

**SCHEDULE OF QUANTITY**

Name of work:- Providing LWSS to PC habitations of census village Rundhan Ghoron & Khil Jasli Tehsil & District Solan  
(SH: - Supplying & erection of centrifugal pumping machinery and providing & laying of rising main).

Estimated cost Rs.:- 670763

Earnest Money Rs.:- 13450

Time :- Three months

| Sr. No. | Description   | Qty.   | Rate    |          | Unit   | Amount |
|---------|---|--------|---------|----------|--------|--------|
|         |   |        | In fig. | In words |        |        |
| 1       | Excavation in drains and channel etc in earth work in all kinds of soil such as kankar, moorum shingles conglomerate saturated soil and decomposed soft and hard rock hard rock including including dressing of sides and beds , disposing of excavated earth with all leads, lifts disposed earth to be levelled and neatly dressed and then returning the stacked soil into foundation and trenches etc. including ramming and consolidating the same wherever required with all leads, lifts and including jungle clearance and as per the direction of Engineer-in-charge.  | 512.32 |         |          | P/Cum  |        |
| 2       | Providing, laying, jointing, testing & commissioning at site in trenches bevelled ended BIS marked MSERW pipes of various grade "A" conforming to IS/ISO-3183-2007 or its equivalent API specifications latest with upto date amendments of following dia with upto date amendments having wall thickness and per Rmt weight as mentioned below & capable of withstanding required test pressure as prescribed in BIS code in random lengths of 5.5 to 6.5 mtr. The pipes ends shall be bevelled suitable for butt welding including the cost of jointing with butt welding conforming to IS 816-1969 or latest as applicable ends with upto date amendments (leak proof) in three layers at site of work with welding rods of standard make and all allied accessories whatever required for welding at site, tail pieces, tees, bends and other specials manufactured from parent pipes as applicable to the particular reach & of approved specification as per site conditions and cutting of pipes wherever required as per site requirement including carriage in all leads and lifts and as directed by Engineer-in-charge. The pipe shall have zinc coating inside & out side conforming to IS/ISO-4736-1986 or latest with upto date amendments & shall be engraved with grade "A" code IS/ISO-3183-2007 or its equivalent. The laying shall conform to BIS 5822-1970 or latest with upto date amendments to the entire satisfaction of Engineer-in-charge (Earth work shall be measured and paid for separately). |        |         |          |        |        |
|         | 0-540      50mm      4.40mm      6.07 Kg      540   | 540    |         |          | P/Rmt  |        |
| 3       | Laying, jointing, testing & commissioning at site in trenches following plain ended GMS pipe of 50mm dia.heavy grade conforming to BIS 1239 (part-1) 1990 or latest with upto date amendments, capable of withstanding required test pressure as prescribed in BIS code in random lengths of 5.5 to 6.5 mtr. The pipes ends shall be bevelled suitable for butt weld, including the cost of jointing with butt welding conforming to IS 816-1969 or latest as applicable (leak proof) in three layers at site of work with welding rods of standard make and all allied accessories whatever required for welding at site tail pieces tees bends manufactured from parent pipes etc. and cutting of pipes wherever required as per site requirement including carriage in all leads and lifts as directed by Engineer-in-charge (earth work shall be measured and paid for separately).   | 450    |         |          | P/Rmt  |        |
| 4       | Providing welding and fixing M.S. plate flanges of various dia (nominal bore) of following flanges table conforming to IS 6392-1971 or latest with upto date amendments to G.I. pipe after every 100metres or as per site requirement including cutting of pipes wherever required welding in three layers (leak proof) conforming to specifications as prescribed in relevent IS code i.e IS 816-1969 or latest as applicable with upto date amendments with nuts, bolts & washers and specials etc. conforming to IS 1963 or latest with upto date amendments including packing sheet i.e. asbestos fibre sheet minimum 3mm thick and painting with anticrossive paints complete in all respect in all leads lifts and carriage of material at site and as directed by the Engineer-in-charge.  |        |         |          |        |        |
|         | 0-630      50mm      630      28  | 7      |         |          | P/Pair |        |
|         | 630-720      50mm      90      17   | 1      |         |          | P/Pair |        |
|         | 720-990      50mm      270      5   | 3      |         |          | P/Pair |        |

5 Supplying, erection, testing & commissioning of horizontal spindle, horizontal split casing, radial split Single, multistages centrifugal pumps of standard make such as KSB/ Mather & Platt/ Jyoti /Kirkoskar/ Beaconweir /BS & BE conforming to BIS 1520-1980 with upto date amendments read with BIS 9137-1978 or latest edition to handle clear water having characteristics as mentioned in item No.8 (A) as under, with impeller, casing ring, priming funnels & shaft sleeves of bronze, shaft of steel with cast iron casing of suitable capacity coupled directly through a flexible coupling on a common base plate of cast steel /Mild steel to BHEL /Kirkoskar/ NGEF/ Crompton / Siemens/Jyoti /GEC make slip ring /squirrel cage screen protected drip proof induction electric motor suitable for operation on the data given below i/c the cost all accessories in all lead & lift & carriage of material at site as per direction of Engineer-in-charge.

2 Set

P/Set

- |   |   |
|---|---|
| a) Total Head   | 366.96 mtr  |
| b) Discharge of pump set  | 1.71 LPS  |
| c) Dia of R/Main  | 50mm  |
| d) Length of R/Main (In metres)   | 990 mtr   |
| A) SITE CONDITIONS & WATER CHARACTERISTICS :-   |   |
| i) Location of Site:-   | Nr. Village<br>Rundhan<br>Ghoron                                      |
| ii) The altitude of place in which the motor is intended to work in ordinary service (in metres) :- |   |
| iii) Humidity:-   | Weather<br>generally<br>remains<br>humid during<br>monsoon<br>season. |
| iv) Nature of atmosphere:-  | As normally<br>encountered in<br>Shivalik<br>Range<br>Clear water     |
| v) Detail of quality of water:-   |   |
| vi) Water free from sand or not :-  | Not   |
| vii) Water corrosive or not :-  | Not   |
| viii) Turbidity (if any):-  | Upto 50PPM  |
| ix) NPSH available:-  | Positive<br>Suction   |
| x) Any other information or requirement:-   |   |
| B) OPERATING CONDITIONS:-   |   |
| i) Type of current:-  | AC<br>three/single<br>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 ammendment s |
| v) No. of working hours per day:-  | 8 hours  |
| vi) Speed of revolution in RPM:-   | To be quoted by tenderer   |
| vii) Direction of rotation:-   | To be quoted by tenderer   |
| viii) The max. Temp. of cooling air & water in the place in which the motor is intended to work in ordinary service. |  |
| C) MOTOR:-   |  |
| i) Ref. to BIS code:-  | BIS 325-1978 read with BIS 900-1992 (latest)with upto date ammendment s      |
| ii) Type of enclosure of motor:-   | SPDP(as per BIS 4691-1985 (latest)   |
| iii) Type of duty:-  | Continuous as per IS-12824-1989 or latest with up to date ammendment s       |

iv) Mechanical out put in KW:-

Suitable for driving centrifugal pumps required for duties specified against Class ~B~

v) Class of insulation:-

vi) Max.permissible temp.rise of motor reqd. if different from given in B(viii) above:-

vii) Particulars of test reqd. & where they are to be conducted:-

As per terms & conditions ATS/star delta starter,oil immersed,fully automatic to be installed between bus bar & motor

viii) Particulars as to whether voltage limiting device will be employed:-

(NOTE:- Star delta starter upto 37.5 KW, ATS between 37.5 KW to 50 KW & Stator rotor starter with Squirrel cage/slip-ring

ix) Motor whether squirrel cage or slipring:-

(Note:- Squirrel cage upto 65HP and slipring above 65HP)

x) Details of shaft extension reqd.:-

Just sufficient to provide direct drive by flexible coupling to pump.

xi) Type of slip-ring gear whether continuously rated or for starting purposes only & whether to be fitted with brush lifting or short circuit arrangements or both if interlocks are required.:-  
Continuously rated for Squirrel cage/Slipring motor

xii) 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

xiii) 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 accelerated & No. of starts during a specified period.:-  
Sufficient to work the pump offered

xiv) 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

- D) PUMP :
- BIS 1520-1980 read with BIS 9137-1978 both with up to date ammendment s
- a) Nos of pumps reqd.:-  
2 pumps ( 1 pump will work at a time)
- b) Spare parts required:-  
For two years normal maintenance as recommende d by manufacturer.
- c) Optional fittings reqd.:-  
Air cock for exhausting air from each stage.
- E) PUMP OPERATING CONDITIONS:-
- i) Capacity of each pump set (in LPS)  
1.71 LPS
- ii) Total head (in Mts):-  
366.96 mtr
- If total head is not known then following details be provided:-
- i) Static head ( in mtrs)
- ii) Minimum depth of water( in mtrs)
- iii) 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<sup>2</sup> )
- vii) Pressure in the delivery tank (in Kg/cm<sup>2</sup> )
- iii) Length of R/Main (in metres):-  
990 mtr
- iv) Dia of R/Main (in mm):-  
50mm
- v) Drive arrangement:-  
Direct through flexible coupling on a common base plate
- vi) Drive type:-  
Electric driven
- vii) NPSH reqd.:-
- viii) Limits of total head in which

|   |  |  |      |
|---|--|--|------|
| the pump is reqd. to operate:-  | (-) 15% to (+)<br>10% of total<br>head.  |  |      |
| ix) Suction/delivery size of pump:-   | To be<br>specified by<br>the tenderer  |  |      |
| x) Efficiency of pump at:-  | To be<br>specified by<br>the tenderer  |  |      |
| a) duty head (as mentioned at item No.8 (a) )   | 366.96 mtr   |  |      |
| b) (+)10 % of head as mentioned at item No.8 (a)  | 403.66 mtr   |  |      |
| c) (-) 15 % of head as mentioned at item No.8 (a)   | 311.92 mtr   |  |      |
| xi) Material of construction:-  | To be<br>specified by<br>the tenderer<br>(manufacturer<br>~s certificate<br>to be<br>appended) |  |      |
| 6 Supply of suitable oil immersed star delta /ATS/stator rotor/soft 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 .<br>Note:- Star - delta - starter upto 37.5 KW , ATS between 37.5 KW to 50 KW and stater rotor starter with slipring motor beyond 50 KW. | 2 Nos.   |  | Each |
| 7 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 the following accessories with all internal electric connections. The drawing of panel board shall be subject to approval of Engineer in charge.  | 1 No.  |  | Each |
| 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.  | 2 Nos  |  | Each |
| 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 No   |  | Each |
| 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.  | 2 Set  |  | Each |
| 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.  |  | Each |
| e) ACB/MCB/Oil circuit breaker of suitable capacity of Kilburn/L &T/MEI/GEC/Standard make on incomming 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   |  | Each |
| 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 Set  |  | Each |

|   |        |      |
|---|--------|------|
| 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 circut 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.  | Each |
| h) Hour run meter of reputed make of four digit capacity conforming to BIS-722 (latest edition)/ recommendations.   | 2 Nos. | Each |
| 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.  | Each |
| j) Change over Switch of reputed make & suitable capacity   | 1 No.  | Each |
| k) Single phase preventor of reputed make & suitable capacity conforming to IS:1248 (P-V)-1983 with up to date ammendments  | 1 No.  | Each |
| 8 (a) supplying & fixing at site Kirloskar/Kilburn/IVC/Fouress/Gled/BHEL/Leader make of 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 mentionmed in item No. 5(a) & conforming to BIS/API-standards with up to date ammendments for delivery line of pump<br>(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/cm <sup>2</sup> ) or class 300 ASA (seat pressure 52 Kg/cm <sup>2</sup> ) as per BS 1414 (API 600).or class ASA-600 as per BS 1414 (API-600)  | 2 Nos. | Each |
| (b) Supplying & fixing at site 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 mentionmed in item No. 5(a) & conforming to BIS/API-standards with up to date ammendments for delivery line of pump<br>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/cm <sup>2</sup> ) or class 300ASA (seat pressure 52 Kg/cm <sup>2</sup> ) as per BS-1414 (API600) or class ASA-600(seat pressure as per BS-1414 or API-600). | 2 Nos. | Each |
| (c) Supplying & fixing at site Kirloskar/Kilburn/IVC/Fouress/Gled/BHEL/Leader make of suitable size Cast Steel double flanged swing check type reflux valve having bye pass arrangement & size equal to dia of R/main as mentioned in item No.5 (c) for withstanding nominal seat pressure as per item No.5(a)<br>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/cm <sup>2</sup> ) or class 300 ASA (seat pressure 52 Kg/cm <sup>2</sup> ) as per BS 1414 (API 600) or class ASA-600 as per BS 1414/API 6D)  | 1 No.  | Each |



|       |  |        |      |
|-------|--|--------|------|
| (d)   | Supplying & fixing at site Kirloskar/Jyoti/Standard/Kilburn/Bir/Kartar make cast iron flanged/screwed type foot valve (In case suction lift is involved) for suction pipe having size one or two size larger than suction size of pump such that velocity of flow is not more than 2.00 mtr/sec. with strainer of dia equal three to four times of dia of suction pipe conforming to BIS 4038-1986 or latest with up to date ammendments i/c all leads & lifts & as directed by Engineer -Inschage   | 2 Nos  | Each |
| 9 (a) | Providing, laying, jointing & testing at site suitable size copper PVC insulated armoured power three & half core cable conforming to BIS 1554 (Part I) -1988 or latest with up to date ammendments 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   | Job    | LS   |
| (b)   | Providing, laying, jointing & testing at site suitable size copper PVC insulated armoured power three core cable conforming to BIS 1554 (part I)-1988 or latest with up to date ammendments of Siemen/ Gloster /ICC/ EICO/National / IEC make from switch to starter & starter to motor (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 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. i/c cost of carriage of material in all leads & lifts & as   | Job    | LS   |
| (c)   | Providing & laying at site double loop earthing with G.I. plate 600x600x3mm thick electrode complete with material such as charcoal, common salt, GI pipes, thimbles, nuts & bolts, digging of pits,GI wiring & 25x5mm G.I. strips of required capacity conforming to BIS 3043-1987 latest with up to date ammendments suitable for above motors & other electrical equipments.i/c cost of carriage of material in all leads & lifts & as directed by Engineer -Inchage.   | Job    | LS   |
| (d)   | Supply & errection of floor/wall mounted power factor shunt capacitor conforming to BIS 2834-1986 or latest with upto date ammendments 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) i/c cost of carriage of material in all leads & lifts & as directed by Engineer -Inchage.   | 2 Nos. | Each |
| 10    | 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 ammendments.  | 2 Nos. | Each |
| 11    | 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 minimum 1.5 times the total presure indicated in item No. 5(a) or total dynamic pressure+surge pressure which ever is more. The size of suction pipe shall be one or two sizes larger than the suction size of pump such that velocity of flow in NOTE:- Actual laying to be done as per final drawings to be approved by the Engineer in charge | Job    | LS   |
| 12    | Supply of antivibration pads conforming to BIS 6337-1971 or latest with upto date ammendments of suitable size for above machinery.  | 2 Nos. | Each |

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**Total:**

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**TERMS AND CONDITIONS FOR PUMPING MACHINERY:**

- 1 The firm shall forward a copy of supply order/indent placed by it for the supply of 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 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 authorized dealer.
- 2 The firm shall arrange dispatch of offered pumps and motors to the consignee direct from the manufacturer/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 in original of the offered pumping equipment shall be supplied with the tender by the participating firm failing which the tender shall be rejected.
- 8 The firm shall supply and 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 valve location to the common header which shall extend upto 5 meter from the outer wall of the pump house towards rising main. The detail of foundations required for various components shall also be supplied by the firm within 30 days of the letter of indent/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 Pumping machinery of the scheme shall be received only after construction of pump house and treatment plant.
- 11 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 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 the licensed contractor of approved class of HPSEB and test report shall be got accepted from the HPSEB authorities on their approved 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 document giving all specified data so desired therein.
- 15 The rates 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.
- 16 The site of work is located at 28KM from Solan-Rajgarh road towards Tikkeri Tananji. The rates quoted by the firm shall be inclusive of all mechanical and manual transport within all leads and lifts.
- 17 All the equipment/materials 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/15 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 costs within 15 days of bringing the same to its notice.

The guarantee clause shall be substantiated by the guarantee bound of a Nationalized bank for an amount equal to the cost of pumping and electric equipments(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 7days without extra cost. However the cost of electricity and water shall be borne by the department.
- 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% take of efficiency shall be deducted beyond 5% in case if fall of efficiency the pump set shall be rejected and cost of the effected pump set recovered from the pledged bank guarantee and 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 & 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. 10% 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 equipments.
- 23 The installation of pumping machinery shall be inspected by the Technical representative of manufacture of rank not less than that of service Engineer at site of work and inspection certificate shall be supplied to the Engineer in Charge. This inspection shall be in addition to the test report and nothing shall 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 of their authorized dealers shall be eligible to participate in the tender process. They shall have to provide certificate from the 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 of authorized dealer offers a pump of which he is not a manufacturer or an authorized dealer, he must at least have sub-dealership 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.
- 30 A firm or a person who has not done any work of providing and fixing of pumping machinery shall not be allowed to quote of work even if he has been authorized for any particular work by authorized dealer
- 31 All C.I. valves wherever required shall be of minimum class of PN 1.6.

**GENERAL TERMS AND CONDITIONS :**

- 1 The work shall be executed as per IPH specification, relevant IS codes and CPHEEO manual to the entire satisfaction of the Engineer-in-charge.
- 2 Security, GST and other statutory deductions will be made as applicable.
- 3 All necessary documents such as income taxes clearance certificate, renewal of registration, GST number shall have to be produced by the contractor/firm before purchase of tender documents.
- 4 The rates of all the items should be inclusive of all taxes, duties, levies, carriage of material with in all leads and lifts etc. to site of work
- 5 When the pipe is supplied within the tolerance permitted by IS codes, the payment for negative side shall be made on pro-rata difference of weight derived on through rate but nothing extra shall be paid for positive side.
- 6 The bends of required degree duly flanged shall be provided by the contractor/firm whenever required as per direction of the Engineer-in-charge. The bends manufactured from parent tubes taking care that nominal bore is not reduced else it will be rejected and shall be 100% test checked by Assistant Engineer before burring.
- 7 The tenderers should ascertain the availability of MSERW/API pipe as per schedule of quantity before quoting their rates.
- 8 **Test certificate, inspection and specification.**
  - a) The tenderer shall have to produce manufacturers test certificate for all appertanances.
  - b) 3rd party inspection shall be got done from one of the following
    - i) Rites,
    - ii) Detonorsake varitas
    - iii) Bureau Varitas
    - iv) SGS
    - v) M/S quality service & Solutiuon New Delhi-48
  - c) Payment only for the accepted and fully tested work shall be released.
  - d) The pipes shall be measured and weighed in the presence of authorized representative of the department at site/weight bridge. The documents showing the laden and unladen weights and lengths shall be submitted to Engineer-in-charge alongwith post delivery bill.
- 9 Any damages caused to any public/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 same shall be restored by the department at contractors cost.
- 10 Contractor shall arrange his own power connection whenever required.
- 11 G.I. pipes will be issued to the contractor free of cost on proper indent at IPH Store Solan. Further carriage and watch and ward responsibility of the contractor. Shortage of G.I. pipe will be recovered on double rate as per store issue rate.
- 12 Noting shall be paid for rejected material/work
- 13 The contractor shall be responsible for watch and ward of material at site of work.
- 14 Alignment of pipe line can be shifted/changed as per site condition for which nothing extra shall be paid beyond the approved rates.
- 15 The plain ended pipes to be arranged by the contractor shall be made bevelled edges on the quoted rates. Nothing extra shall be paid to the contractor on this account.
- 16 The butt welding shall be done in three layers as follow with the specification.
  - i) Rooter layer
  - ii) Filter coat
  - iii) Seal coat
- 17 After the root coat the testing of pipes shall be done with DPT (die penetration test) to ascertain that there is no leakage.
- 18 All ISI codes shall be latest with upto date amendments.
- 19 The time schedule will be strictly adhered to and no extension will be granted under any circumstances.
- 20 5% of the quoted amount will be withheld for want of testing which shall be released only after succesful testing of pipe line.

Executive Engineer  
I&PH Division Solan