

*SCHEDULE OF QUANTITY *

Estimated cost:- Rs. 367069.00

Name of work:- Construction of flow irrigation scheme Neuhal kuhl in gram panchayat Bharwana, Biara and Agojar in Tehsil Palampur District Kangra)HP).

Earnest money:- Rs. 7350.00

(SH)Construction of reinforcement cement concrete channel from RD 970/0/585 to 780 running metre, construction of outlet 1 number.

Time :- Three months

Sr. No.	Description of items.	Qty.	Rate in		Unit	Amount.
			Figure	Words.		
1	Excavation in drain and channels etc. in all kinds of soil such as pick work,jumper work,blasting work soft and hard rock and saturated soil including dressing of sides and beds and disposing of excavated earth upto a lead of 20 metre and lift upto 1.50 metre within all leads and lifts as per the direction of Engineer-in-charge.	45.18 cubic metre			Per cubic metre	
2	Dressing of bed and preparation of sub grade for lining in all kind of soil within all leads and lifts as per the direction of Engineer-in-charge.	165.75 square metre			Per square metre	
3	Excavation in foundation trenches etc.in earth work in all kinds of soil such as pick work,jumper work,blasting in soft and hard rock and chiselling work including saturated soil slushy soil and under floor upto all depth and stacking the excavated soil not more than 3 metre clear from the edge of excavation and then returning the stacked soil in 15 centimetre (Fifteen centimetre)layer when required into plinth sides of foundation etc.consolidating each deposited layer by ramming and watering and then disposing of all surplus excavated earth as directed by the Engineer-in-charge within all leads and lifts.	2.16 cubic metre			Per cubic metre	
4	Providing and laying cement concrete 1:4:8 (One cement is to four sand is to eight graded stone aggregate 40 milimetre nominal size) and curing complete excluding the cost of form work in foundation and plinth with in all leads and lifts as per the direction of Engineer-in-charge.	12.61 cubic metre.			Per cubic metre	
5	Providing and laying cement concrete 1:2:4 (One cement is to two sand is to four graded stone aggregate 20 milimetre nominal size) and curing complete excluding the cost of form work and reinforcement for reinforced cement concrete in:-					
(a)	Foundation,footings bases of column and the like mass concrete within all leads and lifts as per the direction of Engineer-in-charge.	17.11 cubic metre			Per cubic metre	
(b)	Walls (any thickness) butt not less then 0.10 metre thickness) attached pillasters, buttresses, plinth and string courses etc. from top of foundation up to floor two level with in all leads and lifts as per the direction of Engineer-in-charge.	19.50 cubic metre			Per cubic metre	
6	Providing form work with steel plates 3.15 milimetre thick welded with angle iron in frame 30*30*5 milimetre so as to give a fair finish including centring,shuttering,strutting and propping etc. with wooden battens ballies,height of propping and centring below supporting floor two ceiling not exceeding 4 metre and removal of the same for in-situ-reinforced concrete and plain concrete work in-					
a)	Vertical surfaces such as walls(any thickness)partitions walls and the like including attached pillasters,buttreses plinth string courses and the like within all leads and lifts as per the direction of Engineer-in-charge	370.50 square metre			Per square metre	
7	Providing and laying mild steel/tor steel reinforcement for reinforced cement concrete work including bending binding and placing in position complete upto floor two level within all leads and lifts as per the direction of Engineer-in-charge.	1462.50 Killo- gramme.			Per Killo- gramme	
8	Square rubble masonry coursed with hard stone of approved quality in foundation and plinth	1.43			Per cubic	

	including racking out joints in cement mortar 1:6 (One cement is to six sand) within all leads and lifts as per the direction of Engineer-in-charge	cubic metre	metre
9	15 milimetre(fifteen milimetre) thick cement plaster in single coat on rough side of brick/stone masonry for interior plastering upto floor two level including arrises internal rounded angles chamfers and/or rounded angles not exceeding 80 milimetre in girth and finished even and smooth in cement mortar 1:3 (One cement is to three sand) within all leads and lifts as per the direction of Engineer-in-charge.	3.30 square metre	Per square metre
10	20 milimetre(Twenty milimetre) thick cement concrete topping 1:2:3 (One cement is to two to three graded stone aggregate of size 4.75 milimetre below by volume) laid over and finished monolithic with base concrete within all leads and lifts as per the direction of Engineer-in-charge.	1.80 square metre	Per square metre
11	Providing and fixing mild steel plates for 90° V-Notch and gates within all leads and lifts as per the direction of Engineer-in-charge.	15.68 Killo-gramme.	Per Killo-gramme
12	Providing & laying P.V.C. water stop seal 230x6 mm thick 20 metre center to center of expansion cum construction joint within all leads and lifts as per the direction of Engineer-in-charge.	54.60 Killo-gramme.	Per Killo-gramme

Terms and conditions:-

- a) Cement will be issued @ Rs.303/-per bag from Departmental Divisional store Differpat.
- b) Steel will be issued @ Rs.4800/-per quintal to the contractor from Divisional store.
- c) Crushed stone aggregate and mechanically mixture concrete shall be used.
- d) The work shall be completed with in stipulated period.
- e) Required No. of test cubes of cement concrete 1:2:4 (1 cement:2 sand:4 graded stone agg. of 20 mm nominal size) from site shall be collected for random testing of their compressive strength at 28 days as per provision of BIS 456-2000 which shall be get tested from the lab of HPPWD of NIT Hamirpur.
- f) Conditional and telegraphy tender are liable to be rejected.
- g) All pages of the tender from must be signed before submitting the tender falling which the tender is liable to be treated as invalid.
- h) The work shall be executed as per IPH/HPWD specification and relevant IS codes to the entire satisfaction of the Engineer-in-Charge.
- i) The security, income tax, sale tax and surcharge and labour welfare cess if any shall deducted from each running bill of the contractor/firm as applicable.
- j) All necessary documents such as income tax clearance certificate, renewal of registration, CST/GST nos shall have to be produced by the contractor/firm before purchase of tender documents.
- k) The offer shall be valid fore 120 days from the date of the opening of the tender.
- l) The rate of all item should be inclusive of all taxes, duties, levies, carriage of material within all leads and lifts etc. to site of work.
- m) Any damages caused to any public and private property during the course of execution of work shall be restored by the contrctor and if, not done within a reasonable time then the same shall be restored by the Department at contractors cost.
- n) Nothing shall be paid for the rejected work/material.
- o) The contractor shall be fully responsible for watch and ward of material at the site of work.

* SCHEDULE OF QUANTITY *

Estimated cost:- Rs. 412667.00

Name of work:- Improvement and extension of lift irrigation scheme Tikhari Sagoor in Tehsil Baijnath District Kangra(HP).

Earnest money:- Rs. 8260.00

(SH)Construction of reinforcement cement concrete lining from RD 315/0 to 180.

Time :- Three Months

Sr. No.	Description of items.	Qty.	Rate in		Unit	Amount.
			Figure	Words.		
1	Excavation in drain and channels etc. in all kinds of soil such as pick work,jumper work,blasting work soft and hard rock and saturated soil including dressing of sides and beds and disposing of excavated earth upto a lead of 20 metre and lift upto 1.50 metre	55.35 cubic metre			Per cubic metre	
2	Providing and laying cement concrete 1:4:8 (One cement is to four sand is to eight graded stone aggregate 40 milimetre nominal size) and curing complete excluding the cost of form work in foundation and plinth with in all leads and lifts as per the direction of Engineer-in-	10.80 cubic metre.			Per cubic metre	
3	Providing and laying cement concrete 1:2:4 (One cement is to two sand is to four graded stone aggregate 20 milimetre nominal size) and curing complete excluding the cost of form work and reinforcement for reinforced cement concrete in:-					
(a)	Foundation,footings bases of column and the like mass concrete within all leads and lifts as per the direction of Engineer-in-charge.	18.90 cubic metre			Per cubic metre	
(b)	Walls (any thickness) butt not less then 0.10 metre thickness) attached pillasters, buttresses, plinth and string courses etc. from top of foundation up to floor two level with in all leads and lifts as per the direction of Engineer-in-charge.	24.30 cubic metre			Per cubic metre	
4	Providing form work with steel plates 3.15 milimetre thick welded with angle iron in frame 30*30*5 milimetre so as to give a fair finish including centring,shuttering,strutting and propping etc. with wooden battens ballies,height of propping and centring below supporting					
a)	Vertical surfaces such as walls(any thickness)partitions walls and the like including attached pillasters,buttreses plinth string courses and the like within all leads and lifts as per the direction of Engineer-in-charge	378.00 square metre			Per square metre	
5	Providing and laying mild steel/tor steel reinforcement for reinforced cement concrete work including bending binding and placing in position complete upto floor two level within all leads and lifts as per the direction of Engineer-in-charge.	1728.00 Killo- gramme.			Per Killo- gramme	
	<u>Terms and conditions:-</u>					
a)	Cement will be issued @ Rs.303/-per bag from Departmental Divisional store Differpat.					
b)	Steel will be issued @ Rs.4800/-per quintal to the contractor from Divisional store.					
c)	Crushed stone aggregate and mechanically mixture concrete shall be used.					
d)	The work shall be completed with in stipulated period.					
e)	Required No. of test cubes of cement concrete 1:2:4 (1 cement:2 sand:4 graded stone agg. of 20 mm nominal size) from site shall be collected for random testing of their compressive					
f)	The work shall be executed as per IPH/HPWD specification and relevant IS codes to the					
g)	The security, income tax, good service tax and surcharge and labour welfare cess if any					
h)	shall deducted from each running bill of the contractor/firm as applicable.					
i)	Any damages caused to any public and private property during the course of execution of work shall be restored by the contractor and if, not done within a reasonable time then the					
j)	Nothing shall be paid for the rejected work/material.					
	The contractor shall be fully responsible for watch and ward of material at the site of work.					

" SCHEDULE OF QUANTITY "

Estimated cost:- Rs. 378310.00

Name of work:- Providing lift water supply scheme tom PC habitation of census village Chhek & Simbal in Tehsil Baijnath District Kangra(HP).

Earnest money:- Rs. 7570.00

(SH)Construction of 2 Number main reservoir of 25000 litre capacity at node No.2 & 28.

Time :- Three months

Sr. No.	Description of items.	Qty.	Rate in		Unit	Amount.
			Figure	Words.		
1	Excavation in foundation trenches etc. in earth work in all kinds of soil such as pick work,jumper work,blasting in soft and hard rock and chiselling work including saturated soil slushy soil and under floor upto all depth and stacking the excavated soil not more than 3 metre clear from the edge of excavation and then returning the stacked soil in 15 centimetre (Fifteen centimetre) layer when required into plinth sides of foundation etc. consolidating	155.84 cubic metre			Per cubic metre	
2	Providing and laying cement concrete 1:4:8 (One cement is to four sand is to eight graded stone aggregate 40 milimetre nominal size) and curing complete excluding the cost of form work in foundation and plinth within all leads and lifts as per the direction of Engineer-in-	2.90 cubic metre			Per cubic metre	
3	Providing form work with steel plates 3.15 milimetre thick welded with angle iron in frame 30x30x5 milimetre so as to give a fair finish including centring,shuttering,strutting and propping etc. with wooden battens ballies,height of propping and centring below supporting					
a)	Edges of slab and breaks in floor and walls under 20 centimetre in wide within all leads and lifts as per the direction Enginner-in-charge.	27.02 running metre			Per running metre	
b)	Vertical surfaces such as walls(any thickness)partitions walls and the like including attached pillars,buttreses plinth string courses and the like within all leads and lifts as per the direction of Engineer-in-charge.	151.74 square metre			Per square metre	
c)	Beams, cantilever, girder and linter sides and soffits of beams haunchings cantilevers girder, bressumers and lintel not exceeding one meter in depth in all heights from floor within all leads and lifts as per the direction of Engineer-in-charge.	14.78 square metre			Per square metre	
4	Providing form work of ordinary timber planking so as to give a rough finish including centring,shuttering,strutting and propping etc.height of propping and centring below supporting floor to ceiling not exceeding 4 metre and removal of the same for in-situ-					
a)	Arches exceeding 6.00 metre in span within all leads and lifts as per the direction Enginner-in-charge.	32.68 square metre			Per square metre	
4	Providing and laying cement concrete 1:1 ¹ / ₂ :3(One cement is to one and half sand is to three araded stone aaaregate 20 milimetre nominal size) and curina complete excluding the Foundation footings and basis of columns etc. and mass concrete within all leads and lifts as per the direction of Engineer-in-charge.	2.52 cubic metre			Per cubic metre	
b)	Walls (any thickness) butt not less then 0.10 metre thickness) attached pillars, buttresses, plinth and string courses etc. from top of foundation up to floor two level with in all leads and lifts as per the direction of Engineer-in-charge.	15.18 cubic metre			Per cubic metre	
c)	Suspended floors,roofs landing shelves and their supports balconies beams,girders and cantilevers upto floor two level within all leads and lifts as per the direction of Engineer-in-charge.	4.00 cubic metre			Per cubic metre	

5	Providing and laying mild steel/tor steel reinforcement for reinforced cement concrete work including bending binding and placing in position complete upto floor two level within all leads and lifts as per the direction of Engineer-in-charge.	1953.00 Killo-gramme.	Per Killo-gramme
6	Providing and fixing SFRC man hole cover with frame. The weight of cover and frame should not less than 100 Killogramme within all leads and lifts as per the direction of Engineer-in-charge.	2 Number	Each
7	Laying, jointing and testing in trenches galvanised iron pipe of following dia for outlets pipe scour pipe and over flow pipes etc. within all leads and lifts as per the direction of Engineer-in-charge.		
	a) 100 milimetre dia. (Inlet pipe)	60.00 running metre	Per running metre
8	Fixing of cast iron sluice valve (Scour valve) with hand wheel as per IS-780 class upto 300 milimetre dia (including brass spindle) as per IS:2906 class-II for diametres more than 300 milimetre dia complete mild steel flanges of following Table conforming to BIS 6392-1971 latest with upto date ammendments of following dia of galvanised iron pipe including cutting of threaded portion welded on both ends as per specification with nuts,bolts and rubber		
	a) 100 milimetre dia.	6.00 Number	Each
9	Steel work welded in built up sections,trusses and framed work including cutting,hoisting and fixing in position and applying a priming coat of red lead paint in gratings,framed guard bars,ladders,railing,brackets and similar type of work within all leads and lifts as per the	2.00 Quintal	Per quintal
10	Providing and fixing double flanged puddle collars for making connection with reinforcement cement concrete walls of following dia within all leads and lifts as per the direction of Engineer-in-charge.		
	a) 100 milimetre dia.	6.00 Number	Each
11	Construction of chamber for sluice valve with C.I.surfaces bex 100 milimetre top dia 160 milimetre bottom diametre and 180 milimetre deep with chained lid and reinforcement cement concrete top slab 1:2:4 (One cement is to two sand is to four graded stone aggregate 20 milimetre nominal size) 120 milimetre thick foundation bes concrete 1:5:10 (One cement is to five sand is to ten graded stone aggregate 40 milimetre nominal size) and in side cement plastering 1:3 (One cement is to three sand) finished with a floating coat of neat cement including curing complete with 300 milimetre thick wall of squared rubble masonry with hard stone of approved quality in cement mortar 1:6 (One cement is to six sand) as per the direction of Engineer-in-charge within all leads and lifts size 600x600x750	6.00 Number	Each
12	Providing and fixing mosquito proof ventilator 400 mm & 300 mm dia within all leads and lifts as per the direction of Engineer-in-charge.	2.00 Number	Each
13	Finishing wall with water proofing cement paint of approved brand and manufacture and of required shade on undecorated wall surface (one coats) to give an even shade after thoroughly brushing the surface to remove all dirt and remains of loose powdered materials	117.48 square metre	Per square metre
	<u>Terms and conditions:-</u>		
	a) Cement will be issued @ Rs.303/-per bag from Divisional store Differpat.		
	b) Steel will be issued @ Rs.4800/-per quintal to the contractor from Divisional store Differpat.		
	c) The work should be carried out as per specifications.		
	d) Nothing shall be paid for the rejected work/material.		
	e) Crushed stone aggregate and mechanically mixture concrete shall be used.		
	f) The work should be completed within the stipulated period.		
	g) The contractor shall be responsible for watch and ward of material in case of any theft or loss the recovery shall be made at the double cost of issue rates.		

" SCHEDULE OF QUANTITY "

Estimated cost:- Rs. 461225.00

Name of work:- Construction of Flow Irrigation Scheme Dharam Daia to Dharda and its adjoining villages from Dharam Khad in Tehsil Palampur District Kangra(HP).
(SH)Construction of cement concrete lining from RD 1904 to 2079 =175 Rmt.

Earnest money:- Rs. 9225.00

Time :- Three months

Sr. No.	Description of items.	Qty.	Rate in		Unit	Amount.
			Figure	Words.		
1	Excavation in foundation trenches etc. in earth work in all kinds of soil such as pick work,jumper work,blasting in soft and hard rock and chiselling work including saturated soil slushy soil and under floor upto all depth and stacking the excavated soil not more than 3 metre clear from the edge of excavation and then returning the stacked soil in 15 centimetre (Fifteen centimetre) layer when required into plinth sides of foundation and then disposing of	44.623			Per cubic metre	
2	Providing & laying cement concrete 1:4:8 (One cement is to four sand is to eight graded stone aggregate 40 milimetre nominal size) & curing complete excluding the cost of form work in foundation and plinth.	14.88			Per cubic metre	
3	Providing form work with steel plates 3.15 milimetre thick welded with angle iron in frame 30x30x5 milimetre so as to give a fair finish including centring,shuttering,strutting and propping etc. with wooden battens ballies,height of propping and centring below supporting					
a)	Vertical surfaces such as walls(any thickness)partitions walls and the like including attached pillasters,buttrseses plinth string courses and the like within all leads and lifts as per the direction of Engineer-in-charge.	349.00			Per square metre	
4	Providing & laying cement concrete work 1:2:4 (One cement is to two sand is to four graded stone aggregate 00 milimetre nominal size)and curing complete excluding the cost of form work and reinforcement for reinforced concrete work in:	43.31			Per cubic metre	
5	Providing tor steel reinforcement for reinforced cement concrete work including bending binding and placing in position complete upto floor two level.	3500.00			Per Killo-gramme.	
6	Providing and laying P.V.C. water stoper sdeal as per required size within all leads and lifts as per direction of Engineer-in-Charge	18.00			Per running metre	

Terms and conditions:-

- 1 Cement will be issued from I&PH Divisional Store Differpatt @ Rs.303/-per bag and Steel
- 2 The work should be executed as per HP,PWD specifications
- 3 Crushed stone aggregate and mechanically mixture should be used for concrte lining work.
- 4 Nothing shall be paid for the rejected work/material.
- 5 The contractor shall be responsible for watch and ward of material in case of any theft or loss the recovery shall be made at the double cost of issue rates.
- 6 The work should be completed within the stipulated period.
- 7 The rates of all the items should be inclusive of all taxes, duties, levies, carriage of matrial within all leads and lifts tc. To site of work.
- 8 Royalty, sales tax, octral etc. will be borne by the contractor Aand proof there so shall have to be given without which no payment shall be done

SCHEDULE OF QUANTITY

Estimated cost:- ₹ 3,23,303.00

Name of work:- Installation of small tube well near panchayat Ghar Khadanal in tehsil Baijnath District Kangra(HP).

Earnest money:- ₹ 6,470.00

(SH)Drilling/lowering of Mini tube well 60 metre deep near Sitla Chowk.

Time :- Three months

Sr. No.	Description of items.	Quantity	Rate in		Unit	Amount.
			Figure	Words.		
1	Transportation of suitable truck/tractor mounted where only road available DTH & ODEX/Percussion Calys/RC Drilling with portable rigs alongwith necessary accessories etc. to the site of work and erection of portable rig including leveling etc.. complete in all respect	1.00 Number			Each	
2	Development of site including levelling at site through all kinds of roads, approaches field etc. in all leads and lifts complete in all respect as per the direction of Engineer-in-charge.	1.00 Number			Each	
3	Drilling tube well of 175 mm dia as per IS 2800-1979 using percussion/Calyx/RC/ODEX method required for drilling in collapsible strata conglomerate, boulders, pebbles, sand gravels, silt, clay etc. including cost of attachments, extra casings, consumables stores,	60.00 running metre			Per running metre	
4	Supply and lowering of IS-Marked electric resistance welded mild steel slotted pipe 175 millimetre dia nominal size housing, 6.4 mm thick having outside dia metre 193.70 mm screwed and socketted confirming to IS-4270-2001 with upto date ammendments, if any,	25.00 running metre			Per running metre	
5(a)	Supply and lowering of IS makred electric resistance welded MS pipe 175 mm dia nominal size housing 6.4 mm thickness confirming to IS 4270-2001 with up to date amendments if any, 3 to 6 metres in length , welded without any circumferential joints into bore hole in	35.00 running metre			Per running metre	
6	Providing and fixing casing shoe for 200 mm dia MSERW pipe as per requirement of ODEX attachment complete in all respect as per the direction of Engineer-in-charge.	1.00 Number			Each	
7	Collection and preservation of soil samples in polythene bags complete in all respect as per the direction of Engineer-in-charge.	1.00 Number			Each	
8	Development of tubewell and yield testing with air compressor through V notch and disinfection etc. complet in all respects as per IS 2800-1979 and as per the direction of Engineer-in-charge.	1.00 Number			Each	
9	Development of tubewell by continous over pumping method with VT pump/submersible pumps of suitable capacity not less than double the discharge esestablished by the compressor method/design discharge, untill the well is stand free as per IS-11189-1985 up	8.00 hours			Per hours	

Terms and conditions:-

- The location where bores shall be drilled for providing tube well shall be got approved from the Engineer-in-charge.
- All arrangements for the transportation of drilling equipment to the site of work and operation i.e. Katcha tracks, approach road, water, electric light etc. If so required shall be made by
- The department shall be at full liberty to abandon a particular well. If the bore is abandoned to any reason i.e. on accuring hard rock strata, non availability of equifier or any other reason, the contracors shall be paid only for drilling work. In this case the decision of the
- No payment shall be released untill discharge of the tube well is submitted duly certified by Hydrogeologist and Assistant Engineer concerned.
- A gold silver oil other material any relies antiques and other similar things may be found in or upon the site shall be property of the Govt. and contractor shall deliver the same to the
- The scope of the work can be increased and decreased by the Engineer - in-charge.
- The work shall be executed strictly in accordance with the IPH and ISI specification .
- Any damage done by the contractor to any public/private property during the course of
- All the taxes and other incidental charges shall be borne by the contractor and nothing shall be paid to him on this account.
- All extracted material available during the time of execution shall be stacked properly as
- Tubewell assembly shall be got approved from Engineer-in-charge duly recommended from

the Sr.Hydrogeologist ground water organisation before lowering.

- l) Contractor shall be ensure un-intrupted execution of work.
- m) The firm contractor shall abide by the time schedule strictly and shall furnish fortnightly
- n) The contractor shall be responsible for the Govt. material issued to his for use on the work and shall maintain proper account of the same this will be open for inspection by the
- o) The rates are inclusive of all types of classifications of soils and as such no claim in respect in the classification shall be accepted.
- p) The contractor shall obtain order in writing from the Engineer-in-charge about the site where surplus excavated material will be disposed off.
- q) The royalty charges of stone sand,aggregate etc. used shall be deducted from the bill of the contractor at the rates prescribed by Govt. of Himachal Pradesh from time to time on the
- r) The contractor must taken all precautions to avoid accident by exhibiting day and night necessary caution boards speed limit boards, red flags, red light etc. He shall be responsible
- s) The contractor shall give complete postal, telegraphic address in tender and also leave the copy of the same in the office of Executive Engineer. All correspondence telegram etc. sent
- t) All the rates give above for drilling,lowering and development of tube well include the cost of carriage, handling insurance and transportation charges of plants and material to the site of
- u) The site shall be carried out by the contractor strictly in accordance with the attached in contract specifications and ISI specification as per IS-2800-Part-I-1991 IS 2800-Part-II 1979
- v) The contractor/firm or his authorised representative shall in persons see the proposed site for these works and study specification conditions before tendering.
- w) The contractor shall clear the site properly after the completion of the work withing 15 days failing which penalty @ Rs.500/-per day will be imposed for 1st fortnight and Rs.1000/- for
- x) Tender document shall be submitted by the contractor in one lot (duly sealed) and subsequent correspondence before opening the tender shall not be entertained considered.
- y) The final payment shall be made to the contractor after handing over the tube well to entire satisfaction of Engineer-in-charge.

* SCHEDULE OF QUANTITY *

Estimated cost:- Rs 371354.00

Name of work:- Construction of 2 numbers tube well for providing irrigation facility to village Andretta and Biara in Tehsil Palampur District Kangra HP

Earnest money:- Rs 7430.00

(SH)Supply and erection of pumping machinery alongwith allied accessories for village Andretta and Biara and laying, jointing & testing of

Time :- Six months

Sr. No.	Description of items.	Quantity		Unit	Amount.
		Rate in Figure	Words.		

1 At village Andretta.

1	Supply of Submersible pumping sets of reputed make such as KSB/BS/Oswal/Calama/wrothington/Hindustan with bronze impeller conforming to latest relevant BIS code.The pump should be fitted with closed bronze impellers as per IS:8034-1976 latest suitable for clear cold water having greased packed bearings and shaft with wound stator on motor side and with shaft protection sleeve on pump side ensuring better life for shaft conforming to BIS specifications. The pump shall be directly coupled to a submersible squirrel cage induction motor of kirlosikar/NGEF/Jyoti/Crompton make conforming to BIS 9285-1979 latest with upto date ammendments. Totally dust and water proof for submersible duly isolated from the pump by intermediate casing with duple mechanical seal in oil chamber and grease packed lubricated bearings and provided with stainless steel thrust bearings plate to withstanding vertical loads with minium wear and tear. It should also be fitted with a device to take up expansion of water with the heating of motor. The pump set should include water level guards erection clamps,cable clips and depth gauge etc.and and suitable for operation on data given below :-	a) Pump	1 x 7.5 =7.5	Per	
		b) Motor	horse power.	horse power	
		c)	Coupling		
		d) Base	Plate.		

A) SITE CONDITIONS :-

i) Location of site	The site is located at a distance 11 KM from Palampur.
ii) The altitude of place in which	Altitude of place is 1000 metre above MSL
iii) Humidity	Whether generally remains humid during Monsoon Season.
iv) Nature of atmosphere	As normally encountered in Shivalik range .
v) Detail of quilty of wate	Clear water from Tube well
vi) Water free from sand or not	Free from sand
vii) Water corosive or not	Yes Corosive
viii) Turbidity if any	<50 PPM
ix) Type of well	Tube well
x) Size of well	200 mm
xi) Depth of water during HFL in the Pond.	metres.
xii) Maximum draw down.	21.34 metres.
xiii) Depth of well	62 metres.
xiv) Any other information or requirement	metres.

B) OPERATING CONDITIONS :-

- i) Type of current AC three / single phase.
- ii) Operation frequency 50 HZ
- iii) Rated Voltage 400 (+/-) 10% volts.
- iv) System of earthing if any Double loop earthing as per BIS-3043-1987 Latest With upto date ammendments.
- v) Speed of revolution in RPM To be quoted by the tenderer
- vi) Direction of rotation To be quoted by the tenderer
- vii) No of working hours per day. 8 hours.
- viii) The Max. Temp. of cooling air and water in the place in which the motor set is intended to work in ordinary service. 35 degree centigrade.

C) MOTOR

- i) Ref. to BIS code BIS-9283-1979 with BIS 900-1992 up to date ammendments.
- ii) Type of enclosure of motor SPD (As per BIS - 4691- 1985 (latest)
- iii) Type of duty. Contineou s.
- iv) Mechanical output in K.W. Suitable for driving submersible pumps, required for duties specified against pump to avoid overloading of motor a margin of about 15 - 20 %

D) PUMP

- a) No of pumps required. 1 Number pumps
- b) Spare parts required For two years normal maintenance as recommended by manufacturer.
- c) Type of drive Electric induction motor
- d) Optional fittings reqd. ~~~~
- e) Class of insulation- Class B
- f) Max. permissible To be specified by the tendrer
- g) Particulars of test reqd. & As per terms and conditions
- h) Particulars as to whether voltage limiting device **Star delta starter** Oil immersed fully automatic to be installed between bus bar and motor shunt capacitor is also proposed to be installed for improving the power factor at site.
NOTE :-Star delta starter upto 37.5KW & ATS for 37.5Kw to 50Kw.Staror rotor starter with slipering motor beyond
- ix) Type of Motor As per BIS 9283-1979 or latest
- x) Details of shaft extension required To work with the pump offered.
- xi) Breakway torque in terms of rated load torque & the Breakway torque to be given by the tenderer but the starting current should not exceed 2.5 times of the full load current.
- xii) Nature of load & any information regarding the driven machine To work the Pump offered.
- xiii) Where possible The motor should be able to with stand initial current for 2.5 times the rated currents for two minutes without suffering damages or permanent

E) PUMP OPERATING CONDITIONS :-

i)	Capacity	10.79 LPS for each pump
ii)	Total head in metres	58.664 Meters
	If total head is not known then	
a)	Static Head	61.85 Metres
b)	Minimum depth of water	15.85 Metres.
c)	Variation in water level	5.49 Metres
d)	Ground level to Maximum water level	4 Metres
e)	Ground level to delivery points	-- Metres
f)	Pressure in the suction tank	~ Kg/cm2
g)	Pressure in the delivery tank	~ Kg/cm2
iii)	Length of Rising main	60 Metre including column assembly
iv)	Dia of Rising main	125 mm dia G.I.pipe
v)	Drive arrangement	Direct through flexible
vi)	Drive type	Electric driven.
vii)	NPSH reqd.	To be quoted by the tenderer
viii)	Limits of total head in which	(-) 15% to (+) 10% of total head.
ix)	Suction / delivery size of pump	To be specified by the tenderer.
x)	Efficiency of pump at Discharge level of highest point.	To be specified by the tenderer. 994.00 metre
a)	Duty Head.	
b)	(+) 10% Head	
c)	(-) 25% Head.	
x)	Material of construction	To be specified by the tenderer (Manufacturers certificate to be appended.) margin of about 15-20% may be kept in the rated out put of prime mover.

- | | | | |
|---|--|-----------------|------|
| 2 | Installation of L&T make automatic panel for required horse power including auto start, auto stop and restart facility including single phase preventer, timer, relay, ametre, voltametre, selector switch, hours run metre, prevention of phase reversal, imbalance and dry connector overload and fixed with compatible starter including all allied accessories complete in all respect with in all lead and lift as per satisfaction of Engineer- in-charge. | 1
Numbe
r | Each |
| 3 | Providing M.S sheet 16 SWG steel fabricated floor mounted closed almirah type switch board including angle iron post of suitable height & size ISA 40 X40 X6 mm, duly painted comprising and capable of mounting the following accessories with all internal electric connections. The drawing of panel board shall be subject to approval of the Engineer-in-Charge. | 1
Numbe
r | Each |

<p>a) MCCB/Earth leakage circuit breaker of recommended make (Kilburn/L&T/MEI/GEC) as per IS:2516-1977 with upto date ammendments and of suitable range with which should have control box, operating handle and trip/reset bush button on/off indicators, re-indicating off spring condition of the circuit breaker for over current protection. The circuit should be equipped with magnet thermal release with metallic tape CTS. It should also be fitted with earth fault for tripping of breaker on occurrence of earth fault on off breaker load side.</p>	<p>1 Numbe r</p>	<p>Each</p>
<p>4 (a) Supply of Kirloskar/Kilburn/ IVC/Fouress/Gled/BHEL/Leader make of suitable size cast iron double flanged sluice valve having size of 125 mm dia Class PN-1.6 equal to delivery of pump and capable of withstanding nominal seat pressure of 15kg/cm2 as per BIS-780-1984 (Latest additation).</p>	<p>1 Numbe r</p>	<p>Each</p>
<p>NOTE:- The cast iron Sluice valve shall conform to BIS-780-1984 for 50 mm to 300 mm dia and BIS:2906-1984 for 350 mm to 1200 mm dia (latest eddition). However if seat pressure exceeds the limits prescribed in above mentioned BIS then it shall be of cast steel conforming to class ASA-150 for seat pressure up to 21 Kg./Cm2 & of class ASA-300 for seat pressure 52 Kg./Cm2 as per BS-1414 (API-600).</p>		
<p>b) Supply of Kirloskar/Kilburn/ IVC/Fouress/Gled/BHEL/Leader/ of suitable size cast iron double flanged swing check type reflux valve having bye pass arrangement and size of 125 mm dia class PN-1.6 equal to delivery of pump for withstanding nominal seat pressure of 15 kg/cm2 As per BIS - 5312-1984 (part -1) latest with up to date ammendments.</p>	<p>1 Numbe r</p>	<p>Each</p>
<p>NOTE:- The reflux valve shall conform to BIS-5312-1984 (part-I) latest with upt date ammendments. However if seat pressure exceeds the limits prescribed in BIS 5312 then the reflux valves shall be of cast steel conforming to class ASA-150 for seat pressure up to 21 Kg./Cm2 & of class ASA-300 for seat pressure 52 Kg./Cm2 as per BS-1414 (API-600).</p>		
<p>c) Supply of Kirloskar/Kilburn/ IVC/Fouress/Gled/BHEL/Leader/ of suitable size cast iron double flanged swing check type reflux valve 125 mm dia having bye pass arrangement class PN-1.6 equal to rising main for withstanding nominal seat pressure of 15 kg/cm2 As per BIS - 5312-1984 API-600 latest with up to date ammendments.</p>	<p>1 Numbe r</p>	<p>Each</p>
<p>NOTE:- The reflux valve shall conform to BIS-5312-1984 (part-I) latest with upt date ammendments. However if seat pressure exceeds the limits prescribed in BIS 5312 then the reflux valves shall be of cast steel conforming to class ASA-150 for seat pressure up to 21 Kg./Cm2 & of class ASA-300 for seat pressure 52 Kg./Cm2 as per BS-1414 (API-600).</p>		
<p>5 (a) Providing & laying suitable size copper PVC insulated armoured power 3-1/2 core cable conforming to BIS: 1554(P-1)1988 or latest with upto date ammendments of Siemens Gloster /ICC make from meter of HPSEB to OCB & from OCB to busbar switch & starter (one cable carrying all three phases) including all other electrical equipment accessories such as thimbles, flexible, pipes, solder,nuts & bolts, cable glands etc. laid in pipes or tranches under floor.The type size & Make will be subject to approval of HPSEB authorities. In case of non acceptancy by HPSEB authorities it shall have to be replaced by the tenderer free of cost</p>	<p>10 metre</p>	<p>Per metre</p>
<p>(b) Providing & laying jointless flat water proof cable as per BIS 694-1990 (latest with upto date ammendments) suitable for the pump set offered for suitable to pump, motor to starter including all other electrical equipments such as Thimbles, flexible pipes, solder, nuts & bolts cable glands etc. laid in pipes or trenches. The type, size & make will be subject to approval of HPSEB authorities. In case of non acceptance by HPSEB authorities it shall have to bhe repalace by the tenderer free of cost.</p>	<p>50 metre</p>	<p>Per metre</p>
<p>a. 3.00 core 4mm² for switch board to motor.</p>		

c)	Providing and laying double loop earthing with copper plate 600x600x3mm thick electrode complete with material such as charcoal,common salt,G.I.pipes.thimbles,nuts & bolts,digging of pits,GI wiring & 20x5mm copper strips required capacity conforming to BIS 3043-1987 latest with upto date ammendments for above motor & other electrical equipments complete in all respect.	1 job	Each
6	Supply & erection of floor / wall mounted power factor Shunt Capacitor conforming to BIS 2834-1986 latest with up to date ammendments BHEL,GEC,Machneil/Bajaj make to raise the prevailing power factor at site to 0.95 for direct connection to induction motor individually, of required KVAR according to HP of motor offered including cable Siemens/Gloster/ICC make from busbar chamber to capacitor and also including LT/ LK/ Kilburn make ICTP switches conforming to BIS 4064-1978 or latest with HRC fuses (Range to be specified by the tenderer.)	1x3 =3 KVAR	Per KVAR
7	Providing and laying column assembly as per required GI/MSERW pipes of suitable size (layout to be approved by the Engineer-Incharge) for suction delivery and common header considering site requirements and NPSH required/available.The pipe sizes for suction and delivery shall as per the requirement of offered pump and common header shall be equal to dia of rising main including tapers. flanges, bends, rubber gaskets, 3 mm thickness as per IS:2712-1979 and required number of nuts and bolts upto 5 metres from the outer wall of the pump house as per layout approved by the Engineer-Incharge as per IS:1364-1983 . The pipes material shall conform to relevant BIS codes and capable of with standing field test pressure equal to 1.5 times the operating pressure. The complete arrangement shall comprise of:-	50 Rmt	Per Rmt
8	Erection of all equipments from S.No. 1 to 4,6 & 7 including cost of tees, bends tapers & any other fittings required as per site conditions 7 as per direction of the Engineer-in-charge.	Job	Each

1 At village Biara.

1	Supply of Submersible pumping sets of reputed make such as KSB/BS/Oswal/Calama/wrothington/Hindustan with bronze impeller conforming to latest relevant BIS code.The pump should be fitted with closed bronze impellers as per IS:8034-1976 latest suitable for clear cold water having greased packed bearings and shaft with wound stator on motor side and with shaft protection sleeve on pump side ensuring better life for shaft conforming to BIS specifications. The pump shall be directly coupled to a submersible squirrel cage induction motor of kirlosikar/NGEF/Jyoti/Crompton make conforming to BIS 9285-1979 latest with upto date ammendments. Totally dust and water proof for submersible duly isolated from the pump by intermediate casing with duple mechanical seal in oil chamber and grease packed lubricated bearings and provided with stainless steel thrust bearings plate to withstanding vertical loads with minium wear and tear. It should also be fitted with a device to take up expansion of water with the heating of motor. The pump set should include water level guards erection clamps,cable clips and	a) Pump 1 x 20 =20 horse power. b) Motor c) Coupling d) Base Plate.	Per horse power
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A) SITE CONDITIONS :-

i)	Location of site	The site is located at a distance 11 KM from Palampur.
ii)	The altitude of place in which	Altitude of place is 1000 metre above MSL
iii)	Humidity	Whether generally remains humid during Monsoon Season.
iv)	Nature of atmosphere	As normally encountered in Shivalik range .
v)	Detail of quility of wate	Clear water from Tube well
vi)	Water free from sand or not	Free from sand
vii)	Water corosive or not	Yes Corosive
viii)	Turbidity if any	<50 PPM
ix)	Type of well	Tube well
x)	Size of well	200 mm
xi)	Depth of water during HFL in the Pond.	metres.
xii)	Maximum draw down.	22.87 metres.
xiii)	Depth of well	60 metres.
xiv)	Any other information or requirement	_____ metres.

B) OPERATING CONDITIONS :-

- i) Type of current AC three / single phase.
- ii) Operation frequency 50 HZ
- iii) Rated Voltage 400 (+/-) 10% volts.
- iv) System of earthing if any Double loop earthing as per BIS-3043-1987 Latest With upto date ammendments.
- v) Speed of revolution in RPM To be quoted by the tenderer
- vi) Direction of rotation To be quoted by the tenderer
- vii) No of working hours per day. 8 hours.
- viii) The Max. Temp. of cooling air and water in the place in 35 degree centigrade .

C) MOTOR

- i) Ref. to BIS code BIS-9283-1979 with BIS 900-1992 up to date ammendments.
- ii) Type of enclosure of motor SPD (As per BIS - 4691- 1985 (latest)
- iii) Type of duty. Contineou s.
- iv) Mechanical output in K.W. Suitable for driving submersible pumps, required for duties specified against pump to avoid overloading of motor a margin of about 15 - 20 %

D) PUMP

- a) No of pumps required. 1 Number pumps
- b) Spare parts required For two years normal maintenance as recommended by manufacturer.
- c) Type of drive Electric induction motor
- d) Optional fittings reqd. ~~~~
- e) Class of insulation- Class B
- f) Max. permissible To be specified by the tendrer
- g) Particulars of test reqd. & As per terms and conditions
- h) Particulars as to whether voltage limiting device **Star delta starter** Oil immersed fully automatic to be installed between bus bar and motor shunt capacitor is also proposed to be installed for improving the power factor at site.
NOTE :-Star delta starter upto 37.5KW & ATS for 37.5Kw to 50Kw.Staror rotor starter with slipering motor beyond
- ix) Type of Motor As per BIS 9283-1979 or latest
- x) Details of shaft extension required To work with the pump offered.
- xi) Breakway torque in terms of rated load torque & the Breakway torque to be given by the tenderer but the starting current should not exceed 2.5 times of the full load current.
- xii) Nature of load & any information regarding the driven machine To work the Pump offered.
- xiii) Where possible The motor should be able to with stand initial current for 2.5 times the rated currents for two minutes without suffering damages or permanent

E) PUMP OPERATING CONDITIONS :-

- i) Capacity 15 LPS for each pump
- ii) Total head in 76.04
metres Meters
If total head is
not known then
- a) Static Head 60.10
Metres
- b) Minimum depth of water 4.57
Metres.
- c) Variation in water level 18.30
Metres
- d) Ground level to Maximum water level ~ Metres
- e) Ground level to delivery points 50.10
Metres
- f) Pressure in the suction tank ~ Kg/cm2
- g) Pressure in the delivery tank ~ Kg/cm2
- iii) Length of Rising main 230 Metre including column assembly
- iv) Dia of Rising main 125 mm dia G.I.pipe
- v) Drive arrangement Direct
through
flexible
- vi) Drive type Electric
driven.
- vi) NPSH reqd. To be quoted by the tenderer
- vii) Limites of total head in which (-) 15% to (+) 10% of total head.
- viii) Suction / delivery size of pump To be specified by the tendrer.
- ix) Efficiency of pump at To be specified by the tendrer.
- x) Discharge level 550.10
of highest point. metre

- a) Duty Head.
- b) (+) 10% Head
- c) (-) 25% Head.
- x) Material of construction To be specified by the tendrer (Manufacturers certificate to be appended.)
margin of about 15-20% may be kept in the rated out put of prime mover.

2 Installation of L&T make automatic panel for required horse power including auto start, auto stop and restart facility including single phase preventer, timer, relay, ametre, voltametre, selector switch, hours run metre, prevention of phase reversal, imbalance and dry connector overload and fixed with compatible starter including all allied accessories complete in all respect with in all lead and lift as per satisfaction of Engineer- in-charge. 1
Numbe
r Each

3 Providing M.S sheet 16 SWG steel fabricated floor mounted closed almirah type switch board including angle iron post of suitable height & size ISA 40 X40 X6 mm, duly painted comprising and capable of mounting the following accessories with all internal electric connections. The drawing of panel board shall be subject to approval of the Engineer-in-Charge. 1
Numbe
r Each

a) **MCCB/Earth leakage circuit breaker** of recommended make (Kilburn/L&T/MEI/GEC) as per IS:2516-1977 with upto date ammendments and of suitable range with which should have control box, operating handle and trip/reset bush button on/off indicators, re-indicating off spring condition of the circuit breaker for over current protection. The circuit should be equipped with magnet thermal release with metallic tape CTS. It should also be fitted with earth fault for tripping of breaker on occurrence of earth fault on off breaker load side. 1
Numbe
r Each

4 (a) Supply of Kirloskar/Kilburn/ IVC/Fouress/Gled/BHEL/Leader make of suitable size cast iron double flanged sluice valve having size of 125 mm dia Class PN-1.6 equal to delivery of pump and capable of withstanding nominal seat pressure of 15kg/cm2 as per BIS-780-1984 (Latest addition).	1	Each
NOTE:- The cast iron Sluice valve shall conform to BIS-780-1984 for 50 mm to 300 mm dia and BIS:2906-1984 for 350 mm to 1200 mm dia (latest addition). However if seat pressure exceeds the limits prescribed in above mentioned BIS then it shall be of cast steel conforming to class ASA-150 for seat pressure up to 21 Kg./Cm2 & of class ASA-300 for seat pressure 52 Kg./Cm2 as per BS-1414 (API-600).	Number	
b) Supply of Kirloskar/Kilburn/ IVC/Fouress/Gled/BHEL/Leader/ of suitable size cast iron double flanged swing check type reflux valve having bye pass arrangement and size of 125 mm dia class PN-1.6 equal to delivery of pump for withstanding nominal seat pressure of 15 kg/cm2 As per BIS - 5312-1984 (part -1) latest with up to date ammendments.	1	Each
NOTE:- The reflux valve shall conform to BIS-5312-1984 (part-I) latest with upt date ammendments. However if seat pressure exceeds the limits prescribed in BIS 5312 then the reflux valves shall be of cast steel conformingt to class ASA-150 for seat pressure up to 21 Kg./Cm2 & of class ASA-300 for seat pressure 52 Kg./Cm2 as per BS-1414 (API-600).	Number	
c) Supply of Kirloskar/Kilburn/ IVC/Fouress/Gled/BHEL/Leader/ of suitable size cast iron double flanged swing check type reflux valve 125 mm dia having bye pass arrangement class PN-1.6 equal to rising main for withstanding nominal seat pressure of 15 kg/cm2 As per BIS - 5312-1984 API-600 latest with up to date ammendments.	1	Each
NOTE:- The reflux valve shall conform to BIS-5312-1984 (part-I) latest with upt date ammendments. However if seat pressure exceeds the limits prescribed in BIS 5312 then the reflux valves shall be of cast steel conformingt to class ASA-150 for seat pressure up to 21 Kg./Cm2 & of class ASA-300 for seat pressure 52 Kg./Cm2 as per BS-1414 (API-600).	Number	
5 (a) Providing & laying suitable size copper PVC insulated armoured power 3-1/2 core cable conforming to BIS: 1554(P-1)1988 or latest with upto date ammendments of Siemens Gloster /ICC make from meter of HPSEB to OCB & from OCB to busbar switch & starter (one cable carrying all three phases) including all other electrical equipment accessories such as thimbles, flexible, pipes, solder,nuts & bolts, cable glands etc. laid in pipes or tranches under floor.The type size & Make will be subject to approval of HPSEB authorities. In case of non acceptancy by HPSEB authorities it shall have to be replaced by the tenderer free of cost		
a. On supply side of 3:1/2 core (from HPSEB meter to switch & starter) = of size 6mm ²	10	Per
b) Providing & laying jointless flat water proof cable as per BIS 694-1990 (latest with upto date ammendments) suitable for the pump set offered for suitable to pump, motor to starter including all other electrical equipments such as Thimbles, flexible pipes, solder, nuts & bolts cable glands etc. laid in pipes or trenches. The type, size & make will be subject to approval of HPSEB authorities. In case of non acceptance by HPSEB authorities it shall have to bhe repalace by the tenderer free of cost.	metre	metre
a. 3.00 core 4mm ² for switch board to motor.	50	Per
c) Providing and laying double loop earthing with copper plate 600x600x3mm thick electrode complete with material such as charcoal,common salt,G.I.pipes.thimbles,nuts & bolts,digging of pits,GI wiring & 20x5mm copper strips required capacity conforming to BIS 3043-1987 latest with upto date ammendments for above motor & other electrical equipments complete in all respect.	metre 1 job	metre Each
6 Supply & errection of floor / wall mounted power factor Shunt Capacitor conforming to BIS 2834-1986 latest with up to date ammendments BHEL,GEC,Machneil/Bajaj make to raise the prevailing power factor at site to 0.95 for direct connection to induction motor individually, of required KVAR according to HP of motor offered including cable Siemens/Gloster/ICC make from busbar chamber to capacitor and also including LT/ LK/ Kilburn make ICTP switches conforming to BIS 4064-1978 or latest with HRC fuses (Range to be specified by the tenderer.)	1x4 =4 KVAR	Per KVAR

7	Providing and laying column assembly as per required GI/MSERW pipes of suitable size (layout to be approved by the Engineer-Incharge) for suction delivery and common header considering site requirements and NPSH required/available. The pipe sizes for suction and delivery shall as per the requirement of offered pump and common header shall be equal to dia of rising main including tapers, flanges, bends, rubber gaskets, 3 mm thickness as per IS:2712-1979 and required number of nuts and bolts upto 5 metres from the outer wall of the pump house as per layout approved by the Engineer-Incharge as per IS:1364-1983 . The pipes material shall conform to relevant BIS codes and capable of with standing field test pressure equal to 1.5 times the operating pressure. The complete arrangement shall comprise of:-	50 Rmt	Per Rmt														
8	Errrection of all equipments from S.No. 1 to 4,6 & 7 including cost of tees, bends tapers & any other fittings required as per site conditions 7 as per direction of the Engineer-in-charge.	Job	Each														
9	Excavation in foundation trenches etc.(for pipes & pits up to all depths) in all kind of soil such as pick work, jumper work,blasting and chiselling soft or hard rock where blasing is prohibited in all leads and lifts including trimming and dressing of sides,levelling of bed to correct grade stacking the excavated soil clear from the edge of excavation and returning the excavated soil after laying, jointing and testing of GI pipes in trenches in 15 centimeters layers including consolidating each deposited layers by ramming and watering and then disposing of all surplus excavated soil as directed in all leads and lifts and soring strutting and timbering and dressing where ever required restoration of un-metalled/ metelled/ paved surface to its original condition including cost of diversion for traffic night signals, fixing caution boards, crossing over trenches for access to houses, fencing etc. complete in all respect and as per the direction of Engineer-in-Charge.	111.15 cubic metre	Per cubic metre														
10	Laying, jointing and testing in trenches (to level or grade) of pipes jointed with every joint flanged conforming to IS 1239-1990 (Part-I) with latest upto date amendments of grade and wall thickness as specified below, suitable to withstand required hydraulic test pressure in random length 4mm-6mm with plain ends and jointed with MS flanges conforming to IS 6392-1971 (latest upto date amendments) and welding of flanges as per IS 816-1969 with electrodes as per IS 814-1991 including required number and size of MS nuts and bolts as per IS 1369-1967 and compressed asbestos fibre jointing gaskets sheet not less than 3.00 mm in thickness as per IS 2712-1998. The welding of flanges to be done on both faces in two layers to make the joints leak proof and to entire satisfaction of the Engineer-in-Charge. The laying of pipes conform to IS 5822-1994 and as per CPHEEO manual and will include all operations such as cutting, welding and jointing including flushing, cleaning and hydraulic testing complete in all respect.																
	<table border="1"> <thead> <tr> <th>From</th> <th>To</th> <th>Length</th> <th>Class of pipe</th> <th>Wall Thickness</th> <th>Flange Table</th> <th>Dia of pipe</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0</td> <td>290</td> <td>GMS(M)</td> <td>4.00</td> <td>5</td> <td>125 mm dia</td> </tr> </tbody> </table>	From	To	Length	Class of pipe	Wall Thickness	Flange Table	Dia of pipe	1	0	290	GMS(M)	4.00	5	125 mm dia	290.00 runnin g metre	Per running metre
From	To	Length	Class of pipe	Wall Thickness	Flange Table	Dia of pipe											
1	0	290	GMS(M)	4.00	5	125 mm dia											
11	Providing and fixing cast iron double acting air valve 125 mm dia with insulating cock hex nipple for air ventibonite and rubber wall for large oriorifice respectively mounted on rubber brass of spindles flanges drilled as per IS-1538-1967 Table-5 tested 20 Kg/Cm2 body pressure of 20 Kg/Cm2 and 10 Kg/cm2 seat pressure complete in all respect as per the satisfaction of Engineer-in-charge with in all leads and lifts.	2 Numbe r	Each														

Note:- Terms and condition attached