

SCHEDULE OF QUANTITY		ESTIMATED COST- Rs. 2,02,500/-			
		EARNEST MONEY - Rs. 4,050/-			
NAME OF WORK :- Providing LWSS to NC /PC hab. Of CV Bokala Pab in Tehsil kamroo Distt. Sirmour (H.P.)		Time:- 3 Months			
(SH: - Supply & Errection of Centrifugal Pumping Mahinary with allied Accessories)					
S.NO.	DESCRIPTION	QTY	RATE	UNIT	AMOUNT
1	Supply, erection, testing & commissioning of Centrifugal pumping set of reputed make such as KSB/BS/Johnston/Worthington conforming to latest relevent 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 ammendments 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 relevent BIS code with up to date ammendments 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, errection clamps, cable clips & depth gauge etc. & suitable for operation on data given below:-	2 Set (2X15=30HP)		Per HP	
1.01	a) Total Head in mtrs (i/c depth of Column Pipe in case of t/well) : 447.50 b) Capacity (in LPS) 1.26 LPS c) Dia of R/Main (in mm) 50.00 mm d) Dia of Column pipe (in mm)				
1.02	(A) SITE CONDITIONS:- Motorable i) Location of site:- ii) The altitude of place in which the motor is intended to work:- iii) Humidity:- Whether Generally remains humid during monsoon season iv) Nature of Atmosphere:- As normally encountered in Shivalik Ranges v) Detail of quality of water:- Clear Water vi) Water free from sand or not:- Free from Sand vii)Water corosive or not:- --- viii)Turbity:- --- ix) Type of well --- x) Inside dia of well xi) Depth of water during HFL in the pond xii)Max draw down xiii)Depth of well xiv) Any other information or requirement: -				

S.NO.	DESCRIPTION	QTY	RATE	UNIT	AMOUNT
1.03	<p>(B)OPERATING CONDITIONS:-</p> <p>i) Type of current:-</p> <p>ii) Operating frequency:-</p> <p>iii) Rated voltage</p> <p>iv) System of earthing if any to be adopted:- Double loop earthing as per BIS 3043-1987 latest with upto date ammendments</p> <p>v) Speed of revolution:- To be quoted by tenderer</p> <p>vi) Direction of rotation:- To be quoted by tenderer</p> <p>vii) No. of working hours per day: - 16 Hours.</p> <p>viii)The max. Temp. of cooling air & water in the place in which the pump set is intended to work in ordinary service:-</p>				
1.04	<p>(C) MOTOR</p> <p>i) Ref to BIS code:- BIS 9283-1979 or latest with upto date ammendments</p> <p>ii) Type of enclosure of motor:- As per BIS 4691-1985 or latest with upto date ammendments.</p> <p>iii) Type of duty:- "S1" i.e. Continuous as per IS-12824-1989 or latest with up to date ammendments.</p> <p>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.</p> <p>v) Class of Insulation:- Class ~B~</p> <p>vi) Max.permmissible temp. rise of motor reqd. if different from that given in B (viii) above:- To be specified by the tenderer</p> <p>vii) Particulars of test reqd. & where they are to be conducted:- As per terms & conditions attached</p> <p>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, ATS between 37.5 KW to 50 KW)</p> <p>ix) Type of Motor: - As per BIS 9283-1979 or latest with upto date ammendments.</p> <p>x) Details of shaft extension reqd.:- To work with the pump offered.</p> <p>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.</p> <p>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 accelrated & No.of starts during a specified period:- To work the pump offered</p> <p>xiii) Where possible fault capacity of the system to which the motor is connected:- The motor should be</p>				
1.05	<p>(D) PUMPS</p> <p>(i) Nos of pumps reqd.:- 2 No. Pump</p> <p>(ii)Spare parts required:- For two years normal maintenance as recommended by manufacturer.</p> <p>(iii)Type of Drive</p> <p>iv) Optional fittings reqd.:- ---</p>				

S.NO.	DESCRIPTION	QTY	RATE	UNIT	AMOUNT
1.06	<p>(E) PUMP OPERATING CONDITIONS:- As per conditions attached.</p> <p>i) Capacity in LPS 1.26 LPS</p> <p>ii) Total head (in mtrs) 447.50</p> <p>(If total hed is not known then follown detail be provided)</p> <p>i) Static head (in mtrs)</p> <p>ii) Minimum depth of water (in mtrs)</p> <p>iii) Variation in water level (in mtrs)</p> <p>iv) Ground level to max. water level (in mtrs.)</p> <p>v) Ground level to delivery point (in Kg/cm^2)</p> <p>vi) Pressure in the suction tank (in Kg/cm^2)</p> <p>iii) Length of R/Main (in mtrs):- 1520 Mtrs.</p> <p>iv) Dia of R/Main (in mm):- 50 mm</p> <p>v) Length of column Pipe (In Mtrs.)</p> <p>vi) Dia of column pipe</p> <p>vii) Terbity of water (in ppm) Clear water</p> <p>viii) Drive Type Electric Driven</p> <p>ix) Limits of total head in which the pump is reqd. to operate: - (-)15% to (+)10% of total head</p> <p>x) Suction/delivery size of pump:- To be specified by the tenderer</p> <p>xi) Efficiency of pump at:- To be specified by the tenderer</p> <p>a) duty head --</p> <p>b) (+)10% of head --</p> <p>c) (-)15% of head --</p> <p>xi) Material of construction:- To be specified by the tenderer(manufacturers certificate to be appended)</p>				
2	<p>Supply of suitable direct on line/oil immersed star delta /ATS/stator 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 .</p> <p>Note:- Star - delta - starter upto 37.5 KW , ATS between 37.5 KW to 50 KW</p>	2		No.	
3	<p>Providing &fixing at site 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 the following accessories with all internal electric connections. The drawing of panel board shall be subject to approval of Engineer in charge.</p>	1		No.	
3.01	<p>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.</p>	2		No.	
3.02	<p>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.</p>	1		No.	
3.03	<p>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.</p>	2		No.	

S.NO.	DESCRIPTION	QTY	RATE	UNIT	AMOUNT
3.04	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		No.	
3.05	e) ACB/MCB/Oil circuit breaker of suitable capacity of Kilburn/L &T/MEI/GEC/Standard make on incoming feeder for motors offered by the tenderer conforming to BIS 2516-1985 latest with upto date ammendments with initial oil filling whenever required & neutral linked under voltage release.	1		No.	
3.06	f) Three phase indicating lamps complete with toggle switches for individual motors conforming to BIS 3452 part I & II latest with up to date ammendments.	1		No.	
3.07	g) Earth leakage circuit breaker/relay of recommended make such as Kilburn/L&T/MET/GEC conforming to BIS-2516-1977 with upto date ammendments and of suitable range which should have control box, oprating handel and trip/reset push 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 tap CTS. It should also be fitted earth fault for tripping of breaker on occurance of earth fault on/ of breaker load side.	1		No.	
3.08	h) Hour run meter of reputed make of four digit capacity conforming to BIS-722 (latest edition)/ recommendations.	2		No.	
3.09	i) Suitable three phase voltage monitor relay with all protections & usual indicators with electric sirens against single phasing, No/low voltage, high voltage & overloading & phase voltage difference as per IS-3842 with up to date ammendments.	1		No.	
3.1	j) Change over Switch of reputed make & suitable capacity	1		No.	
3.11	k) Single phase preventor of reputed make & suitable capacity conforming to IS:1248 (P-V)-1983 with up to date ammendments	1		No.	
4.1	supply of Kirloskar/Kilburn/IVC/Fouress/Gled/BHEL/Leader/Bir/Kartar make of cast iron/cast steel double flanged sluice valve having size one size higher than the nominal delivery size of pump and capable of withstanding nominal seat pressure as mentioned in item No. 1(a) & conforming to BIS/API-standards with up to date ammendments for delivery line of pump (NOTE:- The sluice valve shall conform to BIS 780-1984 latest with up to date ammendments However, if the seat pressure exceeds the limits prescribed in BIS 780 then the sluice valves shall be of cast steel conforming to class 150 ASA (Seat pressure 21 Kg/cm²) or class 300 ASA (seat pressure 52 Kg/cm²) as per BS 1414 (API 600) or class ASA-600 (Seat pressure 103 kg/cm²) as per API-600	2		No.	
4.2	Supply of Kirloskar/Kilburn/IVC/Fouress/Gled/BHEL/Leader make of suitable size cast iron/cast steel double flanged swing check type reflux valve for delivery line of pump having bye pass arrangement & size one size higher than the nominal delivery size of pump and capable of withstanding nominal seat pressure as mentioned in item No. 1(a) & conforming to BIS/API-standards with up to date ammendments for delivery line of pump NOTE:- The reflux valve shall conform to BIS 5312-1984 (part I) latest with up to date ammendments. However if the seat pressure exceeds the limits prescribed in BIS 5312 then the reflux valves shall be of cast steel conforming to class 150 ASA (Seat pressure 21 Kg/cm²) or class 300ASA (seat pressure 52 Kg/cm²) as per BS-1414 (API600) OR CLASS asa-600 (Seat pressure 105.40 kg/cm²) as per API-6D	2		No.	

S.NO.	DESCRIPTION	QTY	RATE	UNIT	AMOUNT
4.3	<p>Supply of Kirloskar/Kilburn/IVC/Fouress/Gled/BHEL/Leader/Kartar/Pelicon make of suitable size cast iron /Cast Steel double flanged swing check type reflux valve conforming to API/BIS standard with up to date amendments for R/main as mentioned in item No.1 (c) for withstanding nominal seat pressure as per item No.1(a) The size of reflux valve shall be equal to size of Rising main of the same shall be provided with suitable bye pass arrangements.</p> <p>NOTE:- The reflux valve shall conform to BIS 5312-1984 (part I) latest with up to date amendments. However if the seat pressure exceeds the limits prescribed in BIS 5312 then the reflux valves shall be of cast steel conforming to class 150 ASA (Seat pressure 21 Kg/cm²) or class 300 ASA (seat pressure 52 Kg/cm²) as per BS 1414 (API 600) or class ASA-600 (SEAT PRESSURE= 105.40 KG/CM2) AS PER API-6D.</p>	1		No.	
5.1	<p>P/L suitable size copper PVC insulated armoured power three & half core cable conforming to BIS 1554 (Part I) - 1988 or latest with up to date amendments of Siemen/Gloster/ ICC/EICO /National /IEC make from meter of HPSEB to circuit breaker & from circuit breaker to bus bar switch & starter (one cable carrying all three phases) including all other electrical equipment/accessories such as thimbles,flexible pipe,solder,nuts & bolts,cable glands etc. laid in pipes or trenches under floor. The type,size & make will be subject to approval of HPSEB authorities. In case of non acceptance by HPSEB authorities it shall have to be replaced by the tenderer free of cost.</p>	1		job	
5.2	<p>P/L jointless flat water proof cable as per BIS 694-1990 (latest with upto date ammedments) suitable for the pump sets offered from circuite breaker to motor & motor t starter including all other electrical equipments such as thimbles, flexible pipes, solder nuts & bolts cable glands etc. laid in pipes or trenches The type sixe & make will be subject to approval of HPSEBL authorities in case of non acceptance by HPSEB authorities it shall habe to be replaced by the tenderer</p>	1		Job	
5.3	<p>P/L double loop earthing with copper plate 600x600x3mm thick electrode complete with material such as charcoal, common salt ,GI pipes,thimbles,nuts & bolts,digging of pits,GI wiring & 25x5mm copper strips of required capacity conforming to BIS 3043-1987 latest with up to date amendments suitable for above motors & other electrical equipments.</p>	1		Job	
5.4	<p>Supply & errection of floor/wall mounted power factor shunt capacitor of suitable KVAR conforming to BIS 2834-1986 or latest with upto date ammdments of BHEL/GEC/Machneil/ Mager/Bajaj/L&T 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 & also including L&T/Kilburn/Standard/Siemen/Havells make ICTP switches conforming to BIS 4064-1978 or latest with HRC fuses (Range to be specified by the tenderer).</p>	2		No.	
6	<p>Supply of 100mm dia circular dial pressure gauge of suitable range & standard make such as Fiebeg/Bourden/Precision/PREGA with all accessories such as stop cock,copper tubing etc. conforming to BIS 3624-1987 or latest with up to date ammdments.</p>	1		No.	

S.NO.	DESCRIPTION	QTY	RATE	UNIT	AMOUNT
7	<p>P/F double flanged suction, delivery pipe & common header considering site requirements, NPSH required & available & common header having area equal to two times the area of delivery branch of pump including tapers, flanges, rubber gaskets 3mm thick as per BIS-2712-1978 nuts & bolts as per 1364-1983 & special up to 5 mtrs. away from the outer wall of pump house as per layout drawings approved by Engineer-in-Charge. The pipes shall be capable of withstanding 1.5 times the total pressure indicated in item no. 1 (E)-(ii). The size of suction pipe shall be one or two sizes larger than the suction size of pump such that velocity of flow in suction pipe is not more than 3.00 mtr/sec & delivery pipe shall be of size one size larger than nominal delivery size of pump.</p> <p>NOTE:- Actual laying to be done as per final drawings to be approved by the Engineer in charge</p>	1		No.	
8	<p>Providing and lowering of GMS/MSERW column pipe assembly of size as indicated in item 1d including MS flanges of appropriate size capable to withstand nominal pressure as mentioned in item No 1 a & conforming to IS 6392 with up to date amendments including the cost of rubber asbestos gasket of maximum 3mm thickness as per IS 2712-1979 and required number of nuts and bolts as per IS 1364 1983.</p>	75		Rmt	
9	<p>Erection of all equipments from S.No.2 to 4, 6 & 8 i/c cost of tees, bends tapers & any other fittings required as per site conditions & as per directions of Engineer-in-Charge.</p>	1		No.	
	TOTAL				