



NAYA RAIPUR DEVELOPMENT AUTHORITY

**Tender Document for the
Electromechanical and Allied Works for 12 Pump House at
various locations and 24 months O&M for 17 sectors at
Naya Raipur**

(Following Three-Envelope Tender Procedure)

**Schedule – A
Price Tender
To be submitted in ENVELOPE-3**

NIT No. : 84/EMPH/EE-PHE/SE(E)/CE(E) /NRDA/2016-17, Naya Raipur

Dated: 05.07.2016

Issued by: Chief Executive Officer,
Naya Raipur Development Authority (NRDA)
Utility block, Capitol Complex, Sector- 19,
Naya Raipur- 492 002, Chhattisgarh
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Tender Document Contains

- (a) Only schedule "A" and Section-I of schedule "D" are to be filled & signed by the tenderer
 (b) All the certificates as per pre qualification criteria shall be appended with relevant forms of schedule "D"

1. PART ONE (NRDA F-1)-(Attached herewith, to be submit along the tender)

Part (A)

- a) Press Notice
 b) Detailed NIT

Part (B)

a) Schedule-A

- (i) Cost Abstract
 (ii) Bill of Quantities

- b) Schedule-B –NIL
 c) Schedule-C –NIL
 d) Schedule-D

Section-I..... Technical tender forms

- (i) Letter of Technical Tender
 (ii) Tenderer's Information Sheet
 (iii) Annual Turnover
 (iv) Specific Construction Experience
 (v) Declaration
 (vi) Check list for Technical tender evaluation

Section –IIScope of work

Section –III..... Technical specifications of work

Section –IV..... Special Conditions of Contract

Section –V..... List of approved makes

Section –VI..... Drawings

- e) Schedule-E
 f) Schedule-F

2. PART TWO (NRDA F-2/3)-Standard form (Not Attached herewith, and not to be submitted along the tender)

Important note: - Link site <http://nayaraipur.com/documents/gcc.pdf>

1. General Guidelines
2. Tender
3. General rules and directions
4. Conditions of contract
5. Clauses of contract
6. Model rules relating to labour, water supply and sanitation in labour camps safety code
7. Contract forms
 - (a) Draft Format for Performance Security
 - (b) Earnest Money Deposit Form (Bank Guarantee)
 - (c) Format of Contract Agreement
 - (d) Draft Format for Performance Guarantee for Water Proofing and Anti-termite Works
 - (e) Indemnity Bond
 - (f) Indenture Bond
 - (g) Notice for Appointment of Arbitrator
8. Proforma of schedules (Schedule 'A' to Schedule 'F')

Naya Raipur Development Authority (NRDA) Raipur, Chhattisgarh

Document details

Name of work : "Electromechanical and Allied Works for 12 Pump House at various locations and 24 months O&M for 17 sectors at Naya Raipur Raipur".

Name of Tenderer:

Details

- a) Cost of Tender Document : Rs
- b) EMD : Rs

Signature of Tenderer

Date:_____

Signature of Contractor.....

Signature of NRDA.....

COST ABSTRACT

Electromechanical and Allied Works for 12 Pump House at various locations and 24 months O&M for 17 Sectors at Naya Raipur
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Sr. no.	Component of Work	Amount in INR	Amount in Words (In INR)
I	PART I WORKS		
A	Electromechanical works	Rs. -	
B	Civil Works	Rs. -	
C	Electrical Works	Rs. -	
D	Service connections	Rs. -	
E	SUB TOTAL (A+B+C+D)	Rs. -	
II	PART II Works: Operation and Maintenance (2 Years)		
F	First Year Operation and Maintenance (at 6.5% of E)	Rs. -	
G	Second Year Operation and Maintenance (at 9% of E)	Rs. -	
H	SUB TOTAL (F + G)	Rs. -	
	Total (E + H)	Rs. -	

Bill of Quantity

Electromechanical and Allied Works for 12 Pump House at various locations and 24 months O&M for 17 sectors at Naya Raipur

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
A	Electromechanical works					
1	<p>Skid mounted Hydro pneumatic system: Design, engineer, procure, Supplying, installation, testing and commissioning of pre-engineered, factory fabricated, assembled & tested, fully integrated, highly efficient pump, IE3 motors, skid mounted, complete ready-to-connect packaged variable speed water pressure booster station. The packaged variable speed water pressure booster station shall be complete with vertical multi stage centrifugal pumps connected in parallel, high efficiency IE3 motors, an air-cooled external dedicated variable frequency drive for each pump, intelligent multi-pump controller with GSM interface facility, the controller shall be mounted in a control cabinet with an IP 41/IP54 enclosure of suitable rating; hot Dipped Galvanised suction and delivery manifolds; isolation ball valves on suction and discharge of each pump; non return valve on discharge side of each pump; hot dip galvanised common base frame; and diaphragm pressure vessel PN10 complete in all respect as per technical specification and as per direction of Engineer NRDA. (Make : Grundfos or Approved by NRDA)</p>					
	Pump:					
	Pump Head - Cast Iron					
	Pump Base- Cast Iron					
	Impeller-SS 304					
	Chamber-SS 304					
	Shaft-SS316/SS410					
	Motor stool-Cast Iron					
	Shaft seal Cartridge type(SiC/Carbon)					
	Rubber parts-EPDM					
	Motor					
	Efficiency class-IE3					
	Insulation class-F					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
	Enclosure class-IP 54/IP 55					
	Supply Frequency-50Hz					
	Supply voltage-3X380-415V					
	Built in Thermistor-PTC					
	Control Panel					
	Enclosure class-IP 41/IP 54 incomer MCB, all protection, Indication RYB					
	Controller					
	A dedicated intelligent multi-pump logic controller for control and monitoring of pumps shall be from the pump manufacturer with easy interface graphical 320 X 240Pixels colour display unit with key function. controller should able to monitor multiple operating parameters (flow, UG tank level, flow meter output, outlet pressure, instant flow estimation, cumulative flow and speed etc) to calculate best operating algorithm to pump sequence optimally. Mentioned features should be available, automatic pump alternations for run time equalization, Programmable number of starts/stops per hour to prevent pump hunting, Stand by pump selection, pump test run, Friction Loss Compensation, Redundant primary sensor for pressure monitoring, soft pressure built-up, log graph display for key parameters, Clock program for multiple set point for scheduled system operation. (Auto manual selector switch for operating system in in manual also) Multi pump controller should have provision for SMS interface facility to the users for control and monitor of the pumping system through mobile phone using GSM data communication and on-board Ethernet facility for BMS. (Make : Grundfos or Approved by NRDA)					
	Pressure Transmitter (0-10 bar, based on system design pressure)					
	Pressure Gauge - 0-10bar					
	One non-return valve and isolating valves for each pump is provided in delivery side and one isolating valve is provided in suction side.					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
	Suction & Delivery Manifolds - Hot Dip Galvanised Iron					
	Pressure tank capacity: (as per manufacturer recommendation) Note: Back up calculation need to be provided for the same. A pre-charged Carbon Steel body diaphragm tank shall be fitted to the discharge pipe with a compatible Butyl-rubber diaphragm. It shall supply water a very low flows to minimize frequent pump start and stop and water hammering. There shall be complete separation between water and air and there should be no contact between water and tank compounds to avoid corrosion. Bladders shall be suitable for sufficient elasticity to permit full expansion inside the tank to ensure better performance and longer working life. (Make : Grundfos or Approved by NRDA)					
	Including one year warrenty for all pumps (From i to viii)					
i	Each pump flow capacity: 24 cum/hr. Total Head: 40mtr One set of pump mean = 3 nos. of pumps, each pump flow 24 cum/hr. (2W+1S)	Set	2			Rs. -
ii	Spare pump: Supplying of Vertical Multistage Inline Pump Pump flow capacity: 24 cum/hr. Total Head: 40mtr Total no of pump: 1	NO.	1			Rs. -
iii	Each pump flow capacity: 36 cum/hr. Total Head: 40mtr One set of pump mean= 3 nos. of pumps, each pump flow 36 cum/hr. (2W+1S)	Set	2			Rs. -
iv	Spare pump: Supplying of Vertical Multistage Inline Pump Pump flow capacity: 40cum/hr. Total Head: 40mtr Total no of pump: 1	NO.	1			Rs. -
v	Each pump flow capacity: 48 cum/hr. Total Head: 40mtr	Set	2			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
v	One set of pump mean= 3 nos. of pumps, each pump flow 48 cum/hr. (2W+1S)	Set	3			Rs. -
vi	Spare pump: Supplying of Vertical Multistage Inline Pump Pump flow capacity: 48cum/hr. Total Head: 35mtr Total no of pump: 1	NO.	1			Rs. -
vii	Each pump flow capacity: 54 cum/hr. Total Head: 40mtr One set of pump mean= 3 nos. of pumps, each pump flow 54 cum/hr. (2W+1S)	Set	4			Rs. -
viii	Spare pump: Supplying of Vertical Multistage Inline Pump Pump flow capacity: 54cum/hr. Total Head: 40mtr Total no of pump: 1	NO.	1			Rs. -
2	Supplying, installation, testing and commissioning of Pressure tank capacity: (as per manufacturer recommendation) Note: Back up calculation need to be provided for the same. A pre-charged Carbon Steel body diaphragm tank shall be fitted to the discharge pipe with a compatible Butyl-rubber diaphragm. It shall supply water a very low flows to minimize frequent pump start and stop and water hammering. There shall be complete separation between water and air and there should be no contact between water and tank compounds to avoid corrosion. Bladders shall be suitable for sufficient elasticity to permit full expansion inside the tank to ensure better performance and longer working life complete in all respect as per technical specification and as per direction of Engineer NRDA. (Make : Grundfos or Approved by NRDA)					
i	450 ltr. Pressure tank with One year warrenty	No	11			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
3	Supply, installation, testing and commissioning of Electromagnetic Type, Internal battery-operated with 10 years battery life, MID approved and OIML Compliant, having IP68 protected sensor and converter Converter, to measure flow velocity and volume flow, having minimum straight inlet and outlet flow of 0DN, having maximum measuring error of +/- 0.2% - 0.5% of measured value, having 8 digit LCD display with GSM based data logger measuring between every 2 pulses and having a 10 year battery life. The required cable and mounting accessories for remote type transmitter mounting shall be included (Maximum distance of 15 meters or as per site condition).Instrument shall be based on open protocol and SCADA compatible, complete in all respect as per technical specification including all accessories, specials and fittings and as per direction of Engineer in Charge.					
i	EFM 150 for DN 150mm	Each	1			Rs. -
ii	EFM 200 for DN 200mm	Each	1			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
4	Supply, installation, testing and commissioning of electromagnetic full bore meter complete as per specification including transportation to site, storage, safety, installation, testing, commissioning, making connections with existing pipe line, including excavation at site, cuts in the existing pipe system, dewatering and reinstating the same after completion of installation as per specification and drawings including all taxes. Accuracy of meter +/- 0.3% - 0.5% of measured value, Flange connection as per AWWA & IS, fully welded sensor housing complying to IP 68 standard, Electrodes SS 316/Hastelloy C, cable gland 1/2" NPT, Sensor housing fully welded SS 304 housing with protective Polyurethane paint/Die Cast Aluminium with anti corrosive grade paint/Carbon Steel ASTM A 105 with corrosion resistant two component epoxy coating (min 150 µm), Flow Transmitter/ Converter: Microprocessor based, modular design display 2 line back lit LCD for indication of actual flow rate, forward, reverse, sumtotalizer, Perfection category: IP 65. Output: One current output (4-20 mA) one scalable pulse output. The required cable and mounting accessories for remote type transmitter mounting shall be included (Maximum distance of 30 meters or as per site condition).Instrument shall be based on open protocol and SCADA compatible, complete in all respect as per technical specification including all accessories, specials and fittings and as per direction of Engineer in Charge.					
i	EFM 200 for DN 200mm	Each	6			Rs. -
ii	EFM 250 for DN 250mm	Each	10			Rs. -
iii	EFM 300 for DN 300mm	Each	5			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
	Ultrasonic level transmitter					
5	Supply, installation, testing and commissioning of remote type ultrasonic level transmitter capable of measuring liquid level(water)complete as per specification including transportation to site, storage, safety, installation, making connections, testing and commissioning, completion of installation as per specification and drawings including all taxes. Ranges 0-5 meters and 0-7 meters, microprocessor based, measuring principle . time of flight of ultrasonic pulse, degree of protection of sensor-IP 68, the required cable and mounting accessories for remote type transmitter mounting shall be included (Maximum Distance of 15 m from sensor or as per site condition).Instrument shall be based on open protocol and SCADA compatible, complete in all respects according to technical specifications including functionality for programming, required accessories, specials (like cable glands etc.) and fittings, Contactor, control wiring etc. as per requirement of making connections with electrically actuated ON/OFF Control Valve for automatic operation of valve at specified levels, and as per direction of Engineer in Charge.					
i	Range (0-5 meter)	Each	13			Rs. -
ii	Range (0-7 meter)	Each	1	Rs. -		Rs. -
	Sub Total of Electromechanical Works					Rs. -

Bill of Quantity

Electromechanical and Allied Works for 12 Pump House at various locations and 24 months O&M for 17 Sectors at Naya Raipur

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
1	Dewatering pump: Supplying, installation, testing and commissioning of auto on/off Drainage Submersible Pump set suitable for single phase, 230 volts AC supply including connection of suction and delivery line etc. as required complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	Q= 14 cum/hr., Head = 10m	set	14			Rs. -
2	Supply of 150 mm dial pressure gauge with control cock and fittings of range 0-20 kg/cm ² complete in all respect as per technical specification and as per direction of Engineer NRDA.	set	12			Rs. -
3	Providing, and fixing M.S. round and square bars with MS flat of required pattern in wooden frames for windows & clerestory windows including applying a priming coat of red oxide zinc chromate primer, welding etc complete					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
a	Plain grill	Kg.	1000			Rs. -
4	Fabrication of M.S. Pipes and Specials : Fabrication of M.S. pipes & specials as per IS specifications with inside & outside epoxy coating as per relevant IS code, duly tested for usage in Drinking water inclusive of all materials, Central, State and Municipal taxes and duties inspection charges, transit insurance, loading /unloading FOR site unloading & stacking etc. complete in all respect as per technical specification and as per direction of Engineer NRDA.					
a	Fabricating pipes from steel plates (all thickness)	M.T	3.32			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
5	Providing ,Supplying,lowering, laying , jointing including testing and commissioning of following M.S. pipes / M.S. flanged pipes as per IS specifications with inside &outside epoxy coating as per relevant IS code, duly tested for usage in Drinking water inclusive of all materials, Central, State and Municipal taxes and duties inspection charges, transit insurance, loading/ unloading FOR site unloading &stacking etc. complete as per direction of Engineer-in-Charge.					
i	Dia. of pipe 219.10 mm (O.D) Thickness of pipe 8.20 mm	Rm	300			Rs. -
ii	Dia. of pipe 273.1 mm (O.D) Thickness of pipe 7.80 mm	Rm	360			Rs. -
iii	Dia. of pipe 323.9 mm (O.D) Thickness of pipe 7.90 mm	Rm	260			Rs. -
6	Supply, erection, jointing, testing & commissioning of 6+ class (Heavy) MS pipes (as per IS: 1239) including necessary specials such as tees, bends, flanges reducers etc., complete on wall/ ceiling. The pipes to be erected on wall or suspended from beams, RCC roof slabs with suitable size MS bars/ angle irons including painting of metal part except pipe line. complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	100 mm dia (5.4mm thickness)	Rm	46.0			Rs. -
7	Supplying, installation, testing and commissioning of Dirt Box with S.S. Strainer as per specifications					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
i	200 mm dia.	Each	11			Rs. -
8	Providing & Supplying D.I. Specials & Fittings For all types of specials, bends, tees.. etc.					
i	80mm to 300 mm dia	Kg.	1500			Rs. -
9	Providing and fixing in position MS Puddle collar (approx. 1m length) inside the wall including all material labour as per Technical Specifications and as per direction of Engineer.					
i	200mm dia	Each	36			Rs. -
10	Providing and fixing double flanged cast iron (horizontal cast) pipe as per IS: 7181 of One Meter length.					
i	100mm diameter	Each	10.00			Rs. -
11	Providing and laying in position sizes of flanged cast iron standard specials class medium or heavy.					
a	Heavy Class					
i	80mm to 300mm dia	Kg.	250.00			Rs. -
ii	Above 300mm Dia	Kg.	150.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
12	Supplying, installation, testing and commissioning of Flow control valve with Electric actuator totally enclosed with SCADA compatible , weather proof and dust proof construction with IP-67, protection class suitable for installation in any position without lubrication, leakage or other operational difficulty with special grease filled gear box and hand wheel for emergency manual operation which will automatically dis-engage on restoration of power to motor and with 10watt single phase space heater and continuous local mechanical position indicator and individually replaceable counter gear assembly and with two torque and four limit switches with S.S. flap and operated with gear driven cams and of rating 250Volt, 5Amp., AC/DC, torque switch dial and with TEFC squirrel cage induction motor working on 440 Volts+/-10%, 3phase, 50Hz AC of intermittent duty rating S-2, insulation class "F" and temp rise restricted to class "B" with IP-67 protection class suitable for DOL starting and with three thermostat and 30% over load margin. The torque rating of reduction gear boxes shall be chamber and treated effluent outlet channel etc. complete in all respect as per technical specification and as per direction of Engineer NRDA.					
	(FCV)Flow control valve with Electric Actuator for non-rising spindle type sluice valve, PN1.6 rating for Valve size (Without integral starter) for the following					
i	200 mm dia. (Class -PN 1.6 rating)	No	6			Rs. -
ii	250 mm dia. (Class -PN 1.6 rating)	No	4			Rs. -
iii	300 mm dia. (Class -PN 1.6 rating)	No	3			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
13	Providing & fixing cast iron butterfly valve including jointing & testing with cost of jointing material such as bolts, nuts and rubber insertion all complete as per IS : 13095-1991. (Valves above 200mm dia. should be gear operated) complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	200 mm dia. (Class -PN 1.6 rating) should be gear operated)	No	11			Rs. -
ii	250 mm dia. (Class -PN 1.6 rating) should be gear operated)	No	6			Rs. -
iii	300 mm dia. (Class -PN 1.6 rating) should be gear operated)	No	3			Rs. -
iv	400 mm dia. (Class -PN 1.6 rating) should be gear operated)	No	1			Rs. -
14	Providing and fixing cast iron double flanged single door reflux (non return) valve including jointing and testing with cost of jointing material such as bolts, nuts and rubber insertion all complete as per IS:5312 (Part I) complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	300 mm dia. (Class -PN 1.0 rating)	No	10			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
15	Providing & fixing cast iron double flanged multi door reflux (no return) valves including jointing & testing with cost of jointing material such as bolts, nuts and rubber insertion all complete as per IS:5312 (Part II) complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	400 mm dia. (Class -PN 1.0 rating)	No	1			Rs. -
16	Providing & fixing of Cast iron double flanged sluice valves as per I.S.:14846-2000 fitted with cast iron cap including jointing & testing with cost of jointing material such as bolts, nuts, rubber insertions etc. all complete. (Steel Spindle) complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	100 mm diameter (Pressure rating PN - 1.6)	Each	10.0			Rs. -
ii	150 mm diameter (Pressure rating PN - 1.6)	Each	2.0			Rs. -
iii	200 mm diameter (Pressure rating PN - 1.6)	Each	4.0			Rs. -
iv	250 mm diameter (Pressure rating PN - 1.6)	Each	4.0			Rs. -
v	300 mm diameter (Pressure rating PN - 1.6)	Each	2.0			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
17	Providing & fixing cast iron double air valves, flanged without in-built isolating valve as per IS:14845-2000 including jointing & testing with cost of jointing material and rubber insertion all complete as per IS :13095-1991 complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	100 mm dia PN-1.6	Each	12.0			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
18	Providing and fixing brass GM/ ball valve (full bore type) with plastic coated lever and screwed female ends tested to 20 Kg/ cm ² of approved quality as specified, complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	32 mm dia	No	11			Rs. -
19	Providing & laying Ductile iron Mechanical joint collar with follower glands Conforming to IS-9523/2000 having dimension as per table 24 of IS-9523/2000 in the nominal diameter/ sizes with external bitumen coating and internal cement mortar lining.(laying Conforming to IS 12288 : 1987) complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	100 mm diameter	Each	2			Rs. -
ii	150 mm diameter	Each	4			Rs. -
iii	200 mm diameter	Each	18			Rs. -
iv	250 mm diameter	Each	20			Rs. -
v	300 mm diameter	Each	10			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
vi	400 mm diameter	Each	1			Rs. -
20	Supply of DI Dismantling joint with M.S. Nut stud & washers coated for rust prevention & internal rubber rings etc. complete assembly set as per type design inclusive of all taxes & duties, insurance, loading/unloading & stacking FOR at site complete.					
i	100 mm diameter	Each	2			Rs. -
ii	150 mm diameter	Each	2			Rs. -
iii	200 mm diameter	Each	18			Rs. -
iv	250 mm diameter	Each	20			Rs. -
v	300 mm diameter	Each	10			Rs. -
21	Providing and Laying ductile iron PN-1.6 type flanged spigot Conforming to IS-9523/2000 having dimension as per table 24 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause13 of IS-9523/2000. (laying Conforming to IS12288:					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
i	100 mm diameter	Each	3			Rs. -
ii	150 mm diameter	Each	3			Rs. -
iii	200 mm diameter	Each	20			Rs. -
iv	250 mm diameter	Each	6			Rs. -
v	300 mm diameter	Each	24			Rs. -
22	Providing and Laying ductile iron PN-1.6 type flanged sockets Conforming to IS-9523/2000 having dimension as per table 23 of IS-9523/2000 in the nominal diameter/ sizes with external bitumen coating and internal cement mortar lining with finishing as per clause13 of IS-9523/2000. (laying Conforming to IS12288:1987)					
i	100 mm diameter	Each	3			Rs. -
ii	150 mm diameter	Each	3			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
iii	200 mm diameter	Each	20			Rs. -
iv	250 mm diameter	Each	6			Rs. -
v	300 mm diameter	Each	24			Rs. -
23	Providing, Laying & Jointing of welded double flanged centrifugal cast (spun) ductile Iron pressure pipes Conforming to IS: 8329 /2000 in the length of 1m. for classK-9 with inside cement mortar lining for the sizes /dia. pipes. (laying Conforming to IS 12288 : 1987)					
i	100 mm diameter	Each	7			Rs. -
ii	150 mm diameter	Each	2.00			Rs. -
iii	200 mm diameter	Each	12			Rs. -
iv	250 mm diameter	Each	6			Rs. -
v	300 mm diameter	Each	11			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
24	Earth work in excavation for pipe trench in ordinary soil are as including dressing, watering and ramming and disposal of excavated earth lead up to 50meter sand lift up to 1.5m, disposal earth to be leveled, neatly dressed and complete in all respect as per technical specification and as per direction of Engineer NRDA.	cum	1337.00			Rs. -
25	Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20cm. in depth including consolidation of each layer by ramming watering, lead upto 50m and lift up to 1.5m in all kinds of soils, complete in all respect as per technical specification and as per direction of Engineer NRDA.	cum	1296.00			Rs. -
26	Providing and laying mechanically mixed cement concrete with crushed stone aggregate excluding centering and shuttering (with 40mm nominal size graded stone aggregate) complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	M-10 Grade	Cum	7.80			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
27	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete work including concrete laying, cost of centering, shuttering, finishing and including Admixtures in recommended proportions as per IS9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. M-20 grade design mix reinforced cement concrete by using 405 kg. of cement per cum of concrete. All work upto plinth level excluding the cost of reinforcement, complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	M-20	Cum	37.40			Rs. -
28	Providing and fixing formwork i/c centering shuttering, strutting, staging, propping, bracing etc. complete and i/c removal of formwork, complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	Foundation /footing /column base/ plinth beam of any shape and size up to plinth level	Sqm	56.00			Rs. -
ii	Wall of any thickness including attached pilasters, buttresses etc	Sqm	78.88			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
29	Providing and placing in position reinforcement for R.C.C. work including straightening, cutting, bending, binding etc. complete as per drawings including cost of binding wire in foundation and plinth complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	Thermo-Mechanically treated bars FE 500D	kg	2700.00			Rs. -
30	Providing, laying, Jointing & field testing of High Density Polyethylene pipes, (HDPE) Conforming to IS4984/ 14151/ 12786/ 13488 with jointing material like mechanical connector or jointing pipes by heating to the ends of pipes including necessary specials, fittings and with the help of Teflon coated electric mirror/ heater to the required temperature and then pressing the ends together against each other, to form a monolithic & leak proof joint by thermo setting process. It may be required to be done with Jacks/ Hydraulic Jacks /But fusion machine. (50mm & above fusion jointed & below 50 mm mechanical jointed) and complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	75mm dia.(PE-100) 6 Kg/sq.cm	Rm	100.00			Rs. -
ii	110 mm dia.(PE-100) 6 Kg/sq.cm	Rm	200.00			Rs. -
iii	160 mm dia.(PE-100) 6 Kg/sq.cm	Rm	100.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
iv	200 mm dia.(PE-100) 6 Kg/sq.cm	Rm	100.00			Rs. -
31	Labour for cutting following ductile iron pipes of any type and class.	Per Cut	10.00			Rs. -
32	Dismantling dead pipe line of M.S./R.C.C./D.I./P.S.C.and G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including cost of necessary excavation and refilling of trenches, breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface etc. complete.					
i	100 mm dia.	Each	1			Rs. -
ii	150 mm dia.	Each	1			Rs. -
iii	200 mm dia.	Each	3			Rs. -
iv	250 mm dia.	Each	6			Rs. -
v	300 mm dia.	Each	6			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
vi	400 mm dia.	Each	1			Rs. -
33	Dismantling of existing valve including cost of necessary excavation and refilling of trenches, removing the joints, lifting the valve and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface etc. complete.					
i	100 mm dia.	Each	1			Rs. -
ii	150 mm dia.	Each	1			Rs. -
iii	200 mm dia.	Each	3			Rs. -
iv	250 mm dia.	Each	6			Rs. -
v	300 mm dia.	Each	3			Rs. -
34	Laying, Fixing including Jointing of Cast iron double flanged sluice valves fitted with cast iron cap testing with cost of jointing material such as bolts, nuts, rubber insertions etc. all complete (only valve to be supplied by the department free of cost). [Conform to IS 2685: 1971]					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
i	100 mm dia.	Each	1			Rs. -
ii	150 mm dia.	Each	1			Rs. -
iii	200 mm dia.	Each	3			Rs. -
iv	250 mm dia.	Each	6			Rs. -
v	300 mm dia.	Each	7			Rs. -
vi	400 mm dia.	Each	1			Rs. -
35	Providing and fixing full way gate valves tested to 21.00kg/sq.cm. Conforming to IS 778/1984 (Reaffirmed 2005) Class-II complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	65 mm dia. Screwed type	Each	2.00			Rs. -
ii	80 mm dia. Screwed type	Each	1.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
36	Filling with river sand for pipe bedding or over the pipe including supply complete in all respect as per technical specification and as per direction of Engineer NRDA.	Cum	100.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
37	Construction of RCC valve chamber internal size 1.2m x 1.2m x 2.0m, 100mm thick PCC- M10 and RCC M20 grade 150mm thick wall, precast cover 125mm thick slab on top for protection of valve coming under traffic & extended MS valve operating spindle rod as reqd etc. Including steel reinforcementon 10mm dia. 150mm c/c bothways wall & precast cover, shuttering, labour charges etc. complete in all respect as per technical specification and as per direction of Engineer NRDA.	No	45			Rs. -
38	Providing and fixing flush door shutters, conforming to IS 2202 (Part 1), interior grade, commercial type, core of block board construction with frame of first class hard wood and well matched commercial ply veneering with vertical grains, cross bands and face veneers on both faces of shutters excluding hinges, complete in all respect as per technical specification and as per direction of Engineer NRDA.					
i	40 mm. thick (single leaf)	sqm	30			Rs. -
39	Demolishing R.C.C. work including stacking of steel bars and disposal of unserviceable material within 50 metre lead.	cum	3.00			Rs. -
40	Extra for cutting reinforcement bars in R.C.C. or R.B work. (Crossectional area of RCC/RB work to be measured)	sqm	300			Rs. -
41	Providing pressure grouting at a pressure of 0.56kg./sqcm in required row/zigzag fashion as specified at 1.5M interval as per site conditions to stop leakages through water retaining structures to the entire satisfaction of the Engineer-in-charge including compound/ hardening materials, compressor equipment, scaffolding, smooth finishing, etc. complete	Bag	60			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
	Sub Total of Civil work					Rs. -

Bill of Quantity

Electromechanical and Allied Works for 12 Pump House at various locations and 24 months O&M for 17 Sectors at Naya Raipur

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
C	Electrification works					
	Power supply for Electromechanical system					
1	Fabrication, supply, installation, testing and commissioning of cubicle type compartmentalized wall/ floor mounted control panel board of suitable size made out of not less than 2 mm thick CRCA MS sheet with suitable compartments in three parts for ups, SCADA Equipments and for electrical arrangement like bus bars, switchgears and necessary cutouts for voltmeters, ammeters etc as per specifications including powder coating painting, busbars, switchgears and other accessories etc complete as required	Set	18			Rs. -
a	4 pole Al bar 100 amp					
b	analog type 0-100 amp ammeter of size 100x100 (NS)					
c	analog type 0-500 volt voltmeter of size 100x100 (NS)					
d	selector switch for voltmeter (1no.)					
e	selector switch for ammeter (1no.)					
f	230 volt LED type indicating lamp (3nos.)					
g	4 pole MCCB, 63A, 35KA as in commer					
h	3 Nons 6 amps to 32 amps TP MCB					
i	3 nos 6 amps to 32 amps SP MCB					
2	Fabrication, supply, installation, testing and commissioning of cubicle type compartmentalized wall/ floor mounted control panel board of suitable size and made out of not less than 2 mm thick CRCA MS sheet for mounting of flow transmitter and with suitable space for arrangement of SCADA related equipments in future .	Each	2			Rs. -
3	Supplying and laying following sizes one number XLPE insulated, PVC sheathed, steel armoured, aluminium conductor power cable of 1.1 KV grade in existing RCC/ HUME/ STONEWARE/ METAL pipe as required.					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
a	4X16 sq.mm	meter	1800			Rs. -
b	4x10 sq.mm	meter	1300			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
c	2x4 sq.mm	meter	500			Rs. -
4	Supplying and drawing following sizes of FR PVC insulated copper conductor, single core cable in the existing surface/ concealed, steel/ PVC conduit/ PVC casing capping as required					
a	4 x 1.5 sq. mm	meter	360			Rs. -
5	Supplying, installation, testing and commissioning 2.0 KVA rating three phase in, three phase and single phase out ON-LINE UPS having DC bus voltage 36 Volts including including 6 kV surge protection with SMF (Sealed Maintenance Free) lead acid battery of minimum 1 hr back up ,connection etc as required.	Each	21			Rs. -
6	Supplying and laying double wall HDPE pipe having corrugation on the outer wall and plan surface on inner wall in ground below road, path etc at a depth not less than 40 cm including cavation, dismantling of road if required and refilling the trench etc. as					
	40 mm dia	meter	1800			Rs. -
7	Supplying and fixing of following sizes PVC conduit along with accessories in concealed complete as required					
	25 mm	meter	2850			Rs. -
8	Providing and fixing 4 pole, 415/500 volts following rating (AC-1Duty) power contactor in existing starter/ cubical panel including, connections, testing and commissioning etc. as required					
	10 amps	Each	12			Rs. -
Sub Total of Electrification works						Rs. -

Bill of Quantity

Electromechanical and Allied Works for 12 Pump House at various locations and 24 months O&M for 17 Sectors at Naya Raipur

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D						
1	Supply, installation, testing and commissioning of Multi Jet, dry-dial, inferential type, horizontal, Magetically coupled, class 'B'water meters Conforming to IS-779: 1994 and ISO 4064:1993 standard with EEC/MID certification mark, with IP68 protection class copper can register with 5 mm tempered mineral glass cover, successful Life Cycle Test Certificate from FCRI and AMR compatibility with 5 years warranty complete with brass nuts and nipples.					
i	15MM	Each	10			Rs. -
ii	20MM	Each	10			Rs. -
iii	25MM	Each	10			Rs. -
iv	40MM	Each	10			Rs. -
2	Supply, installation, testing and commissioning of Woltman Type, dry dial, inferential type, Magnetically coupled, class 'B'accuracy water meters in any position with interchangeable mechanism. Confirming to ISO 4064:1993 standard with EEC certification mark, with IP 68 protection class copper can register with 5 mm tempered mineral glass cover, AMR compatibility with 5 years warranty complete and successful accuracy test certificate from FCRI, Palakkad with C.I. Body 'T' Type strainer.					
i	50MM	Each	5			Rs. -
ii	65MM	Each	5			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
iii	80MM	Each	5			Rs. -
3	Supply, installation, testing and commissioning of electromagnetic full bore meter complete as per specification including transportation to site, storage, safety, installation, testing, commissioning, making connections with existing pipe line, including excavation at site, cuts in the existing pipe system, dewatering and reinstating the same after completion of installation as per specification and drawings including all taxes. Accuracy of meter +/- 0.3% - 0.5% of measured value, Flange connection as per AWWA & IS, fully welded sensor housing complying to IP 68 standard, Electrodes SS 316/Hastelloy C, cable gland 1/2" NPT, Sensor housing fully welded SS 304 housing with protective Polyurethane paint/Die Cast Aluminium with anti corrosive grade paint/Carbon Steel ASTM A 105 with corrosion resistant two component epoxy coating (min 150 µm), Flow Transmitter/ Converter: Microprocessor based, modular design display 2 line back lit LCD for indication of actual flow rate, forward, reverse, sumtotalizer, Perfectioover load margin. The torque rating of reduction gear boxes hall be chamber and treated effluent outlet channel etc. complete in all respect as per technical specification and as per					
i	EFM 100 for DN 100mm	Each	1			Rs. -
ii	EFM 150 for DN 150mm	Each	1			Rs. -
4	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :					
a	15 mm nominal bore	Each	10			Rs. -
b	20 mm nominal bore	Each	10			Rs. -
c	25 mm nominal bore	Each	10			Rs. -
5	Providing and fixing brass/ gun metal gate valve with C.I. wheel of approved quality (screwed end):					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
a	32 mm nominal bore	Each	10			Rs. -
b	40 mm nominal bore	Each	10			Rs. -
c	50 mm nominal bore	Each	5			Rs. -
d	65 mm nominal bore	Each	5			Rs. -
e	80mm nominal bore	Each	5			Rs. -
6	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings & specials reducers, tees, bends, coupling, union (typ), adaptor and clamps etc., This included jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge.					
a	15 mm nominal outer dia pipes	metre	60			Rs. -
b	20 mm nominal outer dia pipes	metre	60			Rs. -
c	25 mm nominal outer dia pipes	metre	60			Rs. -
d	32 mm nominal outer dia pipes	metre	60			Rs. -
e	40 mm nominal outer dia pipes	metre	60			Rs. -
f	50 mm nominal outer dia pipes	metre	50			Rs. -
g	62.50 mm nominal inner dia pipes	metre	50			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
h	75 mm nominal inner dia pipes	metre	50			Rs. -
i	100mm nominal inner dia pipes	metre	50			Rs. -
7	Providing and Supplying of Saddle Piece, duly tested from certified agencies for usage in Drinking water inclusive of all materials, Central, State and Municipal taxes and duties inspection charges, transit insurance, loading/ unloading FOR site unloading & stacking etc. complete as per direction of Engineer-in-Charge.					
a	50mm x15mm	Each	10			Rs. -
b	65mm x15mm	Each	10			Rs. -
c	75/80mm x15mm	Each	10			Rs. -
d	100/110mm x15mm	Each	10			Rs. -
e	50mm x20mm	Each	10			Rs. -
f	65mm x20mm	Each	10			Rs. -
g	75/80mm x20mm	Each	10			Rs. -
h	100/110mm x20mm	Each	10			Rs. -
i	50mm x25mm	Each	10			Rs. -
j	65mm x25mm	Each	10			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
k	75/80mm x25mm	Each	10			Rs. -
l	100/110mm x25mm	Each	10			Rs. -
m	75mm x 32mm	Each	10			Rs. -
n	90mm x 32mm	Each	10			Rs. -
o	100/110mm x 32mm	Each	10			Rs. -
p	150/160mm x 32mm	Each	10			Rs. -
8	Providing and fixing GM or brass ferrules Conforming to IS-2692/1984 (Reaffirmed 2005), tested to 21.00kg/sq.cm.i/c boring and tapping the main (Screwed type)					
a	15mm	Each	10			Rs. -
b	20mm	Each	10			Rs. -
c	25mm	Each	10			Rs. -
d	32mm	Each	10			Rs. -
e	40mm	Each	10			Rs. -
f	50mm	Each	5			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
9	Constructing masonry Chamber 60x60x75 cm, inside with modular well burnt clay bricks of 35 kg/ cm ² in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100mm. top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design.	Each	45			Rs. -
10	Constructing masonry Chamber 90x90x100 cm, inside with modular well burnt clay bricks of 35 kg/ cm ² in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100 mm. top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design :	Each	12			Rs. -
11	Providing and Supplying of following Open well submersible Pump set with ISI mark IS14220 (horizontal) without panel board, duly tested from certified agencies for usage in Drinking water inclusive of all materials, Central, State and Municipal taxes and duties inspection charges, transit insurance, loading/unloading FOR site unloading & stacking etc. complete as per direction of Engineer-in-Charge.					
a	Submersible pump 150mm dia. (with Bronze Impeller)up to 12 stages 20 HP, 1250 LPM at a head of 40 metres,	Each	8			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
12	Supplying and laying following sizes one number PVC insulated, PVC sheathed, steel armoured, aluminium conductor power cable of 1.1 KV grade direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.					
a	4 x 16 sq. mm.	Meter	200			Rs. -
13	Supply, installation, testing and commissioning of cubicle type wall/ floor mounted power cum control panel made out of not less than 1.6 mm thick MS sheet and comprising of following panel mounting switchgears there in including connection inter-connection etc. as required. a) Phase indicating lamps with fuses and toggle switches 1 set b) Star-delta starter suitable for 7.5 HP 3 phase AC induction motor with over load and no volt relay c) 32 A "C" series TPMCB 1 No d) Voltmeter 0-500 V with selector switch 1 set e) Ammeter 0-10 A with CT's and selector switch 1 set.	Set	4			Rs. -
14	Supplying and installing pressure gauge of 100 mm Ø., 0-300 PSI or 0-21 kg per cm square fitted with 12/15 mm Ø. pad cock valve, and G.I. pipe, elbow etc. as per requirement in approved manner.	set	4			Rs. -
15	Supply, erection, jointing, testing & commissioning of "C" Class MS pipes (as per IS: 1239) including necessary specials such as tees, bends, flanges reducers etc., complete on wall/ ceiling. The pipes to be erected on wall or suspended from beams, RCC roof slabs with suitable size MS bars/ angle irons including painting of metal part except pipe line.					
a	80mm dia.	Rm.	200			Rs. -
16	Painting for M.S. pipe with a coat of red oxide primer and two or more coats of synthetic enamel paint of approved colour and Quality to give an even shade including surface preparation.					
a	80mm dia.	Rm.	200			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
17	Providing and fixing following cast iron double flanged single door reflux (non return) valve including jointing and testing with cost of jointing material such as bolts, nuts and rubber insertion all complete as per IS:5312 9 (Part I)					
a	80 mm dia. (Class -PN 1.0 rating)	Nos	4			Rs. -
18	Providing, laying and jointing following UPVC pipes with solvent cement joint for 10kg/sq.cm. Pressures including testing of joints, cost of jointing materials etc. complete in all respect. [Conform to IS4985:2000 and IS 7634 (PT-3) . The work is inclusive of all specials other accessories all complete.					
a	50mm dia.	Rmt.	100			Rs. -
b	63mm dia.	Rmt.	100			Rs. -
c	75mm dia.	Rmt.	100			Rs. -
d	90mm dia.	Rmt.	50			Rs. -
e	110mm dia.	Rmt.	49			Rs. -
f	140 mm dia.	Rmt.	50			Rs. -
g	160 mm dia.	Rmt.	50			Rs. -
	Sub Total of Service Connection Works					Rs. -