000
	Concrete, substructure	m3	8,100	250.00	2,025,000
	Concrete, second stage	m3	2,100	140.00	294,000
	Reinforcement	ton	530	1,500.00	795,000

	Others (20%)	L.S.			661,550	
	Subtotal					3,969,300
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	2,900	3.50	10,150	
	Excavation, weathered rock	m3	2,900	6.00	17,400	
	Excavation, hard rock	m3	4,300	10.00	43,000	
	Concrete, structure	m3	1,300	140.00	182,000	
	Reinforcement	ton	40	1,500.00	60,000	
	Others (20%)	L.S.			62,510	
	Subtotal					375,060
2.80	ARCHITECTURAL BUILDINGS	m2	4,000	1,100.00	4,400,000	4,400,000
2.90	ACCESS ROAD					
	New construction	m	197	600,000.00	118,200,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					122,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,450	5,000.00	7,250,000	
	Gates	ton	100	7,000.00	700,000	
	Subtotal					7,950,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	440	18,700.00	8,228,000	
	Generators	ton	1,150	20,400.00	23,460,000	
	Transformers	MVA	98	4,100.00	401,800	
	Subtotal					32,089,800
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	100	46,000.00	4,600,000	4,600,000
	Total of Direct Cost					211,733,666
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,117,337
7.00	ADMINISTRATION EXPENSES	LS			0	2,117,337
8.00	ENGINEERING SERVICES	LS			0	14,821,337
9.00	PHYSICAL CONTINGENCY	LS			0	21,173,367
	GRAND TOTAL				251,963,063	251,963,063

B/Q of TR-3 (Draft Rate 0.33)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			6,671,850
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	14,200	3.50	49,700
	Open excavation,weathered rock	m3	14,200	6.00	85,200
	Open excavation,hard rock	m3	19,000	10.00	190,000
	Concrete				
	Mass concrete	m3	26,000	90.00	2,340,000
	Reinforced concrete	m3	87,200	140.00	9,408,000
	Reinforcement bar	ton	2,100	1,500.00	3,150,000
	Curtain grouting	m	3,900	70.00	273,000
	Consolidation grouting	m	2,300	90.00	207,000
	Others (20%)	L.S.			3,140,580
	Subtotal				18,843,480
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	143,100	55.00	7,870,500
	Concrete, tunnel	m3	34,500	160.00	5,520,000
	Reinforcement bars	ton	350	1,500.00	525,000
	Others (20%)	L.S.			2,783,100
	Subtotal				16,698,600
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	2,000	3.50	7,000
	Excavation,weathered rock	m3	2,000	6.00	12,000
	Excavation,hard rock	m3	2,800	10.00	28,000
	Concrete,open structure	m3	3,000	140.00	420,000
	Reinforcement	ton	90	1,500.00	135,000
	Others (20%)	L.S.			120,000
	Subtotal				720,000
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	142,300	55.00	7,826,500
	Concrete, tunnel	m3	46,100	160.00	7,376,000
	Reinforcement	ton	460	1,500.00	690,000
	Consolidation grout	m	12,900	90.00	1,161,000
	Curtain grout	m	320	70.00	22,400
	Backfill grout	m3	980	200.00	196,000
	Others (20%)	L.S.			3,454,380
	Subtotal				20,726,280
2.53	SURGE TANK				
	Excavation, shaft	m3	15,800	55.00	924,000
	Concrete, shaft	m3	4,900	160.00	784,000
	Reinforcement	ton	150	1,500.00	225,000
	Consolidation grout	m	300	90.00	27,000
	Others (20%)	L.S.			392,000
	Subtotal				2,352,000
2.54	PENSTOCK				
	Excavation,tunnel	m3	7,300	55.00	401,500
	Concrete,tunnel	m3	3,000	160.00	480,000
	Reinforcement	ton	80	1,500.00	90,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	100	200.00	20,000
	Others (20%)	L.S.			202,500
	Subtotal				1,215,000
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	12,100	3.50	42,350
	Excavation,weathered rock	m3	12,100	6.00	72,600
	Excavation,hard rock	m3	18,100	10.00	181,000
	Concrete, substructure	m3	11,500	250.00	2,875,000
	Concrete, second stage	m3	2,900	140.00	406,000
	Reinforcement	ton	750	1,500.00	1,125,000

	Others (20%)	L.S.			936,390	
	Subtotal					5,618,340
2.70	TAILRACE					
	Excavation					
	Excavation,common	m3	4,000	3.50	14,000	
	Excavation,weathered rock	m3	4,000	6.00	24,000	
	Excavation,hard rock	m3	6,000	10.00	60,000	
	Concrete, structure	m3	1,900	140.00	266,000	
	Reinforcement	ton	60	1,500.00	90,000	
	Others (20%)	L.S.			90,800	
	Subtotal					544,800
2.80	ARCHITECTURAL BUILDINGS	m2	5,000	1,100.00	5,500,000	5,500,000
2.90	ACCESS ROAD					
	New construction	m	174	600,000.00	104,400,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					108,350,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	2,200	5,000.00	11,000,000	
	Gates	ton	240	7,000.00	1,680,000	
	Subtotal					12,680,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	650	18,700.00	12,155,000	
	Generators	ton	1,350	20,400.00	27,540,000	
	Transformers	MVA	111	3,900.00	432,900	
	Subtotal					40,127,900
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	88	46,000.00	4,048,000	4,048,000
	Total of Direct Cost					244,096,250
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,440,963
7.00	ADMINISTRATION EXPENSES	LS			0	2,440,963
8.00	ENGINEERING SERVICES	LS			0	17,086,738
9.00	PHYSICAL CONTINGENCY	LS			0	24,409,625
	GRAND TOTAL				290,474,538	290,474,538

B/Q of TR-3 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			4,988,994
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation, common	m3	12,900	3.50	45,150
	Open excavation, weathered rock	m3	12,900	6.00	77,400
	Open excavation, hard rock	m3	17,200	10.00	172,000
	Concrete				
	Mass concrete	m3	24,200	90.00	2,178,000
	Reinforced concrete	m3	62,600	140.00	8,764,000
	Reinforcement bar	ton	1,900	1,500.00	2,850,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	2,300	90.00	207,000
	Others (20%)	L.S.			2,909,110
	Subtotal				17,454,660
2.40	DESANDING BASIN				
	Excavation, tunnel	m3	95,300	55.00	5,241,500
	Concrete, tunnel	m3	23,000	160.00	3,680,000
	Reinforcement bars	ton	230	1,500.00	345,000
	Others (20%)	L.S.			1,853,300
	Subtotal				11,119,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	1,600	3.50	5,600
	Excavation, weathered rock	m3	1,600	6.00	9,600
	Excavation, hard rock	m3	2,100	10.00	21,000
	Concrete, open structure	m3	2,400	140.00	336,000
	Reinforcement	ton	70	1,500.00	105,000
	Others (20%)	L.S.			95,440
	Subtotal				572,640
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	92,600	55.00	5,093,000
	Concrete, tunnel	m3	31,000	160.00	4,960,000
	Reinforcement	ton	310	1,500.00	465,000
	Consolidation grout	m	10,300	90.00	927,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	900	200.00	180,000
	Others (20%)	L.S.			2,329,200
	Subtotal				13,975,200
2.53	SURGE TANK				
	Excavation, shaft	m3	11,200	55.00	616,000
	Concrete, shaft	m3	3,300	160.00	528,000
	Reinforcement	ton	100	1,500.00	150,000
	Consolidation grout	m	250	90.00	22,500
	Others (20%)	L.S.			263,300
	Subtotal				1,579,800
2.54	PENSTOCK				
	Excavation, tunnel	m3	5,400	55.00	297,000
	Concrete, tunnel	m3	2,600	160.00	416,000
	Reinforcement	ton	50	1,500.00	75,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	90	200.00	18,000
	Others (20%)	L.S.			164,700
	Subtotal				988,200
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	8,100	3.50	28,350
	Excavation, weathered rock	m3	8,100	6.00	48,600
	Excavation, hard rock	m3	10,700	10.00	107,000
	Concrete, substructure	m3	7,700	250.00	1,925,000
	Concrete, second stage	m3	2,000	140.00	280,000
	Reinforcement	ton	500	1,500.00	750,000

	Others (20%)	L.S.			627,790	
	Subtotal					3,766,740
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	3,500	3.50	12,250	
	Excavation, weathered rock	m3	3,500	6.00	21,000	
	Excavation, hard rock	m3	5,000	10.00	50,000	
	Concrete, structure	m3	1,500	140.00	210,000	
	Reinforcement	ton	45	1,500.00	67,500	
	Others (20%)	L.S.			72,150	
	Subtotal					432,900
2.80	ARCHITECTURAL BUILDINGS	m2	4,000	1,100.00	4,400,000	4,400,000
2.90	ACCESS ROAD					
	New construction	m	174	600,000.00	104,400,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					108,350,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,500	5,000.00	7,500,000	
	Gates	ton	160	7,000.00	1,120,000	
	Subtotal					8,620,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	460	18,700.00	8,602,000	
	Generators	ton	950	20,400.00	19,380,000	
	Transformers	MVA	74	4,300.00	318,200	
	Subtotal					28,300,200
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	88	46,000.00	4,048,000	4,048,000
	Total of Direct Cost					208,597,134
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,085,971
7.00	ADMINISTRATION EXPENSES	LS			0	2,085,971
8.00	ENGINEERING SERVICES	LS			0	14,601,799
9.00	PHYSICAL CONTINGENCY	LS			0	20,859,713
	GRAND TOTAL				248,230,589	248,230,589

B/Q of TR-3 (Draft Rate 0.67)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			4,154,340
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation, common	m3	11,500	3.50	40,250
	Open excavation, weathered rock	m3	11,500	6.00	69,000
	Open excavation, hard rock	m3	15,400	10.00	154,000
	Concrete				
	Mass concrete	m3	22,500	90.00	2,025,000
	Reinforced concrete	m3	58,300	140.00	8,162,000
	Reinforcement bar	ton	1,800	1,500.00	2,700,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	2,200	90.00	198,000
	Others (20%)	L.S.			2,717,250
	Subtotal				16,303,500
2.40	DESANDING BASIN				
	Excavation, tunnel	m3	71,700	55.00	3,943,500
	Concrete, tunnel	m3	17,300	160.00	2,768,000
	Reinforcement bars	ton	180	1,500.00	270,000
	Others (20%)	L.S.			1,396,300
	Subtotal				8,377,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	1,400	3.50	4,900
	Excavation, weathered rock	m3	1,400	6.00	8,400
	Excavation, hard rock	m3	1,800	10.00	18,000
	Concrete, open structure	m3	2,000	140.00	280,000
	Reinforcement	ton	60	1,500.00	90,000
	Others (20%)	L.S.			80,260
	Subtotal				481,560
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	71,800	55.00	3,949,000
	Concrete, tunnel	m3	24,600	160.00	3,936,000
	Reinforcement	ton	250	1,500.00	375,000
	Consolidation grout	m	9,000	90.00	810,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	800	200.00	160,000
	Others (20%)	L.S.			1,849,500
	Subtotal				11,097,000
2.53	SURGE TANK				
	Excavation, shaft	m3	8,400	55.00	462,000
	Concrete, shaft	m3	2,500	160.00	400,000
	Reinforcement	ton	80	1,500.00	120,000
	Consolidation grout	m	200	90.00	18,000
	Others (20%)	L.S.			200,000
	Subtotal				1,200,000
2.54	PENSTOCK				
	Excavation, tunnel	m3	4,800	55.00	253,000
	Concrete, tunnel	m3	2,300	160.00	368,000
	Reinforcement	ton	45	1,500.00	67,500
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	80	200.00	16,000
	Others (20%)	L.S.			143,700
	Subtotal				862,200
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	8,100	3.50	21,350
	Excavation, weathered rock	m3	8,100	6.00	36,600
	Excavation, hard rock	m3	8,100	10.00	81,000
	Concrete, substructure	m3	5,800	250.00	1,450,000
	Concrete, second stage	m3	1,500	140.00	210,000
	Reinforcement	ton	380	1,500.00	570,000

	Others (20%)	L.S.			473,790	
	Subtotal					2,842,740
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	3,000	3.50	10,500	
	Excavation, weathered rock	m3	3,000	6.00	18,000	
	Excavation, hard rock	m3	4,500	10.00	45,000	
	Concrete, structure	m3	1,300	140.00	182,000	
	Reinforcement	ton	40	1,500.00	60,000	
	Others (20%)	L.S.			63,100	
	Subtotal					378,600
2.80	ARCHITECTURAL BUILDINGS	m2	3,500	1,100.00	3,850,000	3,850,000
2.90	ACCESS ROAD					
	New construction	m	174	600,000.00	104,400,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					108,350,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,300	5,000.00	6,500,000	
	Gates	ton	120	7,000.00	840,000	
	Subtotal					7,340,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	380	18,700.00	6,732,000	
	Generators	ton	800	20,400.00	16,320,000	
	Transformers	MVA	55	4,600.00	253,000	
	Subtotal					23,305,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	88	46,000.00	4,048,000	4,048,000
	Total of Direct Cost					192,590,740
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	1,925,907
7.00	ADMINISTRATION EXPENSES	LS			0	1,925,907
8.00	ENGINEERING SERVICES	LS			0	13,481,352
9.00	PHYSICAL CONTINGENCY	LS			0	19,259,074
	GRAND TOTAL				229,182,981	229,182,981

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			2,176,482
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	8,100	3.50	28,350
	Open excavation,weathered rock	m3	8,100	6.00	48,600
	Open excavation,hard rock	m3	10,700	10.00	107,000
	Concrete				
	Mass concrete	m3	14,000	90.00	1,260,000
	Reinforced concrete	m3	55,400	140.00	7,756,000
	Reinforcement bar	ton	1,700	1,500.00	2,550,000
	Curtain grouting	m	3,900	70.00	273,000
	Consolidation grouting	m	1,700	90.00	153,000
	Others (20%)	L.S.			2,435,190
	Subtotal				14,611,140
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	15,000	55.00	825,000
	Concrete, tunnel	m3	4,100	160.00	656,000
	Reinforcement bars	ton	40	1,500.00	60,000
	Others (20%)	L.S.			308,200
	Subtotal				1,849,200
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	700	3.50	2,450
	Excavation,weathered rock	m3	700	6.00	4,200
	Excavation,hard rock	m3	900	10.00	9,000
	Concrete,open structure	m3	1,000	140.00	140,000
	Reinforcement	ton	30	1,500.00	45,000
	Others (20%)	L.S.			40,130
	Subtotal				240,780
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	21,600	55.00	1,188,000
	Concrete, tunnel	m3	8,400	160.00	1,344,000
	Reinforcement	ton	40	1,500.00	60,000
	Consolidation grout	m	100	90.00	9,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			524,020
	Subtotal				3,144,120
2.53	HEAD POND				
	Excavation				
	Excavation,common	m3	1,500	3.50	5,250
	Excavation,weathered rock	m3	1,500	6.00	9,000
	Excavation,hard rock	m3	2,000	10.00	20,000
	Concrete,open structure	m3	1,800	140.00	252,000
	Reinforcement	ton	55	1,500.00	82,500
	Others (20%)	L.S.			73,750
	Subtotal				442,500
2.54	PENSTOCK				
	Excavation				
	Excavation,common	m3	2,800	3.50	9,800
	Excavation,weathered rock	m3	2,800	6.00	16,800
	Excavation,hard rock	m3	3,700	10.00	37,000
	Concrete,open structure	m3	2,900	140.00	406,000
	Reinforcement	ton	45	1,500.00	67,500
	Others (20%)	L.S.			107,420
	Subtotal				644,520
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	1,400	3.50	4,900
	Excavation,weathered rock	m3	1,400	6.00	8,400
	Excavation,hard rock	m3	1,800	10.00	18,000

	Concrete, substructure	m3	1,300	250.00	325,000	
	Concrete, second stage	m3	350	140.00	49,000	
	Reinforcement	ton	90	1,500.00	135,000	
	Others (20%)	L.S.			108,060	
	Subtotal					648,360
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	1,000	3.50	3,500	
	Excavation, weathered rock	m3	1,000	6.00	6,000	
	Excavation, hard rock	m3	1,600	10.00	16,000	
	Concrete, structure	m3	700	140.00	98,000	
	Reinforcement	ton	20	1,500.00	30,000	
	Others (20%)	L.S.			30,700	
	Subtotal					184,200
2.80	ARCHITECTURAL BUILDINGS	m2	2,500	1,100.00	2,750,000	2,750,000
2.90	ACCESS ROAD					
	New construction	m	20	600,000.00	12,000,000	
	Upgraded	m	0	50,000.00	0	
	Subtotal					12,000,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	400	5,000.00	2,000,000	
	Gates	ton	30	7,000.00	210,000	
	Subtotal					2,210,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	90	18,700.00	1,683,000	
	Generators	ton	240	20,400.00	4,896,000	
	Transformers	MVA	11	6,100.00	67,100	
	Subtotal					6,646,100
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	148	46,000.00	6,808,000	6,808,000
	Total of Direct Cost					54,355,402
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	543,554
7.00	ADMINISTRATION EXPENSES	LS			0	543,554
8.00	ENGINEERING SERVICES	LS			0	3,804,878
9.00	PHYSICAL CONTINGENCY	LS			0	5,435,540
	GRAND TOTAL				64,682,928	64,682,928

B/Q of TR-4 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			1,947,894
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	7,300	3.50	25,550
	Open excavation,weathered rock	m3	7,300	6.00	43,800
	Open excavation,hard rock	m3	9,700	10.00	97,000
	Concrete				
	Mass concrete	m3	13,100	90.00	1,179,000
	Reinforced concrete	m3	50,800	140.00	7,112,000
	Reinforcement bar	ton	1,550	1,500.00	2,325,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	1,700	90.00	153,000
	Others (20%)	L.S.			2,237,470
	Subtotal				13,424,820
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	10,000	55.00	550,000
	Concrete, tunnel	m3	2,700	160.00	432,000
	Reinforcement bars	ton	30	1,500.00	45,000
	Others (20%)	L.S.			205,400
	Subtotal				1,232,400
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	600	3.50	2,100
	Excavation,weathered rock	m3	600	6.00	3,600
	Excavation,hard rock	m3	750	10.00	7,500
	Concrete,open structure	m3	850	140.00	119,000
	Reinforcement	ton	25	1,500.00	37,500
	Others (20%)	L.S.			33,940
	Subtotal				203,640
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	21,800	55.00	1,188,000
	Concrete, tunnel	m3	8,400	160.00	1,344,000
	Reinforcement	ton	40	1,500.00	60,000
	Consolidation grout	m	100	90.00	9,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			524,020
	Subtotal				3,144,120
2.53	HEAD POND				
	Excavation				
	Excavation,common	m3	1,200	3.50	4,200
	Excavation,weathered rock	m3	1,200	6.00	7,200
	Excavation,hard rock	m3	1,550	10.00	15,500
	Concrete,open structure	m3	1,400	140.00	196,000
	Reinforcement	ton	45	1,500.00	67,500
	Others (20%)	L.S.			58,080
	Subtotal				348,480
2.54	PENSTOCK				
	Excavation				
	Excavation,common	m3	2,500	3.50	8,750
	Excavation,weathered rock	m3	2,500	6.00	15,000
	Excavation,hard rock	m3	3,400	10.00	34,000
	Concrete,open structure	m3	2,500	140.00	350,000
	Reinforcement	ton	40	1,500.00	60,000
	Others (20%)	L.S.			93,550
	Subtotal				561,300
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	900	3.50	3,150
	Excavation,weathered rock	m3	900	6.00	5,400
	Excavation,hard rock	m3	1,200	10.00	12,000

	Concrete, substructure	m3	850	250.00	212,500	
	Concrete, second stage	m3	250	140.00	35,000	
	Reinforcement	ton	55	1,500.00	82,500	
	Others (20%)	L.S.			70,110	
	Subtotal					420,660
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	800	3.50	2,800	
	Excavation, weathered rock	m3	800	6.00	4,800	
	Excavation, hard rock	m3	1,200	10.00	12,000	
	Concrete, structure	m3	500	140.00	70,000	
	Reinforcement	ton	20	1,500.00	30,000	
	Others (20%)	L.S.			23,920	
	Subtotal					143,520
2.80	ARCHITECTURAL BUILDINGS	m2	2,000	1,100.00	2,200,000	2,200,000
2.90	ACCESS ROAD					
	New construction	m	20	600,000.00	12,000,000	
	Upgraded	m	0	50,000.00	0	
	Subtotal					12,000,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	320	5,000.00	1,600,000	
	Gates	ton	30	7,000.00	210,000	
	Subtotal					1,810,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	65	18,700.00	1,215,500	
	Generators	ton	180	20,400.00	3,672,000	
	Transformers	MVA	7	6,500.00	45,500	
	Subtotal					4,933,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	148	46,000.00	6,808,000	6,808,000
	Total of Direct Cost					49,177,834
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	491,778
7.00	ADMINISTRATION EXPENSES	LS			0	491,778
8.00	ENGINEERING SERVICES	LS			0	3,442,448
9.00	PHYSICAL CONTINGENCY	LS			0	4,917,783
	GRAND TOTAL				58,521,622	58,521,622

B/Q of TR-4 (Draft Rate 0.67)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			1,778,073
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	6,500	3.50	22,750
	Open excavation,weathered rock	m3	6,500	6.00	39,000
	Open excavation,hard rock	m3	8,700	10.00	87,000
	Concrete				
	Mass concrete	m3	12,200	90.00	1,098,000
	Reinforced concrete	m3	46,500	140.00	6,510,000
	Reinforcement bar	ton	1,400	1,500.00	2,100,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	1,700	90.00	153,000
	Others (20%)	L.S.			2,049,550
	Subtotal				12,297,300
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	7,500	55.00	412,500
	Concrete, tunnel	m3	2,100	160.00	336,000
	Reinforcement bars	n	20	1,500.00	30,000
	Others (20%)	L.S.			155,700
	Subtotal				934,200
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	500	3.50	1,750
	Excavation,weathered rock	m3	500	6.00	3,000
	Excavation,hard rock	m3	650	10.00	6,500
	Concrete,open structure	m3	700	140.00	98,000
	Reinforcement	ton	20	1,500.00	30,000
	Others (20%)	L.S.			27,850
	Subtotal				167,100
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	21,600	55.00	1,188,000
	Concrete, tunnel	m3	8,400	160.00	1,344,000
	Reinforcement	ton	40	1,500.00	60,000
	Consolidation grout	m	100	90.00	9,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			524,020
	Subtotal				3,144,120
2.53	HEAD POND				
	Excavation				
	Excavation,common	m3	950	3.50	3,325
	Excavation,weathered rock	m3	950	6.00	5,700
	Excavation,hard rock	m3	1,250	10.00	12,500
	Concrete,open structure	m3	1,300	140.00	182,000
	Reinforcement	ton	40	1,500.00	60,000
	Others (20%)	L.S.			52,705
	Subtotal				316,230
2.54	PENSTOCK				
	Excavation				
	Excavation,common	m3	2,300	3.50	8,050
	Excavation,weathered rock	m3	2,300	6.00	13,800
	Excavation,hard rock	m3	3,100	10.00	31,000
	Concrete,open structure	m3	2,100	140.00	294,000
	Reinforcement	ton	35	1,500.00	52,500
	Others (20%)	L.S.			79,870
	Subtotal				479,220
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	700	3.50	2,450
	Excavation,weathered rock	m3	700	6.00	4,200
	Excavation,hard rock	m3	900	10.00	9,000

	Concrete, substructure	m3	650	250.00	162,500	
	Concrete, second stage	m3	200	140.00	28,000	
	Reinforcement	ton	45	1,500.00	67,500	
	Others (20%)	L.S.			54,730	
	Subtotal					328,380
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	700	3.50	2,450	
	Excavation, weathered rock	m3	700	6.00	4,200	
	Excavation, hard rock	m3	1,000	10.00	10,000	
	Concrete, structure	m3	400	140.00	56,000	
	Reinforcement	ton	15	1,500.00	22,500	
	Others (20%)	L.S.			19,030	
	Subtotal					114,180
2.80	ARCHITECTURAL BUILDINGS	m2	1,500	1,100.00	1,650,000	1,650,000
2.90	ACCESS ROAD					
	New construction	m	20	600,000.00	12,000,000	
	Upgraded	m	0	50,000.00	0	
	Subtotal					12,000,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	230	5,000.00	1,150,000	
	Gates	ton	15	7,000.00	105,000	
	Subtotal					1,255,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	50	18,700.00	935,000	
	Generators	ton	150	20,400.00	3,060,000	
	Transformers	MVA	6	6,750.00	40,500	
	Subtotal					4,035,500
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	148	46,000.00	6,808,000	6,808,000
	Total of Direct Cost					45,307,303
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	453,073
7.00	ADMINISTRATION EXPENSES	LS			0	453,073
8.00	ENGINEERING SERVICES	LS			0	3,171,511
9.00	PHYSICAL CONTINGENCY	LS			0	4,530,730
	GRAND TOTAL				53,915,691	53,915,691

B/Q of MKR-1 (Draft Rate 0.33)

Item No.	Work Item	Unit	Quantity	Unit price P.C.(US\$)	Amount P.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			6,736,914
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	17,900	3.50	62,650
	Open excavation,weathered rock	m3	17,900	6.00	107,400
	Open excavation,hard rock	m3	23,900	10.00	239,000
	Concrete				
	Mass concrete	m3	31,700	90.00	2,853,000
	Reinforced concrete	m3	72,400	140.00	10,136,000
	Reinforcement bar	ton	2,200	1,500.00	3,300,000
	Curtain grouting	m	3,900	70.00	273,000
	Consolidation grouting	m	2,600	90.00	234,000
	Others (20%)	L.S.			3,441,010
	Subtotal				20,646,060
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	143,700	55.00	7,903,500
	Concrete, tunnel	m3	34,600	160.00	5,536,000
	Reinforcement bars	ton	350	1,500.00	525,000
	Others (20%)	L.S.			2,792,900
	Subtotal				16,757,400
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	2,000	3.50	7,000
	Excavation,weathered rock	m3	2,000	6.00	12,000
	Excavation,hard rock	m3	2,600	10.00	26,000
	Concrete,open structure	m3	2,900	140.00	406,000
	Reinforcement	ton	90	1,500.00	135,000
	Others (20%)	L.S.			117,200
	Subtotal				703,200
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	133,900	55.00	7,364,500
	Concrete, tunnel	m3	44,000	160.00	7,040,000
	Reinforcement	ton	440	1,500.00	660,000
	Consolidation grout	m	13,400	90.00	1,206,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	1,150	200.00	230,000
	Others (20%)	L.S.			3,304,300
	Subtotal				19,825,800
2.53	SURGE TANK				
	Excavation, shaft	m3	17,500	55.00	962,500
	Concrete, shaft	m3	5,100	160.00	816,000
	Reinforcement	ton	150	1,500.00	225,000
	Consolidation grout	m	300	90.00	27,000
	Others (20%)	L.S.			406,100
	Subtotal				2,436,600
2.54	PENSTOCK				
	Excavation,tunnel	m3	8,400	55.00	462,000
	Concrete,tunnel	m3	3,400	160.00	544,000
	Reinforcement	ton	70	1,500.00	105,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	110	200.00	22,000
	Others (20%)	L.S.			230,800
	Subtotal				1,384,800
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	11,000	3.50	38,500
	Excavation,weathered rock	m3	11,000	6.00	66,000
	Excavation,hard rock	m3	14,600	10.00	146,000
	Concrete, substructure	m3	10,400	250.00	2,600,000
	Concrete, second stage	m3	2,800	140.00	392,000
	Reinforcement	ton	680	1,500.00	1,020,000

	Others (20%)	L.S.			846,900	
	Subtotal					5,081,400
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	4,200	3.50	14,700	
	Excavation, weathered rock	m3	4,200	6.00	25,200	
	Excavation, hard rock	m3	6,300	10.00	63,000	
	Concrete, structure	m3	1,800	140.00	252,000	
	Reinforcement	ton	80	1,500.00	90,000	
	Others (20%)	L.S.			88,980	
	Subtotal					533,880
2.80	ARCHITECTURAL BUILDINGS	m2	6,000	1,100.00	6,600,000	6,600,000
2.90	ACCESS ROAD					
	New construction	m	177	600,000.00	106,200,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					110,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,900	5,000.00	9,500,000	
	Gates	ton	200	7,000.00	1,400,000	
	Subtotal					10,900,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	500	18,700.00	9,350,000	
	Generators	ton	930	20,400.00	18,972,000	
	Transformers	MVA	98	4,100.00	393,600	
	Subtotal					28,715,600
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	156	46,000.00	7,176,000	7,176,000
	Total of Direct Cost					237,647,654
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,376,477
7.00	ADMINISTRATION EXPENSES	LS			0	2,376,477
8.00	ENGINEERING SERVICES	LS			0	16,635,336
9.00	PHYSICAL CONTINGENCY	LS			0	23,764,765
	GRAND TOTAL				282,800,708	282,800,708

B/Q of MKR-1 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			5,374,704
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	16,200	3.50	56,700
	Open excavation,weathered rock	m3	16,200	6.00	97,200
	Open excavation,hard rock	m3	21,600	10.00	216,000
	Concrete				
	Mass concrete	m3	29,600	90.00	2,664,000
	Reinforced concrete	m3	67,800	140.00	9,492,000
	Reinforcement bar	ton	2,050	1,500.00	3,075,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	2,600	90.00	234,000
	Others (20%)	L.S.			3,217,380
	Subtotal				19,304,280
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	95,900	55.00	5,274,500
	Concrete, tunnel	m3	23,100	160.00	3,696,000
	Reinforcement bars	ton	230	1,500.00	345,000
	Others (20%)	L.S.			1,863,100
	Subtotal				11,178,600
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,600	3.50	5,600
	Excavation,weathered rock	m3	1,600	6.00	9,600
	Excavation,hard rock	m3	2,100	10.00	21,000
	Concrete,open structure	m3	2,400	140.00	336,000
	Reinforcement	ton	70	1,500.00	105,000
	Others (20%)	L.S.			95,440
	Subtotal				572,640
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	106,800	55.00	5,874,000
	Concrete, tunnel	m3	35,800	160.00	5,728,000
	Reinforcement	ton	360	1,500.00	540,000
	Consolidation grout	m	11,900	90.00	1,071,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	1,050	200.00	210,000
	Others (20%)	L.S.			2,688,100
	Subtotal				16,128,600
2.53	SURGE TANK				
	Excavation, shaft	m3	11,700	55.00	643,500
	Concrete, shaft	m3	3,400	160.00	544,000
	Reinforcement	ton	100	1,500.00	150,000
	Consolidation grout	m	250	90.00	22,500
	Others (20%)	L.S.			272,000
	Subtotal				1,632,000
2.54	PENSTOCK				
	Excavation,tunnel	m3	6,000	55.00	330,000
	Concrete,tunnel	m3	2,800	160.00	448,000
	Reinforcement	ton	60	1,500.00	90,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	100	200.00	20,000
	Others (20%)	L.S.			181,100
	Subtotal				1,086,600
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	7,300	3.50	25,550
	Excavation,weathered rock	m3	7,300	6.00	43,800
	Excavation,hard rock	m3	9,800	10.00	98,000
	Concrete, substructure	m3	7,000	250.00	1,750,000
	Concrete, second stage	m3	1,700	140.00	238,000
	Reinforcement	ton	450	1,500.00	675,000

	Others (20%)	L.S.			566,070	
	Subtotal					3,396,420
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	3,500	3.50	12,250	
	Excavation, weathered rock	m3	3,500	6.00	21,000	
	Excavation, hard rock	m3	5,500	10.00	55,000	
	Concrete, structure	m3	1,500	140.00	210,000	
	Reinforcement	ton	50	1,500.00	75,000	
	Others (20%)	L.S.			74,650	
	Subtotal					447,900
2.80	ARCHITECTURAL BUILDINGS	m2	5,000	1,100.00	5,500,000	5,500,000
2.90	ACCESS ROAD					
	New construction	m	177	600,000.00	106,200,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					110,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,250	5,000.00	6,250,000	
	Gates	ton	130	7,000.00	910,000	
	Subtotal					7,160,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	360	18,700.00	6,732,000	
	Generators	ton	720	20,400.00	14,688,000	
	Transformers	MVA	64	4,500.00	288,000	
	Subtotal					21,708,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	156	46,000.00	7,176,000	7,176,000
	Total of Direct Cost					210,815,744
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,108,157
7.00	ADMINISTRATION EXPENSES	LS			0	2,108,157
8.00	ENGINEERING SERVICES	LS			0	14,757,102
9.00	PHYSICAL CONTINGENCY	LS			0	21,081,574
	GRAND TOTAL				250,870,735	250,870,735

B/Q of MKR-1 (Draft Rate 0.67)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			4,488,564
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	14,500	3.50	50,750
	Open excavation,weathered rock	m3	14,500	6.00	87,000
	Open excavation,hard rock	m3	19,400	10.00	194,000
	Concrete				
	Mass concrete	m3	27,500	90.00	2,475,000
	Reinforced concrete	m3	63,500	140.00	8,890,000
	Reinforcement bar	ton	1,900	1,500.00	2,850,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	2,500	90.00	225,000
	Others (20%)	L.S.			3,001,950
	Subtotal				18,011,700
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	72,000	55.00	3,960,000
	Concrete, tunnel	m3	17,400	160.00	2,784,000
	Reinforcement bars	ton	180	1,500.00	270,000
	Others (20%)	L.S.			1,402,800
	Subtotal				8,416,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,400	3.50	4,900
	Excavation,weathered rock	m3	1,400	6.00	8,400
	Excavation,hard rock	m3	1,800	10.00	18,000
	Concrete,open structure	m3	2,000	140.00	280,000
	Reinforcement	ton	60	1,500.00	90,000
	Others (20%)	L.S.			80,260
	Subtotal				481,560
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	82,800	55.00	4,554,000
	Concrete, tunnel	m3	28,400	160.00	4,544,000
	Reinforcement	ton	290	1,500.00	435,000
	Consolidation grout	m	10,400	90.00	936,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	950	200.00	190,000
	Others (20%)	L.S.			2,134,600
	Subtotal				12,807,600
2.53	SURGE TANK				
	Excavation, shaft	m3	8,800	55.00	484,000
	Concrete, shaft	m3	2,600	160.00	416,000
	Reinforcement	ton	80	1,500.00	120,000
	Consolidation grout	m	200	90.00	18,000
	Others (20%)	L.S.			207,600
	Subtotal				1,245,600
2.54	PENSTOCK				
	Excavation,tunnel	m3	5,000	55.00	275,000
	Concrete,tunnel	m3	2,500	160.00	400,000
	Reinforcement	ton	50	1,500.00	75,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	90	200.00	18,000
	Others (20%)	L.S.			156,400
	Subtotal				938,400
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	5,500	3.50	19,250
	Excavation,weathered rock	m3	5,500	6.00	33,000
	Excavation,hard rock	m3	7,300	10.00	73,000
	Concrete, substructure	m3	5,300	250.00	1,325,000
	Concrete, second stage	m3	1,350	140.00	189,000
	Reinforcement	ton	350	1,500.00	525,000

	Others (20%)	L.S.			432,850	
	Subtotal					2,597,100
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	3,200	3.50	11,200	
	Excavation, weathered rock	m3	3,200	6.00	19,200	
	Excavation, hard rock	m3	5,000	10.00	50,000	
	Concrete, structure	m3	1,300	140.00	182,000	
	Reinforcement	ton	40	1,500.00	60,000	
	Others (20%)	L.S.			64,480	
	Subtotal					386,880
2.80	ARCHITECTURAL BUILDINGS	m2	4,000	1,100.00	4,400,000	4,400,000
2.90	ACCESS ROAD					
	New construction	m	177	600,000.00	106,200,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					110,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,050	5,000.00	5,250,000	
	Gates	ton	100	7,000.00	700,000	
	Subtotal					5,950,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	290	18,700.00	5,423,000	
	Generators	ton	800	20,400.00	12,240,000	
	Transformers	MVA	48	4,700.00	225,600	
	Subtotal					17,888,600
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	156	46,000.00	7,176,000	7,176,000
	Total of Direct Cost					194,938,804
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	1,949,388
7.00	ADMINISTRATION EXPENSES	LS			0	1,949,388
8.00	ENGINEERING SERVICES	LS			0	13,645,716
9.00	PHYSICAL CONTINGENCY	LS			0	19,493,880
	GRAND TOTAL				231,977,177	231,977,177

B/Q of MKR-2 (Draft Rate 0.33)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			5,656,776
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	17,700	3.50	61,950
	Open excavation,weathered rock	m3	17,700	6.00	106,200
	Open excavation,hard rock	m3	23,500	10.00	235,000
	Concrete				
	Mass concrete	m3	31,400	90.00	2,826,000
	Reinforced concrete	m3	72,100	140.00	10,094,000
	Reinforcement bar	ton	2,200	1,500.00	3,300,000
	Curtain grouting	m	3,900	70.00	273,000
	Consolidation grouting	m	2,600	90.00	234,000
	Others (20%)	L.S.			3,426,030
	Subtotal				20,556,180
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	127,100	55.00	6,990,500
	Concrete, tunnel	m3	30,600	160.00	4,896,000
	Reinforcement bars	ton	310	1,500.00	465,000
	Others (20%)	L.S.			2,470,300
	Subtotal				14,821,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,900	3.50	6,650
	Excavation,weathered rock	m3	1,900	6.00	11,400
	Excavation,hard rock	m3	2,500	10.00	25,000
	Concrete,open structure	m3	2,800	140.00	392,000
	Reinforcement	ton	90	1,500.00	135,000
	Others (20%)	L.S.			114,010
	Subtotal				694,060
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	90,100	55.00	4,955,500
	Concrete, tunnel	m3	29,600	160.00	4,736,000
	Reinforcement	ton	300	1,500.00	450,000
	Consolidation grout	m	9,000	90.00	810,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	800	200.00	160,000
	Others (20%)	L.S.			2,226,500
	Subtotal				13,359,000
2.53	SURGE TANK				
	Excavation, shaft	m3	14,000	55.00	770,000
	Concrete, shaft	m3	4,100	160.00	656,000
	Reinforcement	ton	120	1,500.00	180,000
	Consolidation grout	m	300	90.00	27,000
	Others (20%)	L.S.			326,600
	Subtotal				1,959,600
2.54	PENSTOCK				
	Excavation,tunnel	m3	6,300	55.00	346,500
	Concrete,tunnel	m3	2,700	160.00	432,000
	Reinforcement	ton	60	1,500.00	90,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	90	200.00	18,000
	Others (20%)	L.S.			181,500
	Subtotal				1,089,000
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	7,600	3.50	26,600
	Excavation,weathered rock	m3	7,600	6.00	45,600
	Excavation,hard rock	m3	10,200	10.00	102,000
	Concrete, substructure	m3	7,300	250.00	1,825,000
	Concrete, second stage	m3	1,900	140.00	266,000
	Reinforcement	ton	470	1,500.00	705,000

	Others (20%)	L.S.			594,040	
	Subtotal					3,564,240
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	4,200	3.50	14,700	
	Excavation, weathered rock	m3	4,200	6.00	25,200	
	Excavation, hard rock	m3	6,300	10.00	63,000	
	Concrete, structure	m3	1,800	140.00	252,000	
	Reinforcement	ton	60	1,500.00	90,000	
	Others (20%)	L.S.			88,980	
	Subtotal					533,880
2.80	ARCHITECTURAL BUILDINGS	m2	6,000	1,100.00	6,600,000	6,600,000
2.90	ACCESS ROAD					
	New construction	m	199	600,000.00	119,400,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					123,350,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,100	5,000.00	5,500,000	
	Gates	ton	180	7,000.00	1,260,000	
	Subtotal					6,760,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	400	18,700.00	7,480,000	
	Generators	ton	680	20,400.00	13,872,000	
	Transformers	MVA	59	4,500.00	265,500	
	Subtotal					21,617,500
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	176	46,000.00	8,096,000	8,096,000
	Total of Direct Cost					228,648,036
6.00	LAND AQUISITION AND COMPENSATION	LS			0	2,286,480
7.00	ADMINISTRATION EXPENSES	LS			0	2,286,480
8.00	ENGINEERING SERVICES	LS			0	16,005,363
9.00	PHYSICAL CONTINGENCY	LS			0	22,864,804
	GRAND TOTAL				272,091,163	272,091,163

B/Q of MKR-2 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			4,329,396
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open excavation				
	Open excavation, common	m3	16,000	3.50	56,000
	Open excavation, weathered rock	m3	18,000	6.00	96,000
	Open excavation, hard rock	m3	21,300	10.00	213,000
	Concrete				
	Mass concrete	m3	29,300	90.00	2,637,000
	Reinforced concrete	m3	67,400	140.00	9,436,000
	Reinforcement bar	ton	2,050	1,500.00	3,075,000
	Curtain grouting	m	3,800	70.00	252,000
	Consolidation grouting	m	2,600	90.00	234,000
	Others (20%)	L.S.			3,199,800
	Subtotal				19,198,800
2.40	DESANDING BASIN				
	Excavation, tunnel	m3	84,800	55.00	4,664,000
	Concrete, tunnel	m3	20,400	160.00	3,264,000
	Reinforcement bars	ton	210	1,500.00	315,000
	Others (20%)	L.S.			1,648,600
	Subtotal				9,891,600
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	1,500	3.50	5,250
	Excavation, weathered rock	m3	1,500	6.00	9,000
	Excavation, hard rock	m3	2,000	10.00	20,000
	Concrete, open structure	m3	2,200	140.00	308,000
	Reinforcement	ton	70	1,500.00	105,000
	Others (20%)	L.S.			89,450
	Subtotal				536,700
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	55,700	55.00	3,063,500
	Concrete, tunnel	m3	19,100	160.00	3,056,000
	Reinforcement	ton	200	1,500.00	300,000
	Consolidation grout	m	7,000	90.00	630,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	720	200.00	144,000
	Others (20%)	L.S.			1,442,200
	Subtotal				8,653,200
2.53	SURGE TANK				
	Excavation, shaft	m3	9,400	55.00	517,000
	Concrete, shaft	m3	2,700	160.00	432,000
	Reinforcement	ton	80	1,500.00	120,000
	Consolidation grout	m	250	90.00	22,500
	Others (20%)	L.S.			218,300
	Subtotal				1,309,800
2.54	PENSTOCK				
	Excavation, tunnel	m3	4,600	55.00	253,000
	Concrete, tunnel	m3	2,200	160.00	352,000
	Reinforcement	ton	45	1,500.00	67,500
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	80	200.00	16,000
	Others (20%)	L.S.			141,200
	Subtotal				847,200
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	5,100	3.50	17,850
	Excavation, weathered rock	m3	5,100	6.00	30,600
	Excavation, hard rock	m3	6,800	10.00	68,000
	Concrete, substructure	m3	4,900	250.00	1,225,000
	Concrete, second stage	m3	1,200	140.00	168,000
	Reinforcement	ton	320	1,500.00	480,000

	Others (20%)	L.S.			397,890	
	Subtotal					2,387,340
2.70	TAIL RACE					
	Excavation					
	Excavation, common	m3	3,800	3.50	13,300	
	Excavation, weathered rock	m3	3,800	6.00	22,800	
	Excavation, hard rock	m3	5,600	10.00	56,000	
	Concrete, structure	m3	1,800	140.00	224,000	
	Reinforcement	ton	50	1,500.00	75,000	
	Others (20%)	L.S.			78,720	
	Subtotal					469,320
2.80	ARCHITECTURAL BUILDINGS	m2	5,000	1,100.00	5,500,000	5,500,000
2.90	ACCESS ROAD					
	New construction	m	199	600,000.00	119,400,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					123,350,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	760	5,000.00	3,800,000	
	Gates	ton	120	7,000.00	840,000	
	Subtotal					4,640,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	280	18,700.00	5,236,000	
	Generators	ton	530	20,400.00	10,812,000	
	Transformers	MVA	40	4,900.00	196,000	
	Subtotal					16,244,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	176	46,000.00	8,096,000	8,096,000
	Total of Direct Cost					205,453,356
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,054,534
7.00	ADMINISTRATION EXPENSES	LS			0	2,054,534
8.00	ENGINEERING SERVICES	LS			0	14,381,735
9.00	PHYSICAL CONTINGENCY	LS			0	20,545,336
	GRAND TOTAL				244,439,494	244,439,494

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			3,641,226
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	14,300	3.50	50,050
	Open excavation,weathered rock	m3	14,300	6.00	85,800
	Open excavation,hard rock	m3	19,100	10.00	191,000
	Concrete				
	Mass concrete	m3	27,200	90.00	2,448,000
	Reinforced concrete	m3	63,200	140.00	8,848,000
	Reinforcement bar	ton	1,900	1,500.00	2,850,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	2,500	90.00	225,000
	Others (20%)	L.S.			2,987,170
	Subtotal				17,923,020
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	63,600	55.00	3,498,000
	Concrete, tunnel	m3	15,300	160.00	2,448,000
	Reinforcement bars	ton	160	1,500.00	240,000
	Others (20%)	L.S.			1,237,200
	Subtotal				7,423,200
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,300	3.50	4,550
	Excavation,weathered rock	m3	1,300	6.00	7,800
	Excavation,hard rock	m3	1,700	10.00	17,000
	Concrete,open structure	m3	1,900	140.00	266,000
	Reinforcement	ton	60	1,500.00	90,000
	Others (20%)	L.S.			77,070
	Subtotal				462,420
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	41,500	55.00	2,282,500
	Concrete, tunnel	m3	14,700	160.00	2,352,000
	Reinforcement	ton	150	1,500.00	225,000
	Consolidation grout	m	6,000	90.00	540,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	650	200.00	130,000
	Others (20%)	L.S.			1,108,700
	Subtotal				6,652,200
2.53	SURGE TANK				
	Excavation, shaft	m3	7,000	55.00	385,000
	Concrete, shaft	m3	2,100	160.00	336,000
	Reinforcement	ton	60	1,500.00	90,000
	Consolidation grout	m	200	90.00	18,000
	Others (20%)	L.S.			165,800
	Subtotal				994,800
2.54	PENSTOCK				
	Excavation,tunnel	m3	3,700	55.00	203,500
	Concrete,tunnel	m3	2,000	160.00	320,000
	Reinforcement	ton	40	1,500.00	60,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	70	200.00	14,000
	Others (20%)	L.S.			122,300
	Subtotal				733,800
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	3,800	3.50	13,300
	Excavation,weathered rock	m3	3,800	6.00	22,800
	Excavation,hard rock	m3	5,100	10.00	51,000
	Concrete, substructure	m3	3,700	250.00	925,000
	Concrete, second stage	m3	1,000	140.00	140,000
	Reinforcement	ton	250	1,500.00	375,000

	Others (20%)	L.S.			305,420	
	Subtotal					1,832,520
2.70	TAILRACE					
	Excavation					
	Excavation,common	m3	3,500	3.50	12,250	
	Excavation,weathered rock	m3	3,500	6.00	21,000	
	Excavation,hard rock	m3	5,000	10.00	50,000	
	Concrete, structure	m3	1,300	140.00	182,000	
	Reinforcement	ton	40	1,500.00	60,000	
	Others (20%)	L.S.			65,050	
	Subtotal					390,300
2.80	ARCHITECTURAL BUILDINGS	m2	4,000	1,100.00	4,400,000	4,400,000
2.90	ACCESS ROAD					
	New construction	m	199	600,000.00	119,400,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					123,350,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	600	5,000.00	3,000,000	
	Gates	ton	90	7,000.00	630,000	
	Subtotal					3,630,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	220	18,700.00	4,114,000	
	Generators	ton	450	20,400.00	9,180,000	
	Transformers	MVA	30	5,200.00	156,000	
	Subtotal					13,450,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	176	46,000.00	8,096,000	8,096,000
	Total of Direct Cost					192,979,486
6.00	LAND AQUISITION AND COMPENSATION	LS			0	1,929,795
7.00	ADMINISTRATION EXPENSES	LS			0	1,929,795
8.00	ENGINEERING SERVICES	LS			0	13,508,564
9.00	PHYSICAL CONTINGENCY	LS			0	19,297,949
	GRAND TOTAL				229,645,588	229,645,588

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			4,813,944
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	15,800	3.50	55,300
	Open excavation,weathered rock	m3	15,800	6.00	94,800
	Open excavation,hard rock	m3	21,100	10.00	211,000
	Concrete				
	Mass concrete	m3	28,800	90.00	2,592,000
	Reinforced concrete	m3	69,300	140.00	9,702,000
	Reinforcement bar	ton	2,100	1,500.00	3,150,000
	Curtain grouting	m	3,900	70.00	273,000
	Consolidation grouting	m	2,400	90.00	216,000
	Others (20%)	L.S.			3,258,820
	Subtotal				19,552,920
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	64,500	55.00	3,547,500
	Concrete, tunnel	m3	16,400	160.00	2,624,000
	Reinforcement bars	ton	165	1,500.00	247,500
	Others (20%)	L.S.			1,283,800
	Subtotal				7,702,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,400	3.50	4,900
	Excavation,weathered rock	m3	1,400	6.00	8,400
	Excavation,hard rock	m3	1,800	10.00	18,000
	Concrete,open structure	m3	2,100	140.00	294,000
	Reinforcement	ton	60	1,500.00	90,000
	Others (20%)	L.S.			83,060
	Subtotal				498,360
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	76,200	55.00	4,191,000
	Concrete, tunnel	m3	28,200	160.00	4,192,000
	Reinforcement	ton	270	1,500.00	405,000
	Consolidation grout	m	9,600	90.00	864,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	1,050	200.00	210,000
	Others (20%)	L.S.			1,976,600
	Subtotal				11,859,600
2.53	SURGE TANK				
	Excavation, shaft	m3	8,800	55.00	484,000
	Concrete, shaft	m3	2,600	160.00	416,000
	Reinforcement	ton	80	1,500.00	120,000
	Consolidation grout	m	300	90.00	27,000
	Others (20%)	L.S.			209,400
	Subtotal				1,256,400
2.54	PENSTOCK				
	Excavation,tunnel	m3	7,800	55.00	429,000
	Concrete,tunnel	m3	3,900	160.00	624,000
	Reinforcement	ton	80	1,500.00	120,000
	Curtain grout	m	300	70.00	21,000
	Backfill grout	m3	170	200.00	34,000
	Others (20%)	L.S.			245,600
	Subtotal				1,473,600
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	10,900	3.50	38,150
	Excavation,weathered rock	m3	10,900	6.00	65,400
	Excavation,hard rock	m3	14,500	10.00	145,000
	Concrete, substructure	m3	10,400	250.00	2,600,000
	Concrete, second stage	m3	2,600	140.00	364,000
	Reinforcement	ton	670	1,500.00	1,005,000

	Others (20%)	L.S.			843,510	
	Subtotal					5,061,060
2.70	TAILRACE					
	Excavation					
	Excavation,common	m3	6,500	3.50	22,750	
	Excavation,weathered rock	m3	6,500	6.00	39,000	
	Excavation,hard rock	m3	8,800	10.00	88,000	
	Concrete, structure	m3	2,500	140.00	350,000	
	Reinforcement	ton	75	1,500.00	112,500	
	Others (20%)	L.S.			122,450	
	Subtotal					734,700
2.80	ARCHITECTURAL BUILDINGS	m2	6,000	1,100.00	6,600,000	6,600,000
2.90	ACCESS ROAD					
	New construction	m	256	600,000.00	153,600,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					157,550,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	3,400	5,000.00	17,000,000	
	Gates	ton	100	7,000.00	700,000	
	Subtotal					17,700,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	440	18,700.00	8,228,000	
	Generators	ton	1,200	20,400.00	24,480,000	
	Transformers	MVA	140	4,500.00	630,000	
	Subtotal					33,338,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	219	46,000.00	10,074,000	10,074,000
	Total of Direct Cost					278,215,384
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,782,154
7.00	ADMINISTRATION EXPENSES	LS			0	2,782,154
8.00	ENGINEERING SERVICES	LS			0	19,475,077
9.00	PHYSICAL CONTINGENCY	LS			0	27,821,538
	GRAND TOTAL				331,076,307	331,076,307

B/Q of MKR-3 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			3,896,268
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	14,300	3.50	50,050
	Open excavation,weathered rock	m3	14,300	6.00	85,800
	Open excavation,hard rock	m3	18,100	10.00	191,000
	Concrete				
	Mass concrete	m3	28,800	90.00	2,412,000
	Reinforced concrete	m3	64,800	140.00	9,044,000
	Reinforcement bar	ton	1,950	1,500.00	2,925,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	2,400	90.00	216,000
	Others (20%)	L.S.			3,035,170
	Subtotal				18,211,020
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	43,100	55.00	2,370,500
	Concrete, tunnel	m3	10,900	160.00	1,744,000
	Reinforcement bars	ton	110	1,500.00	165,000
	Others (20%)	L.S.			855,900
	Subtotal				5,135,400
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,100	3.50	3,850
	Excavation,weathered rock	m3	1,100	6.00	6,600
	Excavation,hard rock	m3	1,500	10.00	15,000
	Concrete,open structure	m3	1,700	140.00	238,000
	Reinforcement	ton	50	1,500.00	75,000
	Others (20%)	L.S.			67,690
	Subtotal				406,140
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	56,800	55.00	3,124,000
	Concrete, tunnel	m3	20,100	160.00	3,216,000
	Reinforcement	ton	200	1,500.00	300,000
	Consolidation grout	m	8,200	90.00	738,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	950	200.00	190,000
	Others (20%)	L.S.			1,517,100
	Subtotal				9,102,600
2.53	SURGE TANK				
	Excavation, shaft	m3	5,900	55.00	324,500
	Concrete, shaft	m3	1,700	160.00	272,000
	Reinforcement	ton	50	1,500.00	75,000
	Consolidation grout	m	250	90.00	22,500
	Others (20%)	L.S.			138,800
	Subtotal				832,800
2.54	PENSTOCK				
	Excavation,tunnel	m3	6,100	55.00	335,500
	Concrete,tunnel	m3	3,400	160.00	544,000
	Reinforcement	ton	70	1,500.00	105,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	150	200.00	30,000
	Others (20%)	L.S.			206,400
	Subtotal				1,238,400
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	7,300	3.50	25,550
	Excavation,weathered rock	m3	7,300	6.00	43,800
	Excavation,hard rock	m3	9,700	10.00	97,000
	Concrete, substructure	m3	6,900	250.00	1,725,000
	Concrete, second stage	m3	1,800	140.00	252,000
	Reinforcement	ton	450	1,500.00	675,000

	Others (20%)	L.S.			563,670	
	Subtotal					3,382,020
2.70	TAILRACE					
	Excavation					
	Excavation,common	m3	5,500	3.50	19,250	
	Excavation,weathered rock	m3	5,500	6.00	33,000	
	Excavation,hard rock	m3	8,000	10.00	80,000	
	Concrete, structure	m3	2,200	140.00	308,000	
	Reinforcement	ton	70	1,500.00	105,000	
	Others (20%)	L.S.			109,050	
	Subtotal					654,300
2.80	ARCHITECTURAL BUILDINGS	m2	5,000	1,100.00	5,500,000	5,500,000
2.90	ACCESS ROAD					
	New construction	m	258	600,000.00	153,600,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					157,550,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	2,400	5,000.00	12,000,000	
	Gates	ton	70	7,000.00	490,000	
	Subtotal					12,490,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	310	18,700.00	5,797,000	
	Generators	ton	880	20,400.00	17,952,000	
	Transformers	MVA	90	4,200.00	378,000	
	Subtotal					24,127,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	219	46,000.00	10,074,000	10,074,000
	Total of Direct Cost					252,599,948
6.00	LAND AQUISITION AND COMPENSATION	LS			0	2,525,999
7.00	ADMINISTRATION EXPENSES	LS			0	2,525,999
8.00	ENGINEERING SERVICES	LS			0	17,681,996
9.00	PHYSICAL CONTINGENCY	LS			0	25,259,995
	GRAND TOTAL				300,593,938	300,593,938

Item No.	Work Item	Unit	Quantity	Unit price P.C.(US\$)	Amount P.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			3,281,951
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	12,800	3.50	44,800
	Open excavation,weathered rock	m3	12,800	6.00	76,800
	Open excavation,hard rock	m3	17,100	10.00	171,000
	Concrete				
	Mass concrete	m3	25,000	90.00	2,250,000
	Reinforced concrete	m3	80,226	140.00	8,431,640
	Reinforcement bar	ton	1,850	1,500.00	2,775,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	2,400	90.00	216,000
	Others (20%)	L.S.			2,840,648
	Subtotal				17,043,888
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	32,400	55.00	1,782,000
	Concrete, tunnel	m3	8,200	160.00	1,312,000
	Reinforcement bars	ton	85	1,500.00	127,500
	Others (20%)	L.S.			644,300
	Subtotal				3,865,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,000	3.50	3,500
	Excavation,weathered rock	m3	1,000	6.00	6,000
	Excavation,hard rock	m3	1,300	10.00	13,000
	Concrete,open structure	m3	1,400	140.00	196,000
	Reinforcement	ton	45	1,500.00	67,500
	Others (20%)	L.S.			57,200
	Subtotal				343,200
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	40,300	55.00	2,216,500
	Concrete, tunnel	m3	14,900	160.00	2,384,000
	Reinforcement	ton	150	1,500.00	225,000
	Consolidation grout	m	6,900	90.00	621,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	860	200.00	172,000
	Others (20%)	L.S.			1,126,500
	Subtotal				6,759,000
2.53	SURGE TANK				
	Excavation, shaft	m3	4,400	55.00	242,000
	Concrete, shaft	m3	1,300	160.00	208,000
	Reinforcement	ton	40	1,500.00	60,000
	Consolidation grout	m	200	90.00	18,000
	Others (20%)	L.S.			105,600
	Subtotal				633,600
2.54	PENSTOCK				
	Excavation,tunnel	m3	4,900	55.00	269,500
	Concrete,tunnel	m3	3,000	160.00	480,000
	Reinforcement	ton	60	1,500.00	90,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	120	200.00	24,000
	Others (20%)	L.S.			175,500
	Subtotal				1,053,000
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	5,500	3.50	19,250
	Excavation,weathered rock	m3	5,500	6.00	33,000
	Excavation,hard rock	m3	7,300	10.00	73,000
	Concrete, substructure	m3	5,200	250.00	1,300,000
	Concrete, second stage	m3	1,300	140.00	182,000
	Reinforcement	ton	340	1,500.00	510,000

	Others (20%)	L.S.			423,450	
	Subtotal					2,540,700
2.70	TAILRACE					
	Excavation					
	Excavation,common	m3	4,800	3.50	16,800	
	Excavation,weathered rock	m3	4,800	6.00	28,800	
	Excavation,hard rock	m3	8,800	10.00	68,000	
	Concrete, structure	m3	2,000	140.00	280,000	
	Reinforcement	ton	60	1,500.00	90,000	
	Others (20%)	L.S.			96,720	
	Subtotal					580,320
2.80	ARCHITECTURAL BUILDINGS	m2	4,000	1,100.00	4,400,000	4,400,000
2.90	ACCESS ROAD					
	New construction	m	256	600,000.00	153,600,000	
	Upgraded	m	79	50,000.00	3,950,000	
	Subtotal					157,550,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,800	5,000.00	9,000,000	
	Gates	ton	50	7,000.00	350,000	
	Subtotal					9,350,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	250	18,700.00	4,675,000	
	Generators	ton	730	20,400.00	14,892,000	
	Transformers	MVA	66	4,400.00	290,400	
	Subtotal					19,857,400
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	219	46,000.00	10,074,000	10,074,000
	Total of Direct Cost					237,332,859
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	2,373,329
7.00	ADMINISTRATION EXPENSES	LS			0	2,373,329
8.00	ENGINEERING SERVICES	LS			0	16,613,300
9.00	PHYSICAL CONTINGENCY	LS			0	23,733,286
	GRAND TOTAL				282,426,102	282,426,102

B/Q of SR-6 (EL. 608.0)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			43,991,158
2.00	CIVIL WORKS				
2.10	DIVERSION TUNNEL				
	Open Excavation of Inlet & Outlet				
	Open excavation, common	m3	20,000	3.50	70,000
	Open excavation, weathered rock	m3	20,000	6.00	120,000
	Open excavation, hard rock	m3	30,000	10.00	300,000
	Concrete of Inlet & Outlet	m3	10,000	140.00	1,400,000
	Tunnel Excavation	m3	645,100	55.00	35,480,500
	Tunnel Concrete	m3	187,500	160.00	30,000,000
	Reinforcement bar	m3	2,000	1,500.00	3,000,000
	Plug Concrete	m3	17,100	160.00	2,736,000
	Others (20%)	L.S.			14,621,300
	Subtotal				87,727,800
2.20	COFFER DAM				
	Excavation				
	Excavation, common	m3	72,900	3.50	255,150
	Embankment				
	Embankment, core	m3	117,700	5.00	588,500
	Embankment, filter	m3	29,400	10.00	294,000
	Embankment, rock	m3	679,400	6.00	4,076,400
	Others (20%)	L.S.			1,042,810
	Subtotal				6,256,860
2.30	MAIN DAM				
	Excavation				
	Excavation, common	m3	658,200	3.50	2,303,700
	Excavation, weathered rock	m3	47,200	6.00	283,200
	Excavation, hard rock	m3	136,700	10.00	1,367,000
	Embankment				
	Embankment, core	m3	3,437,300	5.00	17,186,500
	Embankment, filter	m3	756,800	10.00	7,568,000
	Embankment, rock	m3	23,494,000	6.00	140,964,000
	Curtain Grouting	m	72,000	70.00	5,040,000
	Consolidation Grouting	m	14,000	90.00	1,260,000
	Others (10%)	L.S.			17,597,240
	Subtotal				193,569,640
2.40	SPILLWAY				
	Excavation				
	Excavation, common	m3	384,200	3.50	1,344,700
	Excavation, weathered rock	m3	536,700	6.00	3,220,200
	Excavation, hard rock	m3	4,071,400	10.00	40,714,000
	Concrete	m3	150,100	140.00	21,014,000
	Reinforcement bars	ton	4,500	1,500.00	6,750,000
	Others (20%)	L.S.			14,608,580
	Subtotal				87,651,480
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	8,300	3.50	29,050
	Excavation, weathered rock	m3	8,300	6.00	49,800
	Excavation, hard rock	m3	11,100	10.00	111,000
	Concrete, open structure	m3	12,500	140.00	1,750,000
	Reinforcement	ton	400	1,500.00	600,000
	Others (20%)	L.S.			507,970
	Subtotal				3,047,820
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	203,000	55.00	11,165,000
	Concrete, tunnel	m3	61,200	160.00	9,792,000
	Reinforcement	ton	620	1,500.00	930,000
	Consolidation grout	m	10,000	90.00	900,000
	Curtain grout	m	1,200	70.00	84,000
	Backfill grout	m3	1,000	200.00	200,000
	Others (20%)	L.S.			4,614,200
	Subtotal				27,685,200
2.53	PENSTOCK				
	Excavation, tunnel	m3	52,600	55.00	2,893,000
	Concrete, tunnel	m3	12,700	160.00	2,032,000
	Reinforcement	ton	250	1,500.00	375,000
	Curtain grout	m	0	70.00	0
	Backfill grout	m3	550	200.00	110,000
	Others (20%)	L.S.			1,082,000
	Subtotal				6,492,000
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	57,700	3.50	201,950

	Excavation, weathered rock	m3	57,700	6.00	346,200	
	Excavation, hard rock	m3	76,900	10.00	769,000	
	Concrete, substructure	m3	54,900	250.00	13,725,000	
	Concrete, second stage	m3	13,800	140.00	1,932,000	
	Reinforcement	ton	3,600	1,500.00	5,400,000	
	Others (20%)	L.S.			4,474,830	
	Subtotal					26,848,980
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	7,000	3.50	24,500	
	Excavation, weathered rock	m3	7,000	6.00	42,000	
	Excavation, hard rock	m3	9,000	10.00	90,000	
	Concrete, structure	m3	2,000	140.00	280,000	
	Reinforcement	ton	60	1,500.00	90,000	
	Others (20%)	L.S.			105,300	
	Subtotal					631,800
2.80	ARCHITECTURAL BUILDINGS	m2	5,000	1,100.00	5,500,000	5,500,000
2.90	ACCESS ROAD					
	New construction	m	80	600,000.00	48,000,000	
	Upgraded	m	69	50,000.00	3,450,000	
	Subtotal					51,450,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	11,300	5,000.00	56,500,000	
	Gates	ton	600	7,000.00	4,200,000	
	Subtotal					60,700,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	3,100	18,700.00	57,970,000	
	Generators	ton	4,150	20,400.00	84,660,000	
	Transformers	MVA	678	2,900.00	1,966,200	
	Subtotal					144,596,200
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	152	46,000.00	6,992,000	6,992,000
	Total of Direct Cost					753,140,938
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	37,657,047
7.00	ADMINISTRATION EXPENSES	LS			0	7,531,409
8.00	ENGINEERING SERVICES	LS			0	52,719,866
9.00	PHYSICAL CONTINGENCY	LS			0	75,314,094
	GRAND TOTAL				926,363,354	926,363,354

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			46,570,663
2.00	CIVIL WORKS				
2.10	DIVERSION TUNNEL				
	Open Excavation of Inlet & Outlet				
	Open excavation, common	m3	20,000	3.50	70,000
	Open excavation, weathered rock	m3	20,000	6.00	120,000
	Open excavation, hard rock	m3	30,000	10.00	300,000
	Concrete of Inlet & Outlet	m3	10,000	140.00	1,400,000
	Tunnel Excavation	m3	657,200	55.00	36,146,000
	Tunnel Concrete	m3	191,000	160.00	30,560,000
	Reinforcement bar	m3	2,000	1,500.00	3,000,000
	Plug Concrete	m3	17,100	160.00	2,736,000
	Others (20%)	L.S.			14,866,400
	Subtotal				89,198,400
2.20	COFFER DAM				
	Excavation				
	Excavation, common	m3	72,900	3.50	255,150
	Embankment				
	Embankment, core	m3	117,700	5.00	588,500
	Embankment, filter	m3	29,400	10.00	294,000
	Embankment, rock	m3	679,400	6.00	4,076,400
	Others (20%)	L.S.			1,042,810
	Subtotal				6,356,860
2.30	MAIN DAM				
	Excavation				
	Excavation, common	m3	724,800	3.50	2,536,800
	Excavation, weathered rock	m3	59,000	6.00	354,000
	Excavation, hard rock	m3	191,900	10.00	1,919,000
	Embankment				
	Embankment, core	m3	3,851,100	5.00	19,255,500
	Embankment, filter	m3	846,000	10.00	8,460,000
	Embankment, rock	m3	26,633,600	6.00	159,801,600
	Curtain Grouting	m	75,000	70.00	5,250,000
	Consolidation Grouting	m	16,000	90.00	1,440,000
	Others (10%)	L.S.			19,901,690
	Subtotal				218,918,590
2.40	SPILLWAY				
	Excavation				
	Excavation, common	m3	355,100	3.50	1,242,850
	Excavation, weathered rock	m3	480,100	6.00	2,880,600
	Excavation, hard rock	m3	3,069,100	10.00	30,691,000
	Concrete	m3	153,800	140.00	21,532,000
	Reinforcement bars	ton	4,650	1,500.00	6,975,000
	Others (20%)	L.S.			12,664,290
	Subtotal				75,985,740
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	9,800	3.50	34,300
	Excavation, weathered rock	m3	9,800	6.00	58,800
	Excavation, hard rock	m3	13,100	10.00	131,000
	Concrete, open structure	m3	14,800	140.00	2,072,000
	Reinforcement	ton	450	1,500.00	675,000
	Others (20%)	L.S.			594,220
	Subtotal				3,565,320
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	247,100	55.00	13,590,500
	Concrete, tunnel	m3	73,900	160.00	11,824,000
	Reinforcement	ton	740	1,500.00	1,110,000
	Consolidation grout	m	11,000	90.00	990,000
	Curtain grout	m	1,350	70.00	94,500
	Backfill grout	m3	1,100	200.00	220,000
	Others (20%)	L.S.			5,565,800
	Subtotal				33,394,800
2.53	PENSTOCK				
	Excavation, tunnel	m3	59,600	55.00	3,278,000
	Concrete, tunnel	m3	6,600	160.00	1,056,000
	Reinforcement	ton	130	1,500.00	195,000
	Curtain grout	m	0	70.00	0
	Backfill grout	m3	600	200.00	120,000
	Others (20%)	L.S.			929,800
	Subtotal				5,578,800
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	68,800	3.50	240,800

	Excavation, weathered rock	m3	68,800	6.00	412,800	
	Excavation, hard rock	m3	91,700	10.00	917,000	
	Concrete, substructure	m3	65,500	250.00	16,375,000	
	Concrete, second stage	m3	16,400	140.00	2,296,000	
	Reinforcement	ton	4,300	1,500.00	6,450,000	
	Others (20%)	L.S.			5,338,320	
	Subtotal					32,029,920
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	8,000	3.50	28,000	
	Excavation, weathered rock	m3	8,000	6.00	48,000	
	Excavation, hard rock	m3	11,000	10.00	110,000	
	Concrete, structure	m3	2,500	140.00	350,000	
	Reinforcement	ton	75	1,500.00	112,500	
	Others (20%)	L.S.			129,760	
	Subtotal					778,260
2.80	ARCHITECTURAL BUILDINGS	m2	5,500	1,100.00	6,050,000	6,050,000
2.90	ACCESS ROAD					
	New construction	m	80	600,000.00	48,000,000	
	Upgraded	m	69	50,000.00	3,450,000	
	Subtotal					51,450,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	13,200	5,000.00	66,000,000	
	Gates	ton	680	7,000.00	4,760,000	
	Subtotal					70,760,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	3,500	18,700.00	65,450,000	
	Generators	ton	4,700	20,400.00	95,880,000	
	Transformers	MVA	820	2,700.00	2,214,000	
	Subtotal					163,544,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	152	46,000.00	6,992,000	6,992,000
	Total of Direct Cost					811,073,293
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	40,553,665
7.00	ADMINISTRATION EXPENSES	LS			0	8,110,733
8.00	ENGINEERING SERVICES	LS			0	56,775,131
9.00	PHYSICAL CONTINGENCY	LS			0	81,107,329
	GRAND TOTAL				997,620,150	997,620,150

B/Q of SR-6 (EL. 644.0)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			55,849,005
2.00	CIVIL WORKS				
2.10	DIVERSION TUNNEL				
	Open Excavation of Inlet & Outlet				
	Open excavation, common	m3	20,000	3.50	70,000
	Open excavation, weathered rock	m3	20,000	6.00	120,000
	Open excavation, hard rock	m3	30,000	10.00	300,000
	Concrete of Inlet & Outlet	m3	10,000	140.00	1,400,000
	Tunnel Excavation	m3	687,300	55.00	37,801,500
	Tunnel Concrete	m3	199,800	160.00	31,968,000
	Reinforcement bar	m3	2,100	1,500.00	3,150,000
	Plug Concrete	m3	17,100	160.00	2,736,000
	Others (20%)	L.S.			15,509,100
	Subtotal				93,054,600
2.20	COFFER DAM				
	Excavation				
	Excavation, common	m3	72,900	3.50	255,150
	Embankment				
	Embankment, core	m3	117,700	5.00	588,500
	Embankment, filter	m3	29,400	10.00	294,000
	Embankment, rock	m3	679,400	6.00	4,076,400
	Others (20%)	L.S.			1,042,810
	Subtotal				6,256,860
2.30	MAIN DAM				
	Excavation				
	Excavation, common	m3	945,400	3.50	3,308,900
	Excavation, weathered rock	m3	76,700	6.00	460,200
	Excavation, hard	m3	279,800	10.00	2,798,000
	Embankment				
	Embankment, core	m3	5,088,600	5.00	25,443,000
	Embankment, filter	m3	1,112,400	10.00	11,124,000
	Embankment, rock	m3	36,333,000	6.00	217,998,000
	Curtain Grouting	m	80,000	70.00	5,600,000
	Consolidation Grouting	m	20,000	90.00	1,800,000
	Others (10%)	L.S.			26,853,210
	Subtotal				295,385,310
2.40	SPILLWAY				
	Excavation				
	Excavation, common	m3	226,400	3.50	792,400
	Excavation, weathered rock	m3	288,400	6.00	1,730,400
	Excavation, hard rock	m3	2,994,500	10.00	29,945,000
	Concrete	m3	163,100	140.00	22,834,000
	Reinforcement bars	ton	4,900	1,500.00	7,350,000
	Others (20%)	L.S.			12,530,360
	Subtotal				75,182,160
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	12,400	3.50	43,400
	Excavation, weathered rock	m3	12,400	6.00	74,400
	Excavation, hard rock	m3	16,500	10.00	165,000
	Concrete, open structure	m3	18,600	140.00	2,604,000
	Reinforcement	ton	560	1,500.00	840,000
	Others (20%)	L.S.			745,360
	Subtotal				4,472,160
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	270,800	55.00	14,894,000
	Concrete, tunnel	m3	80,700	160.00	12,912,000
	Reinforcement	ton	810	1,500.00	1,215,000
	Consolidation grout	m	11,600	90.00	1,044,000
	Curtain grout	m	1,400	70.00	98,000
	Backfill grout	m3	1,200	200.00	240,000
	Others (20%)	L.S.			6,080,600
	Subtotal				36,483,600
2.53	PENSTOCK				
	Excavation, tunnel	m3	66,900	55.00	3,679,500
	Concrete, tunnel	m3	14,400	160.00	2,304,000
	Reinforcement	ton	300	1,500.00	450,000
	Curtain grout	m	0	70.00	0
	Backfill grout	m3	700	200.00	140,000
	Others (20%)	L.S.			1,314,700
	Subtotal				7,888,200
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	83,400	3.50	291,900

	Excavation, weathered rock	m3	83,400	6.00	500,400	
	Excavation, hard rock	m3	111,100	10.00	1,111,000	
	Concrete, substructure	m3	79,400	250.00	19,850,000	
	Concrete, second stage	m3	19,900	140.00	2,786,000	
	Reinforcement	ton	5,200	1,500.00	7,800,000	
	Others (20%)	L.S.			6,467,860	
	Subtotal					38,807,160
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	10,000	3.50	35,000	
	Excavation, weathered rock	m3	10,000	6.00	60,000	
	Excavation, hard rock	m3	15,000	10.00	150,000	
	Concrete, structure	m3	3,000	140.00	420,000	
	Reinforcement	ton	90	1,500.00	135,000	
	Others (20%)	L.S.			160,000	
	Subtotal					960,000
2.80	ARCHITECTURAL, BUILDINGS	m2	6,500	1,100.00	7,150,000	7,150,000
2.90	ACCESS ROAD					
	New construction	m	80	600,000.00	48,000,000	
	Upgraded	m	69	50,000.00	3,450,000	
	Subtotal					51,450,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	16,100	5,000.00	80,500,000	
	Gates	ton	800	7,000.00	5,600,000	
	Subtotal					86,100,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	4,100	18,700.00	76,670,000	
	Generators	ton	5,400	20,400.00	110,160,000	
	Transformers	MVA	1,020	2,500.00	2,550,000	
	Subtotal					189,380,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	152	46,000.00	6,992,000	6,992,000
	Total of Direct Cost					955,411,055
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	47,770,553
7.00	ADMINISTRATION EXPENSES	LS			0	9,554,111
8.00	ENGINEERING SERVICES	LS			0	66,878,774
9.00	PHYSICAL CONTINGENCY	LS			0	95,541,106
	GRAND TOTAL				1,175,155,598	1,175,155,598

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			7,158,492
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	30,300	3.50	106,050
	Open excavation,weathered rock	m3	30,300	6.00	181,800
	Open excavation,hard rock	m3	40,400	10.00	404,000
	Concrete				
	Mass concrete	m3	47,800	90.00	4,284,000
	Reinforced concrete	m3	89,100	140.00	12,474,000
	Reinforcement bar	ton	2,700	1,500.00	4,050,000
	Curtain grouting	m	3,900	70.00	273,000
	Consolidation grouting	m	3,500	90.00	315,000
	Others (20%)	L.S.			4,417,570
	Subtotal				26,505,420
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	107,500	55.00	5,912,500
	Concrete, tunnel	m3	25,900	160.00	4,144,000
	Reinforcement bars	ton	280	1,500.00	390,000
	Others (20%)	L.S.			2,089,300
	Subtotal				12,535,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,700	3.50	5,950
	Excavation,weathered rock	m3	1,700	6.00	10,200
	Excavation,hard rock	m3	2,200	10.00	22,000
	Concrete,open structure	m3	2,500	140.00	350,000
	Reinforcement	ton	75	1,500.00	112,500
	Others (20%)	L.S.			100,130
	Subtotal				600,780
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	156,800	55.00	8,624,000
	Concrete, tunnel	m3	52,500	160.00	8,400,000
	Reinforcement	ton	530	1,500.00	795,000
	Consolidation grout	m	17,400	90.00	1,566,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	2,100	200.00	420,000
	Others (20%)	L.S.			3,964,500
	Subtotal				23,787,000
2.53	SURGE TANK				
	Excavation, shaft	m3	14,400	55.00	792,000
	Concrete, shaft	m3	4,200	160.00	672,000
	Reinforcement	ton	125	1,500.00	187,500
	Consolidation grout	m	400	90.00	36,000
	Others (20%)	L.S.			337,500
	Subtotal				2,025,000
2.54	PENSTOCK				
	Excavation,tunnel	m3	9,000	55.00	495,000
	Concrete,tunnel	m3	4,000	160.00	640,000
	Reinforcement	ton	80	1,500.00	120,000
	Curtain grout	m	250	70.00	17,500
	Backfill grout	m3	190	200.00	38,000
	Others (20%)	L.S.			262,100
	Subtotal				1,572,600
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	8,800	3.50	30,800
	Excavation,weathered rock	m3	8,800	6.00	52,800
	Excavation,hard rock	m3	11,800	10.00	118,000
	Concrete, substructure	m3	8,400	250.00	2,100,000
	Concrete, second stage	m3	2,100	140.00	294,000
	Reinforcement	ton	550	1,500.00	825,000

	Others (20%)	L.S.			684,120	
	Subtotal					4,104,720
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	4,000	3.50	14,000	
	Excavation, weathered rock	m3	4,000	6.00	24,000	
	Excavation, hard rock	m3	5,500	10.00	55,000	
	Concrete, structure	m3	1,500	140.00	210,000	
	Reinforcement	ton	50	1,500.00	75,000	
	Others (20%)	L.S.			75,600	
	Subtotal					453,600
2.80	ARCHITECTURAL BUILDINGS	m2	5,000	1,100.00	5,500,000	5,500,000
2.90	ACCESS ROAD					
	New construction	m	5	600,000.00	3,000,000	
	Upgraded	m	263	50,000.00	13,150,000	
	Subtotal					16,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	2,100	5,000.00	10,500,000	
	Gates	ton	150	7,000.00	1,050,000	
	Subtotal					11,550,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	410	18,700.00	7,667,000	
	Generators	ton	830	20,400.00	16,932,000	
	Transformers	MVA	80	4,300.00	344,000	
	Subtotal					24,943,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	59	46,000.00	2,714,000	2,714,000
	Total of Direct Cost					139,600,412
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	1,396,004
7.00	ADMINISTRATION EXPENSES	LS			0	1,396,004
8.00	ENGINEERING SERVICES	LS			0	9,772,029
9.00	PHYSICAL CONTINGENCY	LS			0	13,960,041
	GRAND TOTAL				166,124,490	166,124,490

B/Q of SR-3 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			5,853,414
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	27,400	3.50	95,900
	Open excavation,weathered rock	m3	27,400	6.00	164,400
	Open excavation,hard rock	m3	36,500	10.00	365,000
	Concrete				
	Mass concrete	m3	44,300	90.00	3,987,000
	Reinforced concrete	m3	84,500	140.00	11,830,000
	Reinforcement bar	ton	2,550	1,500.00	3,825,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	3,500	90.00	315,000
	Others (20%)	L.S.			4,166,860
	Subtotal				25,001,160
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	71,500	55.00	3,932,500
	Concrete, tunnel	m3	17,300	160.00	2,768,000
	Reinforcement bars	ton	180	1,500.00	270,000
	Others (20%)	L.S.			1,394,100
	Subtotal				8,364,600
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,400	3.50	4,900
	Excavation,weathered rock	m3	1,400	6.00	8,400
	Excavation,hard rock	m3	1,800	10.00	18,000
	Concrete,open structure	m3	2,000	140.00	280,000
	Reinforcement	ton	80	1,500.00	90,000
	Others (20%)	L.S.			80,260
	Subtotal				481,560
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	121,600	55.00	6,688,000
	Concrete, tunnel	m3	41,700	160.00	6,672,000
	Reinforcement	ton	420	1,500.00	630,000
	Consolidation grout	m	15,300	90.00	1,377,000
	Curtain grout	m	220	70.00	15,400
	Backfill grout	m3	1,900	200.00	380,000
	Others (20%)	L.S.			3,152,480
	Subtotal				18,914,880
2.53	SURGE TANK				
	Excavation, shaft	m3	3,800	55.00	528,000
	Concrete, shaft	m3	2,800	160.00	448,000
	Reinforcement	ton	85	1,500.00	127,500
	Consolidation grout	m	350	90.00	31,500
	Others (20%)	L.S.			227,000
	Subtotal				1,362,000
2.54	PENSTOCK				
	Excavation,tunnel	m3	6,800	55.00	374,000
	Concrete,tunnel	m3	3,500	160.00	560,000
	Reinforcement	ton	70	1,500.00	105,000
	Curtain grout	m	220	70.00	15,400
	Backfill grout	m3	170	200.00	34,000
	Others (20%)	L.S.			217,680
	Subtotal				1,306,080
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	5,900	3.50	20,650
	Excavation,weathered rock	m3	5,900	6.00	35,400
	Excavation,hard rock	m3	7,800	10.00	78,000
	Concrete, substructure	m3	5,600	250.00	1,400,000
	Concrete, second stage	m3	1,400	140.00	196,000
	Reinforcement	ton	370	1,500.00	555,000

	Others (20%)	L.S.			457,010	
	Subtotal					2,742,060
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	3,000	3.50	10,500	
	Excavation, weathered rock	m3	3,000	6.00	18,000	
	Excavation, hard rock	m3	4,500	10.00	45,000	
	Concrete, structure	m3	1,200	140.00	168,000	
	Reinforcement	ton	40	1,500.00	60,000	
	Others (20%)	L.S.			60,300	
	Subtotal					361,800
2.80	ARCHITECTURAL BUILDINGS	m2	4,500	1,100.00	4,950,000	4,950,000
2.90	ACCESS ROAD					
	New construction	m	5	600,000.00	3,000,000	
	Upgraded	m	263	50,000.00	13,150,000	
	Subtotal					16,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,500	5,000.00	7,500,000	
	Gates	ton	100	7,000.00	700,000	
	Subtotal					8,200,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	300	18,700.00	5,610,000	
	Generators	ton	850	20,400.00	13,260,000	
	Transformers	MVA	53	4,600.00	243,800	
	Subtotal					19,113,800
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	59	46,000.00	2,714,000	2,714,000
	Total of Direct Cost					115,515,354
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	1,155,154
7.00	ADMINISTRATION EXPENSES	LS			0	1,155,154
8.00	ENGINEERING SERVICES	LS			0	8,086,075
9.00	PHYSICAL CONTINGENCY	LS			0	11,551,535
	GRAND TOTAL				137,463,271	137,463,271

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			4,937,898
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation, common	m3	24,500	3.50	85,750
	Open excavation, weathered rock	m3	24,500	6.00	147,000
	Open excavation, hard rock	m3	32,800	10.00	328,000
	Concrete				
	Mass concrete	m3	41,100	90.00	3,699,000
	Reinforced concrete	m3	80,200	140.00	11,228,000
	Reinforcement bar	ton	2,400	1,500.00	3,600,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	3,400	90.00	306,000
	Others (20%)	L.S.			3,926,350
	Subtotal				23,558,100
2.40	DESANDING BASIN				
	Excavation, tunnel	m3	53,800	55.00	2,959,000
	Concrete, tunnel	m3	13,000	160.00	2,080,000
	Reinforcement bars	ton	130	1,500.00	195,000
	Others (20%)	L.S.			1,046,800
	Subtotal				6,280,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	1,200	3.50	4,200
	Excavation, weathered rock	m3	1,200	6.00	7,200
	Excavation, hard rock	m3	1,800	10.00	16,000
	Concrete, open structure	m3	1,700	140.00	238,000
	Reinforcement	ton	50	1,500.00	75,000
	Others (20%)	L.S.			68,080
	Subtotal				408,480
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	90,700	55.00	4,988,500
	Concrete, tunnel	m3	32,100	160.00	5,136,000
	Reinforcement	ton	320	1,500.00	480,000
	Consolidation grout	m	13,100	90.00	1,179,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	1,700	200.00	340,000
	Others (20%)	L.S.			2,427,500
	Subtotal				14,565,000
2.53	SURGE TANK				
	Excavation, shaft	m3	7,200	55.00	396,000
	Concrete, shaft	m3	2,100	160.00	336,000
	Reinforcement	ton	85	1,500.00	97,500
	Consolidation grout	m	300	90.00	27,000
	Others (20%)	L.S.			171,300
	Subtotal				1,027,800
2.54	PENSTOCK				
	Excavation, tunnel	m3	5,700	55.00	313,500
	Concrete, tunnel	m3	3,100	160.00	496,000
	Reinforcement	ton	85	1,500.00	97,500
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	150	200.00	30,000
	Others (20%)	L.S.			190,200
	Subtotal				1,141,200
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	4,400	3.50	15,400
	Excavation, weathered rock	m3	4,400	6.00	26,400
	Excavation, hard rock	m3	5,900	10.00	59,000
	Concrete, substructure	m3	4,200	250.00	1,050,000
	Concrete, second stage	m3	1,100	140.00	154,000
	Reinforcement	ton	280	1,500.00	420,000

	Others (20%)	L.S.			344,960	
	Subtotal					2,069,160
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	2,800	3.50	9,100	
	Excavation, weathered rock	m3	2,600	6.00	15,600	
	Excavation, hard rock	m3	4,200	10.00	42,000	
	Concrete, structure	m3	1,100	140.00	154,000	
	Reinforcement	ton	35	1,500.00	52,500	
	Others (20%)	L.S.			54,640	
	Subtotal					327,840
2.80	ARCHITECTURAL BUILDINGS	m2	4,000	1,100.00	4,400,000	4,400,000
2.90	ACCESS ROAD					
	New construction	m	5	600,000.00	3,000,000	
	Upgraded	m	263	50,000.00	13,150,000	
	Subtotal					16,150,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,200	5,000.00	6,000,000	
	Gates	ton	75	7,000.00	525,000	
	Subtotal					6,525,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	230	18,700.00	4,301,000	
	Generators	ton	530	20,400.00	10,812,000	
	Transformers	MVA	40	4,900.00	196,000	
	Subtotal					15,309,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	59	46,000.00	2,714,000	2,714,000
	Total of Direct Cost					99,414,878
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	994,149
7.00	ADMINISTRATION EXPENSES	LS			0	994,149
8.00	ENGINEERING SERVICES	LS			0	6,959,041
9.00	PHYSICAL CONTINGENCY	LS			0	9,941,488
	GRAND TOTAL				118,303,705	118,303,705

B/Q of SR-7 (Draft Rate 0.33)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			5,422,074
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation, common	m3	19,900	3.50	69,650
	Open excavation, weathered rock	m3	19,900	6.00	119,400
	Open excavation, hard rock	m3	26,500	10.00	265,000
	Concrete				
	Mass concrete	m3	34,700	90.00	3,123,000
	Reinforced concrete	m3	75,500	140.00	10,570,000
	Reinforcement bar	ton	2,300	1,500.00	3,450,000
	Curtain grouting	m	3,900	70.00	273,000
	Consolidation grouting	m	2,800	90.00	252,000
	Others (20%)	L.S.			3,624,410
	Subtotal				21,746,460
2.40	DESANDING BASIN				
	Excavation, tunnel	m3	35,000	55.00	1,925,000
	Concrete, tunnel	m3	89,000	160.00	14,240,000
	Reinforcement bars	ton	90	1,500.00	135,000
	Others (20%)	L.S.			3,260,000
	Subtotal				19,560,000
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	1,000	3.50	3,500
	Excavation, weathered rock	m3	1,000	6.00	6,000
	Excavation, hard rock	m3	1,300	10.00	13,000
	Concrete, open structure	m3	1,500	140.00	210,000
	Reinforcement	ton	45	1,500.00	67,500
	Others (20%)	L.S.			60,000
	Subtotal				360,000
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	48,900	55.00	2,689,500
	Concrete, tunnel	m3	18,000	160.00	2,880,000
	Reinforcement	ton	180	1,500.00	270,000
	Consolidation grout	m	8,300	90.00	747,000
	Curtain grout	m	180	70.00	11,200
	Backfill grout	m3	1,700	200.00	340,000
	Others (20%)	L.S.			1,387,540
	Subtotal				8,325,240
2.53	SURGE TANK				
	Excavation, shaft	m3	5,000	55.00	275,000
	Concrete, shaft	m3	1,500	160.00	240,000
	Reinforcement	ton	50	1,500.00	75,000
	Consolidation grout	m	300	90.00	27,000
	Others (20%)	L.S.			123,400
	Subtotal				740,400
2.54	PENSTOCK				
	Excavation, tunnel	m3	3,700	55.00	203,500
	Concrete, tunnel	m3	2,200	160.00	352,000
	Reinforcement	ton	45	1,500.00	67,500
	Curtain grout	m	180	70.00	11,200
	Backfill grout	m3	120	200.00	24,000
	Others (20%)	L.S.			131,640
	Subtotal				789,840
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	5,000	3.50	17,500
	Excavation, weathered rock	m3	5,000	6.00	30,000
	Excavation, hard rock	m3	6,700	10.00	67,000
	Concrete, substructure	m3	4,800	250.00	1,200,000
	Concrete, second stage	m3	1,200	140.00	168,000
	Reinforcement	ton	310	1,500.00	465,000

	Others (20%)	L.S.			389,500	
	Subtotal					2,337,000
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	3,000	3.50	10,500	
	Excavation, weathered rock	m3	3,000	6.00	18,000	
	Excavation, hard rock	m3	4,500	10.00	45,000	
	Concrete, structure	m3	1,200	140.00	168,000	
	Reinforcement	ton	40	1,500.00	60,000	
	Others (20%)	L.S.			60,300	
	Subtotal					361,800
2.80	ARCHITECTURAL BUILDINGS	m2	4,000	1,100.00	4,400,000	4,400,000
2.90	ACCESS ROAD					
	New construction	m	35	600,000.00	21,000,000	
	Upgraded	m	298	50,000.00	14,900,000	
	Subtotal					35,900,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	1,150	5,000.00	5,750,000	
	Gates	ton	55	7,000.00	385,000	
	Subtotal					6,135,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	240	18,700.00	4,488,000	
	Generators	ton	660	20,400.00	13,464,000	
	Transformers	MVA	55	4,600.00	253,000	
	Subtotal					18,205,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	87	46,000.00	4,002,000	4,002,000
	Total of Direct Cost					128,284,814
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	1,282,848
7.00	ADMINISTRATION EXPENSES	LS			0	1,282,848
8.00	ENGINEERING SERVICES	LS			0	8,979,937
9.00	PHYSICAL CONTINGENCY	LS			0	12,828,481
	GRAND TOTAL				152,658,929	152,658,929

B/Q of SR-7 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			3,225,774
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	17,900	3.50	62,650
	Open excavation,weathered rock	m3	17,900	6.00	107,400
	Open excavation,hard rock	m3	23,900	10.00	239,000
	Concrete				
	Mass concrete	m3	32,300	90.00	2,907,000
	Reinforced concrete	m3	70,900	140.00	9,926,000
	Reinforcement bar	ton	2,150	1,500.00	3,225,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	2,700	90.00	243,000
	Others (20%)	L.S.			3,392,410
	Subtotal				20,354,460
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	23,300	55.00	1,281,500
	Concrete, tunnel	m3	5,900	160.00	944,000
	Reinforcement bars	ton	60	1,500.00	90,000
	Others (20%)	L.S.			463,100
	Subtotal				2,778,600
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	800	3.50	2,800
	Excavation,weathered rock	m3	800	6.00	4,800
	Excavation,hard rock	m3	1,100	10.00	11,000
	Concrete,open structure	m3	1,200	140.00	168,000
	Reinforcement	ton	35	1,500.00	52,500
	Others (20%)	L.S.			47,820
	Subtotal				286,920
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	32,400	55.00	1,782,000
	Concrete, tunnel	m3	12,500	160.00	2,000,000
	Reinforcement	ton	130	1,500.00	195,000
	Consolidation grout	m	8,800	90.00	594,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	1,300	200.00	260,000
	Others (20%)	L.S.			968,020
	Subtotal				5,808,120
2.53	SURGE TANK				
	Excavation, shaft	m3	3,400	55.00	187,000
	Concrete, shaft	m3	1,000	160.00	160,000
	Reinforcement	ton	30	1,500.00	45,000
	Consolidation grout	m	250	90.00	22,500
	Others (20%)	L.S.			82,900
	Subtotal				497,400
2.54	PENSTOCK				
	Excavation,tunnel	m3	3,000	55.00	165,000
	Concrete,tunnel	m3	1,900	160.00	304,000
	Reinforcement	ton	40	1,500.00	60,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	100	200.00	20,000
	Others (20%)	L.S.			111,620
	Subtotal				669,720
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	3,300	3.50	11,550
	Excavation,weathered rock	m3	3,300	6.00	19,800
	Excavation,hard rock	m3	4,500	10.00	45,000
	Concrete, substructure	m3	3,200	250.00	800,000
	Concrete, second stage	m3	800	140.00	112,000
	Reinforcement	ton	210	1,500.00	315,000

	Others (20%)	L.S.			260,670	
	Subtotal					1,564,020
2.70	TAILRACH					
	Excavation					
	Excavation,common	m3	2,500	3.50	8,750	
	Excavation,weathered rock	m3	2,500	6.00	15,000	
	Excavation,hard rock	m3	4,000	10.00	40,000	
	Concrete, structure	m3	1,000	140.00	140,000	
	Reinforcement	ton	30	1,500.00	45,000	
	Others (20%)	L.S.			49,750	
	Subtotal					298,500
2.80	ARCHITECTURAL BUILDINGS	m2	3,000	1,100.00	3,300,000	3,300,000
2.90	ACCESS ROAD					
	New construction	m	35	600,000.00	21,000,000	
	Upgraded	m	298	50,000.00	14,900,000	
	Subtotal					35,900,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	850	5,000.00	4,250,000	
	Gates	ton	40	7,000.00	280,000	
	Subtotal					4,530,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	170	18,700.00	3,179,000	
	Generators	ton	510	20,400.00	10,404,000	
	Transformers	MVA	37	5,000.00	185,000	
	Subtotal					13,768,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	87	46,000.00	4,002,000	4,002,000
	Total of Direct Cost					96,983,514
6.00	LAND AQUISITION AND COMPENSATION	LS			0	969,835
7.00	ADMINISTRATION EXPENSES	LS			0	969,835
8.00	ENGINEERING SERVICES	LS			0	6,788,846
9.00	PHYSICAL CONTINGENCY	LS			0	9,698,351
	GRAND TOTAL				115,410,382	115,410,382

B/Q of SR-7 (Draft Rate 0.67)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			2,746,350
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	16,100	3.50	56,350
	Open excavation,weathered rock	m3	16,100	6.00	96,600
	Open excavation,hard rock	m3	21,500	10.00	215,000
	Concrete				
	Mass concrete	m3	30,000	90.00	2,700,000
	Reinforced concrete	m3	66,800	140.00	9,324,000
	Reinforcement bar	ton	2,800	1,500.00	3,000,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	2,700	90.00	243,000
	Others (20%)	L.S.			3,174,590
	Subtotal				19,047,540
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	17,400	55.00	957,000
	Concrete, tunnel	m3	4,400	160.00	704,000
	Reinforcement bars	ton	45	1,500.00	67,500
	Others (20%)	L.S.			345,700
	Subtotal				2,074,200
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	700	3.50	2,450
	Excavation,weathered rock	m3	700	6.00	4,200
	Excavation,hard rock	m3	900	10.00	9,000
	Concrete,open structure	m3	1,000	140.00	140,000
	Reinforcement	ton	30	1,500.00	45,000
	Others (20%)	L.S.			40,130
	Subtotal				240,780
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	19,200	55.00	1,056,000
	Concrete, tunnel	m3	8,000	160.00	1,280,000
	Reinforcement	ton	80	1,500.00	120,000
	Consolidation grout	m	5,000	90.00	450,000
	Curtain grout	m	100	70.00	7,000
	Backfill grout	m3	950	200.00	190,000
	Others (20%)	L.S.			620,600
	Subtotal				3,723,600
2.53	SURGE TANK				
	Excavation, shaft	m3	2,500	55.00	137,500
	Concrete, shaft	m3	750	160.00	120,000
	Reinforcement	ton	25	1,500.00	37,500
	Consolidation grout	m	200	90.00	18,000
	Others (20%)	L.S.			62,600
	Subtotal				375,600
2.54	PENSTOCK				
	Excavation,tunnel	m3	2,300	55.00	126,500
	Concrete,tunnel	m3	1,650	160.00	264,000
	Reinforcement	ton	35	1,500.00	52,500
	Curtain grout	m	100	70.00	7,000
	Backfill grout	m3	90	200.00	18,000
	Others (20%)	L.S.			93,600
	Subtotal				561,600
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	2,500	3.50	8,750
	Excavation,weathered rock	m3	2,500	6.00	15,000
	Excavation,hard rock	m3	3,300	10.00	33,000
	Concrete, substructure	m3	2,400	250.00	600,000
	Concrete, second stage	m3	600	140.00	84,000
	Reinforcement	ton	155	1,500.00	232,500

	Others (20%)	L.S.			194,650	
	Subtotal					1,167,900
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	2,200	3.50	7,700	
	Excavation, weathered rock	m3	2,200	6.00	13,200	
	Excavation, hard rock	m3	3,500	10.00	35,000	
	Concrete, structure	m3	900	140.00	126,000	
	Reinforcement	ton	30	1,500.00	45,000	
	Others (20%)	L.S.			45,380	
	Subtotal					272,280
2.80	ARCHITECTURAL BUILDINGS	m2	2,500	1,100.00	2,750,000	2,750,000
2.90	ACCESS ROAD					
	New construction	m	35	600,000.00	21,000,000	
	Upgraded	m	298	50,000.00	14,900,000	
	Subtotal					35,900,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	580	5,000.00	2,900,000	
	Gates	ton	30	7,000.00	210,000	
	Subtotal					3,110,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	140	18,700.00	2,618,000	
	Generators	ton	420	20,400.00	8,568,000	
	Transformers	MVA	28	5,200.00	145,600	
	Subtotal					11,331,600
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	87	46,000.00	4,002,000	4,002,000
	Total of Direct Cost					87,303,450
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	873,035
7.00	ADMINISTRATION EXPENSES	LS			0	873,035
8.00	ENGINEERING SERVICES	LS			0	6,111,242
9.00	PHYSICAL CONTINGENCY	LS			0	8,730,345
	GRAND TOTAL				103,891,106	103,891,106

B/Q of BS-1 (Draft Rate 0.33)

Item No.	Work Item	Unit	Quantity	Unit price P.C. (US\$)	Amount P.C. (US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			3,698,460
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	18,800	3.50	65,100
	Open excavation,weathered rock	m3	18,800	6.00	111,600
	Open excavation,hard rock	m3	24,700	10.00	247,000
	Concrete				
	Mass concrete	m3	35,000	90.00	3,150,000
	Reinforced concrete	m3	78,500	140.00	10,990,000
	Reinforcement bar	ton	2,350	1,500.00	3,525,000
	Curtain grouting	m	3,850	70.00	269,500
	Consolidation grouting	m	2,700	90.00	243,000
	Others (20%)	L.S.			3,720,240
	Subtotal				22,321,440
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	43,300	55.00	2,381,500
	Concrete, tunnel	m3	11,000	160.00	1,760,000
	Reinforcement bars	ton	110	1,500.00	165,000
	Others (20%)	L.S.			861,300
	Subtotal				5,167,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,100	3.50	3,850
	Excavation,weathered rock	m3	1,100	6.00	6,600
	Excavation,hard rock	m3	1,500	10.00	15,000
	Concrete,open structure	m3	1,650	140.00	231,000
	Reinforcement	ton	50	1,500.00	75,000
	Others (20%)	L.S.			66,290
	Subtotal				397,740
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	41,500	55.00	2,282,500
	Concrete, tunnel	m3	14,700	160.00	2,352,000
	Reinforcement	ton	150	1,500.00	225,000
	Consolidation grout	m	8,000	90.00	540,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	750	200.00	150,000
	Others (20%)	L.S.			1,112,700
	Subtotal				6,676,200
2.53	SURGE TANK				
	Excavation, shaft	m3	5,500	55.00	302,500
	Concrete, shaft	m3	1,600	160.00	256,000
	Reinforcement	ton	50	1,500.00	75,000
	Consolidation grout	m	200	90.00	18,000
	Others (20%)	L.S.			130,300
	Subtotal				781,800
2.54	PENSTOCK				
	Excavation,tunnel	m3	2,200	55.00	121,000
	Concrete,tunnel	m3	1,200	160.00	192,000
	Reinforcement	ton	25	1,500.00	37,500
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	80	200.00	12,000
	Others (20%)	L.S.			75,300
	Subtotal				451,800
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	2,100	3.50	7,350
	Excavation,weathered rock	m3	2,100	6.00	12,600
	Excavation,hard rock	m3	2,800	10.00	28,000
	Concrete, substructure	m3	2,000	250.00	500,000
	Concrete, second stage	m3	500	140.00	70,000
	Reinforcement	ton	130	1,500.00	195,000

	Others (20%)	L.S.			162,590	
	Subtotal					975,540
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	1,200	3.50	4,200	
	Excavation, weathered rock	m3	1,200	6.00	7,200	
	Excavation, hard rock	m3	1,000	10.00	16,000	
	Concrete, structure	m3	800	140.00	112,000	
	Reinforcement	ton	25	1,500.00	37,500	
	Others (20%)	L.S.			35,380	
	Subtotal					212,280
2.80	ARCHITECTURAL BUILDINGS	m2	1,000	1,100.00	1,100,000	1,100,000
2.90	ACCESS ROAD					
	New construction	m	26	600,000.00	15,600,000	
	Upgraded	m	263	50,000.00	13,150,000	
	Subtotal					28,750,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	270	5,000.00	1,350,000	
	Gates	ton	50	7,000.00	350,000	
	Subtotal					1,700,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	150	18,700.00	2,805,000	
	Generators	ton	300	20,400.00	6,120,000	
	Transformers	MVA	14	5,900.00	82,600	
	Subtotal					9,007,600
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	40	46,000.00	1,840,000	1,840,000
	Total of Direct Cost					83,080,660
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	830,807
7.00	ADMINISTRATION EXPENSES	LS			0	830,807
8.00	ENGINEERING SERVICES	LS			0	5,815,646
9.00	PHYSICAL CONTINGENCY	LS			0	8,308,066
	GRAND TOTAL				98,865,985	98,865,985

Item No.	Work Item	Unit	Quantity	Unit price P.C.(US\$)	Amount P.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			3,064,278
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation, common	m3	18,800	3.50	58,800
	Open excavation, weathered rock	m3	18,800	6.00	100,800
	Open excavation, hard rock	m3	22,400	10.00	224,000
	Concrete				
	Mass concrete	m3	31,000	90.00	2,790,000
	Reinforced concrete	m3	70,500	140.00	9,870,000
	Reinforcement bar	ton	2,100	1,500.00	3,150,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	2,600	90.00	234,000
	Others (20%)	L.S.			3,335,920
	Subtotal				20,015,520
2.40	DESANDING BASIN				
	Excavation, tunnel	m3	28,800	55.00	1,584,000
	Concrete, tunnel	m3	7,300	160.00	1,168,000
	Reinforcement bars	ton	75	1,500.00	112,500
	Others (20%)	L.S.			572,900
	Subtotal				3,437,400
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	900	3.50	3,150
	Excavation, weathered rock	m3	900	6.00	5,400
	Excavation, hard rock	m3	1,200	10.00	12,000
	Concrete, open structure	m3	1,300	140.00	182,000
	Reinforcement	ton	40	1,500.00	60,000
	Others (20%)	L.S.			52,510
	Subtotal				315,060
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	29,500	55.00	1,622,500
	Concrete, tunnel	m3	10,900	160.00	1,744,000
	Reinforcement	ton	110	1,500.00	165,000
	Consolidation grout	m	5,000	90.00	450,000
	Curtain grout	m	180	70.00	11,200
	Backfill grout	m3	650	200.00	130,000
	Others (20%)	L.S.			824,540
	Subtotal				4,947,240
2.53	SURGE TANK				
	Excavation, shaft	m3	3,700	55.00	203,500
	Concrete, shaft	m3	1,100	160.00	176,000
	Reinforcement	ton	30	1,500.00	45,000
	Consolidation grout	m	170	90.00	15,300
	Others (20%)	L.S.			87,960
	Subtotal				527,760
2.54	PENSTOCK				
	Excavation, tunnel	m3	2,900	55.00	159,500
	Concrete, tunnel	m3	1,400	160.00	224,000
	Reinforcement	ton	30	1,500.00	45,000
	Curtain grout	m	160	70.00	11,200
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			89,940
	Subtotal				539,640
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	1,400	3.50	4,900
	Excavation, weathered rock	m3	1,400	6.00	8,400
	Excavation, hard rock	m3	1,900	10.00	19,000
	Concrete, substructure	m3	1,400	250.00	350,000
	Concrete, second stage	m3	350	140.00	49,000
	Reinforcement	ton	90	1,500.00	135,000

	Others (20%)	L.S.			113,260	
	Subtotal					679,560
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	1,000	3.50	3,500	
	Excavation, weathered rock	m3	1,000	6.00	6,000	
	Excavation, hard rock	m3	1,300	10.00	13,000	
	Concrete, structure	m3	700	140.00	98,000	
	Reinforcement	ton	20	1,500.00	30,000	
	Others (20%)	L.S.			30,100	
	Subtotal					180,600
2.80	ARCHITECTURAL BUILDINGS	m2	900	1,100.00	990,000	990,000
2.90	ACCESS ROAD					
	New construction	m	26	600,000.00	15,600,000	
	Upgraded	m	263	50,000.00	13,150,000	
	Subtotal					28,750,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	200	5,000.00	1,000,000	
	Gates	ton	30	7,000.00	210,000	
	Subtotal					1,210,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	100	18,700.00	1,870,000	
	Generators	ton	200	20,400.00	4,080,000	
	Transformers	MVA	9	6,150.00	55,350	
	Subtotal					6,005,350
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	40	46,000.00	1,840,000	1,840,000
	Total of Direct Cost					72,502,408
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	725,024
7.00	ADMINISTRATION EXPENSES	LS			0	725,024
8.00	ENGINEERING SERVICES	LS			0	5,075,169
9.00	PHYSICAL CONTINGENCY	LS			0	7,250,241
	GRAND TOTAL				86,277,866	86,277,866

B/Q of BS-1 (Draft Rate 0.67)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			2,634,216
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	15,100	3.50	52,850
	Open excavation,weathered rock	m3	15,100	6.00	90,600
	Open excavation,hard rock	m3	20,100	10.00	201,000
	Concrete				
	Mass concrete	m3	28,900	90.00	2,601,000
	Reinforced concrete	m3	65,500	140.00	9,170,000
	Reinforcement bar	ton	2,000	1,500.00	3,000,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	2,800	90.00	234,000
	Others (20%)	L.S.			3,117,490
	Subtotal				18,704,940
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	21,700	55.00	1,193,500
	Concrete, tunnel	m3	5,500	160.00	880,000
	Reinforcement bars	ton	55	1,500.00	82,500
	Others (20%)	L.S.			431,200
	Subtotal				2,587,200
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	800	3.50	2,800
	Excavation,weathered rock	m3	800	6.00	4,800
	Excavation,hard rock	m3	1,000	10.00	10,000
	Concrete,open structure	m3	1,100	140.00	154,000
	Reinforcement	ton	30	1,500.00	45,000
	Others (20%)	L.S.			43,320
	Subtotal				259,920
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	19,500	55.00	1,072,500
	Concrete, tunnel	m3	7,500	160.00	1,200,000
	Reinforcement	ton	75	1,500.00	112,500
	Consolidation grout	m	4,000	90.00	360,000
	Curtain grout	m	125	70.00	8,750
	Backfill grout	m3	520	200.00	104,000
	Others (20%)	L.S.			571,550
	Subtotal				3,429,300
2.53	SURGE TANK				
	Excavation, shaft	m3	2,700	55.00	148,500
	Concrete, shaft	m3	800	160.00	128,000
	Reinforcement	ton	25	1,500.00	37,500
	Consolidation grout	m	130	90.00	11,700
	Others (20%)	L.S.			65,140
	Subtotal				390,840
2.54	PENSTOCK				
	Excavation,tunnel	m3	1,400	55.00	77,000
	Concrete,tunnel	m3	900	160.00	144,000
	Reinforcement	ton	20	1,500.00	30,000
	Curtain grout	m	125	70.00	8,750
	Backfill grout	m3	45	200.00	9,000
	Others (20%)	L.S.			53,750
	Subtotal				322,500
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	1,100	3.50	3,850
	Excavation,weathered rock	m3	1,100	6.00	6,600
	Excavation,hard rock	m3	1,400	10.00	14,000
	Concrete, substructure	m3	1,000	250.00	250,000
	Concrete, second stage	m3	250	140.00	35,000
	Reinforcement	ton	85	1,500.00	97,500

	Others (20%)	L.S.			81,390	
	Subtotal					488,340
2.70	TAIL RACE					
	Excavation					
	Excavation, common	m3	800	3.50	2,800	
	Excavation, weathered rock	m3	800	6.00	4,800	
	Excavation, hard rock	m3	1,100	10.00	11,000	
	Concrete, structure	m3	600	140.00	84,000	
	Reinforcement	ton	20	1,500.00	30,000	
	Others (20%)	L.S.			26,520	
	Subtotal					159,120
2.80	ARCHITECTURAL BUILDINGS	m2	750	1,100.00	825,000	825,000
2.90	ACCESS ROAD					
	New construction	m	26	600,000.00	15,600,000	
	Upgraded	m	283	50,000.00	13,150,000	
	Subtotal					28,750,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	170	5,000.00	850,000	
	Gates	ton	25	7,000.00	175,000	
	Subtotal					1,025,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	80	18,700.00	1,496,000	
	Generators	ton	170	20,400.00	3,468,000	
	Transformers	MVA	7	6,500.00	45,500	
	Subtotal					5,009,500
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	40	46,000.00	1,840,000	1,840,000
	Total of Direct Cost					66,425,876
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	664,259
7.00	ADMINISTRATION EXPENSES	LS			0	664,259
8.00	ENGINEERING SERVICES	LS			0	4,649,811
9.00	PHYSICAL CONTINGENCY	LS			0	6,642,588
	GRAND TOTAL				79,046,792	79,046,792

B/Q of THR-1 (Draft Rate 0.33)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			2,170,998
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	10,800	3.50	37,800
	Open excavation,weathered rock	m3	10,800	6.00	64,800
	Open excavation,hard rock	m3	14,300	10.00	143,000
	Concrete				
	Mass concrete	m3	19,800	90.00	1,782,000
	Reinforced concrete	m3	61,500	140.00	8,610,000
	Reinforcement bar	ton	1,850	1,500.00	2,775,000
	Curtain grouting	m	3,900	70.00	273,000
	Consolidation grouting	m	2,000	90.00	180,000
	Others (20%)	L.S.			2,773,120
	Subtotal				16,638,720
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	8,900	55.00	379,500
	Concrete, tunnel	m3	1,900	160.00	304,000
	Reinforcement bars	ton	20	1,500.00	30,000
	Others (20%)	L.S.			142,700
	Subtotal				856,200
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	500	3.50	1,750
	Excavation,weathered rock	m3	500	6.00	3,000
	Excavation,hard rock	m3	600	10.00	6,000
	Concrete,open structure	m3	700	140.00	98,000
	Reinforcement	ton	20	1,500.00	30,000
	Others (20%)	L.S.			27,750
	Subtotal				166,500
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	18,500	55.00	1,017,500
	Concrete, tunnel	m3	7,200	160.00	1,152,000
	Reinforcement	ton	40	1,500.00	60,000
	Consolidation grout	m	100	90.00	9,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			451,520
	Subtotal				2,709,120
2.53	HEAD POND				
	Excavation				
	Excavation,common	m3	900	3.50	3,150
	Excavation,weathered rock	m3	900	6.00	5,400
	Excavation,hard rock	m3	1,200	10.00	12,000
	Concrete,open structure	m3	1,100	140.00	154,000
	Reinforcement	ton	35	1,500.00	52,500
	Others (20%)	L.S.			45,410
	Subtotal				272,460
2.54	PENSTOCK				
	Excavation				
	Excavation,common	m3	2,000	3.50	7,000
	Excavation,weathered rock	m3	2,000	6.00	12,000
	Excavation,hard rock	m3	2,700	10.00	27,000
	Concrete,open structure	m3	2,100	140.00	294,000
	Reinforcement	ton	30	1,500.00	45,000
	Others (20%)	L.S.			77,000
	Subtotal				462,000
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	900	3.50	3,150
	Excavation,weathered rock	m3	900	6.00	5,400
	Excavation,hard rock	m3	1,200	10.00	12,000

	Concrete, substructure	m3	900	250.00	225,000	
	Concrete, second stage	m3	250	140.00	35,000	
	Reinforcement	ton	80	1,500.00	90,000	
	Others (20%)	L.S.			74,110	
	Subtotal					444,660
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	800	3.50	2,800	
	Excavation, weathered rock	m3	800	6.00	4,800	
	Excavation, hard rock	m3	1,200	10.00	12,000	
	Concrete, structure	m3	800	140.00	84,000	
	Reinforcement	ton	20	1,500.00	30,000	
	Others (20%)	L.S.			26,720	
	Subtotal					160,320
2.80	ARCHITECTURAL BUILDINGS	m2	2,000	1,100.00	2,200,000	2,200,000
2.90	ACCESS ROAD					
	New construction	m	9	600,000.00	5,400,000	
	Upgraded	m	9	50,000.00	450,000	
	Subtotal					5,850,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	300	5,000.00	1,500,000	
	Gates	ton	15	7,000.00	105,000	
	Subtotal					1,605,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	80	18,700.00	1,122,000	
	Generators	ton	210	20,400.00	4,284,000	
	Transformers	MVA	9	6,250.00	56,250	
	Subtotal					5,462,250
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	43	46,000.00	1,978,000	1,978,000
	Total of Direct Cost					40,976,228
6.00	LAND AQUISITION AND COMPENSATION	LS			0	409,762
7.00	ADMINISTRATION EXPENSES	LS			0	409,762
8.00	ENGINEERING SERVICES	LS			0	2,868,336
9.00	PHYSICAL CONTINGENCY	LS			0	4,097,623
	GRAND TOTAL				48,761,711	48,761,711

B/Q of THR-1 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price P.C.(US\$)	Amount P.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			1,986,978
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	9,700	3.50	33,950
	Open excavation,weathered rock	m3	9,700	6.00	58,200
	Open excavation,hard rock	m3	13,000	10.00	130,000
	Concrete				
	Mass concrete	m3	18,400	90.00	1,656,000
	Reinforced concrete	m3	56,800	140.00	7,952,000
	Reinforcement bar	ton	1,700	1,500.00	2,550,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	2,000	90.00	180,000
	Others (20%)	L.S.			2,562,430
	Subtotal				15,374,580
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	4,600	55.00	253,000
	Concrete, tunnel	m3	1,300	160.00	208,000
	Reinforcement bars	ton	15	1,500.00	22,500
	Others (20%)	L.S.			96,700
	Subtotal				580,200
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	400	3.50	1,400
	Excavation,weathered rock	m3	400	6.00	2,400
	Excavation,hard rock	m3	500	10.00	5,000
	Concrete,open structure	m3	550	140.00	77,000
	Reinforcement	ton	20	1,500.00	30,000
	Others (20%)	L.S.			23,160
	Subtotal				138,960
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	18,500	55.00	1,017,500
	Concrete, tunnel	m3	7,200	160.00	1,152,000
	Reinforcement	ton	40	1,500.00	60,000
	Consolidation grout	m	100	90.00	9,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			451,520
	Subtotal				2,709,120
2.53	HEAD POND				
	Excavation				
	Excavation,common	m3	700	3.50	2,450
	Excavation,weathered rock	m3	700	6.00	4,200
	Excavation,hard rock	m3	1,000	10.00	10,000
	Concrete,open structure	m3	850	140.00	119,000
	Reinforcement	ton	25	1,500.00	37,500
	Others (20%)	L.S.			34,630
	Subtotal				207,780
2.54	PENSTOCK				
	Excavation				
	Excavation,common	m3	1,800	3.50	6,300
	Excavation,weathered rock	m3	1,800	6.00	10,800
	Excavation,hard rock	m3	2,500	10.00	25,000
	Concrete,open structure	m3	2,000	140.00	280,000
	Reinforcement	ton	30	1,500.00	45,000
	Others (20%)	L.S.			73,420
	Subtotal				440,520
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	600	3.50	2,100
	Excavation,weathered rock	m3	600	6.00	3,600
	Excavation,hard rock	m3	800	10.00	8,000

	Concrete, substructure	m3	580	250.00	145,000	
	Concrete, second stage	m3	150	140.00	21,000	
	Reinforcement	ton	40	1,500.00	60,000	
	Others (20%)	L.S.			47,940	
	Subtotal					287,640
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	700	3.50	2,450	
	Excavation, weathered rock	m3	700	6.00	4,200	
	Excavation, hard rock	m3	1,000	10.00	10,000	
	Concrete, structure	m3	500	140.00	70,000	
	Reinforcement	ton	15	1,500.00	22,500	
	Others (20%)	L.S.			21,830	
	Subtotal					130,980
2.80	ARCHITECTURAL BUILDINGS	m2	1,500	1,100.00	1,650,000	1,650,000
2.90	ACCESS ROAD					
	New construction	m	9	600,000.00	5,400,000	
	Upgraded	m	9	50,000.00	450,000	
	Subtotal					5,850,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	240	5,000.00	1,200,000	
	Gates	ton	10	7,000.00	70,000	
	Subtotal					1,270,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	45	18,700.00	841,500	
	Generators	ton	180	20,400.00	3,672,000	
	Transformers	MVA	6	6,250.00	37,500	
	Subtotal					4,143,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	43	46,000.00	1,978,000	1,978,000
	Total of Direct Cost					36,747,758
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	367,478
7.00	ADMINISTRATION EXPENSES	LS			0	367,478
8.00	ENGINEERING SERVICES	LS			0	2,572,343
9.00	PHYSICAL CONTINGENCY	LS			0	3,674,776
	GRAND TOTAL				43,729,832	43,729,832

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			1,845,465
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	8,700	3.50	30,450
	Open excavation,weathered rock	m3	8,700	6.00	52,200
	Open excavation,hard rock	m3	11,600	10.00	116,000
	Concrete				
	Mass concrete	m3	17,100	90.00	1,539,000
	Reinforced concrete	m3	52,800	140.00	7,364,000
	Reinforcement bar	ton	1,800	1,500.00	2,400,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	1,900	90.00	171,000
	Others (20%)	L.S.			2,382,130
	Subtotal				14,292,780
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	3,800	55.00	198,000
	Concrete, tunnel	m3	1,000	160.00	160,000
	Reinforcement bars	ton	10	1,500.00	15,000
	Others (20%)	L.S.			74,600
	Subtotal				447,600
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	350	3.50	1,225
	Excavation,weathered rock	m3	350	6.00	2,100
	Excavation,hard rock	m3	450	10.00	4,500
	Concrete,open structure	m3	500	140.00	70,000
	Reinforcement	ton	15	1,500.00	22,500
	Others (20%)	L.S.			20,065
	Subtotal				120,390
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	18,500	55.00	1,017,500
	Concrete, tunnel	m3	7,200	160.00	1,152,000
	Reinforcement	ton	40	1,500.00	60,000
	Consolidation grout	m	100	90.00	9,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			451,520
	Subtotal				2,709,120
2.53	HEAD POND				
	Excavation				
	Excavation,common	m3	800	3.50	2,100
	Excavation,weathered rock	m3	800	6.00	3,600
	Excavation,hard rock	m3	800	10.00	8,000
	Concrete,open structure	m3	750	140.00	105,000
	Reinforcement	ton	20	1,500.00	30,000
	Others (20%)	L.S.			29,740
	Subtotal				178,440
2.54	PENSTOCK				
	Excavation				
	Excavation,common	m3	1,500	3.50	5,250
	Excavation,weathered rock	m3	1,500	6.00	9,000
	Excavation,hard rock	m3	2,000	10.00	20,000
	Concrete,open structure	m3	1,750	140.00	245,000
	Reinforcement	ton	25	1,500.00	37,500
	Others (20%)	L.S.			63,350
	Subtotal				380,100
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	500	3.50	1,750
	Excavation,weathered rock	m3	500	6.00	3,000
	Excavation,hard rock	m3	650	10.00	6,500

	Concrete, substructure	m3	450	250.00	112,500	
	Concrete, second stage	m3	110	140.00	15,400	
	Reinforcement	ton	30	1,500.00	45,000	
	Others (20%)	L.S.			36,830	
	Subtotal					220,980
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	600	3.50	2,100	
	Excavation, weathered rock	m3	800	6.00	3,600	
	Excavation, hard rock	m3	800	10.00	8,000	
	Concrete, structure	m3	400	140.00	56,000	
	Reinforcement	ton	12	1,500.00	18,000	
	Others (20%)	L.S.			17,540	
	Subtotal					105,240
2.80	ARCHITECTURAL BUILDINGS	m2	1,200	1,100.00	1,320,000	1,320,000
2.90	ACCESS ROAD					
	New construction	m	9	600,000.00	5,400,000	
	Upgraded	tn	9	50,000.00	450,000	
	Subtotal					5,850,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	200	5,000.00	1,000,000	
	Gates	ton	5	7,000.00	35,000	
	Subtotal					1,035,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	35	18,700.00	654,500	
	Generators	ton	135	20,400.00	2,754,000	
	Transformers	MVA	5	6,900.00	34,500	
	Subtotal					3,443,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	43	46,000.00	1,978,000	1,978,000
	Total of Direct Cost					33,926,115
6.00	LAND AQUISITION AND COMPENSATION	LS			0	339,261
7.00	ADMINISTRATION EXPENSES	LS			0	339,261
8.00	ENGINEERING SERVICES	LS			0	2,374,828
9.00	PHYSICAL CONTINGENCY	LS			0	3,392,612
	GRAND TOTAL				40,372,077	40,372,077

B/Q of CR-1 (Draft Rate 0.33)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			2,567,313
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open excavation				
	Open excavation, common	m3	17,400	3.50	60,900
	Open excavation, weathered rock	m3	17,400	6.00	104,400
	Open excavation, hard rock	m3	23,200	10.00	232,000
	Concrete				
	Mass concrete	m3	31,000	90.00	2,790,000
	Reinforced concrete	m3	71,800	140.00	10,024,000
	Reinforcement bar	ton	2,200	1,500.00	3,300,000
	Curtain grouting	m	3,900	70.00	273,000
	Consolidation grouting	m	2,600	90.00	234,000
	Others (20%)	L.S.			3,403,660
	Subtotal				20,421,960
2.40	DESANDING BASIN				
	Excavation, tunnel	m3	13,300	55.00	731,500
	Concrete, tunnel	m3	3,600	160.00	576,000
	Reinforcement bars	ton	40	1,500.00	60,000
	Others (20%)	L.S.			273,500
	Subtotal				1,641,000
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	850	3.50	2,275
	Excavation, weathered rock	m3	850	6.00	3,900
	Excavation, hard rock	m3	850	10.00	8,500
	Concrete, open structure	m3	950	140.00	133,000
	Reinforcement	ton	30	1,500.00	45,000
	Others (20%)	L.S.			38,535
	Subtotal				231,210
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	13,400	55.00	737,000
	Concrete, tunnel	m3	5,200	160.00	832,000
	Reinforcement	ton	40	1,500.00	60,000
	Consolidation grout	m	100	90.00	9,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			331,420
	Subtotal				1,988,520
2.53	HEAD POND				
	Excavation				
	Excavation, common	m3	1,200	3.50	4,200
	Excavation, weathered rock	m3	1,200	6.00	7,200
	Excavation, hard rock	m3	1,800	10.00	16,000
	Concrete, open structure	m3	1,700	140.00	238,000
	Reinforcement	ton	50	1,500.00	75,000
	Others (20%)	L.S.			68,080
	Subtotal				408,480
2.54	PENSTOCK				
	Excavation				
	Excavation, common	m3	1,000	3.50	3,500
	Excavation, weathered rock	m3	1,000	6.00	6,000
	Excavation, hard rock	m3	1,300	10.00	13,000
	Concrete, open structure	m3	800	140.00	112,000
	Reinforcement	ton	25	1,500.00	37,500
	Others (20%)	L.S.			34,400
	Subtotal				206,400
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	1,200	3.50	4,200
	Excavation, weathered rock	m3	1,200	6.00	7,200
	Excavation, hard rock	m3	1,800	10.00	16,000

	Concrete, substructure	m3	1,150	250.00	287,500	
	Concrete, second stage	m3	300	140.00	42,000	
	Reinforcement	ton	75	1,500.00	112,500	
	Others (20%)	L.S.			93,880	
	Subtotal					563,280
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	1,200	3.50	4,200	
	Excavation, weathered rock	m3	1,200	6.00	7,200	
	Excavation, hard rock	m3	1,600	10.00	16,000	
	Concrete, structure	m3	800	140.00	112,000	
	Reinforcement	ton	25	1,500.00	37,500	
	Others (20%)	L.S.			35,380	
	Subtotal					212,280
2.80	ARCHITECTURAL BUILDINGS	m2	2,500	1,100.00	2,750,000	2,750,000
2.90	ACCESS ROAD					
	New construction	m	43	600,000.00	25,800,000	
	Upgraded	m	0	50,000.00	0	
	Subtotal					25,800,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	120	5,000.00	600,000	
	Gates	ton	25	7,000.00	175,000	
	Subtotal					775,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	85	18,700.00	1,589,500	
	Generators	ton	220	20,400.00	4,488,000	
	Transformers	MVA	10	6,150.00	61,500	
	Subtotal					6,139,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	74	46,000.00	3,404,000	3,404,000
	Total of Direct Cost					67,108,443
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	671,084
7.00	ADMINISTRATION EXPENSES	LS			0	671,084
8.00	ENGINEERING SERVICES	LS			0	4,697,591
9.00	PHYSICAL CONTINGENCY	LS			0	6,710,844
	GRAND TOTAL				79,859,047	79,859,047

B/Q of CR-1 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price P.C.(US\$)	Amount P.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			2,333,184
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open excavation				
	Open excavation,common	m3	15,700	3.50	54,950
	Open excavation,weathered rock	m3	15,700	6.00	94,200
	Open excavation,hard rock	m3	21,000	10.00	210,000
	Concrete				
	Mass concrete	m3	28,900	90.00	2,601,000
	Reinforced concrete	m3	87,000	140.00	9,380,000
	Reinforcement bar	ton	2,000	1,500.00	3,000,000
	Curtain grouting	m	3,600	70.00	252,000
	Consolidation grouting	m	2,500	90.00	225,000
	Others (20%)	L.S.			3,163,430
	Subtotal				18,980,580
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	9,000	55.00	495,000
	Concrete, tunnel	m3	2,500	160.00	400,000
	Reinforcement bars	ton	25	1,500.00	37,500
	Others (20%)	L.S.			186,500
	Subtotal				1,119,000
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	550	3.50	1,925
	Excavation,weathered rock	m3	550	6.00	3,300
	Excavation,hard rock	m3	700	10.00	7,000
	Concrete,open structure	m3	800	140.00	112,000
	Reinforcement	ton	25	1,500.00	37,500
	Others (20%)	L.S.			32,345
	Subtotal				194,070
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	13,400	55.00	737,000
	Concrete, tunnel	m3	5,200	160.00	832,000
	Reinforcement	ton	40	1,500.00	60,000
	Consolidation grout	m	100	90.00	9,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			331,420
	Subtotal				1,988,520
2.53	HEAD POND				
	Excavation				
	Excavation,common	m3	1,100	3.50	3,850
	Excavation,weathered rock	m3	1,100	6.00	6,600
	Excavation,hard rock	m3	1,400	10.00	14,000
	Concrete,open structure	m3	1,300	140.00	182,000
	Reinforcement	ton	40	1,500.00	60,000
	Others (20%)	L.S.			53,290
	Subtotal				319,740
2.54	PENSTOCK				
	Excavation				
	Excavation,common	m3	750	3.50	2,625
	Excavation,weathered rock	m3	750	6.00	4,500
	Excavation,hard rock	m3	1,000	10.00	10,000
	Concrete,open structure	m3	750	140.00	105,000
	Reinforcement	ton	20	1,500.00	30,000
	Others (20%)	L.S.			30,425
	Subtotal				182,550
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	800	3.50	2,800
	Excavation,weathered rock	m3	800	6.00	4,800
	Excavation,hard rock	m3	1,100	10.00	11,000

	Concrete, substructure	m3	800	250.00	200,000	
	Concrete, second stage	m3	200	140.00	28,000	
	Reinforcement	ton	50	1,500.00	75,000	
	Others (20%)	L.S.			64,320	
	Subtotal					385,920
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	900	3.50	3,150	
	Excavation, weathered rock	m3	900	6.00	5,400	
	Excavation, hard rock	m3	1,200	10.00	12,000	
	Concrete, structure	m3	600	140.00	84,000	
	Reinforcement	ton	20	1,500.00	30,000	
	Others (20%)	L.S.			26,910	
	Subtotal					161,460
2.80	ARCHITECTURAL BUILDINGS	m2	2,000	1,100.00	2,200,000	2,200,000
2.90	ACCESS ROAD					
	New construction	m	43	600,000.00	25,800,000	
	Upgraded	m	0	50,000.00	0	
	Subtotal					25,800,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	90	5,000.00	450,000	
	Gates	ton	15	7,000.00	105,000	
	Subtotal					555,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	60	18,700.00	1,122,000	
	Generators	ton	170	20,400.00	3,468,000	
	Transformers	MVA	7	6,550.00	45,850	
	Subtotal					4,635,850
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	74	46,000.00	3,404,000	3,404,000
	Total of Direct Cost					62,259,874
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	622,599
7.00	ADMINISTRATION EXPENSES	LS			0	622,599
8.00	ENGINEERING SERVICES	LS			0	4,358,191
9.00	PHYSICAL CONTINGENCY	LS			0	6,225,987
	GRAND TOTAL				74,089,250	74,089,250

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			2,169,462
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation, common	m3	14,100	3.50	49,350
	Open excavation, weathered rock	m3	14,100	6.00	84,600
	Open excavation, hard rock	m3	18,800	10.00	188,000
	Concrete				
	Mass concrete	m3	26,900	90.00	2,421,000
	Reinforced concrete	m3	62,900	140.00	8,806,000
	Reinforcement bar	ton	1,900	1,500.00	2,850,000
	Curtain grouting	m	3,400	70.00	238,000
	Consolidation grouting	m	2,500	90.00	225,000
	Others (20%)	L.S.			2,972,390
	Subtotal				17,834,340
2.40	DESANDING BASIN				
	Excavation, tunnel	m3	6,700	55.00	368,500
	Concrete, tunnel	m3	1,800	160.00	288,000
	Reinforcement bars	ton	20	1,500.00	30,000
	Others (20%)	L.S.			137,300
	Subtotal				823,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	450	3.50	1,575
	Excavation, weathered rock	m3	450	6.00	2,700
	Excavation, hard rock	m3	600	10.00	6,000
	Concrete, open structure	m3	680	140.00	95,200
	Reinforcement	ton	20	1,500.00	30,000
	Others (20%)	L.S.			27,095
	Subtotal				162,570
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	13,400	55.00	737,000
	Concrete, tunnel	m3	5,200	160.00	832,000
	Reinforcement	ton	40	1,500.00	60,000
	Consolidation grout	m	100	90.00	9,000
	Curtain grout	m	130	70.00	9,100
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			331,420
	Subtotal				1,988,520
2.53	HEAD POND				
	Excavation				
	Excavation, common	m3	900	3.50	3,150
	Excavation, weathered rock	m3	900	6.00	5,400
	Excavation, hard rock	m3	1,200	10.00	12,000
	Concrete, open structure	m3	1,100	140.00	154,000
	Reinforcement	ton	35	1,500.00	52,500
	Others (20%)	L.S.			45,410
	Subtotal				272,460
2.54	PENSTOCK				
	Excavation				
	Excavation, common	m3	550	3.50	1,925
	Excavation, weathered rock	m3	550	6.00	3,300
	Excavation, hard rock	m3	700	10.00	7,000
	Concrete, open structure	m3	600	140.00	84,000
	Reinforcement	ton	20	1,500.00	30,000
	Others (20%)	L.S.			25,245
	Subtotal				151,470
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	700	3.50	2,450
	Excavation, weathered rock	m3	700	6.00	4,200
	Excavation, hard rock	m3	900	10.00	9,000

	Concrete, substructure	m3	700	250.00	175,000	
	Concrete, second stage	m3	170	140.00	23,800	
	Reinforcement	ton	40	1,500.00	60,000	
	Others (20%)	L.S.			54,890	
	Subtotal					329,340
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	800	3.50	2,800	
	Excavation, weathered rock	m3	800	6.00	4,800	
	Excavation, hard rock	m3	1,000	10.00	10,000	
	Concrete, structure	m3	500	140.00	70,000	
	Reinforcement	ton	15	1,500.00	22,500	
	Others (20%)	L.S.			22,020	
	Subtotal					132,120
2.80	ARCHITECTURAL BUILDINGS	m2	1,800	1,100.00	1,980,000	1,980,000
2.90	ACCESS ROAD					
	New construction	m	43	600,000.00	25,800,000	
	Upgraded	m	0	50,000.00	0	
	Subtotal					25,800,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	80	5,000.00	400,000	
	Gates	ton	15	7,000.00	105,000	
	Subtotal					505,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	50	18,700.00	935,000	
	Generators	ton	150	20,400.00	3,060,000	
	Transformers	MVA	5	6,800.00	34,000	
	Subtotal					4,029,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	74	46,000.00	3,404,000	3,404,000
	Total of Direct Cost					59,582,082
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	595,821
7.00	ADMINISTRATION EXPENSES	LS			0	595,821
8.00	ENGINEERING SERVICES	LS			0	4,170,746
9.00	PHYSICAL CONTINGENCY	LS			0	5,958,208
	GRAND TOTAL				70,902,678	70,902,678

B/Q of CR-2 (Draft Rate 0.33)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			3,535,062
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	24,000	3.50	84,000
	Open excavation,weathered rock	m3	24,000	6.00	144,000
	Open excavation,hard rock	m3	32,000	10.00	320,000
	Concrete				
	Mass concrete	m3	37,900	90.00	3,411,000
	Reinforced concrete	m3	71,000	140.00	9,940,000
	Reinforcement bar	ton	2,130	1,500.00	3,195,000
	Curtain grouting	m	3,150	70.00	220,500
	Consolidation grouting	m	2,800	90.00	252,000
	Others (20%)	L.S.			3,513,300
	Subtotal				21,079,800
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	46,500	55.00	2,557,500
	Concrete, tunnel	m3	11,800	160.00	1,888,000
	Reinforcement bars	ton	120	1,500.00	180,000
	Others (20%)	L.S.			925,100
	Subtotal				5,550,600
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,200	3.50	4,200
	Excavation,weathered rock	m3	1,200	6.00	7,200
	Excavation,hard rock	m3	1,600	10.00	16,000
	Concrete,open structure	m3	1,800	140.00	252,000
	Reinforcement	ton	55	1,500.00	82,500
	Others (20%)	L.S.			72,380
	Subtotal				434,280
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	28,900	55.00	1,589,500
	Concrete, tunnel	m3	10,200	160.00	1,632,000
	Reinforcement	ton	100	1,500.00	150,000
	Consolidation grout	m	4,100	90.00	369,000
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	530	200.00	106,000
	Others (20%)	L.S.			772,100
	Subtotal				4,632,600
2.53	SURGE TANK				
	Excavation, shaft	m3	5,000	55.00	275,000
	Concrete, shaft	m3	1,500	160.00	240,000
	Reinforcement	ton	50	1,500.00	75,000
	Consolidation grout	m	320	90.00	28,800
	Others (20%)	L.S.			123,760
	Subtotal				742,560
2.54	PENSTOCK				
	Excavation				
	Excavation,common	m3	7,700	3.50	26,950
	Excavation,weathered rock	m3	7,700	6.00	46,200
	Excavation,hard rock	m3	10,300	10.00	103,000
	Excavation,tunnel	m3	3,300	55.00	181,500
	Concrete,open structure	m3	500	140.00	70,000
	Concrete,tunnel	m3	1,200	160.00	192,000
	Reinforcement	ton	55	1,500.00	82,500
	Curtain grout	m	200	70.00	14,000
	Backfill grout	m3	80	200.00	12,000
	Others (20%)	L.S.			145,630
	Subtotal				873,780
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	3,000	3.50	10,500

	Excavation, weathered rock	m3	3,000	6.00	18,000	
	Excavation, hard rock	m3	4,000	10.00	40,000	
	Concrete, substructure	m3	2,900	250.00	725,000	
	Concrete, second stage	m3	800	140.00	112,000	
	Reinforcement	ton	190	1,500.00	285,000	
	Others (20%)	L.S.			238,100	
	Subtotal					1,428,600
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	6,000	3.50	21,000	
	Excavation, weathered rock	m3	6,000	6.00	36,000	
	Excavation, hard rock	m3	8,000	10.00	80,000	
	Concrete, structure	m3	2,000	140.00	280,000	
	Reinforcement	ton	80	1,500.00	90,000	
	Others (20%)	L.S.			101,400	
	Subtotal					608,400
2.80	ARCHITECTURAL BUILDINGS	m2	1,000	1,100.00	1,100,000	1,100,000
2.90	ACCESS ROAD					
	New construction	m	10	600,000.00	6,000,000	
	Upgraded	m	0	50,000.00	0	
	Subtotal					6,000,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	400	5,000.00	2,000,000	
	Gates	ton	40	7,000.00	280,000	
	Subtotal					2,280,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	130	18,700.00	2,431,000	
	Generators	ton	230	20,400.00	4,692,000	
	Transformers	MVA	22	5,500.00	121,000	
	Subtotal					7,244,000
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	74	25,000.00	1,850,000	1,850,000
	Total of Direct Cost					57,359,682
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	573,597
7.00	ADMINISTRATION EXPENSES	LS			0	573,597
8.00	ENGINEERING SERVICES	LS			0	4,015,178
9.00	PHYSICAL CONTINGENCY	LS			0	5,735,968
	GRAND TOTAL				68,258,022	68,258,022

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			2,971,920
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation, common	m3	21,600	3.50	75,600
	Open excavation, weathered rock	m3	21,600	6.00	129,600
	Open excavation, hard rock	m3	28,900	10.00	289,000
	Concrete				
	Mass concrete	m3	35,200	90.00	3,168,000
	Reinforced concrete	m3	67,300	140.00	9,422,000
	Reinforcement bar	ton	2,000	1,500.00	3,000,000
	Curtain grouting	m	2,800	70.00	196,000
	Consolidation grouting	m	2,800	90.00	252,000
	Others (20%)	L.S.			3,306,440
	Subtotal				19,838,640
2.40	DESANDING BASIN				
	Excavation, tunnel	m3	31,200	55.00	1,716,000
	Concrete, tunnel	m3	7,000	160.00	1,120,000
	Reinforcement bars	ton	70	1,500.00	105,000
	Others (20%)	L.S.			588,200
	Subtotal				3,529,200
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation, common	m3	1,000	3.50	3,500
	Excavation, weathered rock	m3	1,000	6.00	6,000
	Excavation, hard rock	m3	1,300	10.00	13,000
	Concrete, open structure	m3	1,500	140.00	210,000
	Reinforcement	ton	45	1,500.00	67,500
	Others (20%)	L.S.			60,000
	Subtotal				360,000
2.52	HEADRACE TUNNEL				
	Excavation, tunnel	m3	20,500	55.00	1,127,500
	Concrete, tunnel	m3	7,500	160.00	1,200,000
	Reinforcement	ton	75	1,500.00	112,500
	Consolidation grout	m	3,500	90.00	315,000
	Curtain grout	m	150	70.00	10,500
	Backfill grout	m3	400	200.00	80,000
	Others (20%)	L.S.			569,100
	Subtotal				3,414,600
2.53	SURGE TANK				
	Excavation, shaft	m3	3,300	55.00	181,500
	Concrete, shaft	m3	1,000	160.00	160,000
	Reinforcement	ton	30	1,500.00	45,000
	Consolidation grout	m	240	90.00	21,600
	Others (20%)	L.S.			81,620
	Subtotal				489,720
2.54	PENSTOCK				
	Excavation				
	Excavation, common	m3	6,600	3.50	23,100
	Excavation, weathered rock	m3	6,600	6.00	39,600
	Excavation, hard rock	m3	8,800	10.00	88,000
	Excavation, tunnel	m3	2,400	55.00	132,000
	Concrete, open structure	m3	400	140.00	56,000
	Concrete, tunnel	m3	900	160.00	144,000
	Reinforcement	ton	40	1,500.00	60,000
	Curtain grout	m	150	70.00	10,500
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			112,640
	Subtotal				675,840
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation, common	m3	2,000	3.50	7,000

	Excavation, weathered rock	m3	2,000	6.00	12,000	
	Excavation, hard rock	m3	2,700	10.00	27,000	
	Concrete, substructure	m3	1,900	250.00	475,000	
	Concrete, second stage	m3	500	140.00	70,000	
	Reinforcement	ton	130	1,500.00	195,000	
	Others (20%)	L.S.			157,200	
	Subtotal					943,200
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	5,000	3.50	17,500	
	Excavation, weathered rock	m3	5,000	6.00	30,000	
	Excavation, hard rock	m3	6,500	10.00	65,000	
	Concrete, structure	m3	1,500	140.00	210,000	
	Reinforcement	ton	45	1,500.00	67,500	
	Others (20%)	L.S.			78,000	
	Subtotal					468,000
2.80	ARCHITECTURAL BUILDINGS	m2	800	1,100.00	880,000	880,000
2.90	ACCESS ROAD					
	New construction	m	10	600,000.00	6,000,000	
	Upgraded	m	0	50,000.00	0	
	Subtotal					6,000,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	325	5,000.00	1,625,000	
	Gates	ton	30	7,000.00	210,000	
	Subtotal					1,835,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	100	18,700.00	1,870,000	
	Generators	ton	170	20,400.00	3,468,000	
	Transformers	MVA	15	5,850.00	87,750	
	Subtotal					5,425,750
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	74	25,000.00	1,850,000	1,850,000
	Total of Direct Cost					48,681,870
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	486,819
7.00	ADMINISTRATION EXPENSES	LS			0	486,819
8.00	ENGINEERING SERVICES	LS			0	3,407,731
9.00	PHYSICAL CONTINGENCY	LS			0	4,868,187
	GRAND TOTAL				57,931,425	57,931,425

B/Q of CR-2 (Draft Rate 0.50)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			2,971,920
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	21,600	3.50	75,600
	Open excavation,weathered rock	m3	21,600	6.00	129,600
	Open excavation,hard rock	m3	28,900	10.00	289,000
	Concrete				
	Mass concrete	m3	35,200	90.00	3,168,000
	Reinforced concrete	m3	67,300	140.00	9,422,000
	Reinforcement bar	ton	2,000	1,500.00	3,000,000
	Curtain grouting	m	2,800	70.00	196,000
	Consolidation grouting	m	2,800	90.00	252,000
	Others (20%)	L.S.			3,306,440
	Subtotal				19,838,640
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	31,200	55.00	1,716,000
	Concrete, tunnel	m3	7,000	160.00	1,120,000
	Reinforcement bars	ton	70	1,500.00	105,000
	Others (20%)	L.S.			588,200
	Subtotal				3,529,200
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	1,000	3.50	3,500
	Excavation,weathered rock	m3	1,000	6.00	6,000
	Excavation,hard rock	m3	1,300	10.00	13,000
	Concrete,open structure	m3	1,500	140.00	210,000
	Reinforcement	ton	45	1,500.00	67,500
	Others (20%)	L.S.			60,000
	Subtotal				360,000
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	20,500	55.00	1,127,500
	Concrete, tunnel	m3	7,500	160.00	1,200,000
	Reinforcement	ton	75	1,500.00	112,500
	Consolidation grout	m	3,500	90.00	315,000
	Curtain grout	m	150	70.00	10,500
	Backfill grout	m3	400	200.00	80,000
	Others (20%)	L.S.			569,100
	Subtotal				3,414,600
2.53	SURGE TANK				
	Excavation, shaft	m3	3,300	55.00	181,500
	Concrete, shaft	m3	1,000	160.00	160,000
	Reinforcement	ton	30	1,500.00	45,000
	Consolidation grout	m	240	90.00	21,600
	Others (20%)	L.S.			81,620
	Subtotal				489,720
2.54	PENSTOCK				
	Excavation				
	Excavation,common	m3	6,600	3.50	23,100
	Excavation,weathered rock	m3	6,600	6.00	39,600
	Excavation,hard rock	m3	8,800	10.00	88,000
	Excavation,tunnel	m3	2,400	55.00	132,000
	Concrete,open structure	m3	400	140.00	56,000
	Concrete,tunnel	m3	900	160.00	144,000
	Reinforcement	ton	40	1,500.00	60,000
	Curtain grout	m	150	70.00	10,500
	Backfill grout	m3	50	200.00	10,000
	Others (20%)	L.S.			112,640
	Subtotal				675,840
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	2,000	3.50	7,000

	Excavation, weathered rock	m3	2,000	6.00	12,000	
	Excavation, hard rock	m3	2,700	10.00	27,000	
	Concrete, substructure	m3	1,900	250.00	475,000	
	Concrete, second stage	m3	500	140.00	70,000	
	Reinforcement	ton	130	1,500.00	195,000	
	Others (20%)	L.S.			137,200	
	Subtotal					943,200
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	5,000	3.50	17,500	
	Excavation, weathered rock	m3	5,000	6.00	30,000	
	Excavation, hard rock	m3	6,500	10.00	65,000	
	Concrete, structure	m3	1,500	140.00	210,000	
	Reinforcement	ton	45	1,500.00	67,500	
	Others (20%)	L.S.			78,000	
	Subtotal					468,000
2.80	ARCHITECTURAL BUILDINGS	m2	800	1,100.00	880,000	880,000
2.90	ACCESS ROAD					
	New construction	m	10	600,000.00	6,000,000	
	Upgraded	m	0	50,000.00	0	
	Subtotal					6,000,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	325	5,000.00	1,625,000	
	Gates	ton	30	7,000.00	210,000	
	Subtotal					1,835,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	100	18,700.00	1,870,000	
	Generators	ton	170	20,400.00	3,468,000	
	Transformers	MVA	15	5,850.00	87,750	
	Subtotal					5,425,750
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	74	25,000.00	1,850,000	1,850,000
	Total of Direct Cost					48,681,870
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	486,819
7.00	ADMINISTRATION EXPENSES	LS			0	486,819
8.00	ENGINEERING SERVICES	LS			0	3,407,731
9.00	PHYSICAL CONTINGENCY	LS			0	4,868,187
	GRAND TOTAL				57,931,425	57,931,425

B/Q of CR-2 (Draft Rate 0.67)

Item No.	Work Item	Unit	Quantity	Unit price F.C.(US\$)	Amount F.C.(US\$)
1.00	PREPARATORY WORKS (10 % of Civil Works)	L.S.			2,625,576
2.00	CIVIL WORKS				
2.10	INTAKE DAM				
	Open Excavation				
	Open excavation,common	m3	19,500	3.50	68,250
	Open excavation,weathered rock	m3	19,500	6.00	117,000
	Open excavation,hard rock	m3	26,000	10.00	260,000
	Concrete				
	Mass concrete	m3	32,600	90.00	2,934,000
	Reinforced concrete	m3	63,800	140.00	8,932,000
	Reinforcement bar	ton	1,900	1,500.00	2,850,000
	Curtain grouting	m	2,700	70.00	189,000
	Consolidation grouting	m	2,700	90.00	243,000
	Others (20%)	L.S.			3,118,650
	Subtotal				18,711,900
2.40	DESANDING BASIN				
	Excavation,tunnel	m3	22,500	55.00	1,237,500
	Concrete, tunnel	m3	5,900	160.00	944,000
	Reinforcement bars	ton	60	1,500.00	90,000
	Others (20%)	L.S.			454,300
	Subtotal				2,725,800
2.50	WATERWAY				
2.51	INTAKE				
	Excavation				
	Excavation,common	m3	900	3.50	3,150
	Excavation,weathered rock	m3	900	6.00	5,400
	Excavation,hard rock	m3	1,100	10.00	11,000
	Concrete,open structure	m3	1,300	140.00	182,000
	Reinforcement	ton	40	1,500.00	60,000
	Others (20%)	L.S.			52,310
	Subtotal				313,860
2.52	HEADRACE TUNNEL				
	Excavation,tunnel	m3	13,600	55.00	748,000
	Concrete, tunnel	m3	5,200	160.00	832,000
	Reinforcement	ton	50	1,500.00	75,000
	Consolidation grout	m	2,800	90.00	252,000
	Curtain grout	m	120	70.00	8,400
	Backfill grout	m3	320	200.00	64,000
	Others (20%)	L.S.			395,880
	Subtotal				2,375,280
2.53	SURGE TANK				
	Excavation, shaft	m3	2,600	55.00	137,500
	Concrete, shaft	m3	720	160.00	115,200
	Reinforcement	ton	20	1,500.00	30,000
	Consolidation grout	m	200	90.00	18,000
	Others (20%)	L.S.			60,140
	Subtotal				360,840
2.54	PENSTOCK				
	Excavation				
	Excavation,common	m3	6,000	3.50	21,000
	Excavation,weathered rock	m3	8,000	6.00	36,000
	Excavation,hard rock	m3	8,000	10.00	80,000
	Excavation,tunnel	m3	2,350	55.00	129,250
	Concrete,open structure	m3	350	140.00	49,000
	Concrete,tunnel	m3	900	160.00	144,000
	Reinforcement	ton	40	1,500.00	60,000
	Curtain grout	m	120	70.00	8,400
	Backfill grout	m3	40	200.00	8,000
	Others (20%)	L.S.			107,130
	Subtotal				642,780
2.60	OPEN POWERHOUSE				
	Excavation				
	Excavation,common	m3	1,500	3.50	5,250

	Excavation, weathered rock	m3	1,500	6.00	9,000	
	Excavation, hard rock	m3	2,000	10.00	20,000	
	Concrete, substructure	m3	1,450	250.00	362,500	
	Concrete, second stage	m3	400	140.00	56,000	
	Reinforcement	ton	100	1,500.00	150,000	
	Others (20%)	L.S.			120,550	
	Subtotal					723,300
2.70	TAILRACE					
	Excavation					
	Excavation, common	m3	4,000	3.50	14,000	
	Excavation, weathered rock	m3	4,000	6.00	24,000	
	Excavation, hard rock	m3	5,500	10.00	55,000	
	Concrete, structure	m3	1,300	140.00	182,000	
	Reinforcement	ton	40	1,500.00	60,000	
	Others (20%)	L.S.			67,000	
	Subtotal					402,000
2.80	ARCHITECTURAL BUILDINGS	m2	700	1,100.00	770,000	770,000
2.90	ACCESS ROAD					
	New construction	m	10	600,000.00	6,000,000	
	Upgraded	m	0	50,000.00	0	
	Subtotal					6,000,000
3.00	METAL WORKS					
	Penstock steel pipes	ton	250	5,000.00	1,250,000	
	Gates	ton	20	7,000.00	140,000	
	Subtotal					1,390,000
4.00	GENERATING EQUIPMENT					
	Turbines	ton	70	18,700.00	1,309,000	
	Generators	ton	140	20,400.00	2,856,000	
	Transformers	MVA	11	6,100.00	67,100	
	Subtotal					4,232,100
5.00	TRANSMISSION LINES AND SUBSTATIONS	km	74	25,000.00	1,850,000	1,850,000
	Total of Direct Cost					43,123,436
6.00	LAND ACQUISITION AND COMPENSATION	LS			0	431,234
7.00	ADMINISTRATION EXPENSES	LS			0	431,234
8.00	ENGINEERING SERVICES	LS			0	3,018,641
9.00	PHYSICAL CONTINGENCY	LS			0	4,312,344
	GRAND TOTAL				51,316,889	51,316,889

