



NAYA RAIPUR DEVELOPMENT AUTHORITY

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

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

(Following Three-Envelope Tender Procedure)

TENDER DOCUMENT (PART ONE)

NIT No. : 140 /EMPH/EE-PHE/SE(E)/CE(E) /NRDA/2016-17,Naya Raipur

Dated: 30.11.2016

Issued by: Chief Executive Officer,
Naya Raipur Development Authority (NRDA)
Paryavas Bhawan, North Block Sector- 19,
Naya Raipur- 492 002, Chhattisgarh
Tel No: + 91 771 2512500; Fax No.: +91 771 2512400.
Website: www.nayarapur.gov.in

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
 (vii) Return of EMD
 (viii) Integrity Pact

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:// nayaipur.gov.in/documents/gcc.pdf](http://nayaipur.gov.in/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. Sketch of cement Godown
8. 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
9. 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”.

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			
Sr. no.	Component of Work	Amount in INR	Amount in Words (In INR)
A	Electromechanical works	Rs. -	
B	Civil Works	Rs. -	
C	Electrical Works	Rs. -	
D	Service connections	Rs. -	
i)	SUB TOTAL (A+B+C+D)	Rs. -	
Operation and Maintenance			
E	Total for 2 years of Operation, Maintenance and successful defect liability period		
ii)	TOTAL AMOUNT (A+B+C+D+E) (INR)	Rs. -	

It is estimated that the cost of O&M works i.e. E above shall be approximately 25% of the value of works (i.e. (i)Sub total of A+B+C+D))

Therefore, If the bidder quotes for two years Operation and Maintenance(E), an amount which is less than 25% of the Value of Works,(i.e.(i) Sub Total of A+B+C+D), additional Bank Guarantee shall be required to be submitted by the lowest bidder in addition to the Performance Bank Guarantee as per the relevant clause of the contract.

The amount of additional Bank Guarantee shall be equal to the difference [i.e 25% of (i) - (E)]

Contractor's bid price as quoted for two years O&M = Y shall be bifurcated in two years as mentioned below:

Payment during the first year of O & M period: = 40% of Y = Y1

Payment during the second year of O & M period: = 60% of Y = Y2

Amounts Y1 and Y2 shall be further subdivided in 4 instalments for working out quarterly payment.

Payment shall be made on successful completion of that quarter.

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					
	<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, IE2/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 IE2/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.</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-IE2/IE3					
	Insulation class-F					
	Enclosure class-IP 54/IP 55					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
A	Electromechanical works					
1	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.					
	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.					
Suction & Delivery Manifolds - Hot Dip Galvanised Iron						

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
A	Electromechanical works					
	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.					
	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. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
A	Electromechanical works					
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 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. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
A	Electromechanical works					
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.					
i	300 ltr. Pressure tank with One year warrenty	No	11			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 ODN, 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.
A	Electromechanical works					
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	7			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.
A	Electromechanical works					
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. -
	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	14.00			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	12.00			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					
i	Plain grill	Kg.	1,000.00			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.					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
a	Fabricating pipes from steel plates (all thickness)					
i	5 to 8 mm	M.T	3.32			Rs. -
5	Providing and Supplying 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	325.00			Rs. -
ii	Dia. of pipe 273.1 mm (O.D) Thickness of pipe 7.80 mm	Rm	360.00			Rs. -
ii	Dia. of pipe 323.9 mm (O.D) Thickness of pipe 7.90 mm	Rm	260.00			Rs. -
6	Labour Only for lowering & laying of M.S. Pipes on pedestals or chairs upon prepared formation including all site arrangements complete.					
a	5 mm to 8.2 mm thick.					
i	Up to 250 mm. dia.	Rm	325.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
ii	Above 250 mm.Upto 500 mm. dia.	Rm	620.00			Rs. -
7	Supply, erection, jointing, testing & commissioning of "C" 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	46.00			Rs. -
8	Supplying, installation, testing and commissioning of Dirt Box with S.S. Strainer as per specifications					
i	200 mm dia.	Each	11.00			Rs. -
9	Providing & Supplying D.I. Specials & Fittings For all types of specials, bends, tees.. etc.					
i	80mm to 300 mm dia	Kg.	1,500.00			Rs. -
10	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.					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
i	200mm dia	Each	36.00			Rs. -
11	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. -
12	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.
B	Civil works					
13	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	8.00			Rs. -
ii	250 mm dia. (Class -PN 1.6 rating)	No	3.00			Rs. -
iii	300 mm dia. (Class -PN 1.6 rating)	No	3.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
14	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	11.00			Rs. -
ii	250 mm dia. (Class -PN 1.6 rating) should be gear operated)	No	6.00			Rs. -
iii	300 mm dia. (Class -PN 1.6 rating) should be gear operated)	No	3.00			Rs. -
iv	400 mm dia. (Class -PN 1.6 rating) should be gear operated)	No	1.00			Rs. -
15	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	10.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
16	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	1.00			Rs. -
17	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	10.00			Rs. -
ii	150 mm diameter (Pressure rating PN - 1.6)	Each	2.00			Rs. -
iii	200 mm diameter (Pressure rating PN - 1.6)	Each	4.00			Rs. -
iv	250 mm diameter (Pressure rating PN - 1.6)	Each	4.00			Rs. -
v	300 mm diameter (Pressure rating PN - 1.6)	Each	2.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
18	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	12.00			Rs. -
19	Providing and fixing brass GM/ ball valve (full bore type) with plastic coated lever and screwed female ends tested to 20 Kg/ cm2 of approved quality as specified, complete in all respect as per technical specification and as per direction of Engineer NRDA.					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
i	32 mm dia	No	11.00			Rs. -
20	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	2.00			Rs. -
ii	150 mm diameter	Each	4.00			Rs. -
iii	200 mm diameter	Each	18.00			Rs. -
iv	250 mm diameter	Each	20.00			Rs. -
v	300 mm diameter	Each	10.00			Rs. -
vi	400 mm diameter	Each	1.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
21	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	2.00			Rs. -
ii	150 mm diameter	Each	2.00			Rs. -
iii	200 mm diameter	Each	18.00			Rs. -
iv	250 mm diameter	Each	20.00			Rs. -
v	300 mm diameter	Each	10.00			Rs. -
22	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:					
i	100 mm diameter	Each	3.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
ii	150 mm diameter	Each	3.00			Rs. -
iii	200 mm diameter	Each	20.00			Rs. -
iv	250 mm diameter	Each	6.00			Rs. -
v	300 mm diameter	Each	24.00			Rs. -
23	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	3.00			Rs. -
ii	150 mm diameter	Each	3.00			Rs. -
iii	200 mm diameter	Each	20.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
iv	250 mm diameter	Each	6.00			Rs. -
v	300 mm diameter	Each	24.00			Rs. -
24	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	6.50			Rs. -
ii	150 mm diameter	Each	2.00			Rs. -
iii	200 mm diameter	Each	12.00			Rs. -
iv	250 mm diameter	Each	6.00			Rs. -
v	300 mm diameter	Each	11.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
25	Earth work in excavation for pipe trench in all type soil areas including dressing, watering and ramming and disposal of excavated earth with all lead and lift, disposal earth to be leveled, neatly dressed including clearing of vegetation, shoring, strutting, de-watering, bailing of water met due to all causes including lowering of water table required to keep the trench in the dry condition to facilitate for laying, jointing and testing of works and backfilling with approved materia, all complete as per technical Specifications and as per direction of Engineer.					
i	upto 1.5 m deep	Cum	1,234.50			Rs. -
26	Extra for every additional lift of 1.5m or part there of					
i	All Kind of soil (over item no. 25)	cum	630.00			Rs. -
27	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	1,296.00			Rs. -
28	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.
B	Civil works					
29	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. -
30	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. -
31	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.					

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
i	Thermo-Mechanically treated bars FE 500D	kg	2,700.00			Rs. -
32	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. -
iv	200 mm dia.(PE-100) 6 Kg/sq.cm	Rm	100.00			Rs. -
33	Labour for cutting following ductile iron pipes of any type and class.	Per Cut	10.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
34	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	1.00			Rs. -
ii	150 mm dia.	Each	1.00			Rs. -
iii	200 mm dia.	Each	3.00			Rs. -
iv	250 mm dia.	Each	6.00			Rs. -
v	300 mm dia.	Each	6.00			Rs. -
vi	400 mm dia.	Each	1.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
35	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	1.00			Rs. -
ii	150 mm dia.	Each	1.00			Rs. -
iii	200 mm dia.	Each	3.00			Rs. -
iv	250 mm dia.	Each	6.00			Rs. -
v	300 mm dia.	Each	3.00			Rs. -
36	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]					
i	100 mm dia.	Each	1.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
ii	150 mm dia.	Each	1.00			Rs. -
iii	200 mm dia.	Each	3.00			Rs. -
iv	250 mm dia.	Each	6.00			Rs. -
v	300 mm dia.	Each	7.00			Rs. -
vi	400 mm dia.	Each	1.00			Rs. -
37	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.
B	Civil works					
38	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. -
39	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 reinforcement 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	45.00			Rs. -
40	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	30.00			Rs. -
41	Demolishing R.C.C. work including stacking of steel bars and disposal of unserviceable material within 50 metre lead.	cum	1.00			Rs. -
42	Extra for cutting reinforcement bars in R.C.C. or R.B work. (Crosssectional area of RCC/RB work to be measured)	sqm	100.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
B	Civil works					
43	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	60.00			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 arrgment 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	18.00			Rs. -
a	4 pole AI bar 100 amp					
b	analog type 0-100 amp ammeter of size 100x100 (NS) (1no.)					
c	analog type 0-500 volt voltmeter of size 100x100 (NS) (1no.)					
d	selector switch fro voltmeter (1no.)					
e	selector switch fro 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 transmmitter and with suitable space for arragment of SCADA related equipments in future .	Each	2.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
C	Electrification works					
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.					
a	4X16 sq.mm	meter	1,800.00			Rs. -
b	4x10 sq.mm	meter	1,300.00			Rs. -
c	2x4 sq.mm	meter	500.00			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	360.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
C	Electrification works					
5	Supplying, installation, testing and commissioning 1000VA rating single phase Line - Interactive with Microprocessor Controlled Design UPS as per specification .	Each	21.00			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 excavation,dismantling of road if required and refilling the trench etc. as					
a	40 mm dia	meter	1,800.00			Rs. -
7	Supplying and fixing of following sizes PVC conduit along with accessories in concealed complete as required					
a	25 mm	meter	2,850.00			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					
a	10 amps	Each	12.00			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	Service Connections					
1	Supply, installation, testing and commissioning of Multi Jet, dry-dial, inferential type, horizontal, Magentically 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	40.00			Rs. -
ii	20MM	Each	25.00			Rs. -
iii	25MM	Each	10.00			Rs. -
iv	40MM	Each	10.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
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	5.00			Rs. -
ii	65MM	Each	5.00			Rs. -
iii	80MM	Each	5.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
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, Perfectioalve for automatic operation of valve at specified levels, and as per direction of Engineer in Charge. 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 100 for DN 100mm	Each	1.00			Rs. -
ii	EFM 150 for DN 150mm	Each	1.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
4	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :					
a	15 mm nominal bore	Each	30.00			Rs. -
b	20 mm nominal bore	Each	30.00			Rs. -
c	25 mm nominal bore	Each	10.00			Rs. -
5	Providing and fixing brass/ gun metal gate valve with C.I. wheel of approved quality (screwed end):					
a	32 mm nominal bore	Each	10.00			Rs. -
b	40 mm nominal bore	Each	10.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
c	50 mm nominal bore	Each	5.00			Rs. -
d	65 mm nominal bore	Each	5.00			Rs. -
e	80mm nominal bore	Each	5.00			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	180.00			Rs. -
b	20 mm nominal outer dia pipes	metre	150.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
c	25 mm nominal outer dia pipes	metre	60.00			Rs. -
d	32 mm nominal outer dia pipes	metre	60.00			Rs. -
e	40 mm nominal outer dia pipes	metre	60.00			Rs. -
f	50 mm nominal outer dia pipes	metre	50.00			Rs. -
g	62.50 mm nominal inner dia pipes	metre	50.00			Rs. -
h	75 mm nominal inner dia pipes	metre	50.00			Rs. -
i	100mm nominal inner dia pipes	metre	50.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
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	10.00			Rs. -
b	65mm x15mm	Each	10.00			Rs. -
c	75/80mm x15mm	Each	10.00			Rs. -
d	100/110mm x15mm	Each	10.00			Rs. -
e	50mm x20mm	Each	10.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
f	65mm x20mm	Each	10.00			Rs. -
g	75/80mm x20mm	Each	10.00			Rs. -
h	100/110mm x20mm	Each	10.00			Rs. -
i	50mm x25mm	Each	10.00			Rs. -
j	65mm x25mm	Each	10.00			Rs. -
k	75/80mm x25mm	Each	10.00			Rs. -
l	100/110mm x25mm	Each	10.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
m	75mm x 32mm	Each	10.00			Rs. -
n	90mm x 32mm	Each	10.00			Rs. -
o	100/110mm x 32mm	Each	10.00			Rs. -
p	150/160mm x 32mm	Each	10.00			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	10.00			Rs. -
b	20mm	Each	10.00			Rs. -

Signature of Contractor.....

Signature of NRDA.....

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
c	25mm	Each	10.00			Rs. -
d	32mm	Each	10.00			Rs. -
e	40mm	Each	10.00			Rs. -
f	50mm	Each	5.00			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	90.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
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	12.00			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.					
	Submersible pump 150mm dia. (with Bronze Impeller)up to 12 stages					
a	20 HP, 1250 LPM at a head of 40 metres,	Each	8.00			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	200.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
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	4.00			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	4.00			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.	200.00			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.	200.00			Rs. -

Sr. No.	Description of Item	Unit	Quantity	Rate in INR	Rate in words	Amount in Rs.
D	Service Connections					
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	4.00			Rs. -
	Sub Total of Service Connection Works					Rs. -