

PROJECT : GODAVARI RIVERFRONT DEVELOPMENT AT NANDED**SUBHEAD 17 : SANITARY PLUMBING INSTALLATION****SUMMARY**

SH. NO.	DESCRIPTION	AMOUNT	
		Schedule Items (DSR 2002)	Non-Schedule Items
1.00	SANITARY FIXTURES & TOILET REQUISITES	33,545.00	639,300.00
2.00	SOIL, WASTE & VENT AND RAIN WATER PIPEWORK	247,882.00	67,505.00
3.00	WATER SUPPLY	655,494.00	1,723,750.00
4.00	SEWERAGE	561,137.00	540,000.00
5.00	PUMPING SYSTEM	-	125,000.00
	TOTAL	1,498,058.00	125,000.00
	Add Cost Index 42.17%	631,731.00	
	TOTAL	2,129,789.00	125,000.00
	GRAND TOTAL	2,254,789.00	

PROJECT : GODAVARI RIVERFRONT DEVELOPMENT AT NANDED

SUBHEAD 17 : SANITARY PLUMBING INSTALLATION

ESTIMATE (Revised)

29.01.2007

Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
1.00	SANITARY FIXTURES & TOILET REQUISITES					CPWD
	Schedule Items (DSR 2002)					DSR-2002
						Item No-
1.01	Providing and fixing wash basin with C.I/M.S brackets, 15 mm C.P brass pillar tap, Kinston/Gem/Techno/ Parko, 32 mm C.P brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require: a) Flat back wash basin size 550 X 400 mm with single 15mm C.P brass pillar tap	14.00	each	770.10	10,781.00	19.7.4
1.02	Providing and fixing PTMT 15 mm Urinal spreader size 95X69X100 mm with 1/2" BSP thread and shapes as per BIS specifications, weighing not less than 60gms(Prayag or equivalent)	48.00	each	104.80	5,030.00	19.106
1.03	Providing and fixing PTMT (An Engineering thermoplastic) bib cock of approved quality colour and make (Prayag or equivalent) a) 15 mm nominal size, 122 mm long, 110 mm high and 43 mm wide with 12 mm seat dia. And replaceable washers, weighing not less than 105 gms.					20.96
		82.00	each	116.80	9,578.00	20.96.2
	b) 5 mm nominal size, 175 mm long, 110 mm high and 43 mm wide with 12 mm seat dia. and replaceable washers, weighing not less than 120 gms.					
		34.00	each	139.05	4,728.00	20.96.3
1.04	15 mm nominal size with 20mm B.S.P. female threads, 100 mm long, 57 mm high and 33 mm wide with 12 mm seat dia. And replaceable washers, weighing not less than 75 gms.	40.00	each	85.70	3,428.00	20.99.1
TOTAL for Schedule Items for "Sanitary Fixtures and Toilet Requisites" carried over to SUMMARY					Rs.	33,545.00

Non-Schedule Items

1.06	Providing and fixing stainless steel (Grade-AISI-304) Indian type water closet with C.I 'P' trap without cistern, including encasing the W. C. with cement concrete, cutting and making good the walls and floors wherever required, complete in all respects for operation and usage, of following make and type: Details of WC : Make : JAYNA Model : NEPTUNE Size : 724x578 mm Cat. No. : LP2	46.00	each	6500.00	299,000.00	Market Rate
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Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
1.07	Providing and fixing floor mounted vitreous china water closet (European type W.C.) with 'P/S' trap without cistern, including cutting and making good the walls and floors wherever required, complete in all respects for operation and usage, of following make and type: Details of WC : Make : PARRYWARE Cat. No. : 0225	14.00		3500.00	49,000.00	Market Rate
1.08	Providing and fixing self closing type concealed W C flush valve comprising of brass housing built in stop valve, water flow adjustment system, permanently lubricated/ self lubricating internal parts, C.P finish metallic push button plate complete with all other fittings to make it operational including making connection of outlet pipe with W.C pan using rubber washer { cost of flush pipe from outlet of flush valve to inlet of W.C pan is to be paid seperately} and cutting & making good the walls as required, of the following make and model:(or equal approved) a) 32/40 mm dia inlet and 32 mm dia inlet Make : JAQUAR Model : Metropole Colour : Chrome	88.00	each	3000.00	264,000.00	Market Rate
1.09	Providing and fixing of 15 mm dia brass angle valve (inlet fitting ball valve type) having strainer screen complete with wall flange of following make and model:(or equal approved) Make : ARCO, Spain Colour/Finish : Chrome	14.00	No.	350.00	4,900.00	Market Rate
1.10	Providing and fixing of 15 mm dia, 450 mm long flexible connection pipe having EPDM rubber internal core and stainless steel braided outer sheath complete with C.P brass end nuts, of approved make.	14.00	No.	100.00	1,400.00	Market Rate
1.11	Providing and fixing Engineering plastic pneumatically controlled remotely located cistern with proper fixing arrangement ('Make : COMMANDER) a) Capacity :10 Litres	14.00	No.	1500.00	21,000.00	Market Rate
TOTAL for Non-Schedule Items for "Sanitary Fixtures and Toilet Requisites" carried over to SUMMARY				Rs.	639,300.00	
2.00	SOIL, WASTE & VENT AND RAIN WATER PIPEWORK Schedule Items (DSR 2002)					
2.01	Providing and fixing soil, waste & vent pipes : a) 100 mm dia. i) Centrifugally cast (spun) iron S & S pipe	600.00	Metre	361.45	216,870.00	19.48.1.2

Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
2.02	Providing and fixing M.S. holder-bat clamps of approved design to Sand Cast iron / centrifugally cast iron (spun) pipe embedded in and including cement concrete blocks 10x10x10 cm of 1 : 2 : 4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of cutting holes and making good the walls etc. a) 100 mm dia pipe	28.00	Each	44.35	1,242.00	19.49.1
2.03	Providing and fixing bend of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete a) 100 mm dia. i) Centrifugally cast (spun) iron S & S	7.00	Each	171.80	1,203.00	19.50.1.2
2.04	Providing and fixing plain bend of required degree. a) 100 mm dia. i) Centrifugally cast (spun) iron S & S	14.00	Each	120.70	1,690.00	19.51.1.2
2.05	Providing and fixing heel rest sanitary bends a) 100 mm dia. i) Centrifugally cast (spun) iron S & S	14.00	Each	167.35	2,343.00	19.52.1.2
2.06	Providing and fixing terminal guard a) 100 mm i) Centrifugally cast (spun) iron S & S	14.00	Each	112.90	1,581.00	19.67.1.2
2.07	Providing lead caulked joints to sand cast iron / centrifugally cast (spun) iron pipes and fittings of diameter. a) 100 mm	275.00	Each	78.45	21,574.00	19.70.1
2.08	Providing and fixing M.S. stays and clamps for sand cast iron / centrifugally cast (spun) iron pipes of diameter. a) 100 mm	14.00	Each	30.70	430.00	19.71.1
2.09	Painting sand cast iron / centrifugally cast (spun) iron soil, waste vent pipes and fittings with paint of any colour such as chocolate, grey, or buff etc. over a coat of primer (of approved quality) for new work : a) 100 mm diameter pipe	75.00	Metre	12.65	949.00	19.96.2
TOTAL for Schedule Items for "Soil, Waste & Vent and Rain Water Pipework" carried over to SUMMARY					Rs. 247,882.00	
Non-Schedule Items						
2.10	Providing & fixing UPVC soil, waste, vent pipework comprising UPVC pipe conforming to IS :4985-1983 and of required class as specified below and fittings (moulded as well as fabricated) like elbows, bends, reducers, threaded tail pieces, caps and other specials. jointing with cement solvent, chasing, cutting and making good the walls, complete in all respects including testing of complete installation. a) 40 mm dia 6 kg/cm ² (Class III) b) 50 mm dia 6 kg/cm ² (Class III)	90.00	M	120.00	10,800.00	Market Rate
		110.00	M	145.00	15,950.00	Market Rate

Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
2.11	Providing and fixing of floor traps formed of Cast Iron 'P' traps complete, including cost of cutting and making good the walls and floors wherever required.					
	a) 100 mm inlet and 100 mm outlet	39.00	No.	450.00	17,550.00	Market Rate
2.12	Providing and fixing PVC floor trap EXTENTION PIECE formed out of 110 mm pipe with multiple side inlets formed with saddle pieces, suitable for 40, 50 and 63 mm dia side connections as per standard detail.					
		39.00	Each	245.00	9,555.00	Market Rate
2.13	Providing and fixing 125 mm dia round stainless steel grating embedded in floor, all complete.					
		39.00	No.	150.00	5,850.00	Market Rate
2.14	Providing and fixing floor drain points formed out of 40 mm dia elbow with suitable extension piece, fitted with 80 mm dia stainless steel grating and frame, embedded in floor, all complete					
		39.00	No.	200.00	7,800.00	Market Rate
TOTAL for Non-Schedule Items for "Soil, Waste & Vent and Rain Water Pipework" carried over to SUMMARY						
				Rs.	67,505.00	
3.00	WATER SUPPLY					
	Schedule Items (DSR 2002)					
3.01	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, including cutting and making good the walls etc. (internal work) :					
	Exposed on wall					
	a) 32 mm nominal bore	90.00	Metre	123.80	11,142.00	20.2.1.4
	b) 40 mm nominal bore	80.00	Metre	144.40	11,552.00	20.2.1.5
	c) 50 mm nominal bore	80.00	Metre	203.00	16,240.00	20.2.1.6
	c) 50 mm nominal bore For Steps and Ghats	1350.00	Metre	203.00	274,050.00	20.2.1.6
	d) 65 mm nominal bore	175.00	Metre	247.00	43,225.00	NS
	e) 80 mm nominal bore	180.00	Metre	341.00	61,380.00	NS
3.02	Concealed pipe including painting with anti corrosive bitumastic paint, cutting chases and making good the wall.					
	a) 15 mm dia nominal bore	300.00	Metre	88.35	26,505.00	20.2.2.1
	b) 20 mm dia nominal bore	120.00	Metre	102.40	12,288.00	20.2.2.2
	c) 25 mm dia nominal bore	310.00	Metre	115.00	35,650.00	NS
	d) 32 mm dia nominal bore	150.00	Metre	132.00	19,800.00	NS
	e) 40 mm dia nominal bore	100.00	Metre	140.00	14,000.00	NS
	f) 50 mm dia nominal bore	100.00	Metre	195.00	19,500.00	NS
3.03	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc. (external work) :					
	a) 65 mm nominal bore	250.00	Metre	195.25	48,813.00	20.3.7
	b) 80 mm nominal bore	110.00	Metre	270.15	29,717.00	20.3.8
3.04	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including cutting and threading the pipe etc. complete					
	a) 50 to 80 mm nominal bore	27.00	Each	286.35	7,731.00	20.4.2

Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
3.05	Painting G.I. pipes and fittings with synthetic enamel white paint over a ready mixed priming coat, both of approved quality for new work :					
	a) 32 mm diameter pipe	25.00	Metre	5.85	146.00	20.76.4
	b) 40 mm diameter pipe	45.00	Metre	6.90	311.00	20.76.5
	c) 50 mm diameter pipe	45.00	Metre	8.15	367.00	20.76.6
	d) 65 mm nominal bore	125.00	Metre	11.00	1,375.00	NS
	e) 80 mm nominal bore	50.00	Metre	15.00	750.00	NS
3.06	Painting G.I. pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality.					
	a) 65 mm diameter pipe	250.00	Metre	5.10	1,275.00	20.78.7
	b) 80 mm diameter pipe	110.00	Metre	5.95	655.00	20.78.8
3.07	Providing and filling sand of grading zone V or coarser grade around the G.I. pipes in external work :					
	a) 65 mm diameter pipe	250.00	Metre	27.50	6,875.00	20.79.7
	b) 80 mm diameter pipe	110.00	Metre	28.35	3,119.00	20.79.8
3.08	Providing and fixing G.I. union in G.I. pipe including cutting and threading the pipe and making long screws etc. complete (new work).					
	a) 32 mm nominal bore	7.00	Each	85.20	596.00	20.87.4
	b) 65 mm diameter pipe	20.00	Each	286.20	5,724.00	20.87.7
	c) 80 mm diameter pipe	8.00	Each	338.45	2,708.00	20.87.8
TOTAL for Schedule Items for "Water Supply" carried over to						
SUMMARY				Rs.	655,494.00	

Non-Schedule Items

3.09 Providing, Laying, Jointing and Testing of HDPE Pipes and Fittings. (For External Water Supply)

The work shall be done as per specifications and in general shall include:

a) Providing HDPE pipes (of PE 80 grade) in coil form. The pipes shall have a working pressure of PN 10.

b) Providing fabricated and moulded fittings of same or higher grade and upto 63 mm OD shall be rated PN 16 and 75 mm OD and above shall be rated for PN 10.

Providing, laying and fixing HDPE compression type fittings (as required, adaptor fittings, saddles, etc. including jointing, testing etc. all complete. The compression fittings upto 63 mm OD shall be rated PN 16 and 75 mm OD and above shall be rated for PN 10.

c) Laying in position in existing excavated trenches.

d) Jointing by heat fusion technique.

e) Encasing the laid pipe with river sand of grading zone V or coarser, 150 mm all around.

f) Providing and laying LDPE/PVC warning tape (in florescent colour) of size 25 mm wide and 50 micron thick. The warning tape shall be laid 150 mm above the pipe crown.

Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
	Note: Excavation of trenches and refilling is to be paid seperately.					
	a) 160 mm dia. (PN 10)	650.00	Metre	750.00	487,500.00	Market Rate
	b) 110 mm dia. (PN 10)	600.00	Metre	620.00	372,000.00	Market Rate
	c) 90 mm dia. (PN 10)	20.00	Metre	450.00	9,000.00	Market Rate
	d) 75 mm dia. (PN 10)	20.00	Metre	320.00	6,400.00	Market Rate
	e) 32 mm dia. (PN 10)	1800.00	Metre	120.00	216,000.00	Market Rate
3.10	Providing and laying in position cement concrete of specified grade including of centring and shuttering. (For thrust blocks, as per standard detail)					
	1:2:4 (1 cement : 2 coarse sand : 3 graded stone aggregate 20 mm nominal size)	150.00	Cum.	2200.00	330,000.00	Market Rate
2.11	Providing and installing HDPE Valve Boxes with screw down type covers, of following sizes and shape, including excavation and filling of pea gravel in 100 mm deep layer at bottoms, all as per standared detail (for QRCV, Ball Valves, Butterfly Valves, Flush points etc.)					
	a) 150 mm dia- Circular	40.00	Each	750.00	30,000.00	Market Rate
	b) 225 mm dia - Circular	5.00	Each	1200.00	6,000.00	Market Rate
	c) 375X300 mm - Rectangular	14.00	Each	2200.00	30,800.00	Market Rate
3.08	Providing, installing and commissioning 20 mm dia inlet Quick Release Coupling Valve of engineering plastic, having spring loaded ball valve mechanism, opening key, lid, all complete including making connections with main supply line.					
		40.00	Each	750.00	30,000.00	Market Rate
3.12	Excavating trenches and refilling including surrounding with sand 150 mm all around of required width for HDPE pipes. including excavation for sockets and dressing of sides, ramming of bottoms, depth upto 0.60 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering etc. and disposal of surplus excavated soil as directed within a lead of 50 M :					
	a) Upto 63 mm dia.	2090.00	M	70.00	146,300.00	Market Rate
3.13	Providing and fixing of nickel plated brass/ nonferrous alloy fullyway ball valve (minimum working pressure of 20 bar) with operating handle of approved make.					
	a) 32 mm dia	7.00	Each	650.00	4,550.00	Market Rate
3.14	Providing and fixing Cast Iron butterfly valve as per IS: 13095 of Class PN 10 , having epoxy coated disc, carbon steel shaft, EPDM / nitrile rubber field replacible body lining and of approved make. including a set of MS flanges, required nos. of nut & bolts all complete.					
	a) 150 mm dia (with lever)	3.00	No.	4800.00	14,400.00	Market Rate
	a) 80 mm dia (with lever)	4.00	No.	3200.00	12,800.00	Market Rate
	b) 65 mm dia (with lever)	10.00	No.	2800.00	28,000.00	Market Rate

Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
TOTAL for Non-Schedule Items for "Water Supply" carried over to				SUMMARY	Rs. 1,723,750.00	

4.00 SEWERAGE

Schedule Items (DSR 2002)

4.01	Providing, laying and jointing glazed stoneware pipes grade 'A' with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete.					
	a) 100 mm diameter	135.00	Metre	77.65	10,483.00	21.1.1
	b) 150 mm diameter	225.00	Metre	111.60	25,110.00	21.1.2
4.02	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) around S.W./ C.I./ R.C.C pipes including bed concrete as per standard design :					
	a) 100 mm diameter S.W. pipe	135.00	Metre	190.80	25,758.00	21.2.1
	b) 150 mm diameter S.W. pipe	225.00	Metre	233.35	52,504.00	21.2.2
4.03	Constructing brick masonry manhole with 75 class designation bricks in cement mortar 1 : 4 (1 cement : 4 coarse sand) R.C.C. top slab with 1 : 2 : 4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1 : 4 : 8 mix (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size) inside plastering 12 mm thick with cement mortar 1 : 3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1 : 2 : 4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat cement complete as per standard design :					
	a) Inside size 90 x 80 cm and 60 cm deep including C.I. Cover and frame (light duty) 455x610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg)					
	i) With F.P.S bricks with class designation 75	120.00	Each	2998.40	359,808.00	21.11.2.2
4.04	Extra for depth for manholes.					
	a) Size 90x80 cm					
	i) With F.P.S bricks with class designation 75	3.50	Metre	1702.15	5,958.00	20.12.1.2

Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
4.05	Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56 m dia at top with 75 class designation F.P.S. bricks in cement mortar 1 : 4 (1 cement : 5 coarse sand) inside cement plaster 12 mm thick with cement mortar 1 : 3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1 : 3 : 6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1 : 2 : 4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement all complete as per standard design : a) 0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to IS 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse : 4 graded stone aggregate 20 mm nominal size) including centering shuttering all complete. (Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be paid for separately)	7.00	Each	3246.15	22,723.00	21.15A.1
4.06	Extra depth for circular type manhole 0.91 m internal dia (at bottom) with beyond 0.91m to 1.67m i) With F.P.S. bricks class designation 75	1.50	Metre	1587.05	2,381.00	21.15B.1
4.07	Providing and fixing square-mouth S.W. gully trap grade 'A' complete with C.I. grating, brick masonry chamber with water tight C.I. cover with frame of 300 x 300 mm size (inside), the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design a) 100x100 mm size P type i) With F.P.S. bricks class designation 75	45.00	Each	489.20	22,014.00	21.4.1.2
4.08	Excavating trenches of required width for pipes, cables, etc. including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc. and disposal of surplus excavated soil as directed within a lead of 50 m : a) All kinds of soil i) Pipes, cables, etc. exceeding 80 mm dia. but not exceeding 300 mm dia.	360.00	Metre	95.55	34,398.00	2.10.1.2
TOTAL for Schedule Items for "Sewerage and Storm Water Drainage" carried over to SUMMARY					Rs. 561,137.00	

Non-Schedule Items

4.09 **Providing, Laying, Jointing and Testing of HDPE Pipes and Fittings. (For External Sewerage system)**

Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
	The work shall be done as per specifications and in general shall include: a) Providing HDPE pipes (of PE 80 grade) in coil form. The pipes shall have a working pressure of PN 10. b) Providing fabricated and moulded fittings of same or higher grade and upto 63 mm OD shall be rated PN 16 and 75 mm OD and above shall be rated for PN 10.					
4.09	Providing, laying and fixing HDPE compression type fittings (as required, adaptor fittings, saddles, etc. including jointing, testing etc. all complete. The compression fittings upto 63 mm OD shall be rated PN 16 and 75 mm OD and above shall be rated for PN 10. c) Laying in position in existing excavated trenches. d) Jointing by heat fusion technique. e) Encasing the laid pipe with river sand of grading zone V or coarser, 150 mm all around. f) Providing and laying LDPE/PVC warning tape (in florescent colour) of size 25 mm wide and 50 micron thick. The warning tape shall be laid 150 mm above the pipe crown. Note: Excavation of trenches and refilling is to be paid seperately.					
	c) 90 mm dia. (PN 10)	1200.00	Metre	450.00	540,000.00	Market Rate
TOTAL for Non-Schedule Items for "Sewerage " carried over to SUMMARY					Rs. 540,000.00	

5.00 PUMPING SYSTEM

Non-Schedule Items

NOTES :

1) The pump shall be capable of developing the required total head at rated capacity for continuous operation. The pumps shall operate satisfactorily at any point on the Head-Discharge (H-Q) characteristic curve over a range of 50% to 130% capacity

2) The total head capacity curve shall be continuously rising towards the shut off. The shut off head shall be at least 110% of the total head. The pump should deliver at least 125% of its rated capacity at 75% of the specified total head

3) All associated piping, valves & other appurtenances shall be paid seperately as per relevant items

4) Wherever **mechanical seal** has been asked for, it must be **`factory fitted`** at pump manufacturer's works.

Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
5	The Tenderer must submit along with his offer, the make and the model of the pump unit proposed by him. The tenderer must mention clearly wherever he is offering alternative material of construction for various types of pumps.					
	6) The Tenderer must fill all the blank fields					
5.01	Supplying, installing, testing and commissioning of domestic water transfer pump as per the following details : The pump unit shall be complete with : a) Pumps: Horizontal / vertical monoblock booster pumpset with mechanical seal - 3 nos. (2 working+1 standby) Material of Construction (M.O.C): Corrosion Resistant in general : Casing — Cast Iron : Impeller — Bronze : Shaft — Stainless Steel Motor: 2900 RPM; 3Ph 415V 50Hz Insulation Class - B Min Protection - IP44 Min. Duty: Discharge (each pump) : 21 M ³ /hr. Head : 20 M					
	b) Interconnecting Pipe work, Valves and Vibration Eliminators : Common suction & delivery headers in G.I (Medium Class. Isolating valves, non return valves and vibration eliminators on suction & delivery side of pumps.					
	c) Common fabricated base frame, duly painted.					
	d) Power and control cabling between panel and pumps.					
	e) Accessories like pressure gauges, pressure switches etc.					
	g) Electric control panel mounted on the skid for automatic operation of pumps comprising incoming switch fuse unit/MCBB, digital voltmeter & ammeter with selector switches, over load and under voltage protection devices, single phase preventors, MCB and DOL starter for each pump, indicating lights etc. all complete.					
	h) Programmable Control System for the following logic: i) Pump 1 starts at set cut in pressure. ii) Pump 1 stops if the cut out pressure is achieved otherwise Pump 2 starts if pressure keeps on falling. iii) Pump 1 and Pump 2 stop the moment cut out pressure is achieved. iv) Pump 3 starts at set cut in pressure v) Pump 3 stops if the cut out pressure is achieved otherwise Pump 2 starts if pressure keeps on falling. vi) Pump 3 and Pump 2 stop the moment cut out pressure is achieved. vii) Pump 1 starts at set cut in pressure and so on.					

Item. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT	REFERENCE
	<p>the idea is to keep all the three pumps operational but with one remaining standby at any particular moment.</p> <p>viii) There shall be an audio visual alarm in case any pump fails to start.</p> <p>Automatic level controller shall comprise of magnetic float type level sensors of Stainless Steel (Grade 304) construction (low and high level sensing in the overhead tank and low level sensing in the under ground tank) and level control unit with manual override facility in the panel.</p> <p>Details of Equipment offered (To be filled in by the tenderer)</p> <p>Pumps Make: Model: HP/KW: M.O.C : Casing —..... : Impeller —..... : Shaft —.....</p> <p>Valves Make: Type: Size: Suction side —..... Delivery side —..... NRV —.....</p> <p>Type of Programmable Logic Controller —</p>	9.00	Set	125000.00	1,125,000.00	Market Rate
TOTAL for "Pumping Machinery" carried over to SUMMARY					<u>1,125,000.00</u>	