

Job No. 1

SCHEDULE OF QUANTITY		Estimated Cost Rs :-			225,000
NAME OF WORK:-Providing water supply scheme to village Bairchha by drilling of Tube well in Tehsil Nalagarh Distt. Solan (HP) (SH:- Supply & erection of submersible pumping machinery with allied accessories)		Earnest Money Rs :-			4500
		Time :-			3 months
S.NO.	DESCRIPTION	QTY	RATE	UNIT	AMOUNT
1	Supply, erection, testing & commissioning of submersible pumping set three phase of reputed make such as BS/ KSB/ Sabar make three phase conforming to latest relevant BIS code. The pump should be fitted with free flow impellers of bronze /suitable alloy as per BIS 5659 or latest with up to date amendments suitable for raw/clear water having greased packed bearings & shell with wound stator on motor side & 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 electric induction motor of Kirloskar/NGEF/Jyoti / Crompton make conforming to relevant BIS code with up to date amendments totally dust & water proof for submersible duty isolated from the pump by intermediate casing with double mechanical seal in oil chamber chamber & grease packed lubricated bearings & provided with stainless steel thrust bearing plate to withstand non vertical loads with minimum wear & 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 guard, erection clamps, cable clips & depth gauge etc. & suitable for operation on data given below:-	2 Set		Per/ HP	
a)	Total Head in mtrs (i/c depth of Column Pipe in case of t/well) :	103.03	Set		
b)	Capacity (in LPS) of each pump set.	5.10	Make		
c)	Dia of R/Main (in mm)	100 mm	Model		
d)	Dia of Column pipe (in mm)	80 mm	BHP		
	Length of R/Main(in Metre)				
A)	SITE CONDITIONS:-				
i)	Location of Site:-	Mandhalla near T/Well			
ii)	The altitude of place in which the motor is intended to work:-	400.00 mtrs			
iii)	Humidity:-	Wheather generally remains humid during monsoon season			
iv)	Nature of atmosphere:-	As normally encountered in Shivalik Ranges			
v)	Detail of quality of water :-	Clear cold water			
vi)	Water free from sand or not:-	yes			
vii)	Water corosive or not:-	Not			
viii)	Turbidity :-	50 ppm			
ix)	Type of well:-	Tube well			
x)	Inside Dia of Well:-	300/200			
xi)	Depth of water during HFL in the pond:-	-----			
xii)	Max. draw down:-	...			
xiii)	Depth of T/well:-	150 mtr			

xiv	Any other information or requirement:-	----				
B)	OPERATING CONDITIONS:-					
i)	Type of current:-	AC three/single phase				
ii)	Operating frequency:-	50 HZ				
iii)	Rated voltage:-	400 (+/-) 10% volts				
iv)	System of earthing if any to be adopted:-	Double loop earthing as per BIS 3043-1987 latest with upto date ammendments				
v)	Speed of revolution:-	To be quoted by tenderer				
vi)	Direction of rotation:-	To be quoted by tenderer				
vii)	No. of working hours per day:-	8 hours				
viii)	The max. Temp. of cooling air & water in the place in which the pumpset is intended to work in ordinary service:-	Generally warm				
C)	MOTOR:-					
i)	Ref to BIS code:-	BIS 9283-1979 or latest with upto date ammendments				
ii)	Type of enclosure of motor:-	As per BIS 4691-1985 or latest with up to date ammendments				
iii)	Type of duty:-	"S1" i.e. Continuous duty type as per IS-12824-1989 or latest with up to date ammendments				
iv)	Mechanical out put in KW:-	Suitable for driving submersible pumps required for duties specified against pumps. To avoid overloading of motor a margin of about 15-20% may be kept in the rated out put of prime mover.				
v)	Class of insulation:-	Class ~B~				

vi)	Max.permissible temp. rise of motor reqd. if different from that given in B (viii) above:-	To be specified by the tenderer				
vii)	Particulars of test reqd. & where they are to be conducted:-.	As per terms & conditions attached				
viii)	Particulars as to whether voltage limiting device will be employed:-	Star Delta starter, oil immersed,fully automatic to be installed between bus bar & motor. Shunt capacitor is also proposed to be installed for improving the power factor at site.				
	(NOTE:- Star delta starter upto 37.5 KW & ATS for 37.5 KW & above)					
ix)	Type of motor:-	As per BIS 9283-1979 or latest with upto date ammendments				
x)	Details of shaft extension reqd:-	To work with the pump offered				
xi)	Breakway torque in terms of rated load torque & the corresponding breakway starting current which may be taken from the supply with the starting apparatus in circuit:-	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 which has a bearing upon the torque reqd. during the accelerated period, the kinetic energy of the moving parts to be accelarated & No.of starts during a specified period:-	To work the pump offered				
xiii)	Where possible fault capacity of the system to which the motor is connected:-	The motor should be able to withstand initial current of 2.5 times the rated current for two minutes without suffering damages or permanent deformations				
D)	PUMPS:-					
i)	Nos of pumps reqd.:-	2 Nos. Pump .(One will be kept as stand bye)				
ii)	Spare parts required:-	For One year normal maintenance as recommended by manufacturer.				
iii)	Type of drive:-	Electric induction motor				
iv)	Optional fittings reqd.:-					
E)	PUMP OPERATING CONDITIONS:-					

i)	Capacity of each pump (in lps) :-	5.10				
ii)	Total head (in Mts.) :-	103.03				
	If total head is not known then following details be provided:-					
	i) Static head (in mtrs):-					
	ii) Minimum depth of water (in mtrs) :-					
	iii) Seasonal Variation in water level (in mtrs):-					
	iv) Ground level to max. water level (in mtrs) :-					
	v) Ground level to delivery point (in mtrs):-					
	vi) Pressure in the suction tank (in kg/cm sq.					
	vii) Pressure in the delivery tank (in kg/cm sq.) :-					
iii)	Length of R/Main (in mtrs):-	510				
iv)	Dia of R/Main (in mm):-	80 mm				
v)	Length of Column pipe (in mtrs):-	55				
vi)	Dia of Column pipe (in mtrs)	80 mm				
vii)	Turbidity of water (in ppm):-	50 ppm				
viii)	Drive type:-	Electric driven				
ix)	Limits of total head in which the pump is reqd. to operate:-	(-) 15% to (+) 10% of total head.				
x)	Suction/delivery size of pump:-	To be specified by the tenderer				
xi)	Efficiency of pump at	To be specified by the tenderer				
	a) duty head	135.50				
	b) (+) 10 % head	149.05				
	c) (-) 15 % head	115.18				
xii)	Material of construction:-	To be specified by the				
2	Supply & fixing at site of suitable direct on line/ Oil immersed star delta/ ATS/ startor rotor starter of standard make such as MEI/Kilburn/Jyoti/ Siemens/Larson & Tubro conforming to BIS-8544-1979 latest with up to date ammendments for squirrel cage/slip-ring motor (make to be specified by the tenderers) mounted on panel board with magnetic type over load release & dashpot,time lag,under voltage release with initial oil filling .		1		Each	
			No.			
	Note:- Star - delta - starter upto 37.5 KW , ATS between 37.5 KW to 50 KW and stater rotor starter with sliping motor beyond 50 KW.					
3	Providing M.S. sheet 16 SWG steel fabricated floor mounted closed almirah type switch board including angle iron post of suitable height and size ISA 40x40x6mm duly painted comprising and capable of mounting including cost of providing & fixing the following accessories with all internal electric connections. The drawing of panel board shall be subject to approval of Engineer in charge.					
a)	Ammeter AC supply,100 mm dia circular dial Auto electric/AE/IMP/Havells make of suitable range for above motor with selector switches conforming to BIS 1248-(P-II)1983 latest with up to date ammendments.		1		Each	
			No.			
b)	Voltmeter AC supply,100 mm dia circular dial Auto electric/AE/IMP/Havells make of suitable range for above motor with selector switches conforming to BIS 4064-1978 with up to date ammendments.		1		Each	
			No.			

c)	ICTP switches with HRC fuses of Kilburn/Larsen & Tubro/Standard/Siemen/Havells make and having capacity 30% extra of the operational rating of motor as per BIS 4064-1978 with upto date ammendments immediatly after the power meter of HPSEB.	1		P/ Set	
		Set.			
d)	Busbar chamber having three copper bars of suitable rating for full length equal to width of board of three live phases and one copper bar of half rating of full length for neutral conforming to BIS 8084-1976 and 11353-1985 read with 5578-1985 all latest with upto date ammendments.	1		Each	
		No			
e)	ACB/MCB/Oil circuit breaker of suitable capacity of Kilburn/L &T/MEI/GEC/Standard make on incomming feeder for	1		Each	
		No.			
f)	Three phase indicating lamps complete with toggle switches for individual motors conforming to BIS 3452 part I & II	1		Each	
		Set.			
g)	Earth leakage circuit breaker/relay of recommended make such as Kilburn/L&T/MET/GEC conforming to BIS-2516-	1		Each	
		No.			
h)	Hour run meter of reputed make of four digit capacity conforming to BIS-722 (latest edition)/recommendations.	1		Each	
		No.			
i)	Suitable three phase voltage monitor relay with all protections & usual indicators with electric sirens against single	1		Each	
		No.			
j)	Single phase preventor of reputed make & suitable capacity conforming to IS:1248 (P-V)-1983 with up to date	1		Each	
		No.			
4 (a)	Supply & fixing at site of kirloskar/ Kilburn/ IVC/ Fouress/ Gled/BHEL/ Leader/ KSD make of suitable size cast steel	1		Each	
		No.			
	(Note:- The sluice valve shall conform to BIS 780-1984 latest with upto date ammendments however, if the seat				
b	Supply & fixing at site of Kirloskar/Kilburn/IVC/Fouress/Gled/BHEL/Leader/KSD make of suitable size cast iron double	1		Each	
		No.			
	NOTE:- The reflux valve shall conform to BIS 5312-1984 (part I) latest with up to date ammendments. However if the				
5 (a)	Providing & jointing at site suitable size copper PVC insulated armoured power three & half core cable (for supply	Job		Per/ job	
(b)	Providing & jointing at site PVC jointless flat water proof cable (for Motor Side) as per BIS 694-1990 (latest with up to	Job		Per/ job	
©	P/L double loop earthing with copper plate 600x600x3mm thick electrode complete with material such as charcoal,	Job		Per/ job	
d	Supply & errection of floor/wall mounted power factor shunt capacitor conforming to BIS 2834-1986 or latest with upto	1		Each	
		No			
6	Supply& fixing at site of 100mm dia circular dial pressure gauge of suitable range & standard make such as	1		Each	
		No			
7	Lowering of GMS medium grade column pipe assembly of size as indicated in item 1 (d) including MS flanges of	Job		Per/ job	
	(In case source is T/well)				
	Terms & Conditionfor Pumping machinery attached.			Total	

TERMS AND CONDITIONS .

- The firm shall forward a copy of supply order /indent placed by it, for the supply if pumps and motors on the manufacturers/authorized dealers of the pumps and motors to the consignee within 30 days after issue of the letter of intent/award by the Engineer In-charge. The copy of supply order/intent to the consignee should also accompany the dealership certificate of the dealer for the pumping machinery in case the pumps and motors are arranged from the authorized dealer.

- 2 The firm shall arrange dispatch of offered pumps and motors to the consignee direct from the manufacturers/their authorized dealer of the pumping machinery for which the supply order/indent has been placed by the firm. The packing slip should indicate the details of materials in the package and material of construction of pumps and motors.
- 3 The shop test for the pumps and motors shall be carried out at manufacturer's works in the presence of representative of the department as per IS: 325-1978. The test performance certificate of the pumping machinery shall be arranged by the firm from the manufacturers and get it approved from the Engineer In-charge before actual dispatch of the pumping machinery.

- 4 The firm shall supply the recommended list of spares and quantities required for normal working of pumping machinery (2 years) from the manufacturers of the aforesaid equipment at the time of quoting rates and shall quote item rates for the same also.
- 5 The firm shall supply the manufacturer's manuals for the operation and maintenance of the pumping equipment.
- 6 The firm shall arrange operation and maintenance training to the operating staff for the pumping machinery without extra cost for a period of 7 days I.e. during the testing period.
- 7 The characteristic curves/performance curve chart in original of the offered pumping equipments shall be supplied with the tender by the participating firms failing which the tender shall be rejected.
- 8 The firm shall supply & get the same approved from Engineer In-charge, the layout drawing in respect of various components, such as suction pipes, valves, cable, trenches, control panel etc. from the foot valves location to the common header which shall extend up to 5 meter from the outer wall of the pump house towards rising main. The details of foundations required for various components shall also be supplied by the firm within 30 days of the letter of intent/award.
- 9 The installation of pumping machinery above 100HP shall be inspected by the technical representative of the manufacturer of rank not less than that of a service engineer, at the work site and inspection certificate shall be supplied to the Engineer In-charge. This inspection shall be in addition to the test report and nothing extra shall be paid on this account.
- 10 All the civil work shall be constructed by the department.
- 11 The wiring and installation of electric equipment shall be as per HPSEB rules and regulations and subject to the approval of the Chief Electrical Inspector and or his authorized officer. Any defect pointed out shall be rectified by the firm without any extra cost. The wiring and installation of all electric equipment shall be done by licensed contractor of approved class of HPSEB and test report shall be got accepted from the HPSEB authorities on their approval format (Form-D) for release of power connection by the firm without extra cost.
- 12 The temporary electrical connection, if required during installation shall be arranged by the firm at its own cost and energy charges shall also be paid directly by the firm to the HPSEB.

- 13 Prices of all the items shall be FOR site of work inclusive of all leads and lifts and shall be inclusive of all charges of transportation. Insurance, packing, taxes and duties such as sales tax, excise duty and local taxes extra.
- 14 The rates shall be quoted only on the format of schedule of quantities which is attached with the tender documents giving all specified data so desired there in.
- 15 The rates offered for, the specified makes in the schedule of quantities only shall be considered. Rates quoted for part of non specified makes shall lead to rejection of the tender.
- 16 The site of works are located at village Bairchha .The rates quoted by the firm shall be inclusive of all mechanical and manual transport within all leads and lifts.
- 17 All the equipments /material shall conform to the relevant BIS specifications wherever applicable and in its absence to any accepted national/International standards.
- 18 All the equipment shall be guaranteed against any manufacturing defect including metallurgy and its performance for a period of 12(twelve) months from the date of commissioning/24 (Twenty four) months from the date of supply whichever is earlier. Any defect if noticed within the stipulated period shall be rectified by the firm at its own cost within 15 days of bringing the same to its notice. The guarantee clause shall be substantiated by a guarantee bond of a Nationalized Bank for an amount equal to the cost of pumping and electric equipment (accessories included) pledged in the name of the Executive Engineer in-charge at the time of applying for refund of security deposits. The guarantee bond shall be released after the expiry of the guarantee period.
- 19 The installed pumping machinery and other allied accessories shall be tested daily for stipulated pumping hours in the NIT for a period of seven days without extra cost. However, the cost of electricity and water shall be borne by the deptt.
- 20 During the guarantee period efficiency of the pumping and the electric equipment should not vary beyond the range of (+/-) 2.5% .If during guarantee period, the efficiency falls beyond 2.5% to a maximum of 5%, 1% cost of the pump set for 1% fall of the efficiency shall be deducted. In case of fall of efficiency beyond 5% the pump set shall be rejected and cost of the defected pump set recovered from the pledged Bank guarantee & or from the security deposit as the case may be.
- 21 80% (eighty percent) payment of the cost of pumping machinery and equipment less 10% security and other statutory recovery shall be made after receipt of complete pumping machinery i.e. pump and motor received together at site of work in good condition. The balance 20% cost after deduction of the security and other recoveries shall be released after successful and satisfactory installation, testing of the entire equipment. Ten percent security deposit shall be released as stipulated in the agreement.
- 22 90% (ninety percent) installation charges shall be released after satisfactory installation of all the pumping and electrical equipment. Remaining 10% of installation charges shall be released after testing of the entire equipment.
- 23 The installation of pumping machinery shall be inspected by the technical representative of manufacturer of rank not less than that of service Engineers at site of work and inspection certificate shall be supplied by to the engineer in charge. This inspection shall be in addition to the test report and nothing extra be paid on this account.

- 24 Unless otherwise specified delivery pipe and pipe for common header shall be of same specification as of Rising Main in initial R.D,s near pump house.
- 25 Only manufacturers or their authorized dealers shall be eligible to participate in the tender process. They shall have to provide certificate from principal manufacturers.
- 26 Those firms/persons having sub-dealership of any approved make of pump shall be allowed to participate in tender process if and only if they are authorized dealer of any one of the approved make of pump.
- 27 Documentary proof of dealership/sub-dealership for supplying pumping machinery of NIT make must be attached with the tender by the participating firms/ contractors.
- 28 In case a principal manufacturer or authorized dealer offers a Pump of which he is not a manufacturer or an authorized dealer, he must at least have sub dealer-ship of the pump "make" offered by him .
- 29 Any authorized dealer participating in the tender process of the given work shall not be allowed to give authority to any individual/firm for the same work.

Executive Engineer,
I&PH Divn. Nalagarh.