SCHEDULE OF QUANTITY

Estiamated cost:-187500/-

Name of work :- Re-drilling of Tube well No. 23, 37 & 39 in Tehsil Indora Distt. Kangra (C/O T/well No.23)

E/Money :-3750/-

(SH:- Providing and installation of submerssible pumping machinery with its allied accessories).

Time :- 6 months

S.No.	Description of items	Specification	Qty.		Rates		Unit	Amount
					Fig	Words		
1	Supply of submerssible puming set of KSB/ Calama/ SU/Crompton /Johnston/ Worthington/BS/OSWAL make confirming to BIS:8034-1979 (latest) suitable for lifting clear, cold & fresh water fitted with bronze impellers or suitable allow directly coupled to squirrel cage electric induction motor of same make as that of pump confirming to BIS:9283-1979 (latest with upto date ammendments) and totally water proof for submerssible duty, isolated from the pump by intermediate casing with double mechanical seal in oil chamber, grease packed lubricated bearings & provided with stainless steel thrust bearing plate to with stand non-vertical loads with minimum wear and tear. It should also be fitted with a device to take up expension of water with the heating of motor including water level guard, errection clamps, cable clips & depth guage etc. The pump shall be suitable for operation on data give below:-	(A) Pumps	1	set of 25 HP			P/HP	
i)	Location of site — The site is locatred at a distance of 8 kms from Kandori Railway station by road and 500 mtr by head load.	b) Motor						
ii)	The altitude of place in which pumping set is intended to work — Altitude of place is 450 m about MSL							
iii)	Type of current — AC three phase with frequency of 50 cycles/second.							
iv)	Rated voltage — 415V + 10%							
v)	Type of water — Clear cold fresh water							
vi)	Charastristics of water — a) Temperature 20 C; d) PH ___; b) Turbidity upto 10 NTU; e) Total solids __ Mg/Litre; c) Hardness -- Mg/Litre(as CaCO3); f) Others ___; d) Alkalinity ___ Mg/Litre (as CaCO3)							
vii)	Depth of T/well assembly — 41.00 mtrs. bGL							
viii)	S.W.L in Well/Tube well — 59.00 mtr							
ix)	Maximum draw down — 3.00 mtr							
x	Centre line level of pump — 63 mtr							
xi)	Discharge level of highest point. — 102.64 mtr.							
xii)	Nos. of pumps required., — 1Nos. pumps set							
xiii)	Capcity — 18.20 lps for each pump.							
xiv)	Total head in mts. — 48.36 mtrs							
xv)	Length of R/main — 360 mtrs							
xvi)	Dia of rising main — 200mm , 4.80mm thickness							
xvii)	Pumping hours per day — 16 hours.							
xviii)	Limits of pump operation — (-) 25% to (+) 10% of total head							
xix)	HP of motor/Drive unit — Required BHP of pump at (+) 10% & (-)25 of total head or BHP with following margins/multiplying factor at duty point, whichever is higher: a) Upto 2 HP = 1.5; b) 2 to 5 HP - 1.4; c) 5 to 10 HP = 1.3; d) 10 to 20 HP = 1.2; e) 20 to 100 HP 1.15; f) Above 100 HP = 1.10							
xx)	RPM of pumping set (1450/2900) — 2900 rpm							
xxi)	Test Run — 16 hours contineously for 7 days							

2	Supply of suitable oil immersed star delta starter of standard make such as L&T conforming to BIS-8544-1979 latest with upto date ammendments for squirrelcage/slipering motor mounted on pannel board with magnetic type over load release & dashpot, time lag, under voltage release with initial oil filling. **Note :- Star delta starter upto 37.5 KW, Auto Transformer Starter between 37.5 KW to 50 KW and Srator Rotor starter with slippering motor beyond 50 KW.**	1	No.	Each
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-65x65xx6mm duly painted comprising and capable of mounting the following accessories with all internal electric connections complete . **Note :- The drawing of pannel board shall be subject to approval of Engineer-in-charge.**	1	No.	Each
a.	Ammeter AC supply 100mm circular dial L&T Rishav/Auto electric/AE/IMP/Havells make of suitable range for above motor with selector switches confirming to BIS-1248-1983 (latest edition).	1	No.	Each
b.	Voltmeter AC supply 100mm circular dial L&T Rishav/Auto electric/AE/IMP/Havells make of suitable range for above motor with selector switches conforming to BIS:8044-1978 (latest edition).	1	No.	Each
c.	ICTP switches with HRC fuses of kilburn/L&T/Siemens/Standard/Havell's make and having capacity of 30% extra of the operational rating of motor as per BIS-4064-1978(with upto date ammendments immediately after the power meter of HPSEB).	1	No.	Each
d.	Busbar chamber of approved make having 3 copper bars of suitable rating for full length equal to width of board of 3 live phases and one copper bar of half rating of full length for neutral confirming to BIS-8084-1976 and IS-11353-1985 read with BIS-5578-1985 with upto date ammendments.	1	No.	Each
e.	MCB/MCCB of 32 Amp., of Kilburn/L&T/MEI/Standard/GEC/Havells make on incoming feeder for pumping set confirming to BIS:2516-1985 (latest edition) with neutral linked under voltage release.	1	No.	Each
f.	Three phase indicating lamps complete with toggle switches for individual motors as per IS-3452(Part-I&II) (latest with upto date ammendments)	3	Nos.	Each
g.	Hour run meter of reputed/approved make of four digit capacity confirming to BIS-722 (Latest edition)	1	No.	Each
4 (a)	Provioding cast iron double flanged sluice valve of Kirloskar/Leader make of size __ mm & class PN-1.00 having one size higher to delivery size of pump and capable of with standing nominal seat pressure of 10 kg/cm2. confirming to IS-780-1984 (latest with upto date ammendments) The size of S/valve shall be specified by the tenderer)	1	No.	Each.
(b)	Supply of Kirloskar/Leader make cast iron double flanged swing check type reflux valve having bye pass arrangement and one size higher to delivery size of pump (size ___ mm & class-PN-1.0) and shall be suitable for withstanding nominal seat pressure of 10 kg/cm2. confirming to IS-780-1984 (latest with upto date ammendments)The size of Reflux valve shall be specified by the tenderer)	1	No.	Each.
(C)	Supply of Kirloskar/Kilburn/IVC/Fourcess/Gled/Leader make cast iron double flanged swing check type reflux valve having bye pass arrangement and one size equal to dia of Rising main i.e. 150mm & of class-PN-1.0 and shall be suitable for with standing nominal seat pressure of 10kg/cm2 confirming to IS-780-1984 (latest with upto date ammendments)	1	No.	Each
5(a)	Providing and laying suitable size copper PVC insulated armoured power 3.5 core water proof cable of suitable size __ mm sq. confirming to BIS 1554- (Part-I) 1988 or latest with upto date ammendments of Siemen/Gloster/ICC/Finolex make from meter of HPSEB to MCB/OCB & from OCB to Busbar switch & starget (one cable carrying all three phases) including all other electrical equipment/accessories such as thimbles, flexible pipe, solder, nuts, & bolts, cable gland etc laid in pipes or trenches under floor. The type, size & make will be subject to approval of HPSEB authorities. Incase of non acceptance by HPSEB authorities it shall have to be replaced by the tenderer free of cost (The size of cable to be speicified by the tenderer).	15	mtr	P/mtr

(b)	Providing and laying PVC jointless flat water proof cable of size __ mm sq. for the pump set of offered as per BIS 1554-part-1998ammendments) Siemen/Gloster/CC Finolex from OCB to motor, motor to starter including all other electrical equipment 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 be replaced by the tenderer free of cost (The size of cable to be speicified by the tenderer).	82 mtr	P/mtr	
(c)	P/L double loop earthing with copper plate 600x600x3mm thick electrode complete with material such 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 upto date ammendments for above motor & other electrical equipment.	1 Job	LS	
(d)	Supply and errection of floor/wall mounted power factor shunt capacitor conforming to BIS-2834-1986 latest with upto date ammendments BHEL/GEC/Mechneil/Mager/Crompton make to raise the prevailing power factor at site to 0.95 for direct connection to induction motor individualoly, of required KVAR according to HP of motor offered including cable Siemen/Gloster/ICC make from busbar chamber to capaitor & also including LT/LK/Kilburn make ICTP switches conforming to BIS 4064-1978 or latest with HRC fuses (Rangae to be specified by the tenderer).	2x6= 12 KVAR	P/KVAR	
6	Supply of standard make oil filled pressure gauge of suitable range of Fiebig make complete with all accessories such as stop cock, copper tubing etc., confirming to IS:3624-1978(with upto date ammendments).	1 No.	Each	
7	P/L column assembly of 125 mm dia of MSERW pipe 4.0mm thick conforming to BIS-1978-82 considering site requirement duly flanged Table-5 at every 3 netre length with flanges conforming to BIS-6392-1971 (Table-5) including cost of tapers, flanges, rubber gaskets 3mm thick as per BIS-2712-1978, nuts and bolts as per 1364-1983 & specials upto collection tank as per direction of Engineer-in-charge as per layout approved by the E-in-charge. The pipes shall be capable of withstanding 1.5 times the total pressure indicated in item No. 1 (xii). **Note :- Actual laying to be done as per final drawings to be approved by the Engineer-in-charge**	48.95 mtr	P/mtr	
8	Errection of all items from S.No. 1 to 4 & 6 i/c cost of tees, bends tapers & any other fittings required as per site conditions & as per direction of Engineer-in-charge.	1 Job	LS	
			Total	

TERMS AND CONDITIONS:-

1. All the equipments or accessories to be supplied shall be of suitable capacity/rating and shall be only of the make as specified in NIT. Nothing extra shall be paid for any change in capacity/rating of the equipments offered if the same does not fulfil the requirements as per NIT.
2. Original Charachstric curve/selection chart of the offered pump set duly marked with discharge, total head efficiency, BHP and NPSH required at duty point and (-) 25% & (+) 10% of total head, nust accompany with the tender, otherwise the same will be summarily rejected. The Ch. curve shall be legible and must be signed by the tendering contractor/firms.
3. In case of the efficiency of the offered is less than 60% the offer of the contractor shall be rejected straightway.
4. The respective class & size of reflux valves/sluice valve (for delivery & suction side) shall be mentioned clearly and shall cary a guarantee of minimum two years. The make of valve shall be either engraved or cast inside the body of the valve.
5. The firm shall forward a copy of supply order/indent placed by it for the supply of pumps and motors on the manufacturers/authorised dealers of the pumps and motors to be consignee within 30 days after issue of the letter of indent/award by the Engineer-in-charge. The copy of supply order/indent 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 authorised dealer.
6. The firm shall arrange dispatch of offered pumps and motors to the consignee direct from the manufacturers/their authorised dealer of the pumping machiney 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.
7. The shop test for the pumps and motors shall be carried out at manufacturers 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.
8. The firm shall supply the recommended list of spares and quantities required for normal working pumping machinery (2years) from the manufacturers of the aforesaid equipment the time of quoting rates and shall quote item rates for the same also.
9. The firm shall supply the manufacturers manuscripts for the operation and maintenance of the pumping equipment.

10 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.

11 The **characteristic curves** of the pumping equipment shall be supplied with the offer other wise the tender shall be rejected.

12 The firm shall supply laout drawing in respect of various components, such as suction pipes, valves, cable, trenches, control panel etc., from the foot valve location to the common header which shall extend upto 5 metres 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 indent/award.

13 The installation of pumping machinery above 100 HP shall be inspected by the technical representative of the manufacturers of rank not less than that of a services engineer, at the 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.

14 All the civil work shall be constructed by the department.

15 The wiring and installation of electric equipment shall be as per HPSEB rules and regulations & subjected to the approval of the Chief Electrical Inspector and or his authorised 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 a licensed contractor of approved class-A HPSEB and test report shall be got accepted from the HPSEB authorities on their aproved format (Form-D) for release of power connection by the firm without extra cost.

16 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 Deptt.,

17 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 etc.

18 The rates shall be quoted only on the format of schedule of quantities which is attached with the tender document giving all specified data so desired there in.

19 The rates of offered for the specified makes in the schedule of quantities only shall be considered. Rates quoted for part and or non-specified makes shall lead to rejection of the tender.

20 The site of work is located at _8_ km on Kandrori Railway Station from nearest road _____ & 500 mtr head load is involved. The site is located 8 km from the nearest rail head Kandrori. The rates quoted by the firm shall be inclusive of all mechanical and manual transport within all leads and lifts.

21 All the equipment material shall confirm to the relevant BIS specifications wherever applicable and in its absence to any accepted National/International standards.

22 The general specifications of work shall confirm to Punjab PWD/HPPWD specifications as per direction of the Engineer-in-charge.

23 The validity of the tender shall be not less than 120 days other-wise the tender shall be summarily rejected.

24 All the equipments shall be guaranteed against any manufacturing defect including metallurgy and its performance for a period of 12 (twelve) months from the date of commissioning 15 (fifteen) months from the date of supply which ever 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 substaintiated by a guarantee bond of a Nationalised 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 apply for refund of security deposits. The guarantee bond shall be released after the expiry of the guarantee period.

25 The installed pumping machinery and other allied accessories shall be tested daily for 16 hours for a period of seven days without extra cost. However the cost of electricity and water shall be borne by the department.

26 During the guarantee period efficiency of the pumping and the electric equipment should not very 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% falls of the efficiency shall be deducted in case of fall of efficiency beyond 5% the pump set shall be rejected and cost of the effected pump set recovered from the pledged Bank guarantee & or from the security deposit as the case may be.

27 80% (Eighty percent) paymet 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 alongwith accessories 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.

28 90% (Ninty 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.

Executive Engineer,
I&PH Divn., Indora

29 In absence of performance curve, no offer will be entertained.