

No.: PHE/MDNS/DB/  
Dated: 23 — 08 — 2023 3860-67

M/s UEE Electrical Engineers Pvt. Ltd.  
Shradhanand Marg Delhi - 110006  
B/O: Main Bazaar, Kathua, J&K-184101  
GST No: 01AACU1624K1ZR  
Cell No: 9899963794

Adv. Cost:	Rs 70.905 Lacs
Allotted Cost:	Rs 65.268 Lacs

Subject: Electro-mechanical works to be carried at WSS Chandergeer Pehlipora Stage 1<sup>st</sup> and 2<sup>nd</sup> under JJM.

Reference: 1. This office e-NIT No.: e-NIT No. 13 of 2023-24, S. No. 02 issued under endorsement No.: PHE/MDNS/DB/1455-60, dated: 10-06-2023.  
2. Authorization awarded by Member Secretary DJJM Superintending Engineer Jal Shakti (PHE) Hydraulic Circle Baramulla/Bandipore HQ at Sopore issued vide No. SE/Hyd/DB/4897-4900, dated: 01-08-2023.

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Dear Sir,

For and on behalf of Lt. Governor of J&K UT contract for execution of "Electro-mechanical works to be carried at WSS Chandergeer Pehlipora Stage 1<sup>st</sup> and 2<sup>nd</sup> under JJM" is hereby awarded to your firm on the quoted/negotiated rates, as per 'General Terms & Conditions' and 'Schedule of cost and quantities' annexed herewith as under:

Annexure A: General Terms & Conditions.

Annexure B: Schedule of cost and quantities.

Encl. \_\_\_\_\_ leaves

Executive Engineer  
Jal Shakti PHE Mechanical Division (North)  
Sopore

Copy to the:

- Chief Engineer Jal Shakti (PHE) Department Kashmir, Srinagar for favour of information.
- District Development Commissioner Bud, for favour of information.
- Superintending Engineer Jal Shakti (PHE) Mechanical Circle (North) Srinagar, for favour of information.
- Superintending Engineer Jal Shakti (PHE) Hydraulic Circle Bla. HQ at Sopore, for favour of information.
- Executive Engineer Jal Shakti (PHE) Division Sopore, for favour of information.
- Provisional Head, TPIA JJM Kashmir, (WAPCOS Limited) Corporate Office 76-C Institutional area Sector-18 Gurugram-122015 (Haryana) for favour of information.
- Assistant Executive Engineer Jal Shakti (PHE) Mechanical Sub-Division Sopore for information & necessary action.
- File concerned.

**Annexure "B" Schedule of cost and quantities**  
 to this office Allotment Order No: PHE/MDNS/DB/ 30/60-67 dated: 23/7/2021

Name of work: Electro-mechanical works to be carried at WSS Chandergeer Pehlipora Stage 1st and 2nd under JMM

S. No.	Item Description	Qty	Units	Rate	Amount
1.	<p><b>VT Pumping Units:</b> Providing, installation, successful testing and commissioning of vertical turbine pumping unit for 1st stage as per IS 1710 driven by hollow shaft VT motor for pumping water from River Jehlum of following parameters:</p> <ul style="list-style-type: none"> <li>• <b>Site Condition:</b> Altitude = 1580 Meters (AMSL) Ambient Temperature = +40°C to - 15°C Relative Humidity = 60%</li> <li>• <b>Levels of site</b> Bottom level of intake channel = Zero Meters Machine Floor level from bottom level of sump = 8 Meters Water column in liner/sump above the bed level = 2 Meters</li> <li>• Type of water = Raw water having specific gravity of unity average</li> </ul> <p><b>A. PUMP</b></p> <ol style="list-style-type: none"> <li>1. Discharge = 15000 GPH at 85M head</li> <li>2. Type = Self water lubricated, VT pump, open line shaft.</li> <li>3. Liquid to be handled = Raw Water</li> <li>4. RPM = 1460</li> <li>5. <b>Head = 80 Meters with minimum stages.</b></li> <li>6. Efficiency = Not less than 65-70%</li> <li>7. Impeller = Enclosed/semi-enclosed mixed flow all bronze</li> <li>8. Line shaft/Head Shaft = Stainless steel</li> <li>9. Total length of line shaft = 10 m or as specified (excluding Head shaft)</li> <li>10. Impeller shaft = Stainless steel</li> <li>11. Line shaft bearing = Cut less rubber/Neoprene rubber</li> <li>12. Line shaft coupling = Stainless steel</li> <li>13. Suction Strainer = MS fabricated</li> <li>14. Suction Bowl/Bell mouth= Cast Iron</li> <li>15. Pump Bowl = Cast iron</li> <li>16. Bearing : Thrust bearing shall be suitable and of adequate capacity to carry the weight of all rotating parts and the hydraulic down thrust. The bearing housing shall have suitable cooling mechanism.</li> <li>17. Ratchet: Non-reversing ratchet shall be provide to prevent reverse rotation.</li> <li>18. Column pipe = Mild Steel 150mm VT Pumping Unit dia, anti-corrosive and polished, of wall thickness not less than 12mm flanged type in assorted lengths. At least 8 Meters column pipes to be provided with maximum length of 5 feet/length. Pump bowl to be designed with minimum number of stages.</li> </ol> <p><b>B. Prime Mover</b></p> <ol style="list-style-type: none"> <li>1. Type = Vertical hollow shaft, AC squirrel cage induction motor</li> <li>2. Power Supply = 03 Phase, 415V± 10% AC</li> <li>3. Frequency = 50Hz±3%</li> <li>4. RPM = 1450 Synchronous</li> <li>5. Efficiency = Not less than 85%</li> <li>6. HP = Corresponding to Head and discharge but not less than 35 HP.</li> <li>7. Class of insulation = F or above</li> <li>8. Type of duty = Continuous</li> <li>9. Motor thrust bearing = Anti-friction ball bearing/roller bearing</li> <li>10. Method of starting = star/delta</li> </ol> <p>The motor should be able to withstand fluctuations in voltage and should be conforming to latest IS specifications.</p>	2	Job	850000.00	1700000.00

**C. Accessories**

- Each pump unit shall be provided with suitable discharge head with proper stiffening box arrangement, non-reverse ratchet, coupling etc. as per standard specifications besides all other accessories required for satisfactory performance and mechanical works required for installation of pumping unit at site are included in the job.

**Base Frame**

- Fabrication, providing and fitting of base frame for the installation of the pumping units. The base frame to be fabricated out of suitable size ISMB/ISMC members. The base frame shall be of robust construction and shall support entire static and dynamic load of pumping unit without any vibration.
- Providing of test certificate & Characteristic Curve of pumping equipment is compulsory and pumping unit is to be approved from the concerned authority before procuring/dispatch.
- Original Manufacturer's Test certificates in original to be provided with the material before installation.

2.	<p><b>VT Pumping Units:</b> Providing, installation, successful testing and commissioning of vertical turbine pumping unit for stage-2nd as per IS 1710 driven by hollow shaft VT motor for pumping water from River Jehlum of following parameters:</p> <ul style="list-style-type: none"><li>• <u>Site Condition:</u> Altitude = 1580 Meters (AMSL) Ambient Temperature = +40°C to - 15°C Relative Humidity = 60%</li><li>• <u>Levels of site</u> Bottom level of intake channel = Zero Meters Machine Floor level from bottom level of sump = 4 Meters Water column in liner/sump above the bed level = 1 Meters</li><li>• Type of water = Raw water having specific gravity of unity average</li></ul> <p><b>A. PUMP</b></p> <ol style="list-style-type: none"><li>1. Discharge = 15000 GPH at 35M head</li><li>2. Type = Self water lubricated, VT pump, open line shaft.</li><li>3. Liquid to be handled = Raw Water</li><li>4. RPM = 1460</li><li>5. Head = 35 Meters with maximum of 4-5 stages.</li><li>6. Efficiency = Not less than 65-70%</li><li>7. Impeller = Enclosed/semi-enclosed mixed flow all bronze</li><li>8. Line shaft/Head Shaft = Stainless steel</li><li>9. Total length of line shaft = 5 m or as specified (excluding Head shaft)</li><li>10. Impeller shaft = Stainless steel</li><li>11. Line shaft bearing = Cut less rubber/Neoprene rubber</li><li>12. Line shaft coupling = Stainless steel</li><li>13. Suction Strainer = MS fabricated</li><li>14. Suction Bowl/Bell mouth= Cast Iron</li><li>15. Pump Bowl = Cast iron</li><li>16. Bearing : Thrust bearing shall be suitable and of adequate capacity to carry the weight of all rotating parts and the hydraulic down thrust. The bearing housing shall have suitable cooling mechanism.</li><li>17. Ratchet: Non-reversing ratchet shall be provide to prevent reverse rotation.</li><li>18. Column pipe = Mild Steel 150mm VT Pumping Unit dia, anti-corrosive and polished, of wall thickness not less than 12mm flanged type in assorted lengths. At least 4 Meters column pipes to be provided with maximum length of 5 feet/length. Pump bowl to be designed with minimum number of stages.</li></ol> <p><b>B. Prime Mover</b></p> <ol style="list-style-type: none"><li>1. Type = Vertical hollow shaft, AC squirrel cage induction motor</li></ol>	2	Job	615000.00	1230000.00
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2. Power Supply = 0.3 Phase, 415V±10% AC
3. Frequency = 50Hz±3%
4. RPM = 1450 Synchronous
5. Efficiency = Not less than 85%
6. HP = Corresponding to Head and discharge but not less than 15 HP.
7. Class of insulation = F or above
8. Type of duty = Continuous
9. Motor thrust bearing = Anti-friction ball bearing/roller bearing
10. Method of starting = star/delta

The motor should be able to withstand fluctuations in voltage and should be conforming to latest IS specifications.

#### C. Accessories

- Each pump unit shall be provided with suitable discharge head with proper stiffening box arrangement, non-reverse ratchet, coupling etc. as per standard specifications besides all other accessories required for satisfactory performance and mechanical works required for installation of pumping unit at site are included in the job.

#### Base Frame

- Fabrication, providing and fitting of base frame for the installation of the pumping units. The base frame to be fabricated out of suitable size ISMB/ISMC members. The base frame shall be of robust construction and shall support entire static and dynamic load of pumping unit without any vibration.
- Providing of test certificate & Characteristic Curve of pumping equipment is compulsory and pumping unit is to be approved from the concerned authority before procuring/dispatch.
- Original Manufacturer's Test certificates in original to be provided with the material before installation.

3. **VT Pumping Units:** Providing, installation, successful testing and commissioning of vertical turbine pumping unit for existing stage-2nd as per IS 1710 driven by hollow shaft VT motor for pumping water from River Jehlum of following parameters:

- Site Condition:

Altitude = 1580 Meters (AMSL)

Ambient Temperature = +40°C to - 15°C

Relative Humidity = 60%

- Levels of site

Bottom level of intake channel = Zero Meters

Machine Floor level from bottom level of sump = 4 Meters

Water column in liner/sump above the bed level = 1 Meters

- Type of water = Raw water having specific gravity of unity average

#### A. PUMP

1. Discharge = 15000 GPH at 45M head
2. Type = Self water lubricated, VT pump, open line shaft.
3. Liquid to be handled = Raw Water
4. RPM = 1460
5. **Head = 45 Meters with maximum of 4-5 stages.**
6. Efficiency = Not less than 65-70%
7. Impeller = Enclosed/semi-enclosed mixed flow all bronze
8. Line shaft/Head Shaft = Stainless steel
9. Total length of line shaft = 5 m or as specified (excluding Head shaft)
10. Impeller shaft = Stainless steel
11. Line shaft bearing = Cut less rubber/Neoprene rubber
12. Line shaft coupling = Stainless steel
13. Suction Strainer = MS fabricated
14. Suction Bowl/Bell mouth= Cast Iron
15. Pump Bowl = Cast iron
16. Bearing : Thrust bearing shall be suitable and of adequate capacity to

1 Job 640000.00 640000.00

carry the weight of all rotating parts and the hydraulic down thrust. The bearing housing shall have suitable cooling mechanism.

17. Ratchet: Non-reversing ratchet shall be provided to prevent reverse rotation.

18. Column pipe = Mild Steel 150mm VT Pumping Unit dia, anti-corrosive and polished, of wall thickness not less than 12mm flanged type in assorted lengths. At least 4 Meters column pipes to be provided with maximum length of 5 feet/length.

Pump bowl to be designed with minimum number of stages.

#### B. Prime Mover

1. Type = Vertical hollow shaft, AC squirrel cage induction motor
2. Power Supply = 03 Phase, 415V±10% AC
3. Frequency = 50Hz±3%
4. RPM = 1450 Synchronous
5. Efficiency = Not less than 85%
6. HP = Corresponding to Head and discharge but not less than 20 HP.

7. Class of insulation = F or above

8. Type of duty = Continuous

9. Motor thrust bearing = Anti-friction ball bearing/roller bearing

10. Method of starting = star/delta

The motor should be able to withstand stand fluctuations in voltage and should be conforming to latest IS specifications.

#### C. Accessories

- Each pump unit shall be provided with suitable discharge head with proper stiffening box arrangement, non-reverse ratchet, coupling etc. as per standard specifications besides all other accessories required for satisfactory performance and mechanical works required for installation of pumping unit at site are included in the job.

#### Base Frame

- Fabrication, providing and fitting of base frame for the installation of the pumping units. The base frame to be fabricated out of suitable size ISMB/ISMC members. The base frame shall be of robust construction and shall support entire static and dynamic load of pumping unit without any vibration.
- Providing of test certificate & Characteristic Curve of pumping equipment is compulsory and pumping unit is to be approved from the concerned authority before procuring/dispatch.
- Original Manufacturer's Test certificates in original to be provided with the material before installation.

4. Delivery manifold/Y-junction: Providing/supplying and fitting of G.I flanged Rising Main at site for stage 1st and 2nd. The Pipe shall be hot dip Galvanized, class C conforming to IS 1239. The job includes providing and fitting of M.S Flanges conforming to BIS 6392/1997 Table 17 (Rating PN16) for fabrication of delivery manifold/Y-Junction as per site requirement. The flanges shall be double welded both from inside and outside of the pipe using standard electrode of reputed make.

Flanges (as per IS 6392/1997 Table:17)

Thickness shall conform to IS 6392 Part 1st Table-17. The flange welding shall be carried out in double layers using reputed make electrodes to form strong welding joint.

Welding Electrode

DC Arc Welding using welding electrode having diameter not less than 4mm.

Nuts and Bolts

Nuts and Bolts (conforming to IS:1363 Part 1st)

Rubber Insertion Gaskets

Rubber Insertion Gaskets (conforming to IS: 638/79) to be used between flanged joints. The main technical specifications of the pipe are given here under:

40 Meter 2189.00 87560.00

	<p>Size : 100 mm Class: C (Heavy) The job also includes providing fitting of 100mm dia washout connection in the delivery manifold.</p>				
5.	<p>Providing and fitting of, Ductile Iron double flanged, non-rising spindle soft seated glandless gate/ sluice valves as per IS14846 for regulating the water supply outside the pumping units for stage 1st and 2nd . Size: DN100 PN:1.6/16 The body and bonnet of the valve shall be of ductile iron, wedge with fully vulcanized EPDM rubber (Approved for drinking water) and NBR seal. The Gate/Sluice valve shall be compatible for buried applications and shall be safe to install in both horizontal and vertical positions It shall have electrostatic epoxy coating(approved for drinking water) both inside and outside of the valve. The valve shall be supplied along with hand wheel. Cost on account of Nuts, bolts, gaskets, etc required for the job is included in the scope of work. The job includes providing and fitting of 02 nos. M.S flanges (Table flanges) perfectly adaptable to the inbuilt flanges of the valve which shall be fitted with rising main of the pumping unit at appropriate spots as per site requirement. The job includes the cost on account of P/F of nuts, bolts and gasket required for the job.</p>	6	No.	19094.00	114564.00
6.	<p>Providing and fitting of Ductile Iron double flanged, Slanted seat swing check valve (NRV) as per IS 5312 for stage 1st and 2nd. Size: 100 mm PN: 1.6/16 The body shall be of ductile cast iron with fully encapsulated vulcanized EPDM rubber (Approved for drinking water). The valve shall be compatible for buried applications and shall be safe to install in both horizontal and vertical positions. It shall have electrostatic epoxy coating (approved for drinking water) both inside and outside of the valve. Cost on account of Nuts, bolts, gaskets, etc required for the job is included in the scope of work. The job includes providing and fitting of 02 nos. M.S flanges (Table flanges) perfectly adaptable to the inbuilt flanges of the valve which shall be fitted with Rising main of the pumping unit at appropriate spots as per site requirement. The job includes the cost on account of P/F of nuts, bolts and gasket required for the job.</p>	6	No.	20581.00	123486.00
7.	<p>Providing, fitting, testing and commissioning of voltage stabilizer for stage 1<sup>st</sup> and 2<sup>nd</sup> as per specifications below: Rating:: 50KVA Type of voltage controller: Manually operated copper wound, 3-phase, AC power supply multi step. Type of Regulator : Double plate type with electrolytic copper contacts. Input voltage : 250-400 volts.(3 phase) Output voltage : 400 ±10% volts. Frequency : 50 ±3 C/S. Windings : Electrolytic grade copper of adequate section, vacuum impregnated and Oven-dried. Insulation : Fiber glass insulations to tested parameters. Cooling : Naturally, Oil cooled Temp. Rise (Max) : 30°C above ambient Mounting : On Uni-directional wheels. Correction rate : 30 volts per step Wave form distortion : virtually nil Duty cycle : 100% continuous. Enclosure : MS sheet enclosure in pressed CGR Sheet powder</p>	3	No.	107401.00	322203.00

	<p>coated with radiators.</p> <p>Core laminates : High grade, low eddy loss, grain oriented silicon steel laminations.</p> <p>Load : Three phase induction motor load.</p> <p>Load Amperes (continuous)</p> <p>Overload in 24-hours operation: 10% above continuous Ampere rating.</p> <p>The voltage stabilizer shall have T-oil level indicator gauge preferably glass type tube or otherwise visible to naked eye. The top of the container to have a display panel for housing 02 numbers Digital voltmeters (0-500V) along with 4-way selector switch and set of neon indicators for incoming and outgoing phases (06 No's).</p> <p>Insulating media (T. Oil) of 11 KVA grade to be provided and filled up to top level, with dielectric strength of 5 KV at 4m air gap. The T-Oil of specific grade should be provided in separate barrels and filled at site up to top level.</p> <p>The voltage Stabilizer shall be accepted with manufacturers dully stamped test certificate and shall have name plate with specifications.</p> <p>Manufacturers test certificate to be appended .</p>				
8.	<p>Providing, fitting, testing and commissioning of voltage stabilizer for stage 1<sup>st</sup> and 2<sup>nd</sup> as per specifications below:</p> <p>Rating:: 75KVA</p> <p>Type of voltage controller: Manually operated copper wound, 3-phase, AC power supply multi step.</p> <p>Type of Regulator : Double plate type with electrolytic copper contacts.</p> <p>Input voltage : 250-400 volts.(3 phase)</p> <p>Output voltage : 400 ±10% volts.</p> <p>Frequency : 50 ±3 C/S.</p> <p>Windings : Electrolytic grade copper of adequate section, vacuum impregnated and Oven-dried.</p> <p>Insulation : Fiber glass insulations to tested parameters.</p> <p>Cooling : Naturally, Oil cooled</p> <p>Temp. Rise (Max) : 30°C above ambient</p> <p>Mounting : On Uni-directional wheels.</p> <p>Correction rate : 30 volts per step</p> <p>Wave form distortion : virtually nil</p> <p>Duty cycle : 100% continuous.</p> <p>Enclosure : MS sheet enclosure in pressed CGR Sheet powder coated with radiators.</p> <p>Core laminates : High grade, low eddy loss, grain oriented silicon steel laminations.</p> <p>Load : Three phase induction motor load.</p> <p>Load Amperes (continuous)</p> <p>Overload in 24-hours operation: 10% above continuous Ampere rating.</p> <p>The voltage stabilizer shall have T-oil level indicator gauge preferably glass type tube or otherwise visible to naked eye. The top of the container to have a display panel for housing 02 numbers Digital voltmeters (0-500V) along with 4-way selector switch and set of neon indicators for incoming and outgoing phases (06 No's).</p> <p>Insulating media (T. Oil) of 11 KVA grade to be provided and filled up to top level, with dielectric strength of 5 KV at 4m air gap. The T-Oil of specific grade should be provided in separate barrels and filled at site up to top level.</p> <p>The voltage Stabilizer shall be accepted with manufacturers dully stamped test certificate and shall have name plate with specifications.</p> <p>Manufacturers test certificate to be appended .</p>	2	No.	163721.00	327442.00
9.	<p>Design, manufacturing ,providing , fitting, testing &amp; commissioning of Star-delta Motor control Panel</p> <p>The Star-delta Motor control Panel shall be fabricated out of 2 mm CRCA Sheets Modular, compartmentalized, Free Standing, Floor Mounting, Front hinged doors for indoor use, removable bottom gland plates for incoming cables, dust and vermin proof (IP:42 protection) with TP Aluminum Buses,</p>	01	Job	330000.00	330000.00

complete with connection, internal wiring, neon indicators for each phase ,starter buttons, name plates, painting ,vents etc. All panel compartments shall be provided with suitable cable alley and vertical bus bar alley. Suitable segregation shall be provided in between bus bar chamber and adjoining compartments. The bus bar shall be PVC sleeved with color strips of red, yellow, blue and black and the same be arranged in accordance with IS-375 specs. Electrical clearances shall be maintained between phases, neutral and body as per standards.

The control panel shall be furnished as per detail given below:

Rated Voltage of the Panel ----- 440 Volts

Frequency ----- 50 Hz

No of Phases ----- Three

**Enclosure Details** ----- Free Standing, Floor mounted,  
Compartmentalized Design.

Material ----- CRS

Thickness of sheet steel used ----- 02mm

Application ----- Indoor

Cable Entry ----- Bottom

Painting ----- Shade Siemens grey.

**a) Main Circuit Breaker (Incomer MCCB)**

Type ----- Front Operated micro processor release type on load 4 pole

Qty ----- 1 Nos

No. of poles ----- 4

Current Rating..... 200 Amp

Rated operational voltage----- 415 V AC  $\pm$  15%

Rated frequency ----- 50  $\pm$  3% Hz

Ultimate S.C Breaking cap

at (415 volt A C , 50 Hz ) ----- 50kA

Type ----- Microprocessor control

**b) Distribution bus bar**

Type ----- Electric grade AL with red, blue & yellow tapings of adequate section.

Rating ----- 160 Amp

**c) Change over Switch**

Qty ----- One

Type ----- Front Operated on load 4 pole (open execution)

Rating ----- 200 Amp

**d) Motor protection Circuit Breaker units**

Type ----- MPCB

Qty ----- 2 Nos

No. of poles-----3

Rated current -----84-125 Amp

Rated operational voltage----- 415 V  $\pm$  15%

Rated frequency ----- 50  $\pm$  3% Hz

Ultimate S.C Breaking capacity at (415 volt A C , 50 Hz ) -----36kA

**e) Starters (FASD) 40HP**

Power Specification -----3 phase, 415  $\pm$  15% v & 50 Hz

Contactors : MNX / Schneider

Line Contactor ----- AC3 95 A

Delta Contactor --- AC3 95 A

Star Contactor ----- AC3 70 A

Timer ----- Star Delta Electronic

Overload relay – direct/CT operated (35-75A range)

Coil Voltage : 220/240V

Qty ----- 2 No's

**f) Aux. panel for heating and lighting**

Circuit breaker---MCCB

Qnty---01 no.

No. of poles---04

Thermal release range -----63-80 A  
 Rated operational Voltage---415 $\pm$ 15%  
 Ultimate S.C. Breaking Capacity---35 KA at (415AC,50 Hz)

**g) Stabilization unit**

Qty---01 no  
 Rating---- 1 KvA single phase automatic voltage stabilizer

Input :90V-300

Out Put : 220/240 ( as per coil voltage of contractors)  
 Enclosure--- to be housed within the cubical panel in separated chamber  
 with additional meter , LED fitted outer side  
 MCB DP ---10A----1nos

**h) Protection Details:**

Motor Protection Relay including other related accessories like single phase preventer relay, timer relay , overload-under load, phase difference etc.

Display ----- LED/LCD

Compact motor protection relay

Note: all setting is to be controlled at display.

Qty :01 nos)

**Protections :**

- Flush Mounting with display
- Last trip data recording

• Protections:

- Thermal Overload with pre- alarm
- Short Circuit
- Earth fault
- Phase loss, Unbalance, Phase reversal
- Under Current, Over Load
- Prolong starting, Locked Rotor.

-Single phase protection- Single Phasing condition- Phase Reversal condition- Phase Unbalance condition-Modes of Operation

**i) Auxiliary Protection**

Earth Fault Relay -----3 phase Earth fault, ground fault module

Type ----GF

Range 100-200A

MCB ----- MCB SP , 10A (10 Ka)

**j) Metering Details:**

• Incomers (Panel Mounted)

- (a) Multi-Function Meters LCD Display (1 No) Voltage of each phase , Current of each phase 3 $\phi$  power (Active, Apparent) , 3 $\phi$  Power factor Frequency , Energy

- (b) Analog voltmeter S/S operated (1 No)

• (b) Outgoing

(Analog voltmeter (0-500) S/S operated (1Nos) .

Analog Ammeters 0-100 Amp (2Nos) for both starters

Each outgoing with S/S CT operated.

0. Design, manufacturing ,providing , fitting, testing & commissioning of Star-delta Motor control Panel

The Star-delta Motor control Panel shall be fabricated out of 2 mm CRCA Sheets Modular, compartmentalized, Free Standing, Floor Mounting, Front hinged doors for indoor use, removable bottom gland plates for incoming cables, dust and vermin proof (IP:42 protection) with TP Aluminum Buses, complete with connection, internal wiring, neon indicators for each phase ,starter buttons, name plates, painting ,vents etc. All panel compartments shall be provided with suitable cable alley and vertical bus bar alley. Suitable segregation shall be provided in between bus bar chamber and adjoining compartments. The bus bar shall be PVC sleeved with color strips of red, yellow, blue and black and the same be arranged in accordance with IS-375 specs. Electrical clearances shall be maintained between phases, neutral and body as per standards.

02	Job	335000.00	670000.00
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The control panel shall be furnished as per detail given below:

Rated Voltage of the Panel ---- 440 Volts

Frequency ---- 50 HZ

No of Phases ---- Three

**Enclosure Details** ---- Free Standing, Floor mounted, Compartmentalized Design.

Material ---- CRS

Thickness of sheet steel used ---- 02mm

Application ---- Indoor

Cable Entry ---- Bottom

Painting ---- Shade Siemens grey.

**a) Main Circuit Breaker (Incomer MCCB)**

Type ---- Front Operated micro processor release type on load 4 pole

Qty ---- 1 Nos

No. of poles ---- 4

Current Rating..... 160-200 Amp

Rated operational voltage----- 415 V AC  $\pm$  15%

Rated frequency ---- 50  $\pm$  3% Hz

Ultimate S.C Breaking cap

at (415 volt A C , 50 Hz ) ---- 50kA

Type ---- Microprocessor control

**b) Distribution bus bar**

Type ---- Electric grade AL with red, blue & yellow tapings of adequate section.

Rating ----160 Amp

**c) Change over Switch**

Qty ---- One

Type ---- Front Operated on load 4 pole (open execution)

Rating ---- 100 Amp

**d) Motor protection Circuit Breaker units**

Type ---- MPCB

Qty ---- 2 Nos

No. of poles-----3

Rated current ----84-125 Amp

Rated operational voltage----- 415 V  $\pm$  15%

Rated frequency ---- 50  $\pm$  3% Hz

Ultimate S.C Breaking capacity at (415 volt A C , 50 Hz ) ----36kA

**e) Starters (FASD) 30HP**

Power Specification ----3 phase, 415  $\pm$  15% v & 50 Hz

Contactors : MNX / Schneider

Line Contactor ---- AC3 70 A

Delta Contactor --- AC3 70 A

Star Contactor ---- AC3 70 A

Timer ----- Star Delta Electronic

Overload relay – direct/CT operated (35-75A range)

Coil Voltage : 220/240V

Qty ---- 2 No's

**f) Aux. panel for heating and lighting**

Circuit breaker---MCCB

Qty---01 no.

No. of poles---04

Thermal release range -----63-80 A

Rated operational Voltage---415 $\pm$ 15%

Ultimate S.C. Breaking Capacity---35 KA at (415AC,50 Hz)

**g) Stabilization unit**

Qty---01 no

Rating---- 1 KvA single phase automatic voltage stabilizer

Input :90V-300

Out Put : 220/240 ( as per coil voltage of contractors)

Enclosure--- to be housed within the cubical panel in separated chamber

	<p>with additional meter , LED fitted outer side MCB DP ---10A---1nos</p> <p><b>h) Protection Details:</b> Motor Protection Relay including other related accessories like single phase preventer relay, timer relay , overload-under load, phase difference etc. Display ----- LED/LCD Compact motor protection relay Note: all setting is to be controlled at display. Qty :01 nos)</p> <p><b>Protections :</b></p> <ul style="list-style-type: none"> <li>• Flush Mounting with display</li> <li>• Last trip data recording</li> <li>• Protections: <ul style="list-style-type: none"> <li>- Thermal Overload with pre- alarm</li> <li>- Short Circuit</li> <li>- Earth fault</li> <li>- Phase loss, Unbalance, Phase reversal</li> <li>- Under Current, Over Load</li> <li>- Prolong starting, Locked Rotor.</li> </ul> </li> <li>-Single phase protection- Single Phasing condition- Phase Reversal condition- Phase Unbalance condition-Modes of Operation</li> </ul> <p><b>i) Auxiliary Protection</b> Earth Fault Relay -----3 phase Earth fault, ground fault module Type ----GF Range 100-200A MCB ----- MCB SP , 10A (10 Ka)</p> <p><b>j) Metering Details:</b></p> <ul style="list-style-type: none"> <li>• <u>Incomers (Panel Mounted)</u> <ul style="list-style-type: none"> <li>(a) Multi-Function Meters LCD Display (1 No) Voltage of each phase , Current of each phase 3Ø power (Active, Apparent) , 3Ø Power factor Frequency , Energy</li> <li>(b) Analog voltmeter S/S operated (1 No)</li> </ul> </li> <li>• <u>(b) Outgoing</u> (Analog voltmeter (0-500) S/S operated (1Nos). Analog Ammeters 0-100 Amp (2Nos) for both starters Each outgoing with S/S CT operated.</li> </ul>				
11.	<p><b>Distribution Cables:</b> Providing, Installation, testing of multi-stranded copper conductor PVC insulated single core unsheathed 35mm sq. Copper cable for internal distribution wiring for stage 1st and 2nd conforming to IS : 7098(part -1) 1988 with latest amendments. The job includes providing and fitting of suitable rating copper thimbles duly crimped and taped at conductor ends by hydraulic crimping tool. The job includes earth work in excavation wherever required for laying of cable underground.</p>	450	Meter	630.00	283500.00
12.	<p>Providing and Fitting of 70 sqmm 3.5 core LT 1.1 KV, XLPE Armoured Aluminium Cable conforming to IS: 7089 part 1st as service line from the HT transformer/DG set to control panel including necessary thimbling, crimping, taping etc.</p> <p>NOTE:- The cable terminal ends for connection to switchgear at various requisite points shall be Al. Thimbles of appropriate size and connected by hydraulic crimp tool only <b>for stage 1st</b></p>	100	Meter	668.00	66800.00
13.	<p>Providing and Fitting of 50 sqmm 3.5 core LT 1.1 KV, XLPE Armoured Aluminium Cable conforming to IS: 7089 part 1st as service line from the HT transformer/DG set to control panel including necessary thimbling, crimping, taping etc.</p> <p>NOTE:- The cable terminal ends for connection to switchgear at various requisite points shall be Al. Thimbles of appropriate size and connected by hydraulic crimp tool only <b>for stage 2nd</b></p>	150	Meter	497.00	74550.00

14.	Steel structural work in built up tubular (round, square or rectangular hollow tubes, ISMC, ISMB, ISA etc.) trusses, construction of liner etc. including cutting, hoisting , fixing in position and applying a priming coat of approved steel primer , including welding and bolted with special shaped washers etc. complete. The drawings and Dimensions for Gantry/Transformer Bed/Pumping Equipment Base will be provided by Site In Charge at the time of execution of job.	3200	Kg.	135.00	432000.00
15.	<p>Providing, installation and testing of manual type triple spur gear chain pulley block along with monorail geared travelling trolley for stage 1st having following features</p> <p>Gears:- The hoist shall have precision machine case Hardened alloy steel gear mounted on bearings and housed in a dust proof gear box. The lubrication of gears should be of high viscosity and temperature for longer life of gears.</p> <p>Load Chain:- The load chain be made of high tensile alloy steel having wear resistance and greatest mobility. The chain should be accurately collaborated, tested and have adequate in-built factor of safety for safer operation.</p> <p>Load chain wheel:- the load chain well should be double ball bearing supported and Specially designed, perfectly machined wheel providing correct grip of load chain to makes the hoist most safe and reliable against any failure. The main specifications of C.P Block are given below :</p> <ul style="list-style-type: none"> <li>i. Make = Reputed make</li> <li>ii. Capacity = 3 ton (P)</li> <li>iii. No. Of load chain falls = 2 or above</li> <li>iv. Min. Height of lift = 6 M</li> </ul>	2	Job	62970.00	125940.00
16.	<p>Illumination of Premises for stage 1<sup>st</sup> and 2<sup>nd</sup>:</p> <p>Providing and erection of 9 Mtr long Hot Dip Galvanized Octagonal pole (single Section) with bottom 150mm, top 75mm wide, thickness 3mm with 70 Microns Zinc coating having inside arrangement for providing of power connection along with following items.</p> <ol style="list-style-type: none"> <li>1) 3 Way Terminal Connector 20 Amp.</li> <li>2) 3 No MCB 8 Amp.</li> </ol> <p>The job includes fabrication, providing and fitting of three arm GI structure at the top having 120° angle between arms and each arm having 15° inclination with respect to horizontal plane. Each arm should be of 2' length and size and shape appropriate as per requirement of the luminary.</p> <p>The job also includes providing and fitting of required length of flexible multi strand 2 mm copper wire from each terminal connector to each holding arm.</p> <p>The pole is mounted on 1:2:4 Cement concreting of size not less than 2'x2'x6" (cost of concreting not included in the job) using 04 No anchor bolts of required size not less than 7" in length. The complete job includes earthing in GI Electrode as per relevant IS Code.</p>	2	Job	22226.00	44452.00
17.	<p>Providing, installation, testing and commissioning of area lighting 120 Watt LED (Street Light Type) on top of octagonal pole vide item No.27 for stage 1st and 2nd</p> <p>Having following specs:</p> <p>Input: 90-240 V 50 Hz</p> <p>Power Factor: &gt;0.9</p> <p>Colour Temperature: 4K - 6.5K</p> <p>Beam Angle: 120° - 170°</p> <p>Lumens: &gt;12000</p> <p>Operating Temperature: -20°C to 60°C</p> <p>The LED is pressure die cast aluminum housing with power coated finish and having Ingress Protection up to IP-68.</p> <p>The LED is properly fitted on the arm of the pole and connected to the copper wire as provided in the high mast pole.</p>	8	Job	9486.00	75888.00
18.	Providing and installation of Junction Box with DP 32 A MCB to serve as Main switch for LED Lighting. The job includes making of electric connection to the circuit.	2	Job	2227.00	4454.00



19	Providing, Installation and testing of 2KVA fully automatic voltage stabilizer with input voltage 70-240 V and output 220 V for stage 1 <sup>st</sup> and 2nd. The stabilizer shall be installed and connected to the electric circuit as per location provided by site in charge.	2	Job	8154.00																																	
20	Supply, installation, Testing & commissioning of 1000VA Full Sine wave power inverter including Providing / Installation of 12V, 180AH Tubular inverter Battery with trolley and cover. with 2-core 4 mm <sup>2</sup> Cu (25 m) wiring as per site requirement along with other accessories like SS-Combine (02 No's), 3-pin plugs etc of reputed make for proper fitment and installation of the item.	2	Job	34053.00	68106.00																																
21	Providing, laying & fixing of shock proof rubber mats with adhesive/bonding material on the floor of the pump house, covering area around electro-mechanical machinery for safeguarding the life & limb of the workmen due to possible leakage of current & short circuit for stage 1 <sup>st</sup> and 2nd. The floor surface shall be made good & shall be free from dust, grease, foreign material & moisture free. The mats shall be as per IS 15652:2006 & shall have the following specifications:- Composition: Rubber (synthetic mats for electrical purpose) Thickness: - 2.5mm Size: - 1M wide. The rubber mats shall be accepted with manufacturers test certificate.	20	Meter	1205.00	24100.00																																
22	<p><b>TOOL KIT</b> For Maintenance for stage 1<sup>st</sup> and 2<sup>nd</sup>:  The Tool Kit for maintenance shall comprise of the following and all the items as mentioned below shall be of:</p> <p>Providing of tool kit consists of following items</p> <p>Double ended Spanner (Chrome plated) 02 sets complete  Double ended Ring spanners chrome plated 02 sets complete  Allen key set black finish 02 sets complete  Combination Pliers insulated with thick C.A sleeve; size in mm 165, 210, 255 each – 02 No.  Long nose plier insulated with thick C.A sleeve; size in mm 165, 205 each – 02 No.  Side cutting plier insulated with thick C.A sleeve; size in mm 165, 205 make – 02 No.</p> <p><b>Insulated screw Drivers</b></p> <table> <thead> <tr> <th>Blade length in mm</th> <th>Blade dia in mm</th> <th>Tip dimensions in mm</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>50</td> <td>3</td> <td>1.6 x 0.4</td> <td>02</td> </tr> <tr> <td>75</td> <td>3</td> <td>1.6 x 0.4</td> <td>02</td> </tr> <tr> <td>100</td> <td>3</td> <td>3 x 0.4</td> <td>02</td> </tr> <tr> <td>125</td> <td>3.5</td> <td>3.5 x 0.5</td> <td>02</td> </tr> <tr> <td>150</td> <td>3.5</td> <td>3.5 x 0.5</td> <td>02</td> </tr> <tr> <td>200</td> <td>4</td> <td>4 x 0.6</td> <td>02</td> </tr> <tr> <td>300</td> <td>5</td> <td>5 x 0.8</td> <td>02</td> </tr> </tbody> </table> <p>viii. Hammer with handle weight – 110 mg, 340 gm , 600 gm –each – 1No . .  ix. Heavy duty pipe Wrench length in mm - 200, 300, 600 each – 01 No.  x. Electric Multimeter =1No  xi. Digital multimeter – 1No.  xii. Digital Clamp tester capable to measure up to 400A - 1 No.  xiii. Hack saw frame with hack saw blade – 01 no.  xiv. S-16 MXL, S- 16 H X L Socket Set (19 sockets + 6 Accessories) – 01 No.</p>	Blade length in mm	Blade dia in mm	Tip dimensions in mm	Quantity	50	3	1.6 x 0.4	02	75	3	1.6 x 0.4	02	100	3	3 x 0.4	02	125	3.5	3.5 x 0.5	02	150	3.5	3.5 x 0.5	02	200	4	4 x 0.6	02	300	5	5 x 0.8	02			28840.00	28840.00
Blade length in mm	Blade dia in mm	Tip dimensions in mm	Quantity																																		
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3	<p>Providing of good quality convenience and utility items as per following details for stage 1<sup>st</sup> and 2<sup>nd</sup></p> <p>a) Providing of good quality bedding for night stay/Shift consisting of:-</p> <p>i) Mattress with warm cover size 6'x3' (6Kg)- 02 No's  ii) Quilt with warm cover size 5'x8' (6Kg)- 02 No's  iii) Pillows with covers - 02 No's  iv) Single bed warm blankets with one sided Fur- 02 No's</p> <p>The filling material for mattress, quilt and pillow shall be of good quality cotton</p> <p>b) The job also includes providing of pressure cooker 5ltr 02 No's, Steel patella (utensil) 5ltrs 02 No's, cooking heater 01 No., room heater 01 No., steel</p>	2	Job	39619.00	79238.00																																

	buckets 10 litre capacity 01 No., Plastic bucket 10 litre capacity with Mug 02 No's each, steel glasses 06 No's, steel Plates with large spoons and bowls 03 No's each, Cup and Saucer set (01 No. Set) and, 5kg Gas cylinder with burner/stove. The job also includes providing of thermo-cool 15'x12' along with excel matting of 15'x12' size. The job also includes providing of unbreakable Plastic Chair table set consisting of chairs 04 No's, extra heavy Table 01 No. The job also includes providing of good quality safety Door locks (03 No's), Link locks,			
24	Fabrication of 6' x 6' angle iron bed by way of providing and fitting of Structural steel in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete welded for stage 1st and 2nd	189.50	Kg	114.00 21603.00
25	Providing and fitting of 19 mm thick multi-layered ply sheet of size 6 x 3 feet, 2 no's including cutting, fixing all complete including painting of the play sheet by one coat of primer and two coats of enamel paint for stage 1st and 2 <sup>nd</sup>	36.00	Sft	150.00 5400.00
26	Providing of solar/ electrical lantern chargeable on both solar & electrical 220v supply for stage 1st and 2 <sup>nd</sup>	2	Job	1911.00 3822.00
27	Providing of 1 KW heat convector for operators for winter season for stage 1st and 2 <sup>nd</sup>	2	Job	1205.00 2410.00
28	Providing and fitting of 01 No. LED (scroll type) sign board fabricated out of stainless steel and metal for stage 1st and 2 <sup>nd</sup>	18	Sft	3998.00 71964.00
29	Providing & fitting of lighting points for ( machine room , operators room,) as per site requirement in 1.5 mm <sup>2</sup> multistranded single core 1100 volts, pvc insulated copper conductor through pvc conduit pipe by way, switches, socket modules , regulators ,indicators, 08/10 watt LED lamps. .Included is cost on account of modular switch boards with the wooden frames as per site requirements for stage 1st and 2nd	16	Job	1680.00 26880.00
30	Providing fitting of heating points in 2.5mm <sup>2</sup> multistranded single core 1100 volts, pvc insulated copper conductor through pvc conduit by way of p / f of 15 Amp switches, 6 pin socket on modular fitting as per site requirements. Heating points are to be connected from main control panel. All accessories required is to be provided by the firm for stage 1st and 2nd	4	Job	1470.00 5880.00
31	Providing and fitting of 01 No. angle iron/sheet metal board duly painted showing various specifications of the mechanical and electrical equipments installed at-site for stage 1st and 2 <sup>nd</sup> .	48	Sft	250.00 12000.00
32	Providing and fitting of 3-Core, 16 Sq mm flat submersible copper cable conforming to IS: 694 (Part 1st)-1964 & IS: 694 (Part 2nd)- 1964 for Pumping Unit and other electrical Equipment for stage 1st and 2 <sup>nd</sup> . The cable connections terminal shall be fitted with copper thimbles of required size.	90	Meter	711.00 63990.00
33	Fabrication, providing and fitting of split type MS clamps 10 mm thick, 2 ft long and 3 inch wide for lowering and holding of pumping unit fitted for stage 1st and 2nd. The job includes the cost of required size of nuts and bolts. Size: 100mm	4	Job	1801.00 7204.00
<b>Estimated / advertised amount:</b>				<b>7090584.00</b>
<b>Percentage quoted by 11 firm</b>				<b>-7.95%</b>
<b>Total allotted amount:</b>				<b>6526882.00</b>
<b>(Rupees Sixty Five Lakh Twenty Six Thousand Eight Hundred and Eighty Two Only)</b>				

Executive Engineer  
Jal Shakti PHE Mechanical Division (North)  
Sopore