

DCP-III_ANNEXURE 4: BILL OF QUANTITIES

DORJILUNG CONTRACT PACKAGE III (DCP-III): CONSTRUCTION OF HRT FROM RD 13,898 m TO 15,105 m INCLUDING CONSTRUCTION ADIT-6, SURGE SHAFT, BUTTERFLY VALVE CHAMBER, PRESSURE SHAFT, POWERHOUSE COMPLEX, TAIL RACE TUNNEL AND HYDRO-MECHANICAL WORKS

Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
PART 1	CIVIL WORKS							
A 1	B.1		Dewatering During Construction					
A1.1		V	Dewatering of Surface Construction Sites	kWh	25,600			
A1.2		V	Dewatering of Underground Construction Sites	kWh	584,000			
A 2	B.2		Surface Excavation					
A2.1		IV	Common excavation	cum	219,000			
A2.2		IV	Rock excavation	cum	158,000			
A2.3		IV	Control perimeter blasting	sqm	21,000			
A2.4		IV	Dental excavation	cum	6,100			
A2.5		IV	Minor excavation	cum	2,350			
A2.6			Additional excavation					
A2.6.1		IV	- Additional common excavation	cum	5,600			
A2.6.2		IV	- Additional rock excavation	cum	6,150			
A2.7		IV	Removal of material arising from over-break accepted due to adverse geological conditions	cum	8,200			
A2.8		IV	Extra for haulage of excavated materials (beyond 3 km)	cum-km	197,100			
A 3	B.3		Underground Excavation					
A3.1			Excavation of tunnels					
A3.1.1		IV	- Type A, B and C	cum	222,000			
A3.1.2		IV	- Type D and E	cum	170,000			
A3.1.3		IV	- Type F	cum	15,200			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A3.2		IV	Excavation by multi-drift or multi-segmental method	cum	11,100			
A3.3		IV	Extra for haulage of excavated materials (beyond 3 km)	cum-km	676,213			
A3.4		IV	Line Drilling	m	35,900			
A3.5		IV	Dental excavation	cum	26,900			
A3.6		IV	Removal of material arising from over-break accepted due to adverse geological conditions	cum	62,800			
A3.7			Excavation of Valve and Penstock Erection chambers, Transformer and Power House Caverns cum Draft Tubes					
A3.7.1		IV	- Excavation of caverns/ chambers above vault	cum	58,300			
A3.7.2		IV	- Excavation of caverns/ chambers below vault	cum	298,000			
A3.8		IV	Excavation of bus ducts	cum	16,000			
A3.9			Excavation of pressure shaft					
A3.9.1		IV	- Pilot shaft excavation (1.8 m dia.)	m	740			
A3.9.2		IV	- Slashing/ sinking of shaft and excavation	cum	26,500			
A3.10			Excavation of surge shaft					
A3.10.1		IV	- Pilot shaft excavation (1.8 m dia.)	m	135			
A3.10.2		IV	- Slashing/ sinking of shaft and excavation	cum	92,300			
A 4	B.4		Rock Supports					
A4.1			Expansion shell rock bolts, 25 mm dia., Grade Fe 500 (drilling included), underground works					
A4.1.1		II	- Length up to 4.0 m	m	3,850			
A4.1.2		II	- Length more than 4.0 m and up to 6.0 m	m	3,300			
A4.2			Expansion shell rock bolts, 32 mm dia., Grade Fe 500 (drilling included), underground works					
A4.2.1		II	- Length up to 6.0 m	m	2,900			
A4.2.2		II	- Length more than 6.0 m and up to 9.0 m	m	970			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A4.3			Expansion shell rock bolts, 36 mm dia., Grade Fe 500 (drilling included), underground works					
A4.3.1		II	- Length up to 6.0 m	m	2,600			
A4.3.2		II	- Length more than 6.0 m and up to 9.0 m	m	970			
A4.3.3		II	- Length more than 9.0 m and up to 12.0 m	m	340			
A4.4		II	Rock Dowels, GFRP type, 25 mm dia.	m	5,650			
A4.5			Resin / Cement grouted rock bolts, 25 mm dia., Grade Fe 500 (drilling included)					
A4.5.1		II	- Length up to 4.0 m, surface works	m	1,900			
A4.5.2		II	- Length up to 4.0 m, underground works	m	152,000			
A4.5.3		II	- Length more than 4.0 m and up to 6.0 m, surface works	m	7,550			
A4.5.4		II	- Length more than 4.0 m and up to 6.0 m, underground works	m	126,000			
A4.6			Resin / Cement grouted rock bolts, 32 mm dia., Grade Fe 500 (drilling included), underground works					
A4.6.1		II	- Length up to 6.0 m	m	5,200			
A4.6.2		II	- Length more than 6.0 m and up to 9.0 m	m	1,750			
A4.7			Resin / Cement grouted rock bolts, 36 mm dia., Grade Fe 500 (drilling included), underground works					
A4.7.1		II	- Length up to 6.0 m	m	2,600			
A4.7.2		II	- Length more than 6.0 m and up to 9.0 m	m	860			
A4.7.3		II	- Length more than 9.0 m and up to 12.0 m	m	330			
A4.8			Rock Anchors, 25 mm dia., Grade Fe 500 (drilling included)					
A4.8.1		II	- Length up to 4.0 m, surface works	m	2,900			
A4.8.2		II	- Length up to 4.0 m, underground works	m	1,700			
A4.8.3		II	- Length more than 4.0 m and up to 6.0 m, surface works	m	2,300			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A4.8.4		II	- Length more than 4.0 m and up to 6.0 m, underground works	m	41,800			
A4.9			Rock Anchors, 32 mm dia., Grade Fe 500 (drilling included), underground works					
A4.9.1		II	- Length up to 6.0 m	m	1,900			
A4.9.2		II	- Length more than 6.0 m and up to 9.0 m	m	260			
A4.9.3		II	- Length 9.0 m and up to 12.0 m	m	37,500			
A4.10			Rock Anchors, 36 mm dia., Grade Fe 500 (drilling included), surface works					
A4.10.1		II	- Length more than 6.0 m and up to 9.0 m	m	2,400			
A4.10.2		II	- Length 9.0 m and up to 12.0 m	m	680			
A4.11		II	Water expandable friction anchors (3 m - 6 m), underground works	m	7,100			
A4.12			Self-drilling Hollow core anchors, underground works					
A4.12.1		II	- 25 mm dia. / length up to 6.0 m	m	370			
A4.12.2		II	- 32 mm dia. / length up to 9.0 m	m	440			
A4.12.3		II	- 32 mm dia. / length more than 9m and up to 15.0 m	m	430			
A4.13			Grouted anchor bars (drilling included), underground works					
A4.13.1		II	- 25 mm dia. / length up to 4m	m	1,950			
A4.13.2		II	- 32 mm dia. / length up to 6m	m	1,550			
A4.13.3		II	- 36 mm dia. / length up to 9m	m	1,150			
A4.14		II	Rock bolt or rock anchor extensions into concrete (welded)	kg	4,100			
A4.15		V	Testing and monitoring of reinforcing elements	nos.	15,500			
A4.16		I	Miscellaneous steel profiles used in conjunction with rock reinforcement	ton	6,550			
A4.17		II	Post-tensioned rock bolts (Tendons), 170 T	m	181,000			
A4.18		II	Fully grouted rock anchor bars (Pre-support), double corrosion protection, 97 T	m	16,300			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A4.19			Mesh reinforcement					
A4.19.1		II	- Chain link fabric	sqm	7,400			
A4.19.2		II	- Welded wiremesh	sqm	74,400			
A4.20		I	Lattice girder	MT	700			
A4.21		I	Steel ribs, supply and installation (including accessories)	MT	1,550			
A4.22			Lagging					
A4.22.1		I	- Steel Lagging	MT	310			
A4.22.2		III	- Concrete Lagging	cum	7,700			
A4.23			Pre-grouting					
A4.23.1		V	- Drilling of holes of 45/ 57 mm diameter	m	53,500			
A4.23.2		V	- Grouting operations	nos.	10,700			
A4.24			Fore poling					
A4.24.1		I	- Installation of fore poles	m	6,600			
A4.24.2		V	- Grouting of fore poles	nos.	440			
A4.25		II	Pipe roofing	kg	91,900			
A4.26		V	Drilling of the pre-drainage holes	m	36,800			
A4.27		V	Protective coating (galvanization and epoxy)	kg	6,200			
A 5	B.5		Shotcrete					
A5.1		III	SFR shotcrete	cum	24,600			
A5.2			Plain shotcrete					
A5.2.1		III	- Surface works	cum	3,750			
A5.2.2		III	- Underground works	cum	10,400			
A5.3		III	Variation in cement content*	kg	581,000			
A5.4		V	Superplasticiser	kg	194,000			
A5.5		V	Steel fibres	kg	861,000			
A5.6		V	Micro silica	kg	1,230,000			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
			<i>* Quantity of cement variation may be both negative as well positive during the actual execution depending upon the mix design</i>					
A 6	B.6		Backfill					
A6.1		IV	Backfill / fill (all types)	cum	960			
A7	B.7		Drilling, Grouting and Pressure Relief Holes					
A7.1.			Drilling for contact / consolidation grouting or pre-grouting					
A7.1.1		V	- Curtain grouting holes	m	22,500			
A7.1.2		V	- Contact grouting holes	m	9,450			
A7.1.3		V	- Consolidation grouting holes	m	67,400			
A7.1.4		V	- Re-drilling for consolidation grouting where the grout has been allowed by the Engineer-in-Charge	m	6,750			
A7.2.			Drilling of pressure relief / drainage holes					
A7.2.1		V	- Drilling and washing out of the hole	m	48,900			
A7.2.2		V	- Supply and installation of slotted PVC pipes / liner	m	48,900			
A7.2.3		V	- Supply and installation of drain holes outlet devices	nos.	1,650			
A7.2.4		V	- Re-drilling to set at the direction of the Engineer-in-Charge (50% of rate)	m	4,900			
A7.3.			Drilling of exploratory holes, check holes, and holes for instrumentation at any inclination					
A7.3.1		V	- 45 mm minimum hole diameter with and without core recovery	m	4,900			
A7.3.2		V	- 76 mm minimum hole diameter with and without core recovery	m	490			
A7.3.3		V	- 98 mm minimum hole diameter with and without core recovery	m	490			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A7.3.4		V	- 115 mm minimum hole diameter with and without core recovery	m	330			
A7.3.5		V	- Extra over for drilling with triple tube core barrels	m	370			
A7.3.6		V	- Core recovery and logging for exploratory holes ordered by the Engineer-in-Charge	m	490			
A7.4.		V	Water pressure testing - Lugeon water test	nos.	100			
A7.5.		I	Embedded steel pipes and fittings for grouting (left in place)	kg	970			
A7.6.		V	Drilling for probe holes (≥ 50 mm dia.)	m	970			
A7.7.			Placing grout (excluding cement)					
A7.7.1		III	- Curtain grouting	nos.	6,000			
A7.7.2		III	- Contact grouting	nos.	16,200			
A7.7.3		III	- Fill grouting of temporary drainage system	m	1,650			
A7.7.4		III	- Fill grouting of exploratory or control holes where directed by the Engineer-in-Charge	m	1,650			
A7.7.5		III	- Consolidation grouting and pre-grouting in single stage	nos.	13,500			
A7.7.6		III	- Consolidation grouting and pre-grouting in multiple stage	nos.	4,500			
A7.8			Grouting materials					
A7.8.1		III	- Cement	MT	4,850			
A7.8.2		IV	- Sand	MT	730			
A7.8.3		V	- Bentonite	MT	125			
A7.8.4		V	- Admixtures	kg	4,850			
A7.8.5		III	- Micro fine / Ultra fine Cement	MT	250			
A7.8.6		V	- Colloidal Silica	kg	4,850			
A8	B.8		- NOT USED					
A 9	B.9		Concrete					



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A9.1			Concrete lining of Tunnels, Adits, Galleries, Shafts and Portals					
A9.1.1		III	- Concrete lining of Tunnels overt, M25/ A20	cum	28,500			
A9.1.2		III	- Concrete lining of Tunnels invert, M25/ A40	cum	29,500			
A9.1.3		III	- Concrete lining in Shafts, M25/ A40	cum	26,700			
A9.2		III	- Concrete in TRT outlet and portals, M25/ A40	cum	1,950			
A9.3			Backfill Concrete in Tunnels, Adits, Galleries and Shafts, tunnel plug and behind steel liner					
A9.3.1		III	- Backfill concrete in overbreak area, behind ribs in Tunnels, M15/ A40	cum	62,800			
A9.3.2		III	- Backfill concrete in surface works, M15/ A80	cum	7,550			
A9.3.3		III	- Concrete in adit plug, M20/ A40	cum	1,950			
A9.3.4		III	- Self compacting concrete behind steel liner, M30/ A20	cum	4,750			
A9.4		III	- Second Stage Concreting and concrete in blockouts for equipment embedding, M40/ A20	cum	1,600			
A9.5			Concrete in Power House cavern, Transformer cavern, Valve chamber and Penstock Erection chamber					
A9.5.1		III	- M25/ A20	cum	27,400			
A 9.5.2		III	- M25/ A40	cum	29,200			
A 9.5.3		III	- M30/ A20	cum	7,350			
A 9.5.4		III	- M40/ A20	cum	5,350			
A 9.6		III	Precast Units, M25/ A20	cum	150			
A 9.7			Grouting of the equipment bearing plates and anchors, and slush					
A 9.7.1		III	- Non-shrink cement grout	kg	41,100			
A 9.7.2		V	- Non-shrink epoxy grout	kg	4,600			
A 9.7.3		III	- Slush grout	kg	2,150			
A 9.8		III	Mass concrete, M15/ A40	cum	6,650			
A 9.9		III	Lean and plum concrete, M15/ A40	cum	1,600			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A 9.10		III	Concrete in pothead yard, M25/ A40	cum	1,000			
A 9.11		III	Pavement concrete, M25/ A40	cum	19,200			
A 9.12			Admixtures					
A 9.12.1		V	- Superplasticizer	kg	314,000			
A 9.12.2		V	- Air entraining agent	kg	11,800			
A 9.13		III	Cement variation in Concrete	kg	236,000			
A 10	B.1 0		NOT USED					
A 11	B.11		Reinforcing Steel					
A11.1		II	Reinforcing Bars - Grade Fe 500	MT	22,500			
A11.2		II	Plain reinforcing bars	MT	45			
A11.3			Couplers					
A11.3.1		II	- 32 mm dia.	nos.	9,000			
A11.3.2		II	- 36 mm dia.	nos.	2,250			
A 12	B.1 2		Waterstop and Joints in concrete structures					
A12.1		V	PVC waterstop	m	790			
A12.2			Joint filler					
A12.2.1		V	- 12 mm thick	sqm	790			
A12.2.2		V	- 24 mm thick	sqm	790			
A12.2.3		V	- 10 mm thick (expanded polystyrene)	sqm	790			
A12.3		V	Joint sealant	m	1,600			
A12.4		V	Bituminous coating	sqm	790			
A 13	B.1 3		Metalworks					
A13.1		I	Miscellaneous steel sections	kg	19,400			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A13.2		I	Steel pipes	kg	1,950			
A13.3		I	Steel covers and frames	kg	4,850			
A13.4		I	Steel gratings	kg	4,850			
A13.5		I	Handrails and railings (GI pipe)	kg	1,950			
A13.6		I	Guardrails	kg	100			
A13.7		I	Ladders and climbing irons	kg	4,850			
A13.8		I	Erection books	kg	1,950			
A13.9		I	Steel anchoring	kg	1,950			
A13.10		I	Metalworks supplied by others	kg	4,450			
A 14	B.1 4		NOT USED					
A 15	B.1 5		Building and Architectural Works					
A15.1		V	Power House Complex and caverns - Architectural design and supervision services, labour, furnishing of materials and installation for architectural items including brick masonry, cement plasters, flooring, railings, doors, windows, shutters, decorative column, glass partitions, gypsum board partitions, false ceiling and all necessary plumbing and sanitary fittings and fixtures	L.S.	1			
A15.2		V	Suspended ceiling	sqm	24,000			
A15.3		V	Wall panelling	sqm	12,000			
A 16	B.1 6		Miscellaneous and Ancillary Works					
A16.1			Fencing and gates					
A16.1.1		I	- Fencing	m	210			
A16.1.2		I	- Gates	MT	15			
A16.2			Concrete and SWG Pipes					



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A16.2.1		III	- Concrete pipe 300 mm dia. fully embedded in concrete	m	120			
A16.2.2		III	- Concrete pipe 450 mm dia. fully embedded in concrete	m	120			
A16.2.3		III	- Concrete pipe 600 mm dia. fully embedded in concrete	m	120			
A16.2.4		III	- Concrete pipe 750 mm dia. fully embedded in concrete	m	120			
A16.2.5		III	- Concrete pipe 900 mm dia. fully embedded in concrete	m	120			
A16.2.6		III	- Drain pipe 300 mm dia. on concrete / sand base	m	120			
A16.2.7		III	- Drain pipe 450 mm dia. on concrete / sand base	m	120			
A16.2.8		III	- Drain pipe 600 mm dia. on concrete / sand base	m	120			
A16.2.9		III	- Drain pipe 750 mm dia. on concrete / sand base	m	120			
A16.2.10		III	- Drain pipe 900 mm dia. on concrete / sand base	m	120			
A16.3			PVC Pipes					
A16.3.1		V	- 50 mm dia.	m	6,750			
A16.3.2		V	- 75 mm dia.	m	680			
A16.3.3		V	- 100 mm dia.	m	6,750			
A16.3.4		V	- 200 mm dia.	m	680			
A16.4		V	Weep Holes	m	2,700			
A 17	B.1 7		Slope Protection					
A17.1		IV	Rock paving	cum	320			
A17.2		IV	Stone Pitching	cum	630			
A17.3			Gabions					
A17.3.1			- Polymer Rope Gabions					
A17.3.1.1		V	- Size 1m x 1m x 1m	nos.	135			
A17.3.1.2		V	- Size 2m x 2m x 1.5m	nos.	45			
A17.3.2		V	- Gabions / Wire crates	sqm	11,000			
A17.3.3		V	- Boulder filling	cum	1,100			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A17.4			Random rubble masonry					
A17.4.1		V	- Wet Masonry	cum	2,650			
A17.4.2		V	- Dry Masonry	cum	870			
A17.5		III	Precast Concrete Blocks	cum	420			
A17.6		V	Rockfall Protection barrier	sqm	3,750			
A17.7		V	Slope protection Netting	sqm	740			
A17.8			Bio-Engineering Measures					
A17.8.1		V	- Wattling Trenches	m	950			
A17.8.2		V	- Mulching / Plantation of Grass / Shrubs	sqm	3,150			
A17.8.3		V	- Jute-Geo Textile	sqm	3,150			
A17.8.4		V	- Balley Benching	nos.	3,150			
A17.8.5		V	- Bamboo Piling	nos.	3,150			
A 18	B.1 8		Monitoring Instruments					
A18.1		V	Topographical markers	nos.	55			
A18.2		V	Temperature meters	nos.	5			
A18.3		V	Inclinometer	nos.	10			
A18.4		V	Load cells	nos.	85			
A18.5		V	Convergence measurement including optical techniques	nos.	450			
A18.6		V	Single and multiple point borehole extensometers	nos.	145			
A18.7		V	Pore pressure gauges (Piezometers)	nos.	8			
A18.8		V	Total pressure cells	nos.	9			
A18.9		V	Water level measuring automatic and gauge-mechanical type	nos.	5			
A18.10		V	Seepage measuring system - Mechanical type	nos.	5			
A18.11			Laboratory tests					
A18.11.1		V	- Point Load Test	nos.	120			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A18.11.2		V	- Uniaxial compression for calculation of the elastic modulus and strength	nos.	220			
A18.11.3		V	- Triaxial Test	nos.	95			
A18.12		V	Sensor networking system	nos.	1			
A18.13		V	Readout Unit for Electrical Instruments	nos.	9			
A18.14		V	Data acquisition system and web based data monitoring services	nos.	1			
A 19	B.1 9		Service water supply, Sewerage system and Sanitary installation					
A19.1			Supply and laying of Galvanised Steel Pipes including all accessories, valves and fittings					
A19.1.1		V	- 100 mm nominal dia.	m	270			
A19.1.2		V	- 50 mm nominal dia.	m	540			
A19.1.3		V	- 25 mm nominal dia.	m	270			
A19.2			Supply & installation of pumps for water supply including all electric panels, cables, level switches etc.					
A19.2.1		V	- No. of Operational units	nos.	1			
A19.2.2		V	- No. of Standby units	nos.	1			
A19.3		V	Supply and installation of Water Treatment Plant including two pressure sand/gravel filters (100% capacity each), sodium hypochlorite primary and secondary dosing units, clear water tank, electrical panel and all accessories	L.S.	1			
A19.4			Laying of sewage pipes (spigot & socket buried type with rubber ring sealing / HDPE PN 10 sanitary drainage) including fittings and fixtures					
A19.4.1		V	- HDPE Pipe 150 mm nominal dia.	m	270			
A19.4.2		V	- HDPE Pipe 100 mm nominal dia.	m	540			
A19.5		V	Sewage treatment plant	LS	1			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A19.6		V	<i>Pumps and their other components</i>	nos.	6			
A 20	B.2 0		Electrical equipments					
A20.1		V	<i>Illumination system for all areas covering Portal of Main Access Tunnel, Portal of Cable Access Tunnel, Portal of Adit 6, TRT Outlet and Pothead Yard</i>	LS	1			
A20.2		V	<i>Grounding system</i>	LS	1			
A 21	B.2 1		Road Works					
A21.1		V	<i>Repair and maintenance of access roads</i>	Km-Month	496			
SUB-TOTAL (PART 1)								
PART 2	HYDRAULIC STEEL STRUCTURE (HSS) EQUIPMENT							
A 22	B.2 2		HSS Equipment, Shaft and Penstock					
A22.1			<i>For draft tube gates: Design, procurement, fabrication/manufacturing, inspection, shop assembly, testing, painting and supply including necessary spares</i>					
A22.1.1		VI	<i>- First stage inserts (anchors with plates), embedded parts, corner angles, etc. for sliding gate complete in all respects, in accordance with the specifications and drawings.</i>	Set	6			
A22.1.2		VI	<i>- Second stage embedded parts complete with seals, seal seats, seat bases, sill beams, lintel beams, guides, second stage anchor bolts with double nuts and washers etc. complete in all respect in accordance with specifications and drawings.</i>	Set	6			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A22.1.3		VI	- sliding gate including skin plate, grab beam, side, top and bottom seal assemblies, end vertical girders, wheel assemblies, all other accessories and appurtenances, complete in all respects in accordance with specifications and drawings.	Set	6			
A22.1.4		VI	- Mandatory Spare parts for sliding gate - As per details given in Particular Technical Specification	Set	1			
A22.1.5		VI	- Electrically operated rope drum hoists, including wire ropes, drums, sheaves, gearings, shafts, couplings, bearing, pedestal/plummer blocks, standard gear reducers, electric motor, electromagnetic brakes, gate position indicator, limit switches, Control panel, power & control cables and wiring, base frame etc. complete in all respect in accordance with the specifications and drawings.	Set	1			
A22.1.6		VI	- Travelling crane structures, foundation anchors, walkways, ladders, hand rails, chequered plate flooring, guard railings, lighting arrangements, associated jointings etc. complete in all respect as per the specifications and drawings.	Set	1			
A22.1.7		VI	- Mandatory Spare parts for gantry crane - As per details given in Particular Technical Specification	Set	1			
A22.2			For tail race tunnel gates: Design, procurement, fabrication/manufacturing, inspection, shop assembly, testing, painting and supply including necessary spares					
A22.2.1		VI	- First stage inserts (anchors with plates), embedded parts, corner angles, etc. for fixed wheel gate complete in all respects, in accordance with the specifications and drawings.	Set	2			
A22.2.2		VI	- Second stage embedded parts for complete with wheel track assembly, bumper track, seal seats, seat bases, sill beams, lintel beams, guides, second stage anchor bolts with double nuts and washers etc. complete in all respect in accordance with specifications and drawings.	Set	2			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A22.2.3		VI	- Wheel gate including skin plate, vertical stiffeners, horizontal girders including bottom lip, diaphragm, side, top and bottom seal assemblies, end vertical girders, wheel assemblies, all other accessories and appurtenances, complete in all respects in accordance with specifications and drawings.	Set	2			
A22.2.4		VI	- Hydraulic cylinder, including all hydraulic and electric components, gate position indicator, limit switches, Control panel, power & control cables and wiring, base frame etc. complete in all respect in accordance with the specifications and drawings.	Set	2			
A22.2.5		VI	- Mandatory Spare parts - As per details given in Particular Technical Specification	Set	1			
A22.3			For surge shaft gates: Design, procurement, fabrication/manufacturing, inspection, shop assembly, testing, painting and supply including necessary spares					
A22.3.1		VI	- First stage inserts (anchors with plates), embedded parts, corner angles, etc. for fixed wheel gate complete in all respects, in accordance with the specifications and drawings.	Set	3			
A22.3.2		VI	- Second stage embedded parts complete with wheel track assembly, bumper track, seal seats, seat bases, sill beams, lintel beams, guides, second stage anchor bolts with double nuts and washers etc. complete in all respect in accordance with specifications and drawings.	Set	3			
A22.3.3		VI	- Wheel gate including skin plate, vertical stiffeners, horizontal girders including bottom lip, diaphragm, side, top and bottom seal assemblies, end vertical girders, wheel assemblies, all other accessories and appurtenances, complete in all respects in accordance with specifications and drawings.	Set	3			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A22.3.4		VI	- Electrically operated rope drum hoists, including wire ropes, drums, sheaves, gearings, shafts, couplings, bearing, pedestal/plummer blocks, standard gear reducers, electric motor, electromagnetic brakes, gate position indicator, limit switches, Control panel, power & control cables and wiring, base frame etc. complete in all respect in accordance with the specifications and drawings.	Set	3			
A22.3.5		VI	- Hoist supporting structures, foundation anchors, walkways, ladders, hand rails, chequered plate flooring, guard railings, lighting arrangements, associated jointings etc. complete in all respect as per the specifications and drawings.	Set	3			
A22.3.6		VI	- Mandatory Spare parts - As per details given in Particular Technical Specification	Set	1			
A22.4			For ADIT-6 door: Design, procurement, fabrication/manufacturing, inspection, shop assembly, testing, painting and supply including necessary spares					
A22.4.1		VI	- First stage inserts (anchors with plates), embedded parts, corner angles, etc. for watertight doors complete in all respects, in accordance with the specifications and drawings.	Set	1			
A22.4.2		VI	- Second stage embedded parts for watertight doors complete with wheel track assembly, bumper track, seal seats, seat bases, sill beams, lintel beams, guides, second stage anchor bolts with double nuts and washers etc. complete in all respect in accordance with specifications and drawings.	Set	1			
A22.4.3		VI	- Watertight doors for opening size 2.2m X 2.2m including skin plate, vertical stiffeners, horizontal girders including bottom lip, diaphragms, side, top and bottom seal assemblies, end vertical girders, wheel assemblies, all other accessories and appurtenances, complete in all respect in accordance with specifications and drawings.	Set	1			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A22.4.4		VI	- Mandatory Spare parts - As per details given in Particular Technical Specification	Set	1			
A22.5			Penstock Liners and accessories: Design, procurement, fabrication/manufacturing, inspection, shop assembly, testing, painting and supply including necessary spares					
A22.5.1		VI	- Steel lining for top horizontal pressure shafts, including transition from surge shaft	MT	530			
A22.5.2		VI	- Steel lining for upper bends of pressure shafts	MT	105			
A22.5.3		VI	- Steel lining for vertical pressure shafts	MT	2,700			
A22.5.4		VI	- Steel lining for lower bends of pressure shafts	MT	105			
A22.5.5		VI	- Steel lining for bottom horizontal pressure shafts	MT	165			
A22.5.6		VI	- Manifolds with bifurcations	MT	210			
A22.5.7		VI	- Steel linings for unit penstocks downstream of bifurcations	MT	600			
A22.5.8		VI	- Inspection manholes for upper bends of pressure shafts	Set	3			
A22.5.9		VI	- Inspection manholes for lower bends of pressure shafts	Set	3			
A22.5.10		VI	- Mandatory Spare parts and special tools - As per details given in Particular Technical Specification	Set	3			
A22.5.11		VI	- Set of accessories including manholes, manifold pressure taps, dewatering pipe, inlet valve by-pass, etc.	Set	3			
A22.6			Transportation from fabrication shop to site (including insurance)					
A22.6.1		V	- Item A22.1.1 above	Set	6			
A22.6.2		V	- Item A22.1.2 above	Set	6			
A22.6.3		V	- Item A22.1.3 above	Set	6			
A22.6.4		V	- Item A22.1.4 above	Set	1			
A22.6.5		V	- Item A22.1.5 above	Set	1			
A22.6.6		V	- Item A22.1.6 above	Set	1			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A22.6.7		V	- Item A22.1.7 above	Set	1			
A22.6.8		V	- Item A22.2.1 above	Set	2			
A22.6.9		V	- Item A22.2.2 above	Set	2			
A22.6.10		V	- Item A22.2.3 above	Set	2			
A22.6.11		V	- Item A22.2.4 above	Set	2			
A22.6.12		V	- Item A22.2.5 above	Set	1			
A22.6.13		V	- Item A22.3.1 above	Set	3			
A22.6.14		V	- Item A22.3.2 above	Set	3			
A22.6.15		V	- Item A22.3.3 above	Set	3			
A22.6.16		V	- Item A22.3.4 above	Set	3			
A22.6.17		V	- Item A22.3.5 above	Set	3			
A22.6.18		V	- Item A22.3.6 above	Set	1			
A22.6.19		V	- Item A22.4.1 above	Set	1			
A22.6.20		V	- Item A22.4.2 above	Set	1			
A22.6.21		V	- Item A22.4.3 above	Set	1			
A22.6.22		V	- Item A22.4.4 above	Set	1			
A22.6.23		V	- Item A22.5.1 above	Set	3			
A22.6.24		V	- Item A22.5.2 above	Set	3			
A22.6.25		V	- Item A22.5.3 above	Set	3			
A22.6.26		V	- Item A22.5.4 above	Set	3			
A22.6.27		V	- Item A22.5.5 above	Set	3			
A22.6.28		V	- Item A22.5.6 above	Set	3			
A22.6.29		V	- Item A22.5.7 above	Set	3			
A22.6.30		V	- Item A22.5.8 above	Set	3			
A22.6.31		V	- Item A22.5.9 above	Set	3			
A22.6.32		V	- Item A22.5.10 above	Set	3			
A22.6.33		V	- Item A22.5.11 above	Set	3			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A22.7			Site assembly, erection/installation, field painting, testing and commissioning of supplied equipment					
A22.7.1		VII	- Item A22.1.1 above	Set	6			
A22.7.2		VII	- Item A22.1.2 above	Set	6			
A22.7.3		VII	- Item A22.1.3 above	Set	6			
A22.7.4		VII	- Item A22.1.5 above	Set	1			
A22.7.5		VII	- Item A22.1.6 above	Set	1			
A22.7.6		VII	- Item A22.2.1 above	Set	2			
A22.7.7		VII	- Item A22.2.2 above	Set	2			
A22.7.8		VII	- Item A22.2.3 above	Set	2			
A22.7.9		VII	- Item A22.2.4 above	Set	2			
A22.7.10		VII	- Item A22.3.1 above	Set	3			
A22.7.11		VII	- Item A22.3.2 above	Set	3			
A22.7.12		VII	- Item A22.3.3 above	Set	3			
A22.7.13		VII	- Item A22.3.4 above	Set	3			
A22.7.14		VII	- Item A22.3.5 above	Set	3			
A22.7.15		VII	- Item A22.4.1 above	Set	1			
A22.7.16		VII	- Item A22.4.2 above	Set	1			
A22.7.17		VII	- Item A22.4.3 above	Set	1			
A22.7.18		VII	- Item A22.5.1 above	Set	3			
A22.7.19		VII	- Item A22.5.2 above	Set	3			
A22.7.20		VII	- Item A22.5.3 above	Set	3			
A22.7.21		VII	- Item A22.5.4 above	Set	3			
A22.7.22		VII	- Item A22.5.5 above	Set	3			
A22.7.23		VII	- Item A22.5.6 above	Set	3			
A22.7.24		VII	- Item A22.5.7 above	Set	3			
A22.7.25		VII	- Item A22.5.8 above	Set	3			
A22.7.26		VII	- Item A22.5.9 above	Set	3			



Item No.	Ref. to TS	Price Adjustment Ref. Category	Description	Unit	Quantity	Rate (Nu./Rs.)		Amount (Nu./Rs.)
						In Figures	In Words	
A22.7.27		VII	- Item A22.5.11 above	Set	3			
SUB-TOTAL (PART 2)								
GRAND TOTAL (PART 1 + PART 2)								
IN FIGURES Nu./Rs.....								
IN WORDS:								

