

R1
Details on Revised Schedule of Price

Sl. No	Item	Quantity	Unit	Exact item(s)	Location –wise breakup of quantity	General Specification	Makes (to be followed wherever mentioned)
1	Supply & Delivery of Control Instruments & Panels: PLC Hardware with wireless communication feature for caisson & Penstock operation, control & monitoring	4	sets	PLC panel consisting of items, but not limited to PLC CPU, IO Cards, SMPS, Field Terminals	One each at outer and inner gates of both working side and non-working side of lock channel Panel to be fitted with AC of adequate rating	Given in Scope of work. The following is further clarified in this regard: (a) It will be of Hot Redundancy type with no central or supervisory unit. (b) Engineering software must have the simulation software facility. If simulation software is not available, then one set of complete PLC hardware (i.e.PS, CPU, Com Module, with similar IO racks) as offline test kit need be provided. (c) The PLC software shall have to be handed over to the Port while commissioning. (d) The Panel mounting board shall be CRCA power coated and designed as per site condition.	ABB/ SIEMENS/ SCHNEIDER ELECTRIC / FUJI
2	Supply & Delivery of Control Instruments & Panels: HMI Hardware for each PLC	2	sets	HMI Hardware	At outer and inner gates of only working side. As mentioned in clause No. 6.10 of the tender document,	-do-	Same as that of Sl. No. 1 above.
3	Supply & Delivery of Control Instruments & Panels: PC based monitoring & controlling system comprising necessary hardware & software at central control station	2	sets	Control instruments and panels [Desktop computer with SCADA software and necessary licenses for the software applications]	At control rooms – one working and one standby. No hardware Firewall shall be required. As mentioned in clause No. 6.10 (b) of the tender document, the HMI screen should not be less than 10 inch.	Minimum -Processor I 5, 8 GB, DDR and 1 TB HDD; 2 LAN ports, Monitor 22 inch With Mouse and keyboard OS – Windows 10 or latest – license version – 64 bit The SCADA software shall have unlimited TAGs and unlimited screen. SCADA software should be provided with Unlimited point of OPC Server licence.	SCADA as above. For computers – DELL/ HP/ IBM/ LENOVO
4	Installation, Testing & commissioning, Logic programming & monitoring for the supplied items as mentioned from Sl. Nos. 1 to 3 above	1	set	For above three items	-do-	-----	-----
5	Supply & Delivery of Field Instruments: Open channel Level Transmitter	11	Nos.	Open Channel Level Transmitter	Six at penstocks (Nos. 1, 2,3,4,6 & 10 together, 7) one each at Basin, Barrel and River and rest two at oil tank of both the winch rooms.	Type – Ultrasonic Ingress protection – IP 66 or better Sensor – PVD Accuracy – ± 3 mm or better Body MOC – PVC/ Aluminium Output – 4-20 milli-Amps	SIEMENS/ VEGA/EMERSON/ ENDRESS & HAUSER/ PULSAR/ FOXBORO / EMERSON/ SCHNEIDER
6	Supply & Delivery of Field Instruments: Insertion Type Level Transmitter	10	Nos.	Insertion Type Level Transmitter	In 4 trimming tanks and 1 ballast tank of both inner and outer gates	Hydrostatic / Ultrasonic as per bidder's choice in accordance with site condition IP 68 Sensor material – SS 316L or better or PVD Output - 4-20 milli-Amps Accuracy - $\pm 0.5\%$ of FS or better	SIEMENS/ VEGA/ TECHTROL/ LEVCON /ENDRESS & HAUSER/ PULSAR/ FOXBORO / EMERSON/ SCHNEIDER

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7	Supply & Delivery of Field Instruments: Float switches	2	Nos.	Float switches	Two at Cooling water Tank for Measurement of level at two Machine Rooms.	One pair for cooling water tank – Type – float operated Material _ SS Mounting – side mount Enclosure – Aluminium Micro-switch operated 1 NO + 1 NC contacts Ingress protection – IP 66 or better Other pair – Capacitance type Probe material – PVC coated SS Mounting – top mount Enclosure – Al/ PVC Micro-switch operated 1 NO + 1 NC contacts Ingress protection – IP 66 or better	SIEMENS/ VEGA/TECHT ROL/ ENDRESS & HAUSER / LEVCON /EVERLY/ NELCO / IFM/ SCHNEIDER/ KRONE
8	Supply & Delivery of Field Instruments: Pressure transmitter	26	Nos.	Pressure transmitter	3 pressure points (opening, closing and preset during movement) per winch motor X 2 winch motors per gate X 2 gates = 12 Nos. Plus Penstocks (2 for each penstock X 7 Penstocks (Nos. 1,2,3,4,6,7, 10) = 14 Nos.	Capacitance PIEZO Resistive/ Silicon resonant Supply – 24 V DC Output – 4 to 20 milli Amp with LCD display Enclosure – Dual Housing AL Terminal and display shall be in separate housing Accuracy – 0.065 % of full scale or better All wetted parts, nuts, bolts, vent shall be SS 316 or better Sensing diaphragm shall be SS 316 Mounting Bracket SS	SIEMENS/ VEGA/ E&H/ EMERSON/ YOKOGAWA/ ABB/ SCHNEIDER
9	Supply & Delivery of Field Instruments: Motorized control valve assembly for Trimming tank fill in system	52	Nos.	Motorized control valve assembly	For 26 valves of each inner and outer gates	Electric Actuator – 3 ph, 50HZ, on off continuous operation duty Feedback, local operation, limit switch, remote operation, local indication is required. Enclosure MOC – Aluminium Alloy Ingress protection – IP 67 or better. Mounting accessories as required to fit with valve	AUMA / ROTORK / BETTIS/ LIMITORQUE/ SCHNEIDER /
10	Supply & Delivery of all cables (Ethernet cables, communication cable) required for above job	600	Mtr.	Ethernet & communication cable	For connectivity between PLC, SCADA, HMI, CCTV, Camera, wireless device etc	CAT 6	FINOLEX / DIGILINK/ D-LINK/ MOLEX/ BELDEN
11	Supply & Delivery of CCTV Camera	8	Nos.	CCTV Camera	2 in each machine room (ONE focussing the power pack and ANOTHER focussing the winch drum FOR EACH OF THE TWO MACHINE ROOMS = 2 x 2 = 4 (Bullet or PTZ?) Plus 2 in 2 gates non-working side – fixed type to observe only respective caisson movement and other 2 on working side with 360 deg rotation. All the cameras shall have NVR of 1 TB A screen of atleast 42 inch to be installed in the control room shall also be provided for CC camera output display.	For fixed type Fixed bullet IP camera Optical Zoom ; 30X IR distance – 30 mtr or better Ingress Protection – IP 67 or better, IK 8 or better, ONVIF compliant, vision –day-night For rotating type PTZ IP camera 2 MP Optical Zoom ; 30X IR distance – 100 mtr or better Ingress Protection – IP 67 or better, IK 8 or better, ONVIF compliant, vision –day-night PAN Travel 360 dgr endless Tilt travel – minus 10 to plus 90 degree, Auto flip 180	Camera: HONEYWELL / BOSCH/ PELCO/ PANASONIC/ INFINOVA Screen: SAMSUNG PELCO / SONY/ BOSCH/ SHARP/ SANIO

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						degree. Product shall be latest model & support of minimum 10 years is required for spare & others for all CCTV system.	
12	Supply & Delivery of Limit Switches	14	Nos.	Limit Switches to indicate position of padals of penstocks – raised or lowered	2 in each penstock X 7 Penstocks	Supply – 220 Volt DC/ 230 Volt AC Contact or non-contact Output - 1 NO + 1 NC contacts Mounting – vendor to specify as per site condition	JAI BALAJI/ SNIEDER / HONEYWELL/ P&F/ SICK/ SIEMENS/ SCHNEIDER/ L&T/ ESSENDEINKI / BCH(BIL)
13	Supply & Delivery of Impulse pipe with fittings for integration of all Hydraulic systems (Lot)	1	Lot	Impulse pipe with fittings	The purpose is to transmit oil pressure at the winch power pack and separately at the penstock valves – together forming a lot	All the fitting and pipes / tubes, manifold shall be suitable for withstanding the maximum pressure of existing Hydraulic system	SANVIK/ SWAGELOCK/ RATNAMANI/ PARKER / FLOWTECH/ ASTEK / HYLOCK/EXC LELOCK
14	Supply & Delivery of Medium grade GI Pipe of 100 mm Nominal Bore, conforming to IS:1239	100	Mtr	GI Pipe of 100 mm	For instrument applications at different locations	Class B or better	---
15	Supply & Delivery of HDPE pipe (1.5" diameter)	1200	mtr	HDPE pipe (Purpose?)	For laying of fibre optic cable etc	---	---
16	Supply & Delivery of Junction Box at various location for signal distribution	6	Nos.	For signal multiplication	2 each at M/c Rooms, penstocks and gates with relay and selector switch as per requirement	CRCA sheet 2 mm minimum thickness with required terminals having locking facility	---
17.1	Supply & Delivery of Power DB with Trafo	4	Nos.	Power DB	At the PLC panels	Transformer rating to be in conformity with load requirement with 25% additional load	---
17.2	Supply and Delivery of Motor Starter	4	Nos.	Motor Starter	2 Nos. in each gate compatible with the existing 25 HP motors.	Having star delta connection	L&T/ SIEMENS/ ABB/ SCHNEIDER
18.1	Supply & Delivery of Cable Reeling Drums (CRDs)	2	Nos.	Cable Reeling Drums	One each on outer and inner gates	Towards camber of both inner and outer alongwith foundation	---
18.2	Providing necessary support structure on the shore at the working side for the CRDs	2	Nos.	-----	-----	-----	---
19	Supply & Delivery of 3.5 C X 150 Sq mm. LT X LPE Power Cable as per IS:7098 Part II	250	mtr	Power Cable	CRD to Caisson Gate to be supplied alongwith PCRD system as per OEM specification & Power requirement.	1.1 KV grade	See Scope of work
20	Supply & Delivery of 1.5 sqmm X10C Cu EC Grade Overall Screen Multistrand unarmoured Cable	600	mtr	Cable	Actuator control Cable [Cashion Gate Actuator to JB]	See Scope of work	See Scope of work
21	Supply & Delivery of 1 sqmmX 3C, Cu EC Grade Overall Screen Multistrand armoured Cable	3200	mtr	-do-	Pressure transmitter (1000 mtr), open type level sensor (1200 mtr.) and Penstock Limit Switch to Penstock Panel (1000 mtr.)	See Scope of work	See Scope of work
22	Supply & Delivery of 1 sqmm X2 core Cu EC Grade Overall Screen Multistrand armoured Cable	750	mtr	-do-	For solenoid valves	-do-	---
23	Supply & Delivery of 1.5 sqmm X30 core Cu XLPE Multistrand armoured Cable	500	mtr	-do-	JB (Penstock panel) to PLC	-do-	---

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24	Supply & Delivery of 6 sqmm X 4 core Cu XLPE Multistrand armoured Cable	1150	mtr	-do-	Main Sw to JB for Motor feeder (50 mtr.) UPS to DB (100 mtr.) Power cable for Actuator (1000 mtr.)	-do-	---
25	Supply & Delivery of Fiber Optic Cable 12 Core	1000	mtr	Fiber Optic Cable	-	---	---
26	Providing Earth Link / Earth pit as per IS and connected all the equipment with 25mm X 3 mm GI Strip	5	Nos.	4 PLC and 1 control room	GI Strip	---	---
27	Supply & Delivery of Automatic Ladder	2	Nos.	Automatic Ladder	<p>A. Automatic Ladder System: The successful bidder shall have to make suitable arrangement to place one automatic ladder each at the footbridge/ concrete at the end of each Caisson. Before opening of the Caisson gates, the ladder will be removed from the footbridge/ concrete and repositioned on the walkway automatically at both the ends of Caisson gates. Necessary suitable mechanical & electrical arrangement including cable laying, if required, shall be under the scope of successful contractor to complete the job in all respects.</p> <p>B. Technical Specification for Automatic Ladder System: i) It should have Remote operation facility. ii) It should have facility to take feedback to automation system with 24V DC / 230 V AC. iii) Horizontal / Vertical movement during travel of gate operation. iv) System should be outdoor type and corrosion free. v) For detailed operation, tenderers may visit site before submission of techno- offer.</p>	---	---
28	Supply & Delivery of suitable arrangement for Caisson Gate Seal detector & Monitoring in each gate [each set comprising 2]	2	sets	Caisson Gate Seal detector	One each at inner and outer gates	---	---
29	Supply & Delivery of LED Digital Display Board including Limit switch and hooter	2	sets	LED & Digital Display Board for outdoor application including hooter No limit Switch and No annunciator are to be provided.	One set display board near inner gate and another set near outer gate.	Each set comprising (a) one digital display board (to display status of the respective caisson while in operation and (b) one LED display board (to display movement of next five vessels through the Lock). All the display boards shall be atleast 65 inches with proper cooling arrangement to suit the outdoor condition. The Hooter is to be operated during lock gate movement, having a minimum loudness of 30 dB.	---

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30	Supply & Delivery of 3 KVA online UPS	5	Nos.	3 KVA online UPS back up of 15 minutes	4 near PLCs and one in the control room SCADA station	The battery to be provided shall be maintenance free and should have appropriate rating of voltage and AH	APC/ VERTIV/ NUMERIC/ HI-REL/ ILK(FUJI)/ SIEMENS/ SCHNEIDER/ APLAB/ APC(MG)/
31	Installation, Testing, Commissioning of all the above items starting from Sl. No. 5 (including laying of cables)	1	set	OK	OK	---	---
32	Manning during Guarantee period of one year	1	No.	Manning support during Guarantee period	---	---	---
33	1 st year CAMC after Guarantee period	1	No.	To be read as : 1 st year CAMC after Guarantee period	---	---	---
34	2 nd year CAMC after Guarantee period	1	No.	To be read as : 2 nd year CAMC after Guarantee period	---	---	---
35	3 rd year CAMC after Guarantee period	1	No.	To be read as : 3 rd year CAMC after Guarantee period	---	---	---
36	4 th year CAMC after Guarantee period	1	No.	To be read as : 4 th year CAMC after Guarantee period	---	--	---
37	5 th year CAMC after Guarantee period	1	No.	To be read as : 5 th year CAMC after Guarantee period	---	---	---
38	Operation for one year on commissioning	1	No.	Unaltered	---	---	---