

**MAHARASHTRA JEEVAN PRADHIKARAN  
ELECTRICAL & MECHANICAL CSR 2018-19**

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# MAHARASHTRA JEEVAN PRADHIKARAN

## MJP ELECT. / MECH. CSR 2018-19

### NOTES

1. The rates in this CSR are applicable for Electrical and Mechanical Works in Maharashtra Jeevan Pradhikaran.
2. The rates in this schedule are exclusive of GST . Add 12 % GST on overall estimate.
3. The rates in the schedule are inclusive of routine tests at manufacturer's works, packing, forwarding, loading, transportation including head load carting upto 0.5 km., unloading, storing and insurance and overhead charges wherever applicable.
4. The rates in this schedule do not include charges payable to MSEDCo. for power supply.
5. Following increase on rates in this CSR is admissible on account of the following-

| Admissible increase on Rates for   | Supply Part | Erection Part         |
|--|-------------|-----------------------|
| a) Notified hilly and inaccessible area / tribal area as detailed in Civil CSR of MJP for respective regions (except Matheran)   | 2%          | 20%                   |
| b) For additional lead for head load carting above 0.5 km (except Matheran)  | 2%          | 10%                   |
| c) Matheran and its pumping stations   | 5%          | 20%                   |
| d) Test and Inspections  | As per MJP  | Circular              |
| i) Manufacturer's inspecting agency's charges for routine and performance test of pump, motor, transformer and other equipments at manufacturer's works to be witnessed by M.J.P | 0.14% OR    | minimum<br>Rs.2,000/- |
| ii) Inspection charges of third party agency approved by MJP for any or all test at manufacturer's work.   | 0.14% OR    | minimum<br>Rs.2,000/- |

7. The rates of items not included in this schedule shall be adopted as follows -
  - i) The rates if included in CSR of civil works of MJP.
  - ii) If not included in the Civil CSR of MJP, the rates as per CSR of Electrical wing of Public Works Department of Govt. of Maharashtra.

- iii) If not included in both (i) and (ii) above the rates as per CSR of MIDC (E & M).
- iv) If not included in both (i), (ii) and (iii) above, the same shall be worked out on the basis of budgetary offer / price lists of manufacturers as given below.

|  | <b>For Equipments<br/>manufactured out<br/>of Maharashtra</b> | <b>For Equipments<br/>manufactured in<br/>Maharashtra</b> |
|--|---|---|
| 1) Budgetary offer / price list  |   |   |
| 2) Add for Goods and Service Tax (GST)   | As rate applicable  | As rate applicable  |
| 5) Add for packing, forwarding, transit insurance, loading, unloading, transportation, insurance upto completion of work | 5%  | 5%  |

- 8. Rate of valves shall be as per Civil CSR of MJP and makes of valves shall be as per Elect. / Mech. approved list of MJP.
- 9. Erection rate mentioned in this CSR shall not be applicable for left over works for which separate analysis covering actual expenses shall be prepared.
- 10. While preparing the Estimate, factor for economy of scale shall be used as below -
  - 1) For individual items costing total amount Rs. 10 lakhs to 50 lakh, 5% less shall be adopted on the CSR rate of that individual item.
  - 2) For individual items costing total amount beyond Rs. 50 lakh, 10% less shall be adopted on the CSR rates.

# **MAHARASHTRA JEEVAN PRADHIKARAN**

**( Government of Maharashtra Undertaking )**



## **SCHEDULE OF RATES**

**FOR YEAR 2018-19**

**( Effective from 01/06/2018 )**

**APPLICABLE IN**

**ALL REGIONS OF MAHARASHTRA**

**ELECTRICAL AND MECHANICAL WORKS**

**sd/-**

**Member Secretary**

**Maharashtra Jeevan Pradhikaran**

**MAHARASHTRA JEEVAN PRADHIKARAN**  
**ELECTRICAL & MECHANICAL CSR 2018-19**  
**( Without GST )**

| Code No       | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|---|------|-----------------|-------------------|---------------|
|               | <b>SECTION 1 - PM<br/>PUMPS</b>   |      |                 |                   |               |
| <b>PM1</b>    | Providing, erecting and giving test of submersible pump set conforming to IS 8034 and motor conforming to IS 9283, with water proof winding. Pump shall be suitable for various delivery head and discharge with stainless steel shaft. Motor suitable for working on 415 V $\pm$ 10%, 3 Ph, 50 Hz A.C. Supply, with cable guard, thrust carbon/fiber bearing to withstand entire hydraulic thrust. The pump set shall be suitable for direct coupling, with suitable suction strainer. Pump should have suitable discharge out let as per manufacturer's design. Antithrust stream lined non return valve shall be provided with the pump. 3 m submersible copper conductor cable in single / double run and 2 pairs of suitable size erection clamp 10 mm thick shall be provided |      |                 |                   |               |
| <b>PM 1-1</b> | <b>Submersible Pump set 100 mm dia (with Polypropylene / Noryl Impeller) up to 20 stages</b>  |      |                 |                   |               |
| PM 1-1-1      | 1.5 HP  | Each | 15572           | 3245              | 18817         |
| PM 1-1-2      | 2 HP  | Each | 16149           | 3245              | 19394         |
| PM 1-1-3      | 2.5 HP  | Each | 17892           | 3245              | 21137         |
| PM 1-1-4      | 3.0 HP  | Each | 18207           | 3245              | 21452         |
| PM 1-1-5      | 4.0 HP  | Each | 19091           | 3245              | 22336         |
| PM 1-1-6      | 5.0 HP  | Each | 24654           | 3245              | 27899         |
| <b>Note 1</b> | Supply rate should be increased by Rs. 200/- per stage for pump with more than 20 stages  |      |                 |                   |               |
| <b>PM 1-2</b> | <b>Submersible Pump 150 mm dia (with Bronze / Stainless steel (CF8M) Impeller) up to 8 stages</b>   |      |                 |                   |               |
| PM 1-2-1      | 1.5 HP  | Each | 20889           | 3245              | 24134         |
| PM 1-2-2      | 2.0 HP  | Each | 21987           | 3245              | 25232         |
| PM 1-2-3      | 3.0 HP  | Each | 23615           | 3245              | 26860         |
| PM 1-2-4      | 4.0 HP  | Each | 24465           | 3245              | 27710         |
| PM 1-2-5      | 5.0 HP  | Each | 25725           | 3245              | 28970         |
| PM 1-2-6      | 6.0 HP  | Each | 28203           | 4227              | 32430         |
| PM 1-2-7      | 7.5 HP  | Each | 29474           | 4227              | 33701         |
| <b>Note 2</b> | Supply rate should be increased by Rs. 600/- per stage for pump with more than 8 stages   |      |                 |                   |               |

| Code No       | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|--|------|-----------------|-------------------|---------------|
| <b>PM 1-2</b> | <b>Submersible Pump 150 mm dia (with Bronze / Stainless steel(CF8M) Impeller) up to 12 stages</b>  |      |                 |                   |               |
| PM 1-2-8      | 8.0 HP   | Each | 32573           | 4701              | 37274         |
| PM 1-2-9      | 9.0 HP   | Each | 32865           | 4701              | 37566         |
| PM 1-2-10     | 10.0 HP  | Each | 34944           | 4701              | 39645         |
| PM 1-2-11     | 11.0 HP  | Each | 36039           | 4701              | 40740         |
| PM 1-2-12     | 12.5 HP  | Each | 37989           | 5436              | 43425         |
| PM 1-2-13     | 15.0 HP  | Each | 40173           | 5436              | 45609         |
| <b>Note 3</b> | Supply rate should be increased by Rs. 600/- per stage for pump with more than 12 stages   |      |                 |                   |               |
| <b>PM 1-2</b> | <b>Submersible Pump 150 mm dia (with Bronze / Stainless steel(CF8M) Impeller) up to 15 stages</b>  |      |                 |                   |               |
| PM 1-2-14     | 17.5 HP  | Each | 44153           | 6172              | 50325         |
| PM 1-2-15     | 20.0 HP  | Each | 51849           | 6172              | 58021         |
| PM 1-2-16     | 22.5 HP  | Each | 63998           | 6172              | 70170         |
| <b>Note 4</b> | Supply rate should be increased by Rs. 600/- per stage for pump with more than 15 stages for <b>Borewell only</b> .<br><br>For other use 200 mm dia pump shall be preferred over 150 mm dia with more than 15 stage pump.<br><br>For 150 mm dia energy efficient pumps add as below<br>a. upto 8 stages 3% of supply rates<br>b. upto 12 stages 4% of supply rates<br>c. upto 15 stages 5% of supply rates |      |                 |                   |               |
| <b>PM 1-3</b> | <b>Submersible Pump 200 mm dia (with Bronze / Stainless steel (CF8M) Impeller) up to 5 stages of category A &amp; B</b>  |      |                 |                   |               |
| PM 1-3-1      | 7.5 HP   | Each | 30419           | 4227              | 34646         |
| PM 1-3-2      | 10.0 HP  | Each | 35448           | 4701              | 40149         |
| PM 1-3-3      | 12.5 HP  | Each | 38756           | 5436              | 44192         |
| <b>Note 5</b> | Supply rate should be increased by Rs. 1900/- per stage for pump with more than 5 stages   |      |                 |                   |               |
| <b>PM 1-3</b> | <b>Submersible Pump 200 mm dia (with Bronze / Stainless steel(CF8M) Impeller) up to 8 stages of category A &amp; B</b>   |      |                 |                   |               |
| PM 1-3-4      | 15.0 HP  | Each | 49350           | 6172              | 55522         |
| PM 1-3-5      | 17.5 HP  | Each | 52290           | 6172              | 58462         |
| PM 1-3-6      | 20.0 HP  | Each | 57834           | 6172              | 64006         |
| PM 1-3-7      | 22.5 HP  | Each | 64953           | 6172              | 71125         |
| PM 1-3-8      | 25.0 HP  | Each | 65006           | 6172              | 71178         |

| Code No       | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|--|------|-----------------|-------------------|---------------|
| PM 1-3-9      | 27.5 HP  | Each | 75718           | 6172              | 81890         |
| <b>Note 6</b> | Supply rate should be increased by Rs. 1900/- per stage for pump with more than 8 stages   |      |                 |                   |               |
| <b>PM 1-4</b> | <b>Submersible Pump 250 mm dia (with Bronze / Stainless steel(CF8M) Impeller) up to 8 stages of category A &amp; B</b>   |      |                 |                   |               |
| PM 1-4-1      | 15.0 HP  | Each | 52574           | 6172              | 58746         |
| PM 1-4-2      | 20.0 HP  | Each | 56175           | 6172              | 62347         |
| PM 1-4-3      | 22.5 HP  | Each | 71925           | 6172              | 78097         |
| PM 1-4-4      | 25.0 HP  | Each | 75261           | 6172              | 81432         |
| PM 1-4-5      | 30.0 HP  | Each | 76632           | 6172              | 82804         |
| <b>PM 1-5</b> | <b>Submersible monoblock Pump set (with Bronze / Stainless steel(CF8M) Impeller) Horizontal / Vertical - up to 3 stages</b>  |      |                 |                   |               |
|               | (Motor with water lubricated bearing to accept entire hydraulic thrust)  |      |                 |                   |               |
| PM 1-5-1      | 3.0 HP   | Each | 13125           | 3245              | 16370         |
| PM 1-5-2      | 5.0 HP   | Each | 14595           | 3735              | 18330         |
| PM 1-5-3      | 7.5 HP   | Each | 26618           | 4227              | 30845         |
| PM 1-5-4      | 10.0 HP  | Each | 31920           | 4227              | 36147         |
| <b>Note 7</b> | Erection rates for submersible pump set are considering drop pipe length up to 15 m. The erection rates shall be increased for additional length of drop pipe by 50% of the rate of erection of respective dia of GI pipe for more than 15 m drop pipe. Refer Civil CSR for the rates of erection of GI    |      |                 |                   |               |
| <b>Note 8</b> | For turbid water use of submersible pump shall be avoided, however for emergency situation mechanical seal of TCTC construction shall be provided with the motor and adequate screen to prevent floating material shall also be provided for which Rs. 7500/- shall be added in additional to supply rate. |      |                 |                   |               |
| <b>PM 2</b>   | <b>Centrifugal Monoblock Pump set</b>  |      |                 |                   |               |

| Code No       | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|--|------|-----------------|-------------------|---------------|
|               | Providing, erecting and giving test of Centrifugal Monoblock pump set conforming to IS 9079 operating at 2900 RPM with CI impeller, priming funnel, cock, suitable flanges at suction and delivery side. Pump shall have common shaft for pump and motor. Motor shall be suitable for working on 415 V $\pm$ 10%, 3 Ph, 50 Hz A.C. Supply. Motor shall be TEFC type. Pump set shall be suitable for working at various discharge and head requirements. Pump shall be erected on Provided C.C. foundation block with suitable foundation bolts grouted in C.C. foundation block. |      |                 |                   |               |
| <b>PM 2-1</b> | <b>Centrifugal Monoblock Pump set (Single Stage)</b>   |      |                 |                   |               |
| PM 2-1-1      | 2.0 HP   | Each | 11108           | 2282              | 13389         |
| PM 2-1-2      | 3.0 HP   | Each | 13464           | 2282              | 15746         |
| PM 2-1-3      | 5.0 HP   | Each | 16458           | 2999              | 19458         |
| PM 2-1-4      | 7.5 HP   | Each | 20052           | 2999              | 23051         |
| PM 2-1-5      | 10.0 HP  | Each | 26561           | 2999              | 29560         |
| PM 2-1-6      | 12.5 HP  | Each | 32373           | 3735              | 36108         |
| PM 2-1-7      | 15.0 HP  | Each | 35330           | 3735              | 39065         |
| PM 2-1-8      | 20.0 HP  | Each | 50938           | 3735              | 54673         |
| PM 2-1-9      | 25.0 HP  | Each | 67002           | 3735              | 70737         |
| PM 2-1-10     | 30.0 HP  | Each | 82958           | 3735              | 86693         |
| <b>PM 2-2</b> | <b>Centrifugal Monoblock Pump set (Two Stage)</b>  |      |                 |                   |               |
| PM 2-2-1      | 5.0 HP   | Each | 18651           | 2999              | 21650         |
| PM 2-2-2      | 7.5 HP   | Each | 22658           | 2999              | 25657         |
| PM 2-2-3      | 10.0 HP  | Each | 30038           | 2999              | 33037         |
| PM 2-2-4      | 12.5 HP  | Each | 37080           | 3735              | 40815         |
| PM 2-2-5      | 15.0 HP  | Each | 44108           | 3735              | 47843         |
| PM 2-2-6      | 20.0 HP  | Each | 49176           | 3735              | 52912         |
| <b>PM 3</b>   | <b>Centrifugal Coupled Pump set</b>  |      |                 |                   |               |
|               | C.S.R. for centrifugal coupled set is not prepared due to wide variation in rates per horse power as per duty conditions and type of material. The rates required shall be worked out on basis of quotations, offers from manufacturers, distributors, dealers in individual case.   |      |                 |                   |               |
| <b>PM 4</b>   | <b>Centrifugal Coupled Pump set -- Erection charges</b>  |      |                 |                   |               |
|               | Erecting and giving test of centrifugal coupled pump set with foot mounted motor excluding base plate coupling and foundation bolts, etc. on provided concrete foundation / RSJ with accurate levelling with shims and proper alignment.   |      |                 |                   |               |



| Code No       | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|--|------|-----------------|-------------------|---------------|
| PM 4-1        | 15 TO 30 HP  | Each | 0               | 4279              | 4279          |
| PM 4-2        | 31 TO 50 HP  | Each | 0               | 5122              | 5122          |
| PM 4-3        | 51 TO 100 HP   | Each | 0               | 6103              | 6103          |
| PM 4-4        | 101 TO 150 HP  | Each | 0               | 7313              | 7313          |
| PM 4-5        | 151 TO 200 HP  | Each | 0               | 8523              | 8523          |
| PM 4-6        | 201 TO 250 HP  | Each | 0               | 9750              | 9750          |
| PM 4-7        | 251 TO 300 HP  | Each | 0               | 11695             | 11695         |
| PM 4-8        | More than 300 HP   | HP   | 0               | 54                | 54            |
| <b>PM 5</b>   | <b>Vacuum Pump set (Monoblock)</b><br><br>Providing, erecting Kirloskar make or other approved make Mono block Vacuum pump set with base plate excluding C.C. foundation / cross channels / RSJ frame and foundation bolts etc complete.   |      |                 |                   |               |
| PM 5-1        | 1 HP, single Ph (Type kV 20)   | Each | 20408           | 2282              | 22690         |
| PM 5-2        | 3 HP, three Ph (Type kV 30)  | Each | 38267           | 2282              | 40549         |
| <b>PM 6</b>   | <b>Vacuum Pump set (Coupled)</b><br><br>Providing, erecting Coupled Vacuum pump set with horizontal foot mounted TEFC squirrel cage motor working on three phase 50 Hz, 415 Volts +/- 10% with base plate including cost of flexible couplings, coupling guard etc complete.   |      |                 |                   |               |
| PM 6-1        | 5 HP (Type DV 40)  | Each | 71265           | 3298              | 74564         |
| PM 6-2        | 10 HP (Type DV 50)   | Each | 88369           | 3298              | 91667         |
| <b>Note 9</b> | Cost of starters, cable, switches, suitable GI Pipe with coupling and specials, valves etc shall be added as per G.P.  |      |                 |                   |               |
| <b>PM 7</b>   | <b>V.T. Pumps, Water / Oil lubricated</b><br><br>C.S.R. for Vertical Turbine Pump set is not prepared due to wide variation in rates per horse power as per duty conditions, number of stages, column pipe size and length required and type of material. The rates required shall be worked out on basis of quotations, offers from manufacturer, distributors, dealers in individual case. |      |                 |                   |               |

| Code No        | Description  | Unit  | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|----------------|--|-------|-----------------|-------------------|---------------|
| <b>PM 8</b>    | <b>V.T. Pump erection charges (For column length up to 6 m)</b>  |       |                 |                   |               |
|                | Erecting, commissioning and giving test of Vertical Turbine Pump (Water Lubricated) including bowl assembly and discharge head etc on provided channel / RSJ / RCC beam including erecting on provided sole plate with blue  |       |                 |                   |               |
| PM 8-1         | Up to 30 HP  | Each  | 0               | 5314              | 5314          |
| PM 8-2         | 31 HP to 100 HP  | Each  | 0               | 7925              | 7925          |
| PM 8-3         | 101 HP to 200 HP   | Each  | 0               | 10959             | 10959         |
| PM 8-4         | 201 HP to 300 HP   | Each  | 0               | 14624             | 14624         |
| PM 8-5         | above 300 HP   | HP    | 0               | 54                | 54            |
| <b>Note 10</b> | For column length more than 6m additional rate per column joint  |       |                 |                   |               |
|                | 100 mm dia column pipe   | Joint | 0               | 160               | 160           |
|                | 150 mm dia column pipe   | Joint | 0               | 300               | 300           |
|                | 200 mm dia column pipe   | Joint | 0               | 335               | 335           |
|                | 300 mm dia column pipe   | Joint | 0               | 458               | 458           |
|                | 350 mm dia column pipe   | Joint | 0               | 598               | 598           |
|                | 400 mm dia column pipe   | Joint | 0               | 738               | 738           |
|                | 450 mm dia column pipe   | Joint | 0               | 913               | 913           |
|                | 500 mm dia column pipe   | Joint | 0               | 984               | 984           |
|                | 600 mm dia column pipe and above   | Joint | 0               | 1177              | 1177          |
| <b>Note 11</b> | Add 5 % for erection of oil lubricated pumps   |       |                 |                   |               |
| <b>Note 12</b> | Generally self water lubricated VT pumps shall be preferred. In exceptional cases, oil lubricated VT pumps shall be selected with prior approval from Superintending Engineer (Mech).  |       |                 |                   |               |
| <b>Note 13</b> | Above rates shall not be applicable where supply part is over and erection part is left. In such cases erection and testing charges shall be worked out separately.  |       |                 |                   |               |
| <b>PM 9</b>    | <b>Sewage Pump</b>   |       |                 |                   |               |
|                | C.S.R. for Sewage pump set is not prepared due to wide variation in rates per H.P. as per duty conditions, speed, length of transmission shaft, type etc. The rates required shall be worked out on the basis of quotations / offers from manufacturers / authorised distributors in each individual |       |                 |                   |               |

| Code No        | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|----------------|---|------|-----------------|-------------------|---------------|
| <b>PM 10</b>   | <b>Sewage Pump, Erection charges</b>  |      |                 |                   |               |
|                | Erection and giving test and trial for directly coupled sewage pump set on provided foundation.   |      |                 |                   |               |
| PM 10-1        | Up to 30 HP   | Each | 0               | 4279              | 4279          |
| PM 10-2        | 31 HP to 100 HP   | Each | 0               | 5612              | 5612          |
| PM 10-3        | 101 HP to 200 HP  | Each | 0               | 7925              | 7925          |
| PM 10-4        | 201 HP to 300 HP  | Each | 0               | 10713             | 10713         |
| PM 10-5        | Above 300 HP  | HP   | 0               | 54                | 54            |
| <b>Note 14</b> | Add 25 % to above rates in case of submersible sewage pump set including guide rail etc or extended shaft of sewage pump.   |      |                 |                   |               |
| <b>Note 15</b> | Erection of pumpset ( Above 100 HP ) must be done in presence & guidance of manufacturers representative.   |      |                 |                   |               |
| <b>PM 11</b>   | <b>Pressure gauges</b>  |      |                 |                   |               |
|                | Providing, erecting Pressure gauge of required range complete with syphon tube, isolating cock suitable for 12 mm dia G.I. Pipe. Pressure gauge shall be installed as directed, with tapping on rising main.                              |      |                 |                   |               |
| PM 11-1        | Pressure gauge (100 mm dia)   | Each | 690             | 62                | 751           |
| PM 11-2        | Pressure gauge (150 mm dia)<br>Glycerine Filled Pressure gauge Bourdon's type as IS 3624:1987<br>Mounting - direct bottom, stainless steel body, toughened glass window   | Each | 794             | 62                | 855           |
| PM 11-3        | Pressure gauge 100 mm dia (black & red marking)   | Each | 1100            | 62                | 1162          |
| PM 11-4        | Pressure gauge 150 mm dia   | Each | 1626            | 62                | 1688          |
| <b>PM 12</b>   | <b>Vacuum / Combination gauge</b>   |      |                 |                   |               |
|                | Providing, erecting Vacuum Gauge / Combination gauge of required range complete with syphon tube, isolating cock suitable for 12 mm dia G.I. Pipe. Vacuum / Combination gauge shall be installed as directed, with tapping on main lines. |      |                 |                   |               |
| PM 12-1        | Vacuum / Combination gauge - 100 mm dia   | Each | 764             | 62                | 825           |
| PM 12-2        | Vacuum / Combination gauge - 150 mm dia   | Each | 868             | 62                | 929           |
| <b>PM 13</b>   | <b>Foot Valve</b>   |      |                 |                   |               |

| Code No   | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-----------|--|------|-----------------|-------------------|---------------|
|           | Providing, erecting C.I. foot valve having single leather flap and gunmetal seating. Valve shall be fixed on suction side of pump as per requirement including jointing material and |      |                 |                   |               |
|           | <b>Screwed Type</b>  |      |                 |                   |               |
| PM 13-1   | 50 mm  | Each | 356             | 116               | 472           |
| PM 13-2   | 65 mm  | Each | 474             | 116               | 590           |
| PM 13-3   | 80 mm  | Each | 607             | 116               | 723           |
| PM 13-4   | 100 mm   | Each | 934             | 223               | 1157          |
| PM 13-5   | 125 mm   | Each | 1438            | 223               | 1661          |
| PM 13-6   | 150 mm   | Each | 2091            | 223               | 2314          |
|           | <b>Flanged Type</b>  |      |                 |                   |               |
| PM 13-7   | 50 mm  | Each | 1007            | 421               | 1428          |
| PM 13-8   | 65 mm  | Each | 1186            | 421               | 1607          |
| PM 13-9   | 80 mm  | Each | 1349            | 421               | 1770          |
| PM 13-10  | 100 mm   | Each | 1853            | 547               | 2400          |
| PM 13-11  | 125 mm   | Each | 3097            | 547               | 3644          |
| PM 13-12  | 150 mm   | Each | 4519            | 547               | 5066          |
|           | <b>SECTION 2 - SP<br/>[ SOLAR PUMPS ]</b>  |      |                 |                   |               |
|           | Designing, Supplying, Installing, Testing and commissioning of SPV water pumping system with required accessories as per following:  |      |                 |                   |               |
| <b>SP</b> | 1. Solar panel with stand<br>2. Controller<br>3. Protection<br>4. Battery based back up<br>5. Sufficient size & Length of cable<br>and with comprehensive contract for 5 years.      |      |                 |                   |               |
| <b>1</b>  | <b>Solar pumps - SPV DC type</b>   |      |                 |                   |               |
| 1.1       | 1 HP ( 900 Wp ) Surface pump   |      |                 |                   |               |
| 1.2       | 2 HP ( 1500 Wp ) Surface pump  |      |                 |                   |               |
| 1.3       | 3 HP ( 3000 Wp ) Surface pump  |      |                 |                   |               |
| 1.4       | 1 HP ( 675 Wp ) Sub. pump  |      |                 |                   |               |
| 1.5       | 2 HP ( 1800 Wp ) Sub. pump   |      |                 |                   |               |
| 1.6       | 2.3 HP ( 2400 Wp ) Sub. pump   |      |                 |                   |               |
| 1.7       | 3 HP ( 3000 Wp ) Sub. pump   |      |                 |                   |               |
| 1.8       | 4 HP ( 4200 Wp ) Sub. pump   |      |                 |                   |               |
| 1.9       | 4.8 HP ( 5600 Wp ) Sub. pump   |      |                 |                   |               |
| <b>2</b>  | <b>Solar pumps - SPV AC type</b>   |      |                 |                   |               |
|           |  |      | As Per PWD      |                   |               |

| Code No | Description                  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|------------------------------|------|-----------------|-------------------|---------------|
| 2.1     | 1 HP ( 900 Wp ) Surface pump |      | As Per PWD      |                   |               |
| 2.2     | 1 HP ( 900 Wp ) Sub. pump    |      |                 |                   |               |
| 2.3     | 1.5 HP ( 1500 Wp ) Sub. pump |      |                 |                   |               |
| 2.4     | 2 HP ( 1800 Wp ) Sub. pump   |      |                 |                   |               |
| 2.5     | 2.5 HP ( 2400 Wp ) Sub. pump |      |                 |                   |               |
| 2.6     | 3 HP ( 3000 Wp ) Sub. pump   |      |                 |                   |               |
| 2.7     | 4 HP ( 4200 Wp ) Sub. pump   |      |                 |                   |               |
| 2.8     | 5 HP ( 5600 Wp ) Sub. pump   |      |                 |                   |               |

| Code No     | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|---|------|-----------------|-------------------|---------------|
|             | <b>SECTION 3-VL and VA<br/>[VALVES &amp; ACTUATORS]</b>   |      |                 |                   |               |
|             | <b>SECTION 3 A- VL [Glandless VALVE]</b>  |      |                 |                   |               |
| <b>VL 1</b> | <b>Glandless CIDF Sluice Valves : PN : 1.0</b><br>Providing,erecting,testing and commissioning C.I.<br>Glandless Sluice valve suitable for working pressure of 10 kg/cm2 with standard non rising spindle, handwheel, cap etc and manufactured as per IS 2906/14846 and as per detailed specifications. |      |                 |                   |               |
| VL 1-1      | 50mm  | No   | 5274            | 825               | 6099          |
| VL 1-2      | 65mm  | No   | 5987            | 1241              | 7229          |
| VL 1-3      | 80mm  | No   | 6144            | 1724              | 7868          |
| VL 1-4      | 100mm   | No   | 8181            | 2253              | 10434         |
| VL 1-5      | 125mm   | No   | 10234           | 2804              | 13039         |
| VL 1-6      | 150mm   | No   | 12272           | 3541              | 15813         |
| VL 1-7      | 200mm   | No   | 23220           | 3685              | 26904         |
| VL 1-8      | 250mm   | No   | 35925           | 4799              | 40725         |
| VL 1-9      | 300mm   | No   | 45272           | 4980              | 50252         |
| VL 1-10     | 350mm   | No   | 59087           | 6136              | 65223         |
| VL 1-11     | 400mm   | No   | 79666           | 7403              | 87068         |
| VL 1-12     | 450mm   | No   | 97439           | 8806              | 106245        |
| VL 1-13     | 500mm   | No   | 125381          | 9120              | 134502        |
| VL 1-14     | 600mm   | No   | 185188          | 9679              | 194867        |
| <b>VL 2</b> | <b>Glandless CIDF Sluice Valve PN - 1.6</b><br>Providing, erecting, testing and commissioning C.I.<br>Glandless Sluice valves suitable for working pressure of 16 kg/cm2 with standard non rising spindle, handwheel, cap etc and manufactured as per IS 2906/14846 and as per detailed specifications. |      |                 |                   |               |
| VL 2-1      | 50mm  | No   | 6970            | 825               | 7795          |
| VL 2-2      | 65mm  | No   | 7652            | 1241              | 8893          |
| VL 2-3      | 80mm  | No   | 8725            | 1724              | 10450         |
| VL 2-4      | 100mm   | No   | 11573           | 2253              | 13825         |
| VL 2-5      | 125mm   | No   | 14284           | 2804              | 17089         |
| VL 2-6      | 150mm   | No   | 14440           | 3541              | 17982         |
| VL 2-7      | 200mm   | No   | 28945           | 3685              | 32630         |
| VL 2-8      | 250mm   | No   | 44895           | 4799              | 49694         |
| VL 2-9      | 300mm   | No   | 59688           | 4980              | 64669         |
| VL 2-10     | 350mm   | No   | 80449           | 6136              | 86585         |
| VL 2-11     | 400mm   | No   | 110180          | 7403              | 117583        |
| VL 2-12     | 450mm   | No   | 136718          | 8806              | 145523        |
| VL 2-13     | 500mm   | No   | 176946          | 9120              | 186067        |
| VL 2-14     | 600mm   | No   | 269576          | 9679              | 279256        |

| Code No  | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|----------|--|------|-----------------|-------------------|---------------|
|          | <b>Glandless DIDF Sluice Valves - PN - 1.0</b><br>Providing,erecting,testing and commissioning D.I. Glandless Sluice valves suitable for working pressure of 10 kg/cm2 with standard non rising spindle, handwheel, cap etc and manufactured as per IS 2906/14846. As per detailed specifications. |      |                 |                   |               |
| VL 3     |  |      |                 |                   |               |
| VL 3-1   | 50mm   | No   | 5695            | 825               | 6520          |
| VL 3 -2  | 65mm   | No   | 6466            | 1241              | 7707          |
| VL 3 -3  | 80mm   | No   | 6636            | 1724              | 8360          |
| VL 3 -4  | 100mm  | No   | 8836            | 2253              | 11089         |
| VL 3 -5  | 125mm  | No   | 11053           | 2804              | 13857         |
| VL 3 -6  | 150mm  | No   | 13252           | 3541              | 16793         |
| VL 3 -7  | 200mm  | No   | 25076           | 3685              | 28761         |
| VL 3 -8  | 250mm  | No   | 38799           | 4799              | 43598         |
| VL 3 -9  | 300mm  | No   | 48893           | 4980              | 53873         |
| VL 3 -10 | 350mm  | No   | 64225           | 6136              | 70361         |
| VL 3 -11 | 400mm  | No   | 86592           | 7403              | 93995         |
| VL 3 -12 | 450mm  | No   | 105911          | 8806              | 114717        |
| VL 3 -13 | 500mm  | No   | 136284          | 9120              | 145404        |
| VL 3 -14 | 600mm  | No   | 201292          | 9679              | 210971        |
|          | <b>Glandless DIDF Sluice Valves - PN - 1.6</b><br>Providing,erecting,testing and commissioning D.I. Glandless Sluice valves suitable for working pressure of 16 kg/cm2 with standard non rising spindle, handwheel, cap etc and manufactured as per IS 2906/14846.                                 |      |                 |                   |               |
| VL 4     |  |      |                 |                   |               |
| VL 4-1   | 50mm   | No   | 7527            | 825               | 8352          |
| VL 4-2   | 65mm   | No   | 8264            | 1241              | 9505          |
| VL 4-3   | 80mm   | No   | 9424            | 1724              | 11148         |
| VL 4-4   | 100mm  | No   | 12499           | 2253              | 14752         |
| VL 4-5   | 125mm  | No   | 15426           | 2804              | 18230         |
| VL 4-6   | 150mm  | No   | 15596           | 3541              | 19137         |
| VL 4-7   | 200mm  | No   | 31261           | 3685              | 34946         |
| VL 4-8   | 250mm  | No   | 48487           | 4799              | 53286         |
| VL 4-9   | 300mm  | No   | 64463           | 4980              | 69443         |
| VL 4-10  | 350mm  | No   | 87445           | 6136              | 93581         |
| VL 4-11  | 400mm  | No   | 119762          | 7403              | 127165        |
| VL 4-12  | 450mm  | No   | 148607          | 8806              | 157413        |
| VL 4-13  | 500mm  | No   | 192332          | 9120              | 201452        |
| VL 4-14  | 600mm  | No   | 293018          | 9679              | 302697        |
|          | <b>Note : - The above rates are for with / without bypass arrangement.</b>   |      |                 |                   |               |

| Code No | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|---|------|-----------------|-------------------|---------------|
|         | <b>SECTION 3 B - VL<br/>[ VALVE ACTUATOR ]</b>  |      |                 |                   |               |
| VA      | Providing, erecting electric Valve actuators totally enclosed, weather-proof and dust proof construction with IP-67, protection class suitable for installation in any position without lubrication, leakage or other operational difficulty with special grease filled gear box and hand wheel for emergency manual operation which will automatically disengage on restoration of power to motor and with 10 watt single phase space heater and continuous local mechanical position indicator and individually replaceable counter gear assembly and with two torque and four limit switches with S.S. flap and operated with gear driven cams and of rating 250 Volt, 5 Amp, AC/DC, torque switch dial and with TEFC squirrel cage induction motor working on 440 Volts +/- 10%, 3 phase, 50 Hz AC of intermittent duty rating S-2, insulation class "F" and temp rise restricted to class "B" with IP - 67 protection class suitable for DOL starting and with three thermostat and 30% over load margin. The torque rating of reduction gear box shall be atleast 1.5 times max. torque required for opening and closing of valve with integral starter controls having four limit switches 1 for OPEN, 1 for CLOSE & 2 Nos for intermediate positions for interlocking etc complete. |      |                 |                   |               |
| VA -1   | <b>Electric Valve Actuator for non rising spindle type sluice valve, PN 1 &amp; PN 1.6 rating<br/>For Valve Size</b>  |      |                 |                   |               |
| VA 1-1  | 50 mm dia   | Each | 54671           | 2902              | 57573         |
| VA 1-2  | 65 mm dia   | Each | 54671           | 2902              | 57573         |
| VA 1-3  | 80 mm dia   | Each | 55441           | 2902              | 58343         |
| VA 1-4  | 100 mm dia  | Each | 58136           | 2902              | 61038         |
| VA 1-5  | 125 mm dia  | Each | 60646           | 2902              | 63548         |
| VA 1-6  | 150 mm dia  | Each | 61986           | 2902              | 64888         |
| VA 1-7  | 200 mm dia  | Each | 64527           | 2902              | 67429         |
| VA 1-8  | 250 mm dia  | Each | 68762           | 2902              | 71664         |
| VA 1-9  | 300 mm dia  | Each | 73500           | 2902              | 76402         |
| VA 1-10 | 350 mm dia  | Each | 75500           | 2902              | 78402         |
| VA 1-11 | 400 mm dia  | Each | 77500           | 2902              | 80402         |
| VA 1-12 | 450 mm dia  | Each | 80866           | 2902              | 83768         |
| VA 1-13 | 500 mm dia  | Each | 88217           | 2902              | 91119         |
| VA 1-14 | 600 mm dia  | Each | 99244           | 2902              | 102146        |
| VA 1-15 | 700 mm dia  | Each | 103391          | 2902              | 106293        |
| VA 1-16 | 750 mm dia  | Each | 105391          | 2902              | 108293        |
| VA 1-17 | 800 mm dia  | Each | 108129          | 2902              | 111031        |
| VA 1-18 | 900 mm dia  | Each | 117492          | 2902              | 120394        |
| VA 1-19 | 1000 mm dia   | Each | 124331          | 2902              | 127233        |



| Code No   | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---|---|------|-----------------|-------------------|---------------|
| <b>SECTION 4 - PW<br/>[ PIPE WORK AND VESSELS ]</b> |   |      |                 |                   |               |
| <b>PW 1</b>   | <b>G.I. Bend "B" Class</b>  |      |                 |                   |               |
|   | Supplying and erecting "B" class G.I. Bend in position with necessary material              |      |                 |                   |               |
| PW 1-1  | 15 mm dia   | Each | 46              | 21                | 67            |
| PW 1-2  | 25 mm dia   | Each | 67              | 21                | 88            |
| PW 1-3  | 40 mm dia   | Each | 87              | 21                | 108           |
| PW 1-4  | 50 mm dia   | Each | 133             | 31                | 164           |
| PW 1-5  | 65 mm dia   | Each | 194             | 31                | 225           |
| PW 1-6  | 75 mm dia   | Each | 313             | 31                | 344           |
| PW 1-7  | 100 mm dia  | Each | 626             | 47                | 673           |
| <b>PW 2</b>   | <b>G.I. Tee "B" Class</b>   |      |                 |                   |               |
|   | Supplying and erecting "B" class G.I. Tee in position with necessary material               |      |                 |                   |               |
| PW 2-1  | 15 mm dia   | Each | 28              | 21                | 49            |
| PW 2-2  | 25 mm dia   | Each | 59              | 21                | 80            |
| PW 2-3  | 40 mm dia   | Each | 119             | 21                | 140           |
| PW 2-4  | 50 mm dia   | Each | 189             | 31                | 220           |
| PW 2-5  | 65 mm dia   | Each | 350             | 31                | 381           |
| PW 2-6  | 75 mm dia   | Each | 501             | 31                | 532           |
| PW 2-7  | 100 mm dia  | Each | 820             | 47                | 867           |
| PW 2-8  | 150 mm dia  | Each | 892             | 47                | 939           |
| <b>PW 3</b>   | <b>G.I. Coupling / Nipple "B" Class</b>   |      |                 |                   |               |
|   | Supplying and erecting "B" class G.I. Coupling / Nipple in position with necessary material |      |                 |                   |               |
| PW 3-1  | 15 mm dia   | Each | 16              | 6                 | 22            |
| PW 3-2  | 25 mm dia   | Each | 32              | 6                 | 38            |
| PW 3-3  | 40 mm dia   | Each | 59              | 15                | 74            |
| PW 3-4  | 50 mm dia   | Each | 101             | 15                | 116           |
| PW 3-5  | 65 mm dia   | Each | 165             | 15                | 180           |
| PW 3-6  | 75 mm dia   | Each | 248             | 15                | 263           |
| PW 3-7  | 100 mm dia  | Each | 402             | 21                | 423           |
| PW 3-8  | 150 mm dia  | Each | 492             | 21                | 513           |
| <b>PW 4</b>   | <b>G.I. Union (Heavy Duty)</b>  |      |                 |                   |               |

| Code No     | Description  | Unit  | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|--|-------|-----------------|-------------------|---------------|
|             | Supplying and erecting Heavy Duty G.I. Union in position with necessary material   |       |                 |                   |               |
| PW4-1       | 15 mm dia  | Each  | 48              | 6                 | 54            |
| PW 4-2      | 25 mm dia  | Each  | 87              | 6                 | 93            |
| PW 4-3      | 40 mm dia  | Each  | 168             | 15                | 183           |
| PW 4-4      | 50 mm dia  | Each  | 258             | 15                | 273           |
| <b>PW 5</b> | <b>G.I. Elbow (Heavy Duty)</b>   |       |                 |                   |               |
|             | Supplying and erecting Heavy Duty G.I. Elbow in position with necessary material   |       |                 |                   |               |
| PW 5-1      | 15 mm dia  | Each  | 16              | 11                | 27            |
| PW 5-2      | 25 mm dia  | Each  | 48              | 15                | 63            |
| PW 5-3      | 40 mm dia  | Each  | 101             | 15                | 116           |
| PW 5-4      | 50 mm dia  | Each  | 156             | 15                | 171           |
| <b>PW 6</b> | <b>Dismantling Joints</b>  |       |                 |                   |               |
|             | Providing, erecting and commissioning M.S. Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm <sup>2</sup> working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. ( length over flange ) should not be less than 75% of dia. |       |                 |                   |               |
| PW 6-1      | 200 mm dia Joint   | Joint | 7875            | 698               | 8573          |
| PW 6-2      | 250 mm dia Joint   | Joint | 10920           | 894               | 11814         |
| PW 6-3      | 300 mm dia Joint   | Joint | 13230           | 940               | 14170         |
| PW 6-4      | 350 mm dia Joint   | Joint | 18060           | 1230              | 19290         |
| PW 6-5      | 400 mm dia Joint   | Joint | 23819           | 1531              | 25350         |
| PW 6-6      | 450 mm dia Joint   | Joint | 26927           | 1892              | 28819         |
| PW 6-7      | 500 mm dia Joint   | Joint | 32793           | 2066              | 34859         |
| PW 6-8      | 600 mm dia Joint   | Joint | 43680           | 2459              | 46139         |
| PW 6-9      | 700 mm dia Joint   | Joint | 57330           | 2666              | 59996         |
| PW 6-10     | 750 mm dia Joint   | Joint | 67830           | 2923              | 70753         |
| <b>PW 7</b> | <b>Surge/ Air Vessels</b>  |       |                 |                   |               |
|             | Providing, fabricating, erecting, testing and commissioning as per IS 2825 (code for unfired pressure vessels) Surge vessel / Air Vessel fabricated in boiler quality plate conforming to grade I of IS 2002 with radiography testing on provided foundation including epoxy painting.   |       |                 |                   |               |
| PW 7-1      | Boiler quality Plate   | kg    | 247             | 0                 | 247           |

| Code No   | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---|---|------|-----------------|-------------------|---------------|
| <b>PW 8</b>                                     | <b>Pressure Vessels</b><br>Providing, fabricating, erecting, testing and commissioning pressure vessel fabricated in M.S. plate on provided foundation including epoxy paint.   |      |                 |                   |               |
| PW 8-1  | M.S. Plate  | kg   | 178             | 0                 | 178           |
| <b>PW 9</b>                                     | <b>Sole Plate</b><br>Providing, fabricating, erecting, Sole Plate of required size and thickness with both side machined to match the surface area not less than 60%.   |      |                 |                   |               |
| PW 9-1  | Sole Plate  | kg   | 121             | 0                 | 121           |
| <b>PW 10</b>                                    | <b>M.S. Flanges</b><br>Providing, fabricating, erecting, M.S. Flanges sleep on type (all tables) of required size and thickness with both side machined.  |      |                 |                   |               |
| PW 10-1   | Up to 300 NB  | kg   | 134             | 0                 | 134           |
| PW 10-2   | Above 300 NB  | kg   | 126             | 0                 | 126           |
| <b>SECTION 5 - LF<br/>[ LIFTING EQUIPMENT ]</b> |   |      |                 |                   |               |
| <b>LF 1</b>                                     | <b>Chain Pulley Block</b><br>Providing, erecting triple spur gear type Chain Pulley Block suitable for capacity as below with 6 m lift complete with load chain and hand chain suitable for above lift, tested to 50% over load as per IS 3832 carrying ISI mark. |      |                 |                   |               |
| LF 1-1  | 1 Tonne Capacity  | Each | 10091           | 188               | 10279         |
| LF 1-2  | 2 Tonne Capacity  | Each | 14170           | 233               | 14403         |
| LF 1-3  | 3 Tonne Capacity  | Each | 19919           | 350               | 20269         |
| <b>LF 2</b>                                     | <b>Travelling Trolley</b><br>Providing, erecting Travelling Trolley of capacity as below with 6 m lift, tested to 50% over load   |      |                 |                   |               |
| LF 2 -1   | 1 Tonne Capacity  | Each | 7623            | 141               | 7764          |
| LF 2 -2   | 2 Tonne Capacity  | Each | 9555            | 188               | 9743          |
| LF 2 -3   | 3 Tonne Capacity  | Each | 12852           | 233               | 13085         |

| Code No       | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|---|------|-----------------|-------------------|---------------|
| <b>Note 1</b> | Add Rs. 356/- per m for extra handling chain for all capacity geared trolley  |      |                 |                   |               |
| <b>Note 2</b> | Add for Additional 1 m load chain for all capacity chain pulley block<br><br>For 1 Tonne -- <b>Rs. 529/-</b> per m<br>For 2 Tonne -- <b>Rs. 1013/-</b> per m<br>For 3 Tonne -- <b>Rs. 1050/-</b> per m  |      |                 |                   |               |
| <b>LF 3</b>   | <b>Hand Operated Circular or Rectangular Travelling Crane (Single Girder)</b><br><br>Providing , erecting and commissioning Single Girder Hand Operated Circular / Rectangular Travelling Crane with 6 m lift complete with chain pulley block ISI marked and travelling trolley both tested for 50 % overload including arrangement for longitudinal travel / circular travel and cross travel with wheel, hand chain, etc complete. |      |                 |                   |               |
| <b>LF 3-1</b> | <b>3 Tonne Capacity</b>   |      |                 |                   |               |
| LF 3 -1-1     | Up to 5 m span  | Each | 133945          | 15393             | 149338        |
| LF 3 -1-2     | Above 5 m upto 6 m span   | Each | 144872          | 16022             | 160894        |
| LF 3 -1-3     | Above 6 m upto 8 m span   | Each | 169428          | 17482             | 186910        |
| <b>LF 3-2</b> | <b>5 Tonne Capacity</b>   |      |                 |                   |               |
| LF 3 -2-1     | Up to 5 m span  | Each | 171815          | 15393             | 187208        |
| LF 3 -2-2     | Above 5 m upto 6 m span   | Each | 184375          | 16022             | 200397        |
| LF 3 -2-3     | Above 6 m upto 8 m span   | Each | 212879          | 17482             | 230361        |
| LF 3 -2-4     | Above 8 m upto 10 m span  | Each | 257781          | 19131             | 276912        |
| <b>Note 3</b> | The rates are exclusive of corbel / rail / square bar and track girders for supporting rails.   |      |                 |                   |               |
| <b>LF 4</b>   | <b>Electric Operated Circular or Rectangular Travelling Crane (Single Girder)</b><br><br>Providing, erecting and commissioning single girder Electrically Operated Rectangular Over head Travelling Crane with 6 m lift complete with wire rope hoist, class II duty, all three motions electrically operated by suitable rating motor IP 54, control panel and down pendant control block.   |      |                 |                   |               |
| <b>LF 4-1</b> | <b>5 Tonne Capacity</b>   |      |                 |                   |               |
| LF 4-1-1      | Above 6 m upto 8 m span   | Each | 668183          | 17804             | 685987        |

| Code No       | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|---|------|-----------------|-------------------|---------------|
| LF 4-1-2      | Above 8 m upto 10 m span  | Each | 710829          | 22027             | 732856        |
| <b>LF 4-2</b> | <b>7.5 Tonne Capacity</b>   |      |                 |                   |               |
| LF 4-2-1      | Above 6 m upto 8 m span   | Each | 812117          | 22027             | 834144        |
| LF 4-2-2      | Above 8 m upto 10 m span  | Each | 864511          | 24346             | 888857        |
| <b>LF 4-3</b> | <b>10 Tonne Capacity</b>  |      |                 |                   |               |
| LF 4-3-1      | Above 6 m upto 8 m span   | Each | 893906          | 24346             | 918252        |
| LF 4-3-2      | Above 8m upto 10 m span   | Each | 950963          | 26665             | 977628        |
| <b>Note 4</b> | The rates are exclusive of corbel / rail / square bar and track girders for supporting rails.   |      |                 |                   |               |
| <b>Note 5</b> | For D.S.L. (Down Shop Lead) system for above crane Add Rs. 2269/- per m length of longitudinal travel.  |      |                 |                   |               |
| <b>Note 6</b> | Rate for Additional Load Chain /Handling Chain.   |      |                 |                   |               |
|               | <b>Load Chain</b>   |      |                 |                   |               |
|               | For 1 Tonne   | m    | 699             | 0                 | 699           |
|               | For 2 Tonne   | m    | 1398            | 0                 | 1398          |
|               | For 3 Tonne   | m    | 2463            | 0                 | 2463          |
|               | <b>Handling Chain</b>   | m    | 324             | 0                 | 324           |
| <b>LF 5</b>   | <b>Square Bar / Rail</b>  |      |                 |                   |               |
|               | Providing, erecting and fixing square bar of EN 8 as rail for over head crane on provided track, girder / continuous corbel beam, including supporting plate and "J" bolts. |      |                 |                   |               |
| LF 5 -1       | 50 X 50 mm ( EN 8)  | m    | 1401            | 24                | 1425          |
| LF 5 -2       | 40 X 40 mm ( EN 8 )   | m    | 893             | 24                | 917           |

| Code No       | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|---|------|-----------------|-------------------|---------------|
|               |   |      |                 |                   |               |
|               | <b>SECTION 6 - SS<br/>[ H.T. SUB STATION EQUIPMENTS ]</b>   |      |                 |                   |               |
| <b>SS1</b>    | <b>RSJ pole</b><br><br>Supplying, erecting Rolled Steel Joist (Girder) pole complete erected duly painted with two coats of red oxide paint and one coat of bituminous paint for the length to be embedded in ground and plinth and two coats of aluminium paint for the remaining portion complete with base plate of size 30 X 30 X 0.6 cms welded at the bottom complete erected in provided C.C. foundation and plinth. |      |                 |                   |               |
| SS 1-1        | ISMB 175 - 8.5 mtr Long   |      |                 | As Per PWD CSR    |               |
| <b>Note 1</b> | Add / subtract Rs. 1170/- per meter for addition or reduction in length   |      |                 |                   |               |
| SS 1-2        | ISHB 150 -11 mtr long   |      |                 | As Per PWD CSR    |               |
| <b>Note 2</b> | Add / subtract Rs. 1660/- per meter for addition or reduction in length   |      |                 |                   |               |
| <b>SS 2</b>   | <b>Pole Foundation</b><br><br>Providing C.C. foundation including excavation for the poles with 60 X 60 cm and 180 cm deep in 1:3:6 cement concrete (20 to 25 mm stone metal) and 45 X 45 X 45 cm plinth duly plastered and with necessary curing and finishing in an approved manner   |      |                 | As Per PWD CSR    |               |
| <b>SS 3</b>   | <b>GI Stay</b><br><br>Supplying, erecting G.I. Stay set for poles, including loop insulators at accessible height complete with anchor plate 300 X 300 X 6 mm, straining screws, G.I. Stay rod 20 mm X 1.8m length and pole clamps erected in provided C.C. foundation.   |      |                 |                   |               |
| SS 3-1        | Size 7/10 SWG/ Size7/8 SWG  |      |                 | As Per PWD CSR    |               |
| SS 3-2        | <b>GI Stay Foundation</b>   |      |                 |                   |               |

| Code No       | Description  | Unit           | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|--|----------------|-----------------|-------------------|---------------|
| <b>SS 4</b>   | Providing CC foundation Each including excavation for stay 60 cms x 60 cms x 1.5 mtr. Deep in 1:3:6 cement concrete (20 to 25 mm stone metal) with necessary curing and finishing in an approved manner.   | As Per PWD CSR |                 |                   |               |
|               | <b>Cross Arm, ISMC 100 ( 2.4 m long )</b>  |                |                 |                   |               |
|               | Supplying erecting 100 X 50 mm with 4.7 mm thick web and 7.5 mm flange channel iron cross arm of suitable length fabricated for H.T. insulator mounting and erected on two pole structure, 2.4m apart provided with two clamps of 50 X 6 mm M.S. flat and 15 mm nuts and bolts for each cross arm, duly painted with one coat of red lead and two coats of white lead. | As Per PWD CSR |                 |                   |               |
| <b>Note 3</b> | Add / subtract Rs. 490/- per m for addition or reduction in length.  |                |                 |                   |               |
| <b>SS 5</b>   | <b>Lightening Arrestor</b>   |                |                 |                   |               |
|               | Supplying, erecting approved make thyrite type Lightening Arrestor suitable for H.T. supply with necessary ancillary material complete on provided cross arm and connected to overhead line.   |                |                 |                   |               |
| SS 5-1        | Suitable for 11 kV Supply, Distribution class  | Set            | 2365            | 504               | 2869          |
| SS 5-2        | Suitable for 22 kV Supply, Distribution class  | Set            | 4308            | 504               | 4812          |
| SS 5-3        | Suitable for 33 kV Supply, Station class   | Set            | 25298           | 698               | 25996         |
| <b>SS 6</b>   | <b>Disc Insulator</b>  |                |                 |                   |               |
|               | Supplying, erecting porcelain Disc Type Insulators with hardware fittings suitable for H.T. overhead line complete erected with nuts and bolts on provided cross arm.  |                |                 |                   |               |
| SS 6-1        | Suitable for 11 kV line  | Each           | 199             | 169               | 368           |
| SS 6-2        | Suitable for 22 kV line  | Each           | 994             | 198               | 1192          |
| SS 6-3        | Suitable for 33 kV line  | Each           | 1457            | 233               | 1690          |
| <b>SS 7</b>   | <b>Pin Insulator</b>   |                |                 |                   |               |
|               | Supplying, erecting porcelain Pin Type Insulator with hardware fittings suitable for H.T. overhead line complete erected with nuts and bolts on provided cross arm.  |                |                 |                   |               |
| SS 7-1        | Suitable for 11 kV line  | Each           | 75              | 67                | 142           |
| SS 7-2        | Suitable for 22 kV line  | Each           | 168             | 85                | 253           |
| SS 7-3        | Suitable for 33 kV line  | Each           | 475             | 95                | 570           |
| <b>SS 8</b>   | <b>Air Break Switch Without Earth Switch</b>   |                |                 |                   |               |

| Code No       | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|---|------|-----------------|-------------------|---------------|
|               | Supplying, erecting approved make H.T. out door type gang operated air break, triple pole switch of required capacity with 3 post / pin type insulator per phase, mounted in horizontal or vertical position on provided cross arm with adequate length of G.I. pipe for operating handle erected on extended square shaft. The operating handle provided with lock and key at suitable height from ground with necessary clamps.                   |      |                 |                   |               |
| <b>SS 8-1</b> | <b>Suitable for 11 kV line</b>  |      |                 |                   |               |
| SS 8-1-1      | Rocking / Tilting Type  | Set  | 11387           | 559               | 11946         |
| SS 8-1-2      | Rotating Type   | Set  | 21498           | 559               | 22057         |
| <b>SS 8-2</b> | <b>Suitable for 22 kV line</b>  |      |                 |                   |               |
| SS 8-2-1      | Rocking / Tilting Type  | Set  | 14617           | 579               | 15196         |
| SS 8-2-2      | Rotating Type   | Set  | 27300           | 579               | 27879         |
| <b>SS 8-3</b> | <b>Suitable for 33 kV line</b>  |      |                 |                   |               |
| SS 8-3-1      | Rocking / Tilting Type  | Set  | 29925           | 604               | 30529         |
| SS 8-3-2      | Rotating Type   | Set  | 34650           | 604               | 35254         |
| <b>SS 9</b>   | <b>Air Break Switch with Earth Switch</b>   |      |                 |                   |               |
|               | Supplying, erecting approved make H.T. out door type gang operated air break, triple pole switch with earth switch of required capacity with 3 post / pin type insulator per phase, mounted in horizontal or vertical position on provided cross arm with adequate length of G.I. pipe for operating handle erected on extended square shaft. The operating handle provided with lock and key at suitable height from ground with necessary clamps. |      |                 |                   |               |
| <b>SS 9-1</b> | <b>Suitable for 11 kV line</b>  |      |                 |                   |               |
|               | Rotating Type   | Set  | 26250           | 604               | 26854         |
| <b>SS 9-2</b> | <b>Suitable for 22 kV line</b>  |      |                 |                   |               |
|               | Rotating Type   | Set  | 31500           | 604               | 32104         |
| <b>SS 9-3</b> | <b>Suitable for 33 kV line</b>  |      |                 |                   |               |
|               | Rotating Type   | Set  | 38850           | 604               | 39454         |
| <b>SS 10</b>  | <b>Drop Out Fuse ( Channel mounted )</b>  |      |                 |                   |               |



| Code No        | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs.  |
|----------------|---|------|-----------------|-------------------|----------------|
|                | Supplying, erecting approved make outdoor type Drop Out Fuse Channel type with insulator complete with fuse holders fuse barrel with metal fittings, fuse element, with working current up to 50 Amp, capacity complete erected on provided cross arm, each set comprising 3 units.                                 |      |                 |                   |                |
| SS 10-1        | Suitable for 11 kV line   | Set  | 6825            | 866               | 7691           |
| SS 10-2        | Suitable for 22 kV line   | Set  | 11025           | 866               | 11891          |
| SS 10-3        | Suitable for 33 kV line   | Set  | 16800           | 866               | 17666          |
| <b>SS 11</b>   | <b>Horn Gap Fuse ( Channel mounted )</b>  |      |                 |                   |                |
|                | Supplying, erecting approved make outdoor type Horn Gap Type fuse with insulator, fuse element, with working current up to 50 Amp, capacity complete erected on provided cross arm, each set comprising 3 units.  |      |                 |                   |                |
| SS 11-1        | Suitable for 11 kV line   | Set  | 4291            | 604               | 4895           |
| SS 11-2        | Suitable for 22 kV line   | Set  | 6968            | 604               | 7572           |
| SS 11-3        | Suitable for 33 kV line   | Set  | 10682           | 604               | 11286          |
| <b>SS 12</b>   | <b>Fuse Barrel</b>  |      |                 |                   |                |
|                | Supplying and erecting fuse barrel with metal fittings.   |      |                 |                   | As Per PWD CSR |
| <b>SS 12-1</b> | <b>Suitable for 11 kV line with metal fitting</b>   |      |                 |                   |                |
| SS 12-1-1      | With fiber fitting  |      |                 |                   | As Per PWD CSR |
| <b>SS 12-2</b> | <b>Suitable for 22 kV line with metal fitting</b>   |      |                 |                   |                |
| SS 12-2-1      | With fiber fitting  |      |                 |                   | As Per PWD CSR |
| <b>SS 13</b>   | <b>D.O. Operating Rod</b>   |      |                 |                   |                |
|                | Supplying D.O. Operating rod 20 feet long in three sections made from best quality fine wood with SRBP tube and aluminium head PVC coated suitable for 11 / 22 / 33 kV supply with clamps for removing drop out fuses at 6 m height with rain shed porcelain insulator with hand grip including earthing chain 1.5m |      |                 |                   | As Per PWD CSR |
| <b>SS 14</b>   | <b>Hard Drawn Copper solid wire</b>   |      |                 |                   |                |
|                | Supplying and erecting hard drawn copper solid wire complete erected for connections on H.T. side. 0 to 6 SWG   |      |                 |                   | As Per PWD CSR |

| Code No        | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|----------------|--|------|-----------------|-------------------|---------------|
| <b>SS 15</b>   | <b>Alkathene Pipe 10 mm dia</b><br>Supplying and erecting extra thick alkathene pipe 10mm dia erected to enclose bare conductor wires.   |      | As Per PWD CSR  |                   |               |
| <b>SS 16</b>   | <b>Out Door CT</b><br>Providing, erecting and commissioning out door type single phase oil filled current transformer for metering and protection purpose of suitable C.T. ratio and V.A. burden duly erected on provided cross channel. |      |                 |                   |               |
| <b>SS 16-1</b> | <b>Single Core</b>   |      |                 |                   |               |
| SS 16-1-1      | Suitable for 11 kV system  | Each | 13865           | 509               | 14374         |
| SS 16-1-2      | Suitable for 22 kV system  | Each | 19318           | 509               | 19827         |
| SS 16-1-3      | Suitable for 33 kV system  | Each | 20422           | 509               | 20931         |
| <b>SS 16-2</b> | <b>Double Core</b>   |      |                 |                   |               |
| SS 16-2-1      | Suitable for 11 kV system  | Each | 20752           | 509               | 21261         |
| SS 16-2-2      | Suitable for 22 kV system  | Each | 27008           | 509               | 27517         |
| SS 16-2-3      | Suitable for 33 kV system  | Each | 27008           | 509               | 27517         |
| <b>SS 17</b>   | <b>Out Door PT</b><br>Providing, erecting and commissioning out door type single phase oil filled Potential transformer for metering purpose of suitable V.A. burden duly erected on provided cross channel.                             |      |                 |                   |               |
| <b>SS 17-1</b> | <b>Single Core</b>   |      |                 |                   |               |
| SS 17-1-1      | Suitable for 11 kV system  | Each | 7537            | 509               | 8046          |
| SS 17-1-2      | Suitable for 22 kV system  | Each | 16890           | 509               | 17399         |
| SS 17-1-3      | Suitable for 33 kV system  | Each | 17521           | 509               | 18030         |
| <b>SS 17-2</b> | <b>Double Core</b>   |      |                 |                   |               |
| SS 17-2-1      | Suitable for 11 kV system  | Each | 12394           | 509               | 12903         |
| SS 17-2-2      | Suitable for 22 kV system  | Each | 18848           | 509               | 19357         |
| SS 17-2-3      | Suitable for 33 kV system  | Each | 25507           | 509               | 26016         |
| <b>SS 18</b>   | <b>Miscellaneous items</b>   |      |                 |                   |               |
| <b>SS 18-1</b> | <b>Anticlimbing devices</b>  |      |                 |                   |               |

| Code No   | Description                | Unit | Supply Rate Rs.                             | Erection Rate Rs. | Total Amt Rs. |
|---|----------------------------|------|---|-------------------|---------------|
| <p><b>SS 18-2</b></p> <p><b>Fencing sections</b></p> <p>Supplying and erecting anticlimbing devices fabricated from pole clamps with drooping spikes welded to it and erected on pole.</p> <p>Supplying and erecting fencing section having size 2.45 m height from ground level and 1.2 m width by using angle iron size 50 X 50 X 6 mm erected in C.C. foundation 15 X 15 X 40 cm deep. The section of the frame shall be fitted with flat iron support of size 25 X 6 mm on top, bottom and mid way and chain link jali of 3.26 mm dia / 10 SWG G.I. hard wire mesh of 50 X 50 mm to the angle iron at every distance of 30 cms, by angle iron at every distance of 30 cms, by iron studs complete duly painted with one coats of red oxide and two coats of aluminium paint.</p> <p><b>Note 4</b> For sections less than 1200 mm width reduce rate by Rs. 120 /- per 100 mm or part there of reduction in width of 1200 mm.</p> |                            |      | <p>As Per PWD CSR</p> <p>As Per PWD CSR</p> |                   |               |
| <p><b>SS 18-3</b></p>   | <p><b>Fencing gate</b></p> |      |   |                   |               |

| Code No        | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs.  |
|----------------|---|------|-----------------|-------------------|----------------|
|                | <p>Supplying and erecting double leaf hinged door each 150 cm in width and 185 cm in height using 40 mm dia "B" grade ISI mark G.I. Pipe from all four sides with necessary bends and cross supports of angle iron 45 X 45 X 5 mm with the door leaf covered with chain link jali 50 X 50 mm made from 3.26 mm dia / 10 SWG G.I. wire with necessary flat iron covering all around with necessary number of spikes of size 10 mm dia at top and bottom at 150 mm apart to match the height of fencing. The door shall have latches and side channel of 100 X 50 X 5mm rigidly welded for providing locking arrangement, Godrej/Navtal make medium size lock with duplicate keys, The fencing complete erected and painted with anticorrosive red oxide paint and two coats of prescribed enamel paint / silver paint. The channel iron of size 150 X 75 mm by 2.5 m long shall be provided and erected at both sides of gate.</p> |      |                 |                   |                |
| <b>SS 18-4</b> | <p><b>Angle iron corner support</b></p> <p>Supplying and erecting 50 X 50 X6 mm angle iron corner support 0.5 m way from the fence supports fixed at the middle fencing frame and other side in C.C. foundation 15 X 15 X 40 cm complete duly painted with one coat of red oxide and two coats of aluminium paint.</p>  |      |                 |                   | As Per PWD CSR |
| <b>SS 18-5</b> | <p><b>Stone Metal Spreading</b></p> <p>Providing and spreading stone metal 25 mm size for 100 mm depth above the ground level.</p>  |      |                 |                   | As Per PWD CSR |
| <b>SS 18-6</b> | <p><b>M.S. Stand for Fire bucket.</b></p> <p>Providing floor mounted stand for keeping 4 nos. of fire bucket,1500 mm in length and 900 mm in height made out of 30 X 30 X 4 mm angle iron welded with 4 hooks and duly painted with one coat of red lead and two coats of silver paint.</p>   |      |                 |                   | As Per PWD CSR |
| <b>SS 18-7</b> | <p><b>Wall Hook for Fire bucket.</b></p> <p>Supplying and erecting wall hook 225 mm projection for keeping fire buckets made out of 15 mm dia MS round bar grouted in wall to a depth of minimum 15 cm.</p>   |      |                 |                   | As Per PWD CSR |
| <b>SS 18-8</b> | <p><b>G.I. Fire bucket 9 lit</b></p>  |      |                 |                   |                |

| Code No         | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs.  |
|-----------------|---|------|-----------------|-------------------|----------------|
|                 | Supplying G.I. Fire bucket with round bottom duly painted having at least 9 lit. capacity and filled with dry sand and kept on provided wall hook or stand.   |      |                 |                   | As Per PWD CSR |
| <b>SS 18-9</b>  | <b>First Aid Box</b><br>Supplying standard first aid box with all standard contents.  |      |                 |                   | As Per PWD CSR |
| <b>SS 18-10</b> | <b>Pair of Rubber hand Glove 11/22/33 kV</b><br>Supplying pair of rubber hand gloves suitable for working on 11 / 22 /33 kV system  |      |                 |                   | As Per PWD CSR |
| <b>SS 18-11</b> | <b>Instruction Chart</b><br>Providing printed instruction chart for treating persons suffering from electric shocks, printed in English and Marathi and duly framed with front glass.   |      |                 |                   | As Per PWD CSR |
| <b>SS 18-12</b> | <b>Fire Extinguisher</b><br>Supplying, erecting D.C.P. type fire extinguisher cartridge type, with G.M. cap 150 gram CO2 gas cartridge powder brackets conforming to IS 2171 - 1985 and having complete erected with necessary clamps made from 50 X 6 mm MS flat with nuts and bolts grouted in wall complete. |      |                 |                   |                |
| SS 18-12-1      | Fire extinguisher with 5 kg cartridge capacity  |      |                 |                   | As Per PWD CSR |
| SS 18-12-2      | Fire extinguisher with 10 kg cartridge capacity   |      |                 |                   | As Per PWD CSR |

| Code No | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|---|------|-----------------|-------------------|---------------|
|         | <b>SECTION 7 - TR</b><br><b>[ TRANSFORMER AND VOLTAGE STABILIZER ]</b>  |      |                 |                   |               |
| TR-1    | <b>Power Transformer (With Off Load Tap Changer)</b><br><br>Providing, erecting and commissioning out door type copper wound transformer continuously rated for 3 Ph, 50 Hz, at full load and temp. rise not exceeding 45° C by thermometer in oil and 50°C by the resistance in winding after continuous run at full load rating, the transformer should have oil immersed winding having vector group DY 11, HT side connected in Delta and LT side connected in Star with neutral brought out connected to provided separate earthing. The transformer shall have power terminal arrangement, bushings / cable end box on HT side and cable end box on LT side. 2 Nos. channels with stoppers shall be provided and fixed on the provided plinth for mounting the transformer. The transformer should have following standard fittings. Transformer shall be of latest manufacturing standards as per amended IS specifications and the Load & No Load losses shall be limited to the values given below or as per IS or Norms issued by MSEDCL Ltd whichever are lower.<br><br>1) Oil conservator with filling hole with cap and plain oil level gauge.<br>2) Silica gel dehydrating breather charged with Silica Gel.<br>3) Oil drain valve.<br>4) Oil filter valve.<br>5) Lifting eyes / hooks.<br>6) Two earthing terminals.<br>7) Diagram and rating plate.<br>8) Air Vent.<br>9) Explosion Vent.<br>10) 100 mm dia thermometer with thermometer pocket<br>11) Four bi directional plain roller.<br><br><b>Power Transformer 11000 / 433 Volt</b><br><br>With off load Tap Changer -12.5% to +2.5% in steps of 2.5% |      |                 |                   |               |
| TR 1-1  | 63 kVA (no load loss 180 w and load loss 1235 w)  | Each | As Per PWD      |                   |               |
| TR 1-2  | 100 kVA (no load loss 260 w and load loss 1760 w)   | Each |                 |                   |               |
| TR 1-3  | 160 kVA (no load loss 400 w and load loss 2600 w)   | Each |                 |                   |               |
| TR 1-4  | 200 kVA (no load loss 500 w and load loss 3000 w)   | Each |                 |                   |               |
| TR 1-5  | 250 kVA (no load loss 550 w and load loss 3600 w)   | Each |                 |                   |               |
| TR 1-6  | 315 kVA (no load loss 580 w and load loss 4200 w)   | Each |                 |                   |               |
| TR 1-7  | 400 kVA (no load loss 715 w and load loss 5000 w)   | Each |                 |                   |               |
| TR 1-8  | 500 kVA (no load loss 850 w and load loss 5800 w)   | Each |                 |                   |               |
|         |   |      | 737160          | 10754             | 747914        |
|         |   |      | As Per PWD      |                   |               |

| Code No     | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|---|------|-----------------|-------------------|---------------|
| TR 1-9      | 630 kVA (no load loss 1000 w and load loss 7000 w)  | Each | As Per PWD      |                   |               |
| TR 1-10     | 750 kVA (no load loss 1500 w and load loss 8000 w)  | Each | 1214962         | 12428             | 1227390       |
| <b>TR 2</b> | <b>Power Transformer 22000 / 433 Volt and other specification as per TR-1</b><br><br>With off load Tap Changer -12.5% to +2.5% in steps of 2.5% |      |                 |                   |               |
| TR 2-1      | 63 kVA ( no load loss 230w and load loss 1400w)   | Each | As Per PWD      |                   |               |
| TR 2-2      | 100 kVA ( no load loss 300w and load loss 1850w)  | Each |                 |                   |               |
| TR 2-3      | 160 kVA ( no load loss 400w and load loss 2600w)  | Each |                 |                   |               |
| TR 2-4      | 200 kVA ( no load loss 470w and load loss 3000w)  | Each |                 |                   |               |
| TR 2-5      | 250 kVA ( no load loss 550w and load loss 3600w)  | Each |                 |                   |               |
| TR 2-6      | 315 kVA (no load loss 620w and load loss 4200w)   | Each |                 |                   |               |
| TR 2-7      | 400 kVA ( no load loss 750w and load loss 5000w)  | Each | 828729          | 10438             | 839167        |
| TR 2-8      | 500 kVA ( no load loss 900w and load loss 5800w)  | Each | As Per PWD      |                   |               |
| TR 2-9      | 630 kVA ( no load loss 1080w and load loss 7000w)   | Each |                 |                   |               |
| TR 2-10     | 750 kVA ( no load loss 1600w and load loss 8000w)   | Each | 1370585         | 17390             | 1387975       |
| <b>TR 3</b> | <b>Power Transformer 33000 / 433 Volt and other Specification as per TR-1</b><br><br>With off load Tap Changer -12.5% to +2.5% in steps of 2.5% |      |                 |                   |               |
| TR 3-1      | 63 kVA  | Each | 282975          | 10438             | 293413        |
| TR 3-2      | 100 kVA   | Each | 339570          | 10438             | 350008        |
| TR 3-3      | 160 kVA   | Each | 437325          | 10438             | 447763        |
| TR 3-4      | 200 kVA   | Each | 617400          | 10438             | 627838        |
| TR 3-5      | 250 kVA   | Each | 720300          | 10438             | 730738        |
| TR 3-6      | 315 kVA   | Each | 864360          | 10438             | 874798        |
| TR 3-7      | 400 kVA   | Each | 926100          | 10438             | 936538        |
| TR 3-8      | 500 kVA   | Each | 977550          | 17390             | 994940        |
| TR 3-9      | 630 kVA   | Each | 1286250         | 17390             | 1303640       |
| TR 3-10     | 750 kVA   | Each | 1414875         | 17390             | 1432265       |

| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|--|------|-----------------|-------------------|---------------|
| TR-4    | <p><b>Power Transformer (With On Load Tap Changer)</b></p> <p>Providing, erecting and commissioning out door type copper wound transformer continuously rated for 3 Ph, 50 Hz, at full load and temp. rise not exceeding 45°C by thermometer in oil and 50°C by the resistance in winding after continuous run at full load rating, the transformer should have oil immersed winding having vector group DY 11, HT side connected in Delta and LT side connected in Star with neutral brought out connected to provided separate earthing. The transformer shall have power terminal arrangement, bushing / cable end box on HT side and cable end box on LT side. 2 Nos. channels with stoppers shall be provided and fixed on the provided plinth for mounting the transformer. The transformer should have following standard fittings. The OLTC should be suitable for minimum 50 operations per day. Transformer shall be of latest manufacturing standards as per amended IS specifications and the Load &amp; No Load losses shall be limited to the values as per IS and Norms issued by MSEDCL Ltd whichever are lower.</p> |      |                 |                   |               |
|         | <ol style="list-style-type: none"> <li>1) Oil conservator with filling hole with cap and plain oil level gauge.</li> <li>2) Silica gel dehydrating breather charged with Silica Gel.</li> <li>3) Oil drain valve.</li> <li>4) Oil filter valve.</li> <li>5) Lifting eyes / hooks.</li> <li>6) Two earthing terminals.</li> <li>7) Diagram and rating plate.</li> <li>8) Air Vent.</li> <li>9) Explosion Vent.</li> <li>10) 100 mm dia thermometer with thermometer pocket</li> <li>11) Four bi directional plain roller.</li> <li>12) Bucholtz relay.</li> <li>13) Resistance Temp. detector.</li> <li>14) Marshalling box.</li> <li>15) Automatic Voltage Regulator (AVR).</li> <li>16) Remote Tap Changing Controller (RTCC).</li> </ol> <p><b>Transformer 11000 / 433 Volt</b></p> <p><b>With On Load Tap Changer -15% to +5% in steps of 1.25% with RTCC, AVR and marshalling box, and other specification as per TR-1</b></p>   |      |                 |                   |               |
| TR 4-1  | 750 kVA  | Each | 1594950         | 17390             | 1612340       |
| TR 4-2  | 1000 kVA   | Each | 1672125         | 17390             | 1689515       |



| Code No     | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|---|------|-----------------|-------------------|---------------|
| TR 4-3      | 1250 kVA  | Each | 1852200         | 17390             | 1869590       |
| TR 4-4      | 1600 kVA  | Each | 2304960         | 17390             | 2322350       |
| TR 4-5      | 2000 kVA  | Each | 2495325         | 17390             | 2512715       |
| <b>TR 5</b> | <b>Transformer 22000 / 433 Volt</b><br><br><b>With On Load Tap Changer -15% to +5% in steps of 1.25% with RTCC, AVR and marshalling box, and other specification as per TR-4</b>  |      |                 |                   |               |
| TR 5-1      | 750 kVA   | Each | 1646400         | 17390             | 1663790       |
| TR 5-2      | 1000 kVA  | Each | 1749300         | 17390             | 1766690       |
| TR 5-3      | 1250 kVA  | Each | 1903650         | 17390             | 1921040       |
| TR 5-4      | 1600 kVA  | Each | 2366700         | 17390             | 2384090       |
| TR 5-5      | 2000 kVA  | Each | 2572500         | 17390             | 2589890       |
| <b>TR 6</b> | <b>Transformer 33000 / 433 Volt</b><br><br><b>With On Load Tap Changer -15% to +5% in steps of 1.25% with RTCC, AVR and marshalling box, and other specifications as per TR-4</b> |      |                 |                   |               |
| TR 6-1      | 750 kVA   | Each | 1672125         | 17390             | 1689515       |
| TR 6-2      | 1000 kVA  | Each | 1775025         | 17390             | 1792415       |
| TR 6-3      | 1250 kVA  | Each | 1929375         | 17390             | 1946765       |
| TR 6-4      | 1600 kVA  | Each | 2407860         | 17390             | 2425250       |
| TR 6-5      | 2000 kVA  | Each | 2623950         | 17390             | 2641340       |
|             | <b>H.T. TRANSFORMER</b>   |      |                 |                   |               |
| <b>TR 7</b> | <b>Transformer 11000 / 3300 Volt</b><br><br><b>With On Load Tap Changer -15% to +5% in steps of 1.25% with RTCC, AVR and marshalling box, and other specification as per TR-4</b> |      |                 |                   |               |
| TR 7-1      | 1000 kVA  | Each | 1203930         | 17390             | 1221320       |
| TR 7-2      | 1250 kVA  | Each | 1394295         | 17390             | 1411685       |
| TR 7-3      | 1600 kVA  | Each | 1528065         | 17390             | 1545455       |
| TR 7-4      | 2000 kVA  | Each | 1929375         | 17390             | 1946765       |
| TR 7-5      | 2500 kVA  | Each | 2181480         | 17390             | 2198870       |
| TR 7-6      | 3000 kVA  | Each | 2289525         | 17390             | 2306915       |
| <b>TR 8</b> | <b>Transformer 22000 / 3300 Volt</b><br><br><b>With On Load Tap Changer -15% to +5% in steps of 1.25% with RTCC, AVR and marshalling box, and other specification as per TR 4</b> |      |                 |                   |               |
| TR 8-1      | 1000 kVA  | Each | 1337700         | 17390             | 1355090       |

| Code No        | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|----------------|---|------|-----------------|-------------------|---------------|
| TR 8-2         | 1250 kVA  | Each | 1543500         | 17390             | 1560890       |
| TR 8-3         | 1600 kVA  | Each | 1687560         | 17390             | 1704950       |
| TR 8-4         | 2000 kVA  | Each | 2042565         | 17390             | 2059955       |
| TR 8-5         | 2500 kVA  | Each | 2366700         | 17390             | 2384090       |
| TR 8-6         | 3000 kVA  | Each | 2716560         | 17390             | 2733950       |
| <b>TR 9</b>    | <b>Transformer 33000 / 3300 Volt<br/>With On Load Tap Changer -15% to +5% in steps of 1.25% with RTCC, AVR and marshalling box, and other specification as per TR-4</b>   |      |                 |                   |               |
| TR 9-1         | 1000 kVA  | Each | 1389150         | 17390             | 1406540       |
| TR 9-2         | 1250 kVA  | Each | 1605240         | 17390             | 1622630       |
| TR 9-3         | 1600 kVA  | Each | 1749300         | 17390             | 1766690       |
| TR 9-4         | 2000 kVA  | Each | 2109450         | 17390             | 2126840       |
| TR 9-5         | 2500 kVA  | Each | 2413005         | 17390             | 2430395       |
| TR 9-6         | 3000 kVA  | Each | 2778300         | 17390             | 2795690       |
| <b>TR 10</b>   | <b>Servo Controlled Automatic Voltage Stabilizer</b><br><br>Providing, erecting Servo Controlled Automatic Voltage stabilizer suitable for out put voltage of 415 Volt +/-1%, 3 Ph, 50 Hz, with copper wound transformer (air/oil cooled) as mentioned below. The stabilizer shall function satisfactorily even if incoming supply is unbalanced between phases within range of 10%. The stabilizer should be constructed in cubical box, with bi-directional wheels for easy handling, necessary monitors and user's controls on front panel such as indication, alarm, volt meter and selector switch for measuring input and out put voltage, Auto/Manual selector switch, Raise/Low push buttons etc. Suitable capacity termination strips and bus bars for incoming and out going cable should be provided. All three phases shall be independently monitored and corrected. Following protections and indications shall be incorporated |      |                 |                   |               |
| <b>TR 10-1</b> | s Over Voltage / Under Voltage<br>s Single Phasing<br>s Cut off contactor with electronic output sensing unit<br><br><b>Servo Controlled Automatic Voltage Stabilizer (Output 415 +/-1%)</b><br><br><b>Input 220 to 460 Volt</b>  |      |                 |                   |               |
| TR 10-1-1      | 3 kVA Air cooled  | Each | 52981           | 233               | 53214         |
| TR 10-1-2      | 5 kVA Air cooled  | Each | 61346           | 303               | 61649         |
| TR 10-1-3      | 7.5 kVA Air cooled  | Each | 69148           | 464               | 69612         |
| TR 10-1-4      | 10 kVA Air cooled   | Each | 90553           | 698               | 91251         |

| Code No        | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|----------------|--|------|-----------------|-------------------|---------------|
| TR 10-1-5      | 12.5 kVA Air cooled  | Each | 99535           | 929               | 100464        |
| TR 10-1-6      | 15 kVA Air cooled  | Each | 108516          | 929               | 109445        |
| TR 10-1-7      | 20 kVA Air cooled  | Each | 118192          | 1159              | 119351        |
| TR 10-1-8      | 25 kVA Air cooled  | Each | 130078          | 1392              | 131470        |
| TR 10-1-9      | 30 kVA Air cooled  | Each | 158175          | 1624              | 159799        |
| TR 10-1-10     | 40 kVA Air cooled  | Each | 173564          | 1855              | 175419        |
| TR 10-1-11     | 50 kVA Oil cooled  | Each | 234622          | 1855              | 236477        |
| TR 10-1-12     | 60 kVA Oil cooled  | Each | 284452          | 1855              | 286307        |
| TR 10-1-13     | 75 kVA Oil cooled  | Each | 297443          | 1855              | 299298        |
| TR 10-1-14     | 100 kVA Oil cooled   | Each | 335170          | 2550              | 337720        |
| TR 10-1-15     | 125 kVA Oil cooled   | Each | 416346          | 3018              | 419364        |
| <b>TR 10-2</b> | <b>Servo Controlled Automatic Voltage Stabilizer (Out put 415 +/-1%)</b><br><b>Input 280 to 460 Volt</b>                       |      |                 |                   |               |
| TR 10-2-1      | 3 kVA Air cooled   | Each | 45090           | 233               | 45323         |
| TR 10-2-2      | 5 kVA Air cooled   | Each | 54427           | 464               | 54891         |
| TR 10-2-3      | 7.5 kVA Air cooled   | Each | 58567           | 464               | 59031         |
| TR 10-2-4      | 10 kVA Air cooled  | Each | 62499           | 698               | 63197         |
| TR 10-2-5      | 12.5 kVA Air cooled  | Each | 75413           | 929               | 76342         |
| TR 10-2-6      | 15 kVA Air cooled  | Each | 84311           | 929               | 85240         |
| TR 10-2-7      | 20 kVA Air cooled  | Each | 96462           | 1159              | 97621         |
| TR 10-2-8      | 25 kVA Air cooled  | Each | 104827          | 1392              | 106219        |
| TR 10-2-9      | 30 kVA Air cooled  | Each | 118299          | 1476              | 119775        |
| TR 10-2-10     | 40 kVA Air cooled  | Each | 139185          | 1855              | 141040        |
| TR 10-2-11     | 50 kVA Air cooled  | Each | 154863          | 1855              | 156718        |
| TR 10-2-12     | 60 kVA Air cooled  | Each | 176662          | 1855              | 178517        |
| TR 10-2-13     | 60 kVA Oil cooled  | Each | 211283          | 1855              | 213138        |
| TR 10-2-14     | 75 kVA Oil cooled  | Each | 219105          | 1855              | 220960        |
| TR 10-2-15     | 100 kVA Oil cooled   | Each | 262919          | 2550              | 265469        |
| TR 10-2-16     | 125 kVA Oil cooled   | Each | 302529          | 3018              | 305547        |
| TR 10-2-17     | 150 kVA Oil cooled   | Each | 311500          | 3248              | 314748        |
| TR 10-2-18     | 175 kVA Oil cooled   | Each | 357761          | 3248              | 361009        |
| TR 10-2-19     | 200 kVA Oil cooled   | Each | 390703          | 4177              | 394880        |
| <b>Note 1</b>  | For oil cooled stabilizer, the supply cost is excluding cost of transformer oil.   |      |                 |                   |               |
| <b>TR-11</b>   | <b>Transformer oil</b><br><br>Supplying and topping fresh/ filtered Transformer Oil as per IS 335 and giving test certificate. |      |                 |                   |               |
|                |  |      | As Per PWD CSR  |                   |               |

| Code No        | Description  | Unit | Supply Rate Rs.   | Erection Rate Rs. | Total Amt Rs. |
|----------------|--|------|---|-------------------|---------------|
| <b>TR-12-A</b> | <b>Filtration of Transformer oil</b>   |      |   |                   |               |
|                | Filtration of transformer oil at site and giving test certificate for other area than that mentioned at TR-12 (B). |      | As Per PWD CSR  |                   |               |
| <b>TR 12-B</b> | For Metro Area of Pune, Mumbai Metro Region & Nagpur, Nashik, Aurangabad, Amravati Municipal Corporation areas.    |      | As Per PWD CSR  |                   |               |
| <b>TR-13</b>   | Transportation of oil filtering machine  |      | Rs.968/- for first 10 kms & Rs. 10/- for remaining distance |                   |               |
|                |  |      |   |                   |               |

| Code No       | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|---|------|-----------------|-------------------|---------------|
|               | <b>SECTION 8 - LT<br/>[ L.T. PANEL ]</b>  |      |                 |                   |               |
| <b>LT 1</b>   | <b>PANEL FABRICATION</b><br><br>M.S. sheet of thickness given below to be used for fabrication of boxes, panel boards, etc including cutting, bending, drilling, welding, cleaning, de-rusting and painting with one coat of red lead paint and two coats of enamel paint.  |      |                 |                   |               |
| LT 1-1        | M .S sheet 16 SWG   |      | As Per PWD CSR  |                   |               |
| LT 1-2        | M .S sheet 14 SWG   |      | As Per PWD CSR  |                   |               |
| <b>LT 2</b>   | <b>G.I. Sheet (Ducting of ventilation)</b><br><br>G.I. Sheet of thickness given below to be used for fabrication, ducting of ventilation or similar work etc, including cutting, bending, drilling, welding, cleaning, derusting and retouching with cold galvanising method wherever damaged.                                      |      |                 |                   |               |
| LT 2-1        | G.I. Sheet 18 SWG   |      | As Per PWD CSR  |                   |               |
| LT 2-2        | G.I. Sheet 16 SWG   |      | As Per PWD CSR  |                   |               |
| <b>Note 1</b> | Increase rate by 30% if sheet work for total item in each estimate is less than 1 sq m.<br><br>16 SWG sheet shall be specified for rear, side and top.<br>14 SWG sheet shall be specified for front and bottom.<br>Rate of G.I. Sheet fabrication may be adopted for panel fabrication also wherever required.                      |      |                 |                   |               |
| <b>LT 3</b>   | <b>Iron Work for panel board</b><br><br>Iron work for panel board or for other purpose complete with bending, cutting, drilling and welding complete erected at position with necessary material duly painted with one coat of red oxide and two coats of enamel paint to match the switchgear or as per the direction of Engineer. |      |                 |                   |               |
| <b>LT 4</b>   | <b>Bus Bar</b>  |      |                 |                   |               |

| Code No                              | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|--------------------------------------|---|------|-----------------|-------------------|---------------|
| LT 4-1<br>LT 4-2                     | Providing and fixing bus bar of required material in provided cubical panel on internal angle iron frame structure on provided epoxy bus bar insulators or suitable size bus bar strips, suitably designed for desired Amp rating for required length with suitable arrangement for fixing cable<br>Aluminium Bus Bar<br>Copper Bus Bar   |      | As Per PWD CSR  |                   |               |
| <b>Note 2</b>                        | Add 10% for color coded sleeves for bus bar strip kg rate.<br>Nut bolts holding busbar and cable lugs shall be of brass<br>Double bus bar should be adequately bolted.<br>For copper bus bar decrease the cross sectional area by 25% to nearest size available for respective Amp rating<br>Weight of Aluminium is 2700 kg/cum and weight of copper is 8900 kg/cum   |      |                 |                   |               |
| <b>LT 5</b>                          | <b>Bus Bar Chamber</b><br><br>Providing, erecting bus bar chamber triple pole with neutral (With 4 Aluminium bus bar) each of 100 cm length of cross section and rating as below with minimum 3 insulators per bar. Bus bar chamber of given size fabricated from 16 SWG M.S. Sheet and 25 X 25 X 4 mm angle iron frame complete, spray painted with one coat of red oxide and two coats of good quality enamel paint and polish.<br><br><b>Chamber size 115 X 40 X 15 cm</b> |      |                 |                   |               |
| LT 5-1<br>LT 5-2                     | Each bus bar of size 25 X 5mm-- For 100 Amp<br>Each bus bar of size 40 X 5mm-- For 200 Amp  |      | As Per PWD CSR  |                   |               |
|                                      | <b>Chamber size 115 X 50 X 30 cm</b>  |      |                 |                   |               |
| LT 5-3<br>LT 5-4<br>LT 5-5<br>LT 5-6 | Each bus bar of size 50 X 5mm-- For 300 Amp<br>Each bus bar of size 50 X 10mm-- For 400 Amp<br>Bus bar of size 2 Nos-40 X 10mm-- For 630 Amp<br>Bus bar of size 2 Nos-50 X 10mm-- For 800 Amp   |      | As Per PWD CSR  |                   |               |
| <b>LT 6</b>                          | <b>Bus Bar Insulators</b><br><br>Providing and fixing epoxy bus bar insulators in provided cubical panel on internal angle frame structure of suitable size as per requirement of aluminium strip being used for panel, with required hardware material.  |      |                 |                   |               |
| LT 6-1<br>LT 6-2                     | 30 X 30 X 30 mm ( T X B X H )<br>30 X 40 X 40 mm ( T X B X H )  |      |                 |                   |               |

| Code No  | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|--|--|------|-----------------|-------------------|---------------|
| LT 6-3<br>LT 6-4<br>LT 6-5                               | 40 X 50 X 50 mm ( T X B X H )<br>40 X 50 X 60 mm ( T X B X H )<br>40 X 50 X 70 mm ( T X B X H )  |      | As Per PWD CSR  |                   |               |
| <b>LT 7</b>  | <b>Metal Clad T.P.</b><br><br>Supplying and erecting on angle frame, Triple Pole Iron Clad / Metal Clad switch and rewirable fuse 415 / 500 V of suitable rating as below of approved make.  |      |                 |                   |               |
| LT 7-1<br>LT 7-2<br>LT 7-3<br>LT 7-4<br>LT 7-5<br>LT 7-6 | 16 Amp<br>32 Amp<br>63 Amp<br>100 Amp<br>200 Amp<br>300 Amp  |      | As Per PWD CSR  |                   |               |
| <b>LT 8</b>  | <b>Metal Clad T.P.N.</b><br><br>Supplying and erecting on angle frame, Triple Pole Iron Clad / Metal Clad switch with rewirable fuse, 415 / 500 V of suitable rating, with Neutral link, of below rating and of  |      |                 |                   |               |
| LT 8-1<br>LT 8-2<br>LT 8-3<br>LT 8-4<br>LT 8-5           | 16 Amp<br>32 Amp<br>63 Amp<br>100 Amp<br>200 Amp   |      | As Per PWD CSR  |                   |               |
| <b>LT 9</b>  | <b>Metal Clad T.P.N. with HRC fuse</b><br><br>Supplying and erecting on angle frame, Triple Pole Iron Clad / Metal Clad switch with H.R.C. Type fuse (of ISI Mark), 415 / 500 V of suitable rating, with Neutral link, of below rating and of approved make. |      |                 |                   |               |
| LT 9-1<br>LT 9-2<br>LT 9-3<br>LT 9-4                     | 100 Amp<br>200 Amp<br>300 Amp<br>400 Amp   |      | As Per PWD CSR  |                   |               |
| <b>LT 10</b>   | <b>T.P.N. Switch for Panel Mounting</b><br><br>Supplying and erecting T.P.N. switch suitable for 415 Volts , 50 Hz with operating mechanism for panel mounting   |      |                 |                   |               |
| LT 10-1<br>LT 10-2                                       | 63 Amp<br>100 Amp  |      | As Per PWD CSR  |                   |               |
| <b>LT 11</b>   | <b>T.P.N. Switch Fuse ( In sheet steel encloser )</b>  |      |                 |                   |               |

| Code No      | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs.  |
|--------------|--|------|-----------------|-------------------|----------------|
|              | Supplying and erecting T.P.N. switch suitable for 415 Volts , 50 Hz with operating mechanism   |      |                 |                   |                |
| LT 11-1      | 32 Amp   |      |                 |                   |                |
| LT 11-2      | 63 Amp   |      |                 |                   |                |
| LT 11-3      | 100 Amp  |      |                 |                   |                |
| <b>LT 12</b> | <b>Switch- Disconnecter Fuse Unit</b>  |      |                 |                   |                |
|              | Supplying and erecting T.P.N. Switch -Disconnecter Fuse Unit suitable for 415 Volts, 50 Hz with operating mechanism for panel mounting or sheet metal enclosed, (Without HRC Fuses). |      |                 |                   |                |
| LT 12-1      | 125 Amp<br>( In sheet steel encloser)  |      |                 |                   | As Per PWD CSR |
| LT 12-2      | 125 Amp<br>( For open execution)   |      |                 |                   | As Per PWD CSR |
| LT 12-3      | 200 Amp<br>( In sheet steel encloser)  |      |                 |                   | As Per PWD CSR |
| LT 12-4      | 200 Amp<br>( For open execution)   |      |                 |                   | As Per PWD CSR |
| LT 12-5      | 315 Amp<br>( In sheet steel encloser)  |      |                 |                   | As Per PWD CSR |
| LT 12-6      | 315 Amp<br>( For open execution)   |      |                 |                   | As Per PWD CSR |
| <b>LT 13</b> | <b>H.R.C. Fuse Link</b>  |      |                 |                   |                |
|              | <b>Supplying erecting HRC Fuse link .</b>  |      |                 |                   |                |
| LT 13-1      | HF Type, Current Rating 2/-----/ 40 Amp  |      |                 |                   |                |
| LT 13-2      | HF Type, Current Rating 50 Amp   |      |                 |                   |                |
| LT 13-3      | HF Type Current Rating 63 Amp  |      |                 |                   |                |
| LT 13-4      | HN Type Current Rating 63 Amp  |      |                 |                   |                |
| LT 13-5      | HN Type Current Rating 80/100 Amp  |      |                 |                   |                |
| LT 13-6      | HN Type 125 Amp  |      |                 |                   |                |
| LT 13-7      | HN Type 160 Amp  |      |                 |                   |                |
| LT 13-8      | HN Type 200 Amp  |      |                 |                   |                |
| LT 13-9      | HN Type 250 Amp  |      |                 |                   |                |
| LT 13-10     | HN Type 315 Amp  |      |                 |                   |                |
| <b>LT 14</b> | <b>Rotary change over switch</b>   |      |                 |                   |                |



| Code No      | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|--------------|--|------|-----------------|-------------------|---------------|
|              | Supplying, erecting front operated rotary change over switch for cubical panel, suitable for 3 Phase, 415 Volt, 50 Hz.   |      |                 |                   |               |
| LT 14-1      | 63 Amp   |      |                 |                   |               |
| LT 14-2      | 125 Amp  |      |                 |                   |               |
| LT 14-3      | 200 Amp  |      |                 |                   |               |
| LT 14-4      | 250 Amp  |      |                 |                   |               |
| LT 14-5      | 315 Amp  |      |                 |                   |               |
| LT 14-6      | 400 Amp  |      |                 |                   |               |
| <b>LT 15</b> | <b>Cut outs ( Porcelain Base )</b>   |      |                 |                   |               |
|              | Supplying and erecting porcelain base iron clad cut out, 500 Volts, of approved make erected on Polished T.W. block.   |      |                 |                   |               |
| LT 15-1      | 16 Amp   |      |                 |                   |               |
| LT 15-2      | 32 Amp   |      |                 |                   |               |
| LT 15-3      | 63 Amp   |      |                 |                   |               |
| LT 15-4      | 100 Amp  |      |                 |                   |               |
| LT 15-5      | 200 Amp  |      |                 |                   |               |
| <b>LT 16</b> | <b>Fuse Bridges ( Porcelain Base )</b>   |      |                 |                   |               |
|              | Supplying and erecting H.C. Pattern porcelain fuse bridge and fuse link suitable for 500 Volts, of approved make erected on Polished T.W. block.   |      |                 |                   |               |
| LT 16-1      | 16 Amp   |      |                 |                   |               |
| LT 16-2      | 32 Amp   |      |                 |                   |               |
| LT 16-3      | 63 Amp   |      |                 |                   |               |
| LT 16-4      | 100 Amp  |      |                 |                   |               |
| LT 16-5      | 200 Amp  |      |                 |                   |               |
| LT 16-6      | 300 Amp  |      |                 |                   |               |
| <b>LT 17</b> | <b>Moulded Case Circuit Breakers</b>   |      |                 |                   |               |
|              | Providing erecting Moulded Case Circuit Breaker of capacity as below with magnetic thermal release complete erected in provided enclosure and connected with provided leads of incoming and out going side with copper PVC leads/ bus in an approved manner. |      |                 |                   |               |
| LT 17-1      | 40-60-75-100 Amp (10 kA)   |      |                 |                   |               |
| LT 17-2      | 125-150 Amp (16 kA)  |      |                 |                   |               |
| LT 17-3      | 160-175-200-225 Amp (16 kA)  |      |                 |                   |               |
| LT 17-4      | 175 - 200 Amp (25 kA)  |      |                 |                   |               |
| LT 17-5      | 225-250 Amp (35 kA)  |      |                 |                   |               |
| LT 17-6      | 300-350-400 Amp (35 kA)  |      |                 |                   |               |
| LT 17-7      | 300-350-400 Amp (50 kA)  |      |                 |                   |               |

| Code No  | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs.  |
|--|--|------|-----------------|-------------------|----------------|
| LT 17-8<br>LT 17-9   | 450-500-600-630 Amp (50 kA)<br>700-800 Amp (50 kA)   |      |                 |                   |                |
| <b>Note 3</b>  | Add Rs. 1400/- for shunt release coil<br>Add Rs. 1575/- for front operating mechanism  |      |                 |                   |                |
| <b>LT 18</b>   | <b>Air Circuit Breaker</b><br><br>Providing erecting Air Circuit Breaker manually operated draw out type with magnetic Thermal release, C.T. and auxillary contact and all standard accessories.<br><br><b>Manually operated draw out type</b>   |      |                 |                   |                |
| LT 18-1<br>LT 18-2<br>LT 18-3<br>LT 18-4<br>LT 18-5<br>LT 18-6<br>LT 18-7<br>LT 18-8 | 800 Amp ( 25 kA)<br>1000 Amp (25 kA)<br>1250 Amp (35 kA)<br>1600 Amp (35 kA)<br>2000 Amp (35 kA)<br>2500 Amp ( 50 kA)<br>3200 Amp ( 50 kA)<br>4000 Amp ( 50 kA)  |      |                 |                   | As Per PWD CSR |
| <b>Note 4</b>  | Add Rs.1400/- for shunt release, Rs. 5185/- for under voltage relay and Rs.2300/- for earth fault relay , if these protections are required as a special case.   |      |                 |                   |                |
| <b>LT 19</b>   | <b>Earth Leakage Circuit Breaker</b><br><br>Providing, erecting, commissioning Earth leakage circuit breaker (ELCB/ RCCB) of suitable rating as below working on residual current 30 mA sensitivity and max 30 mSec tripping time, test knob facility free trip mechanism operating for rated leakage at nominal 10 V AC and also in both neutral open snapping condition, etc with short circuit with-stand capacity as per literature complying to BS 4293-1983 complete including all material copper leads, lugs, screws etc erected in provided MS box with window etc. |      |                 |                   |                |
| LT 19-1<br>LT 19-2<br>LT 19-3<br>LT 19-4<br>LT 19-5<br>LT 19-6<br>LT 19-7<br>LT 19-8 | 16 / 25 Amp 2 pole<br>40 Amp 2 pole<br>63 Amp 2 pole<br>15/25 Amp 4 pole<br>40 Amp 4 pole<br>63 Amp 4 pole<br>80 Amp 4 pole<br>100 Amp 4 pole  |      |                 |                   | As Per PWD CSR |
| <b>LT 20</b>   | <b>Panel Board accessories</b>   |      |                 |                   |                |
| <b>LT 20-1</b>   | <b>Marine Plywood</b>  |      |                 |                   |                |

| Code No        | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|----------------|--|------|-----------------|-------------------|---------------|
|                | Supplying and erecting Marine Plywood 19 mm thick fixed to wall or on provided panel board for fixing Kit-Kat fuses and meter , etc with necessary material .  |      | As Per PWD CSR  |                   |               |
| <b>LT 20-2</b> | <b>Self Locking Arrangement</b>  |      |                 |                   |               |
|                | Supplying and erecting self locking arrangement with duplicate keys duly erected flush with / panel surface of cup   |      | As Per PWD CSR  |                   |               |
| <b>LT 20-3</b> | <b>Pilot lamp</b>  |      |                 |                   |               |
|                | Supplying and erecting set of three pilot lamps all type indicating lamp with LED colours RED / YELLOW / BLUE, 230 / 250 V on provided box / panel with necessary wiring, material, connections etc.                   |      | As Per PWD CSR  |                   |               |
| <b>LT 20-4</b> | <b>Ammeter</b>   |      |                 |                   |               |
|                | Providing erecting Ammeter AC 50 Hz 440 Volts of suitable range flush type complete erected in provided MS box and connected to supply by PVC copper wire.   |      |                 |                   |               |
| LT 20-4-1      | Ammeter 144 X 144 mm   |      |                 |                   |               |
| LT 20-4-2      | Ammeter 96 X 96 mm   |      | As Per PWD CSR  |                   |               |
| <b>LT 20-5</b> | <b>Voltmeter</b>   |      |                 |                   |               |
|                | Providing, erecting Voltmeter AC 50 Hz. 0 to 500 Volts of suitable range flush type complete erected in provided MS box and connected to supply by PVC copper wire.  |      |                 |                   |               |
| LT 20-5-1      | Voltmeter 144 X 144mm  |      |                 |                   |               |
| LT 20-5-2      | Voltmeter 96 X 96 mm   |      | As Per PWD CSR  |                   |               |
| <b>LT 20-6</b> | <b>Selector Switch</b>   |      |                 |                   |               |
|                | Providing and erecting selector switch RY - YB - BR- for Volt meter, R - Y - B for ammeter suitable for AC supply 500 Volts 50 Hz erected in provided MS box and connected to Voltmeter, Ammeter with PVC copper wire. |      | As Per PWD CSR  |                   |               |
| <b>LT 20-7</b> | <b>L.T Current Transformer</b>   |      |                 |                   |               |
|                | Providing erecting LT current transformer with wound / bar primary 100/5 Amps to 400/5 Amp ratio with 15 VA burden erected in provided MS box duly secured insulating materials and connected to the meter             |      | As Per PWD CSR  |                   |               |

| Code No         | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-----------------|---|------|-----------------|-------------------|---------------|
|                 |   |      |                 |                   |               |
| <b>LT 20-8</b>  | <b>Power factor meter</b><br><br>Providing erecting power factor meter 150 mm dia flush or projection type suitable for 400 Volt 50 Hz, 3 phase 4 wire balanced or unbalanced load to work with appropriately provided CTs 100/5 Amp to 400/5 Amp ratio and other accessories complete erected in provided MS box and connected to the circuit by means of PVC copper leads.  |      |                 | As Per PWD CSR    |               |
| <b>LT 20-9</b>  | <b>Hour meter</b><br><br>Supplying and erecting Hour meter on provided panel board including the hardware required similar to HM 700 series of L.& T. working on 240 Volts AC synchron / 24 VDC in quartz flush / panel mounting with metallic bracket, etc complete including cost of suitable control wires for connection.   |      |                 | As Per PWD CSR    |               |
| <b>LT 20-10</b> | <b>kWh meter</b><br><br>Supply and erecting kWh meter provided with MD indicator for unbalanced load 3 Phase 4 wire, 50 Hz, 230/440 Volts with incorporated time switch of 30 min integration period and of 50 sec tune required for decoupling suitable to work on provided three numbers of instrument transformer of class "C" accuracy with ratio 100/5 Amp to 400/5 Amps complete with zero adjustment and test certificate from manufacturer, erected on provided MS box or panel connected to CTs and circuit by means of PVC copper wire leads. |      |                 | As Per PWD CSR    |               |
| <b>LT 20-11</b> | <b>Push Button</b><br><br>Providing erecting shrouded / unshrouded push button actuator L. & T. make TK 3 Type<br>Shrouded push button L&T  |      |                 | As Per PWD CSR    |               |
| <b>LT 20-12</b> | <b>Toggle Switch</b><br><br>Providing erecting selector actuator 2 Position / 3 Position<br>Selector Switch 2/3 Position  |      |                 | As Per PWD CSR    |               |

| Code No         | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs.  |
|-----------------|--|------|-----------------|-------------------|----------------|
| <b>LT 20-13</b> | <b>Key actuator</b><br>Providing erecting Key actuator Lockable in one position / both position L & T make Key actuator lockable 1/2 position  |      |                 |                   | As Per PWD CSR |
| <b>LT 20-14</b> | <b>Rubber Matting</b><br>Supplying rubber mating of thickness as below and of required length and breadth with good insulation property  |      |                 |                   |                |
| LT 20-14-1      | Rubber mating 6 mm thick 11 kV   |      |                 |                   | As Per PWD CSR |
| LT 20-14-2      | Rubber mating 12mm thick 22 kV   |      |                 |                   |                |
| <b>LT 20-15</b> | <b>Caution Board.</b><br>Providing enameled iron GI Sheet 18 gauge caution board of size 200 X 150 mm as per IS 2551 of 1982 in Marathi and Hindi erected at position.   |      |                 |                   | As Per PWD CSR |
| <b>LT 20-16</b> | <b>Name Board</b><br>Providing and fixing wall mounting type Name Board duly painted all details of Pumping machinery, Make. Models, Frame Number, Sr. No, Capacities, Date of installation, Commissioning, Manufacturing Year , Agency's name and agreement No etc. Details on GI Sheet of 18 gauge of required size duly painted with red oxide and enamel paint for displaying the above details . Board shall be provided with suitable size TW bottom on the back side. |      |                 |                   | As Per PWD CSR |
| <b>Note 5</b>   | For Labour charges for internal wiring of panels including all material Add as below<br>1) Up to 5 HP twin set panel Rs. 1645/-<br>2) 6 to 10 HP twin set panel Rs. 2193/-<br>3) 11 to 30 HP twin set panel Rs. 2742/-<br>4) For connected load more than 60 HP Add Rs.50/- per HP   |      |                 |                   |                |

| Code No     | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|--|------|-----------------|-------------------|---------------|
|             | <b>SECTION 9 - CP<br/>[ CAPACITOR ]</b>  |      |                 |                   |               |
| <b>CP 1</b> | <b>All Polypropylene Capacitors ( APP )</b><br><br>Supplying and erecting bank of <b>All Polypropylene</b> capacitors with the standard capacities of 1,2,3,5,7,12.5,15,20 and 25 KVAR units of power factor correction for operation on 3 phase, 50 Hz, 400 V+/- 10% with externally discharging resistances, earthing terminals and built on angle iron or channel iron frame work and provided with terminal cover box complete erected and           | KVAR | 273             | 24                | 297           |
| <b>CP 2</b> | <b>Metalized polypropylene Capacitors (MPP)</b><br><br>Supplying and erecting bank of <b>Metalized polypropylene</b> Capacitors with the standard capacities of 1,2,3,5,7,12.5,15,20 and 25 KVAR units of power factor correction for operation on 3 phase, 50 Hz, 400 V+/- 10% with externally discharging resistances, earthing terminals and built on angle iron on channel iron frame work and provided with terminal cover box complete erected and | KVAR | 252             | 24                | 276           |
| <b>CP 3</b> | <b>H.T. Capacitors</b><br><br>Supplying and erecting bank of <b>All Polypropylene</b> capacitors with the standard capacities of 75,84,116,133 and 167 KVAR units of power factor correction for operation on 3 phase, 50 Hz, 3300 V+/- 6% with externally discharging resistances, earthing terminals and built on angle iron on channel iron frame work and provided with terminal cover box, H.T. bushing bus bar and HRC fuses                       | KVAR | 454             | 62                | 516           |

| Code No   | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---|---|------|-----------------|-------------------|---------------|
| <b>SECTION 10 - LG</b><br><b>[ L.T. SWITCHGEAR AND PROTECTION ]</b> |   |      |                 |                   |               |
| <b>LG</b>   | <b>L.T. Switchgear and Protection</b>   |      |                 |                   |               |
| <b>LG 1</b>   | <b>D.O.L. Starter</b>   |      |                 |                   |               |
|   | Supplying and erecting DOL starter to operate squirrel cage induction motor working on 380- 440 Volt, 3 phase, 50 Hz with no volt coil and over load element with necessary material and connected to supply, etc complete. Starter with original sheet steel encloser.                           |      |                 |                   |               |
| LG 1-1  | Up to 7.5 HP  | Each | 1395            | 77                | 1472          |
| LG 1-2  | Up to 10 HP   | Each | 2273            | 164               | 2437          |
| <b>LG 2</b>   | <b>Assembled D.O.L. Starter</b>   |      |                 |                   |               |
|   | Supplying and erecting assembled DOL starter in provided cubical panel, with ON-OFF push buttons, no volt coil, over load element and required power and control wiring complete.   |      |                 |                   |               |
| LG 2-1  | Up to 7.5 HP  | Each | 1319            | 95                | 1414          |
| LG 2-2  | Up to 10 HP   | Each | 1709            | 187               | 1896          |
| <b>LG 3</b>   | <b>F.A.S.D. Starter</b>   |      |                 |                   |               |
|   | Supplying and erecting Fully Automatic Star Delta starter to operate squirrel cage induction motor working on 380- 440 Volt, 3 phase, 50 Hz with no volt coil, over load element, and ON - OFF push buttons, with necessary material and connected to supply, etc complete. Starter with original |      |                 |                   |               |
| LG 3-1  | > 7.5 HP & Up to 12.5 HP  | Each | 5493            | 167               | 5660          |
| LG 3-2  | > 12.5 HP & Up to 20 HP   | Each | 6715            | 167               | 6882          |
| LG 3-3  | > 20 HP & Up to 25 HP   | Each | 7811            | 187               | 7998          |
| LG 3-4  | > 25 HP & Up to 40 HP   | Each | 18019           | 187               | 18206         |
| <b>Note 1</b>   | Contactor rating should be same for STAR, LINE and DELTA Connection.  |      |                 |                   |               |
| <b>LG 4</b>   | <b>F.A.S.D. Starter ( Assembled )</b>   |      |                 |                   |               |

| Code No       | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|---|------|-----------------|-------------------|---------------|
| LG 4-1        | Supplying and erecting, assembled Fully Automatic Star Delta starter, in a provided cubical panel to operate squirrel cage induction motor working on 380- 440 Volt, 3 phase, 50 Hz with no volt coil, over load relay and ON-OFF push buttons, with necessary material and connected to supply,<br>> 7.5 HP & Up to 12.5 HP  | Each | 5414            | 187               | 5601          |
| LG 4-2        | > 12.5 HP & Up to 20 HP   | Each | 6559            | 187               | 6746          |
| LG 4-3        | > 20 HP & Up to 30 HP   | Each | 12726           | 210               | 12936         |
| LG 4-4        | > 30 HP & Up to 40 HP   | Each | 17951           | 210               | 18161         |
| <b>Note 2</b> | Contactor rating should be same for STAR, LINE and DELTA Connection.  |      |                 |                   |               |
| <b>LG 5</b>   | <p><b>Auto transformer Starter with air break contactor ( Locally Fabricated )</b></p> <p>Providing erecting and giving test and trial of Fully Automatic, Auto Transformer Starter with Air Break Contactor, assembled locally with contactors of approved make in 14 SWG sheet steel fabricated, floor mounted type cubical panel, suitable for operation on 380 - 440 Volts, 3 Phase, 50 Hz, fitted with accessories as below. The incoming and outgoing cable end boxes shall be on either sides of main panel. The cable entries from auto transformer shall be totally enclosed in sheet metal. The</p> <ol style="list-style-type: none"> <li>1) Oil immersed copper wound auto transformer with 50%,65%, and 80% tapping including first fill of oil.</li> <li>2) All Air Break Contactors of AC 3 duty of suitable rating as mentioned.</li> <li>3) Bimetallic overload relay.</li> <li>4) Timer ON and OFF delay.</li> <li>5) Master timer.</li> <li>6) Ammeter with CTs and selector switch.</li> <li>7) No Volt release.</li> <li>8) Motor 'ON", "OFF" and "TRIP" indication lamp.</li> <li>9) Motor Protection Relay, solid state with protection CTs.</li> <li>10) Thermostat with 1 NO + 1 NC for Oil temperature.</li> <li>11) Door interlock switch with 1 NO + 1 NC.</li> <li>12) Control fuse.</li> </ol> <p>Starter for Motor HP / Contactor Rating " Main/ Start/ Run".</p> <p><b>Cubical Panel Size</b></p> <p><b>1.25 m height X 0.75 m width X 0.45 m deep.</b></p> |      |                 |                   |               |



| Code No       | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|---|------|-----------------|-------------------|---------------|
| LG 5-1        | 40 HP (110 / 40 / 40)   | Each | 68063           | 2550              | 70613         |
| LG 5-2        | 60 HP (200 / 70 / 70)   | Each | 95289           | 2550              | 97839         |
| LG 5-3        | 80 HP (200 / 110 / 110)   | Each | 115708          | 2550              | 118258        |
| LG 5-4        | 100 HP (200 / 110 / 110)  | Each | 149829          | 2550              | 152379        |
| LG 5-5        | 120 HP (300 / 150 / 150)  | Each | 190577          | 2550              | 193127        |
|               | <b>Cubical Panel Size</b>   |      |                 |                   |               |
|               | <b>1.5 m height X 0.9 m width X 0.5 m deep.</b>   |      |                 |                   |               |
| LG 5-6        | 150 HP (300/150/150)  | Each | 196622          | 5102              | 201724        |
| LG 5-7        | 180 HP (400/170/170)  | Each | 233415          | 5102              | 238517        |
| LG 5-8        | 200 HP (400/200/200)  | Each | 254285          | 5102              | 259387        |
| LG 5-9        | 220 HP (400/200/200)  | Each | 319145          | 5102              | 324247        |
| LG 5-10       | 250 HP ( 400/300/300)   | Each | 330125          | 7651              | 337776        |
| LG 5-11       | 270 HP (630/300/300)  | Each | 342217          | 7651              | 349868        |
| LG 5-12       | 300 HP (630/300/300)  | Each | 355510          | 7651              | 363161        |
| <b>LG 6</b>   | <b>FCMA / HFSR Electrical Soft starter</b>  |      |                 |                   |               |
| LG 6-13       | 100 HP (200)  | Each | 146614          | 2550              | 149164        |
| LG 6-14       | 120 HP (300)  | Each | 163370          | 2550              | 165920        |
| LG 6-15       | 150 HP (300)  | Each | 185115          | 5102              | 190217        |
| LG 6-16       | 180 HP (400)  | Each | 203826          | 5102              | 208928        |
| LG 6-17       | 200 HP (400)  | Each | 218939          | 5102              | 224041        |
| LG 6-18       | 220 HP (400)  | Each | 241440          | 5102              | 246542        |
| LG 6-19       | 250 HP (400)  | Each | 258873          | 7651              | 266524        |
| LG 6-20       | 270 HP (630)  | Each | 274539          | 7651              | 282190        |
| LG 6-21       | 300 HP (630)  | Each | 321241          | 7651              | 328892        |
| <b>LG 7-1</b> | <b>Phase Failure Relay</b>  |      |                 |                   |               |
|               | Current sensing Phase Failure Relay with over load protection ( without CTs)  | Each | 940             | 217               | 1157          |
| <b>LG 7-2</b> | <b>Electronic Motor Protection Relay (for LT motors)</b>  |      |                 |                   |               |
|               | Providing, installing in panel EMPR for protection like overload, phase failure, locked rotor, phase reversal with trip indication and adjustable over current function, DIN rail | Each | 7988            | 2106              | 10094         |

| Code No     | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|---|------|-----------------|-------------------|---------------|
|             |   |      |                 |                   |               |
| <b>HG</b>   | <b>SECTION 11 - HG<br/>[ H.T. SWITCHGEAR &amp; PROTECTION ]</b>   |      |                 |                   |               |
| <b>HG 1</b> | <b>H.T. switchgear and protection</b>   |      |                 |                   |               |
|             | Providing and erecting Vacuum Circuit Breaker out door type excluding cost of CT, PT and control relay panel.   |      |                 |                   |               |
|             | <b>Vacuum Circuit Breaker (Out door type)</b>   |      |                 |                   |               |
| HG 1-1      | 11 kV system 630 Amp 25 kA  | Each | 136500          | 12751             | 149251        |
| HG 1-2      | 22 kV system 630 Amp 25 kA  | Each | 140595          | 12751             | 153346        |
| HG 1-3      | 33 kV system 630 Amp 25 kA  | Each | 144813          | 12751             | 157564        |
| HG 1-4      | 11 kV system 1250 Amp 25 kA   | Each | 147000          | 12751             | 159751        |
| HG 1-5      | 22 kV system 1250 Amp 25 kA   | Each | 151410          | 12751             | 164161        |
| HG 1-6      | 33 kV system 1250 Amp 25 kA   | Each | 155952          | 12751             | 168703        |
| <b>HG 2</b> | Providing and erecting Vacuum Circuit Breaker panel Indoor type including CT of required ratio for metering and protection including 3 O/C and E/F relay and high speed trip relay. |      |                 |                   |               |
|             | <b>Vacuum Circuit Breaker (Indoor type)</b>   |      |                 |                   |               |
| HG 2-1      | 3.3 kV system 630 Amp 25 kA   | Each | 289273          | 12751             | 302024        |
| HG 2-2      | 6.6 kV system 630 Amp 25 kA   | Each | 289273          | 12751             | 302024        |
| HG 2-3      | 11 kV system 630 Amp 25 kA  | Each | 289273          | 12751             | 302024        |
| HG 2-4      | 22 kV system 630 Amp 25 kA  | Each | 503855          | 12751             | 516606        |
| HG 2-5      | 33 kV system 630 Amp 25 kA  | Each | 503855          | 12751             | 516606        |
| HG 2-6      | 3.3 kV system 1250 Amp 25 kA  | Each | 299604          | 12751             | 312355        |
| HG 2-7      | 6.6 kV system 1250 Amp 25 kA  | Each | 299604          | 12751             | 312355        |
| HG 2-8      | 11 kV system 1250 Amp 25 kA   | Each | 299604          | 12751             | 312355        |
| HG 2-9      | 22 kV system 1250 Amp 25 kA   | Each | 615601          | 12751             | 628352        |
| HG 2-10     | 33 kV system 1250 Amp 25 kA   | Each | 615601          | 12751             | 628352        |
| <b>HG 3</b> | Providing and erecting draw out type Vacuum Contactor Panel Indoor type including CT of required ratio for metering and motor protection relay with High speed trip relay.          |      |                 |                   |               |
|             | <b>Vacuum Contactor Panel (Indoor Type)</b>   |      |                 |                   |               |
| HG 3-1      | 3.3 kV system ( 25 kA)  | Each | 314212          | 12751             | 326963        |

| Code No       | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|--|------|-----------------|-------------------|---------------|
| HG 3-2        | 6.6 kV system ( 25 kA)   | Each | 361415          | 12751             | 374166        |
| <b>HG 4</b>   | Providing and erecting Resin Cast Indoor single phase double core CT of required ratio and VA burden for metering and protection purpose.<br><br><b>Resign Cast Indoor Single Phase, Double Core CT of required ratio</b>  |      |                 |                   |               |
| HG 4-1        | C.T. for 3.3/ 6.6 / 11 kV 15 VA Class 1/10-P-10  | Each | 8779            | 1159              | 9938          |
| HG 4-2        | C.T. for 22 /33 kV 15 VA Class 1/10-P-10   | Each | 14286           | 1159              | 15445         |
| <b>HG 5</b>   | Providing and erecting Resin Cast Indoor single phase Single core PT of required ratio and VA burden for metering purpose.   |      |                 |                   |               |
|               | <b>Indoor Type Single Core PT of 100 VA capacity</b>   |      |                 |                   |               |
| HG 5-1        | (11 kV / Root 3) / (110 Volt / Ö 3)  | Each | 8779            | 1159              | 9938          |
| HG 5-2        | (22 kV / Root 3) / (110 Volt / Ö 3)  | Each | 13086           | 1159              | 14245         |
| HG 5-3        | (33 kV / Root 3) / (110 Volt / Ö 3)  | Each | 14079           | 1159              | 15238         |
| <b>HG 6</b>   | <b>Protection and auxiliary relays</b>   |      |                 |                   |               |
|               | Providing and erecting following type protection and auxiliary relay as required for Vacuum Circuit Breaker Panel / control relay panel.   |      |                 |                   |               |
| <b>HG 6-1</b> | Providing, installing static motor protection relay similar to Alstom make <b>for motors controlled through circuit breaker</b> , providing thermal instantaneous three phase over current, unbalance and single phasing, earth fault and separate built-in stalling protection. |      |                 |                   |               |
|               | CTMM 501-510   | Each | 47334           | 1223              | 48557         |
| <b>HG 6-2</b> | Providing, installing static motor protection relay similar to Alstom make <b>for motors controlled by fused contactors</b> , providing thermal instantaneous three phase over current, unbalance and single phasing, earth fault and separate built in stalling protection.     |      |                 |                   |               |
|               | CTMM 401-410   |      | 46215           | 1223              | 47438         |
| <b>HG 6-3</b> | <b>Over Current and/or Earth Fault Relay</b>   |      |                 |                   |               |
|               | Providing, installing in panel single pole non directional IDMT O/C or E/F self powered relay, flush mounted, conforming to IS 3231  |      |                 |                   |               |
| HG 6-3-1      | CDG 11, without High set/ MC 11A   | Each | 5372            | 698               | 6070          |

| Code No       | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|---|------|-----------------|-------------------|---------------|
| HG 6-3-2      | CDG 21, with High set/ MC 11A<br><br>Providing, installing in panel triple pole non directional IDMT, 2 O/C and 1 E/F self powered relay , flush mounted, conforming to IS 3231 | Each | 9069            | 698               | 9767          |
| HG 6-3-3      | CDG 31, without High set  | Each | 15750           | 698               | 16448         |
| HG 6-3-4      | CDG 61 with high set  | Each | 15750           | 698               | 16448         |
| HG 6-3-5      | Numerical communicable nondirectional overcurrent and earth fault relay, flush mounted similar to ABB model -   | Each | 42048           | 3265              | 45313         |
| <b>HG 6-4</b> | <b>High Speed Trip Relay</b><br><br>Providing, installing in panel single element high speed trip relay with mechanical flag and hand reset contacts. VAJH 13/ MVAJ053/AVAJH13  | Each | 3150            | 62                | 3212          |
| <b>HG 6-5</b> | Voltage operated auxillary relay without indicator with self reset / hand reset contacts, plug in combiflex mounting similar ABB model RXP8n / RXPQ8n                           | Each | 3259            | 254               | 3513          |
| <b>HG 6-5</b> | <b>Auxiliary Relay</b>  |      |                 |                   |               |
| HG 6-5-1      | Providing, installing in panel voltage operated auxiliary relay with flag, 2 NO + 2 NC, self reset contacts. MVAA 11  | Each | 2428            | 62                | 2490          |
| HG 6-5-2      | Providing, installing in panel voltage operated auxiliary relay with flag, 2 NO + 2 NC, hand reset contacts. MVAA 31/ AVA33   | Each | 4200            | 62                | 4262          |
| <b>HG 6-6</b> | <b>Power Factor Controller Relay</b>  |      |                 |                   |               |
| HG 6-6-1      | Providing, installing static power factor controller relay with minimum 8 capacitor stages with micro-processor based capacitor switching with display of power factor          | Each | 12096           | 464               | 12560         |
| HG 6-6-2      | 14 stages   | Each | 13689           | 464               | 14153         |
| <b>HG 6-7</b> | <b>Digital Timer</b>  |      |                 |                   |               |
|               | Providing, installing static digital timer with time delay on pick-up.  | Each | 1425            | 62                | 1487          |
| <b>HG 6-8</b> | <b>Automatic Semaphore Indicator</b><br><br>Providing, installing Automatic Semaphore indicator DC / AC operated for automatic indication of the position of Circuit Breakers   |      |                 |                   |               |

| Code No     | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|---|------|-----------------|-------------------|---------------|
|             | VAM 21  | Each | 2604            | 62                | 2666          |
| <b>CB 1</b> | <p align="center"><b>SECTION 12 - CB<br/>[ L.T. CABLE ]</b></p> <p><b>3 core PVC insulated, PVC sheathed copper conductor flat submersible cable</b></p> <p>Supplying and erecting, Flat flexible submersible cable with, Copper Conductor, PVC insulated, and PVC sheathed.</p>  |      |                 |                   |               |
| CB 1-1      | 3 core 1.5 sq mm  | m    | As per PWD      |                   |               |
| CB 1-2      | 3 core 2.5 sq mm  | m    |                 |                   |               |
| CB 1-3      | 3 core 4 sq mm  | m    |                 |                   |               |
| CB 1-4      | 3 core 6 sq mm  | m    |                 |                   |               |
| CB 1-5      | 3 core 10 sq mm   | m    | 256             | 13                | 269           |
| CB 1-6      | 3 core 16 sq mm   | m    | 392             | 24                | 416           |
| CB 1-7      | 3 core 25 sq mm   | m    | 635             | 24                | 659           |
| CB 1-8      | 3 core 35 sq mm   | m    | 904             | 24                | 928           |
| <b>CB 2</b> | <p><b>Aluminium conductor single core, XLPE /PVC insulated &amp; armoured cable</b></p> <p>Supplying and erecting, XLPE / PVC insulated, armoured cable 1100 V grade with ISI mark single core, stranded aluminium conductor with 6 mm thick 25 mm width M.S. spacer with G.I. Earth wire 6 sq mm, complete erected on wall / on pole with 25 X 3 mm M.S. clamps or in provided trench in an approved manner.</p> |      |                 |                   |               |
| CB 2-1      | Single core 300 sq mm   | m    | 416             | 24                | 440           |
| CB 2-2      | Single core 400 sq mm   | m    | 532             | 47                | 579           |
| CB 2-3      | Single core 500 sq mm   | m    | 662             | 47                | 709           |
| CB 2-4      | Single core 630 sq mm   | m    | 855             | 47                | 902           |
| CB 2-5      | Single core 800 sq mm   | m    | 1053            | 72                | 1125          |
| CB 2-6      | Single core 1000 sq mm  | m    | 1293            | 72                | 1365          |
| <b>CB 3</b> | <p><b>Aluminium conductor Twin core, XLPE / PVC insulated &amp; armoured cable</b></p>  |      |                 |                   |               |

| Code No     | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|--|------|-----------------|-------------------|---------------|
| CB 3-1      | Two core 2.5 sq mm   | m    |                 |                   |               |
| CB 3-2      | Two core 4 sq mm   | m    |                 |                   |               |
| CB 3-3      | Two core 6 sq mm   | m    |                 |                   |               |
| CB 3-4      | Two core 10 sq mm  | m    |                 |                   |               |
|             |  |      | As per PWD      |                   |               |
| <b>CB 4</b> | <b>Aluminium conductor Three core, XLPE / PVC insulated &amp; armoured cable</b>   |      |                 |                   |               |
|             | Supplying and erecting XLPE / PVC insulated, armoured cable 1100 V grade with ISI mark Three core, solid / stranded aluminium conductor with 6 mm thick 25 mm width M.S. spacer with G.I. Earth wire 6 sq mm, complete erected on wall / on pole with 25 X 3 mm M.S. clamps or in provided trench in an approved manner.   |      |                 |                   |               |
| CB 4-1      | 3 Core 2.5 sq mm   | m    |                 |                   |               |
| CB 4-2      | 3 Core 4 sq mm   | m    |                 |                   |               |
| CB 4-3      | 3 Core 6 sq mm   | m    |                 |                   |               |
| CB 4-4      | 3 Core 10 sq mm  | m    |                 |                   |               |
| CB 4-5      | 3 Core 16 sq mm  | m    |                 |                   |               |
| CB 4-6      | 3 Core 25 sq mm  | m    |                 |                   |               |
| CB 4-7      | 3 Core 35 sq mm  | m    |                 |                   |               |
| CB 4-8      | 3 Core 50 sq mm  | m    |                 |                   |               |
| CB 4-9      | 3 Core 70 sq mm  | m    |                 |                   |               |
| CB 4-10     | 3 Core 95 sq mm  | m    | 367             | 26                | 393           |
| CB 4-11     | 3 Core 120 sq mm   | m    | 466             | 26                | 492           |
| CB 4-12     | 3 Core 150 sq mm   | m    | 562             | 47                | 609           |
| CB 4-13     | 3 Core 185 sq mm   | m    | 672             | 47                | 719           |
| CB 4-14     | 3 Core 240 sq mm   | m    | 790             | 47                | 837           |
| CB 4-15     | 3 Core 300 sq mm   | m    | 1060            | 47                | 1107          |
|             |  |      | 1246            | 47                | 1293          |
|             |  |      | As per PWD      |                   |               |
| <b>CB 5</b> | <b>Aluminium conductor 3.5 Core, XLPE / PVC insulated &amp; armoured cable</b>   |      |                 |                   |               |
|             | Supplying and erecting, XLPE / PVC insulated, armoured cable 1100 V grade with ISI mark Three and half core, stranded aluminium conductor with 6 mm thick 25 mm width M.S. spacer with G.I. Earth wire 6 sq mm, complete erected on wall / on pole with 25 X 3 mm M.S. clamps or in provided trench in an approved manner. |      |                 |                   |               |
| CB 5-1      | 3.5 Core 25 sq mm  | m    |                 |                   |               |
| CB 5-2      | 3.5 Core 35 sq mm  | m    |                 |                   |               |
| CB 5-3      | 3.5 Core 50 sq mm  | m    |                 |                   |               |

| Code No       | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |     |    |     |
|---------------|--|------|-----------------|-------------------|---------------|-----|----|-----|
| CB 5-4        | 3.5 Core 70 sq mm  | m    | As per PWD      |                   |               |     |    |     |
| CB 5-5        | 3.5 Core 95 sq mm  | m    |                 |                   |               |     |    |     |
| CB 5-6        | 3.5 Core 120 sq mm   | m    |                 |                   |               |     |    |     |
| CB 5-7        | 3.5 Core 150 sq mm   | m    |                 |                   |               |     |    |     |
| CB 5-8        | 3.5 Core 185 sq mm   | m    |                 |                   |               |     |    |     |
| CB 5-9        | 3.5 Core 240 sq mm   | m    |                 |                   |               |     |    |     |
| CB 5-10       | 3.5 Core 300 sq mm   | m    |                 |                   |               |     |    |     |
| CB 5-11       | 3.5 Core 400 sq mm   | m    |                 |                   |               |     |    |     |
| <b>CB 6</b>   | <b>Aluminium conductor 4 Core, XLPE / PVC insulated &amp; armoured cable</b><br><br>Supplying and erecting, XLPE / PVC insulated, armoured cable 1100 V grade with ISI mark Four core, solid / stranded aluminium conductor with 6 mm thick 25 mm width M.S. spacer with G.I. Earth wire 6 sq mm, complete erected on wall / on pole with 25 X 3 mm M.S. clamps or in provided trench in an approved manner. |      |                 |                   |               |     |    |     |
| CB 6-1        | 4 Core 4 sq mm   | m    |                 |                   |               | 88  | 15 | 103 |
| CB 6-2        | 4 Core 6 sq mm   | m    |                 |                   |               | 101 | 15 | 116 |
| CB 6-3        | 4 Core 10 sq mm  | m    | 128             | 15                | 143           |     |    |     |
| CB 6-4        | 4 Core 16 sq mm  | m    | 143             | 15                | 158           |     |    |     |
| <b>CB 7</b>   | <b>Copper conductor PVC insulated, armoured control cable</b><br><br>Supplying and erecting armoured control cable with ISI mark stranded / solid copper conductor 1.1 kV grade complete erected on wall / panel or in provided trench in an approved manner.  |      |                 |                   |               |     |    |     |
| <b>CB 7-1</b> | <b>1.5 sq mm Copper conductor PVC insulated, armoured control cable</b>  |      |                 |                   |               |     |    |     |
| CB 7-1-1      | 2 core 1.5 sq mm   | m    | 76              | 5                 | 81            |     |    |     |
| CB 7-1-2      | 3 core 1.5 sq mm   | m    | 91              | 5                 | 96            |     |    |     |
| CB 7-1-3      | 4 core 1.5 sq mm   | m    | 110             | 5                 | 115           |     |    |     |
| CB 7-1-4      | 5 core 1.5 sq mm   | m    | 129             | 5                 | 134           |     |    |     |
| CB 7-1-5      | 6 core 1.5 sq mm   | m    | 148             | 5                 | 153           |     |    |     |
| CB 7-1-6      | 7 core 1.5 sq mm   | m    | 164             | 5                 | 169           |     |    |     |
| CB 7-1-7      | 8 core 1.5 sq mm   | m    | 186             | 5                 | 191           |     |    |     |
| CB 7-1-8      | 9 core 1.5 sq mm   | m    | 196             | 5                 | 201           |     |    |     |
| CB 7-1-9      | 10 core 1.5 sq mm  | m    | 237             | 5                 | 242           |     |    |     |
| <b>CB 7-2</b> | <b>2.5 sq mm Copper conductor PVC insulated, armoured control cable</b>  |      |                 |                   |               |     |    |     |
| CB 7-2-1      | 2 core 2.5 sq mm   | m    | 99              | 5                 | 104           |     |    |     |
| CB 7-2-2      | 3 core 2.5 sq mm   | m    | 124             | 5                 | 129           |     |    |     |
| CB 7-2-3      | 4 core 2.5 sq mm   | m    | 155             | 5                 | 161           |     |    |     |

| Code No                | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|------------------------|---|------|-----------------|-------------------|---------------|
| CB 7-2-4               | 5 core 2.5 sq mm  | m    | 186             | 5                 | 191           |
| CB 7-2-5               | 6 core 2.5 sq mm  | m    | 215             | 5                 | 220           |
| CB 7-2-6               | 7 core 2.5 sq mm  | m    | 244             | 5                 | 249           |
| CB 7-2-7               | 8 core 2.5 sq mm  | m    | 274             | 5                 | 279           |
| CB 7-2-8               | 9 core 2.5 sq mm  | m    | 271             | 5                 | 276           |
| CB 7-2-9               | 10 core 2.5 sq mm   | m    | 320             | 5                 | 325           |
| <b>CB 8</b>            | <b>Copper conductor PVC insulated, Un-armoured control cable</b><br><br>Supplying and erecting Un-armoured control cable with ISI mark stranded / solid copper conductor 1.1 kV grade complete erected on wall / panel or in provided trench in an approved manner. |      |                 |                   |               |
| CB 8-1-1               | 2 core 1.5 sq mm  | m    | 47              | 5                 | 52            |
| CB 8-1-2               | 3 core 1.5 sq mm  | m    | 62              | 5                 | 67            |
| CB 8-1-3               | 4 core 1.5 sq mm  | m    | 74              | 5                 | 79            |
| CB 8-1-4               | 5 core 1.5 sq mm  | m    | 91              | 5                 | 96            |
| CB 8-1-5               | 6 core 1.5 sq mm  | m    | 108             | 5                 | 113           |
| CB 8-1-6               | 7 core 1.5 sq mm  | m    | 119             | 5                 | 124           |
| CB 8-1-7               | 8 core 1.5 sq mm  | m    | 134             | 5                 | 139           |
| CB 8-1-8               | 9 core 1.5 sq mm  | m    | 151             | 5                 | 156           |
| CB 8-1-9               | 10 core 1.5 sq mm   | m    | 165             | 5                 | 170           |
| <b>CB 8-2</b>          | <b>2.5 sq mm Copper conductor PVC Un-armoured control cable</b>   |      |                 |                   |               |
| CB 8-2-1               | 2 core 2.5 sq mm  | m    | 65              | 5                 | 70            |
| CB 8-2-2               | 3 core 2.5 sq mm  | m    | 87              | 5                 | 92            |
| CB 8-2-3               | 4 core 2.5 sq mm  | m    | 110             | 5                 | 115           |
| CB 8-2-4               | 5 core 2.5 sq mm  | m    | 132             | 5                 | 137           |
| CB 8-2-5               | 6 core 2.5 sq mm  | m    | 158             | 5                 | 163           |
| CB 8-2-6               | 7 core 2.5 sq mm  | m    | 182             | 5                 | 187           |
| CB 8-2-7               | 8 core 2.5 sq mm  | m    | 201             | 5                 | 206           |
| CB 8-2-8               | 9 core 2.5 sq mm  | m    | 227             | 5                 | 232           |
| CB 8-2-9               | 10 core 2.5 sq mm   | m    | 257             | 5                 | 262           |
| <b>SECTION 13 - CB</b> |   |      |                 |                   |               |



| Code No      | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|--------------|---|------|-----------------|-------------------|---------------|
|              | <b>[ H.T. CABLE ]</b>   |      |                 |                   |               |
| <b>CB 9</b>  | <b>Aluminium conductor XLPE / PVC insulated, armoured Cable</b>   |      |                 |                   |               |
|              | Supplying and erecting Aluminium conductor, XLPE / PVC - 3.3 kV, armoured cable complete erected in provided trench or on provided trays in an approved manner as per direction of Engineer In Charge |      |                 |                   |               |
|              | <b>3.3 kV- XLPE / PVC</b>   |      |                 |                   |               |
| CB 9-1       | 3 Core 25 sq mm   | m    | 452             | 26                | 478           |
| CB 9-2       | 3 Core 35 sq mm   | m    | 470             | 26                | 496           |
| CB 9-3       | 3 Core 50 sq mm   | m    | 537             | 26                | 563           |
| CB 9-4       | 3 Core 70 sq mm   | m    | 629             | 26                | 655           |
| CB 9-5       | 3 Core 95 sq mm   | m    | 764             | 26                | 790           |
| CB 9-6       | 3 Core 120 sq mm  | m    | 859             | 47                | 906           |
| CB 9-7       | 3 Core 150 sq mm  | m    | 1012            | 47                | 1059          |
| CB 9-8       | 3 Core 185 sq mm  | m    | 1133            | 47                | 1180          |
| CB 9-9       | 3 Core 240 sq mm  | m    | 1404            | 47                | 1451          |
| CB 9-10      | 3 Core 300 sq mm  | m    | 1643            | 74                | 1717          |
| CB 9-11      | 3 Core 400 sq mm  | m    | 2043            | 74                | 2117          |
| <b>CB 10</b> | Supplying and erecting Aluminium conductor, XLPE / PVC - 6.6 kV, armoured cable complete erected in approved trench or on trays as per direction of Engineer In Charge                                |      |                 |                   |               |
|              | <b>6.6 kV -- XLPE / PVC</b>   |      |                 |                   |               |
| CB 10-1      | 3 Core 35 sq mm   | m    | 536             | 26                | 562           |
| CB 10-2      | 3 Core 50 sq mm   | m    | 605             | 26                | 631           |
| CB 10-3      | 3 Core 70 sq mm   | m    | 719             | 26                | 745           |
| CB 10-4      | 3 Core 95 sq mm   | m    | 852             | 26                | 878           |
| CB 10-5      | 3 Core 120 sq mm  | m    | 982             | 47                | 1029          |
| CB 10-6      | 3 Core 150 sq mm  | m    | 1096            | 47                | 1143          |
| CB 10-7      | 3 Core 185 sq mm  | m    | 1276            | 47                | 1323          |
| CB 10-8      | 3 Core 240 sq mm  | m    | 1531            | 47                | 1578          |
| CB 10-9      | 3 Core 300 sq mm  | m    | 1781            | 74                | 1855          |
| CB 10-10     | 3 Core 400 sq mm  | m    | 2238            | 74                | 2312          |
| <b>CB 11</b> | Supplying and erecting Aluminium conductor, XLPE / PVC - 11 kV , armoured cable complete erected in approved trench or on trays as per direction of Engineer In Charge                                |      |                 |                   |               |
|              | <b>11 kV -- XLPE / PVC</b>  |      |                 |                   |               |
| CB 11-1      | 3 Core 35 sq mm   | m    | 524             | 26                | 550           |
| CB 11-2      | 3 Core 50 sq mm   | m    |                 |                   |               |

| Code No      | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |      |    |      |
|--------------|---|------|-----------------|-------------------|---------------|------|----|------|
| CB 11-3      | 3 Core 70 sq mm   | m    | As Per PWD      |                   |               |      |    |      |
| CB 11-4      | 3 Core 95 sq mm   | m    |                 |                   |               |      |    |      |
| CB 11-5      | 3 Core 120 sq mm  | m    |                 |                   |               |      |    |      |
| CB 11-6      | 3 Core 150 sq mm  | m    |                 |                   |               |      |    |      |
| CB 11-7      | 3 Core 185 sq mm  | m    |                 |                   |               |      |    |      |
| CB 11-8      | 3 Core 240 sq mm  | m    |                 |                   |               |      |    |      |
| CB 11-9      | 3 Core 300 sq mm  | m    |                 |                   |               |      |    |      |
| CB 11-10     | 3 Core 400 sq mm  | m    |                 |                   |               |      |    |      |
| <b>CB 12</b> | Supplying and erecting Aluminium conductor, XLPE / PVC - 22 kV, armoured cable complete erected in approved trench or on trays as per direction of Engineer In Charge |      |                 |                   |               |      |    |      |
|              | <b>22 kV -- XLPE / PVC</b>  |      |                 |                   |               |      |    |      |
| CB 12-1      | 3 Core 35 sq mm   | m    | 910             | 26                | 936           |      |    |      |
| CB 12-2      | 3 Core 50 sq mm   | m    | 1006            | 26                | 1032          |      |    |      |
| CB 12-3      | 3 Core 70 sq mm   | m    | As Per PWD      |                   |               |      |    |      |
| CB 12-4      | 3 Core 95 sq mm   | m    |                 |                   |               |      |    |      |
| CB 12-5      | 3 Core 120 sq mm  | m    |                 |                   |               |      |    |      |
| CB 12-6      | 3 Core 150 sq mm  | m    |                 |                   |               |      |    |      |
| CB 12-7      | 3 Core 185 sq mm  | m    |                 |                   |               |      |    |      |
| CB 12-8      | 3 Core 240 sq mm  | m    |                 |                   |               |      |    |      |
| CB 12-9      | 3 Core 300 sq mm  | m    |                 |                   |               |      |    |      |
| CB 12-10     | 3 Core 400 sq mm  | m    |                 |                   |               |      |    |      |
|              |   |      |                 |                   |               | 2559 | 74 | 2633 |
| <b>CB 13</b> | Supplying and erecting Aluminium conductor, XLPE / PVC - 33 kV, armoured cable complete erected in approved trench or on trays as per direction of Engineer In Charge |      |                 |                   |               |      |    |      |
|              | <b>33 kV -- XLPE / PVC</b>  |      |                 |                   |               |      |    |      |
| CB 13-1      | 3 Core 50 sq mm   | m    | 1520            | 26                | 1546          |      |    |      |
| CB 13-2      | 3 Core 70 sq mm   | m    | As Per PWD      |                   |               |      |    |      |
| CB 13-3      | 3 Core 95 sq mm   | m    |                 |                   |               |      |    |      |
| CB 13-4      | 3 Core 120 sq mm  | m    |                 |                   |               |      |    |      |
| CB 13-5      | 3 Core 150 sq mm  | m    |                 |                   |               |      |    |      |
| CB 13-6      | 3 Core 185 sq mm  | m    |                 |                   |               |      |    |      |
| CB 13-7      | 3 Core 240 sq mm  | m    |                 |                   |               |      |    |      |
| CB 13-8      | 3 Core 300sq mm   | m    |                 |                   |               |      |    |      |
| CB 13-9      | 3 Core 400 sq mm  | m    |                 |                   |               |      |    |      |
|              |   |      |                 |                   |               | 3030 | 74 | 3104 |
| <b>CB 14</b> | <b>MAKING TRENCH</b>  |      |                 |                   |               |      |    |      |

| Code No                       | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs.  |
|-------------------------------|--|------|-----------------|-------------------|----------------|
| CB 14-1<br>CB 14-2            | Making a trench of suitable width and 0.9 m deep and laying provided cable and refilling the same with screened sand bed of 0.2 m thick to embed the cable and bricks placed on both side length wise and on top width wise all over the cable run and refilling the excavated earth without stone or hard material and making the surface proper with 0.15 m<br>In Soft Soil<br>In Hard Murum or Tar Road |      |                 |                   |                |
| <b>Note 1</b>                 | Add Rs 20/- per m length if Additional cable is to be laid by the side in the same trench with two Additional bricks to form another compartment.  |      |                 |                   |                |
| <b>Note 2</b>                 | For cable size up to 10 sq.mm, single brick is to be laid on the cable length wise and the above rate be reduced by 25%.   |      |                 |                   |                |
| <b>CB 15</b>                  | <b>CABLE MARKER</b><br>Supplying and erecting cast iron cable marker plate of 100 mm dia and 6 mm thick welding with 0.7 m long galvanised iron rod of 12 mm dia and cross bars of 15 cm length welding at bottom of iron rod buried along with route of cable.  |      |                 |                   | As Per PWD CSR |
| <b>CB 16</b>                  | <b>Cable enclosing G.I. Pipe "A" Grade</b><br>Supplying, erecting G.I. Pipe "A" grade erected for enclosing PVC armoured cable on wall or pole with clamp and upper end closed with T.W. bush and sealed with compound.  |      |                 |                   |                |
| CB 16-1<br>CB 16-2<br>CB 16-3 | G.I. Pipe , 25 mm dia<br>G.I. Pipe , 40 mm dia<br>G.I. Pipe , 50 mm dia  |      |                 |                   | As Per PWD CSR |
| <b>CB 17</b>                  | <b>Cable enclosing RCC Pipe</b><br>Supplying and laying RCC hume pipe with coupling collar of standard thickness below ground / road surfacing for inclosing provided cable. The rates are inclusive of the work of required excavation of trench for pipe laying and refilling the trench with light ramming to make the road / ground surface as it was.   |      |                 |                   |                |

| Code No   | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs.  |
|---|---|------|-----------------|-------------------|----------------|
| CB 17-1<br>CB 17-2<br>CB 17-3   | 100 mm dia, RCC pipe<br>150 mm dia, RCC pipe<br>250 mm dia, RCC pipe  |      |                 |                   | As Per PWD CSR |
| <b>CB 18</b>  | <b>Cable enclosing G.I. Pipe "B" Class</b><br><br>Providing and laying 75 mm dia G.I. Pipe "B" grade ISI mark for enclosing provided cable to lay underground at required depth up to 90 cm with required excavation and refilling with light ramming to make the ground surface as it was. |      |                 |                   | As Per PWD CSR |
| <b>CB 19</b>  | <b>Cable Lugs-- Aluminium</b><br><br>Supplying and erecting crimpling type aluminium lugs conforming to IS suitable for cable as below evenly crimped with high pressure tool and connected to switch gear terminals with brass / cadmium plated nut bolts in an approved manner.           |      |                 |                   |                |
| CB 19-1<br>CB 19-2<br>CB 19-3<br>CB 19-4<br>CB 19-5<br>CB 19-6<br>CB 19-7<br>CB 19-8<br>CB 19-9<br>CB 19-11<br>CB 19-12<br>CB 19-13 | 16 sq mm<br>25 sq mm<br>35 sq mm<br>50 sq mm<br>70 sq mm<br>95 sq mm<br>120 sq mm<br>150 sq mm<br>185 sq mm<br>240 sq mm<br>300 sq mm<br>400 sq mm  |      |                 |                   | As Per PWD CSR |
| <b>CB 20</b>  | <b>Cable Glands ( Brass )</b><br><br>Supplying and erecting heavy duty Siemens type brass cable glands of suitable size for PVC armoured cable as mentioned below with brass washers, rubber rings, complete erected with cable ends and lead connections.                                  |      |                 |                   |                |
| CB 20-1<br>CB 20-2<br>CB 20-3<br>CB 20-5<br>CB 20-6<br>CB 20-7<br>CB 20-8<br>CB 20-9<br>CB 20-10                                    | 2 to 4 core 2.5 to 4 sq mm<br>3 to 4 core 6 to 10 sq mm<br>3 to 4 core 16 to 25 sq mm<br>3 to 3.5 core 50 sq mm<br>3 to 3.5 core 70 sq mm<br>3 to 3.5 core 95 sq mm<br>3 to 3.5 core 120 sq mm<br>3 to 3.5 core 150 sq mm<br>3 to 3.5 core 185 sq mm  |      |                 |                   | As Per PWD CSR |

| Code No       | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|--|------|-----------------|-------------------|---------------|
| CB 20-11      | 3 to 3.5 core 240 sq mm  |      |                 |                   |               |
| CB 20-12      | 3 to 3.5 core 300 sq mm  |      |                 |                   |               |
| CB 20-13      | 3 to 3.5 core 400 sq mm  |      |                 |                   |               |
| <b>Note 3</b> | For Flange type glands increase overall rate by 50% .  |      |                 |                   |               |
| <b>CB 21</b>  | <b>Cable Jointing Kit for Submersible cable</b><br><br>Providing cable jointing Kit with cable jointing compound and material for various size of submersible cable up to 35 sq mm etc complete. |      | As Per PWD CSR  |                   |               |
| <b>CB 22</b>  | <b>INDOOR TERMINATION KIT for 3.3 kV / 6.6 kV XLPE 3 Core cable.</b>   |      |                 |                   |               |
| CB 22-1       | 25-50 sq.mm  | Each | 3130            | 2318              | 5448          |
| CB 22-2       | 70-120 sq.mm   | Each | 3466            | 2318              | 5784          |
| CB 22-3       | 150-185 sq.mm  | Each | 3926            | 2318              | 6244          |
| CB 22-4       | 240-400 sq.mm  | Each | 4375            | 2318              | 6693          |
| <b>CB 23</b>  | <b>OUT DOOR TERMINATION KIT for 3.3 / 6.6 kV XLPE 3 Core cable.</b>  |      |                 |                   |               |
| CB 23-1       | 25-50 sq.mm  | Each | 5105            | 2318              | 7423          |
| CB 23-2       | 70-120 sq.mm   | Each | 5318            | 2318              | 7636          |
| CB 23-3       | 150-185 sq.mm  | Each | 5733            | 2318              | 8051          |
| CB 23-4       | 240-400 sq.mm  | Each | 7214            | 2318              | 9532          |
| <b>CB 24</b>  | <b>STRAIGHT THROUGH JOINT for 3.3 / 6.6 kV XLPE 3 Core cable.</b>  |      |                 |                   |               |
| CB 24-1       | 25-50 sq.mm  | Each | 11730           | 2318              | 14048         |
| CB 24-2       | 70-120 sq.mm   | Each | 13134           | 2318              | 15452         |
| CB 24-3       | 150-185 sq.mm  | Each | 16708           | 2318              | 19026         |
| CB 24-4       | 240-400 sq.mm  | Each | 18273           | 2318              | 20591         |
| <b>CB 25</b>  | <b>INDOOR TERMINATION KIT for 11 kV XLPE Screened 3 core cable.</b>  |      |                 |                   |               |
| CB 25-1       | 25-50 sq.mm  | Each | 4521            | 2318              | 6839          |
| CB 25-2       | 70-120 sq.mm   | Each | 5474            | 2318              | 7792          |
| CB 25-3       | 150-225 sq.mm  | Each | 6554            | 2318              | 8872          |
| CB 25-4       | 240-400 sq.mm  | Each | 7382            | 2318              | 9700          |
| <b>CB 26</b>  | <b>OUT DOOR TERMINATION KIT for 11 kV XLPE Screened 3 core cable.</b>  |      |                 |                   |               |

| Code No      | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|--------------|---|------|-----------------|-------------------|---------------|
| CB 26-1      | 25-50 sq.mm   | Each | 5900            | 2318              | 8218          |
| CB 26-2      | 70-120 sq.mm  | Each | As Per PWD      |                   |               |
| CB 26-3      | 150-185 sq.mm   | Each |                 |                   |               |
| CB 26-4      | 225 sq. mm  | Each |                 |                   |               |
| CB 26-5      | 240-400 sq.mm   | Each |                 |                   |               |
| <b>CB 27</b> | <b>STRAIGHT THROUGH JOINT for 11 kV XLPE Screened 3 core cable.</b>   |      |                 |                   |               |
| CB 27-1      | 25-50 sq.mm   | Each | 14369           | 2318              | 16687         |
| CB 27-2      | 70-120 sq.mm  | Each | As Per PWD      |                   |               |
| CB 27-3      | 150-185 sq.mm   | Each |                 |                   |               |
| CB 27-4      | 240-300 sq.mm   | Each |                 |                   |               |
|              |   |      |                 |                   |               |
| <b>CB 28</b> | <b>INDOOR TERMINATION KIT FOR 22 kV XLPE Screened 3 core cable.</b>   |      |                 |                   |               |
| CB 28-1      | 25-50 sq.mm   | Each | 5800            | 2318              | 8118          |
| CB 28-2      | 70-120 sq.mm  | Each | As Per PWD      |                   |               |
| CB 28-3      | 150-185 sq.mm   | Each |                 |                   |               |
| CB 28-4      | 240-400 sq.mm   | Each |                 |                   |               |
|              |   |      |                 |                   |               |
| <b>CB 29</b> | <b>OUT DOOR TERMINATION KIT for 22 kV XLPE Screened 3 core cable.</b> |      |                 |                   |               |
| CB 29-1      | 25-50 sq.mm   | Each | 10153           | 2318              | 12471         |
| CB 29-2      | 70-120 sq.mm  | Each | As Per PWD      |                   |               |
| CB 29-3      | 150-185 sq.mm   | Each |                 |                   |               |
| CB 29-4      | 240-400 sq.mm   | Each |                 |                   |               |
|              |   |      |                 |                   |               |
| <b>CB 30</b> | <b>STRAIGHT THROUGH JOINT for 22 kV XLPE Screened 3 core cable.</b>   |      |                 |                   |               |
| CB 30-1      | 50 sq.mm  | Each | 25307           | 2318              | 27625         |
| CB 30-2      | 70-95 sq.mm   | Each | As Per PWD      |                   |               |
| CB 30-3      | 120-150 sq.mm   | Each |                 |                   |               |
| CB 30-4      | 185-240 sq.mm   | Each |                 |                   |               |
| CB 30-5      | 300-400 sq.mm   | Each |                 |                   |               |
| <b>CB 31</b> | <b>INDOOR TERMINATION KIT for 33 kV XLPE Screened 3 core cable.</b>   |      |                 |                   |               |
| CB 31-1      | 50 sq.mm  | Each | 9806            | 2318              | 12124         |
| CB 31-2      | 70-95 sq.mm   | Each | As Per PWD      |                   |               |
| CB 31-3      | 120-185 sq.mm   | Each |                 |                   |               |
| CB 31-4      | 240-400 sq.mm   | Each |                 |                   |               |
|              |   |      |                 |                   |               |
| <b>CB 32</b> | <b>OUT DOOR TERMINATION KIT for 33 kV XLPE Screened 3 core cable.</b> |      |                 |                   |               |

| Code No      | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|--------------|--|------|-----------------|-------------------|---------------|
| CB 32-1      | 50 sq.mm   | Each | 13833           | 2318              | 16151         |
| CB 32-2      | 70-95 sq.mm  | Each | As Per PWD      |                   |               |
| CB 32-3      | 120-185 sq.mm  | Each |                 |                   |               |
| CB 32-4      | 240-400 sq.mm  | Each |                 |                   |               |
| <b>CB 33</b> | <b>STRAIGHT THROUGH JOINT for 33 kV XLPE Screened 3 core cable.</b>  |      |                 |                   |               |
| CB 33-1      | 50-70 sq.mm  | Each | As Per PWD      |                   |               |
| CB 33-2      | 95-150 sq.mm   | Each |                 |                   |               |
| CB 33-3      | 185-300 sq.mm  | Each |                 |                   |               |
| CB 33-4      | 400 sq.mm  | Each |                 |                   |               |
| <b>CB 34</b> | <b>CABLE TRAY</b>  |      |                 |                   |               |
|              | Providing and fixing G.I. Perforated cable trays of size as below including fixing on provided angles.   |      |                 |                   |               |
| CB 34-1      | 80mm X 20mm  | m    | As Per PWD      |                   |               |
| CB 34-2      | 200mm X 20mm   | m    |                 |                   |               |
| CB 34-3      | 400mm X 20mm   | m    |                 |                   |               |
| <b>CB 35</b> | <b>CABLE DUCT RCC M-150</b>  |      |                 |                   |               |
|              | Providing and laying RCC ( M-150) cable duct of size given below for laying electric cable including form work for centering M.S. bar reinforcement, necessary excavation bolder filling, PCC (M100), compacting, curing , plastering, including providing and fixing 35 X 35 X 5 mm M.S. angles, RCC pre cast cover of Adequate length with 100 mm over lap on either walls etc complete and providing RCC pre cast covers. |      |                 |                   |               |
| CB 35-1      | Cable duct 2 tier-750W X 750 D   | m    | 1444            | 0                 | 1444          |
| CB 35-2      | Cable duct 3 tier-750W X 1000 D  | m    | 1696            | 0                 | 1696          |
| CB 35-3      | Cable duct 2x3 tier-1000W X 1000D  | m    | 2107            | 0                 | 2107          |

| Code No     | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|--|------|-----------------|-------------------|---------------|
|             |  |      |                 |                   |               |
|             | <b>SECTION 14 - MO<br/>[ L.T.MOTORS ]</b>  |      |                 |                   |               |
| <b>MO 1</b> | <b>Foot Mounted Motors SPDP 1000 RPM</b>   |      |                 |                   |               |
|             | Providing, erecting and giving test and trial of Foot Mounted SPDP motor 1000 RPM, squirrel cage induction motor, conforming to IS 325 having continuous rating suitable for operation at 415 Volts +/-10%, 3 Phase, 50 Hz +/-3% with "F" class insulation temperature rise limited to class "B" insulation. |      |                 |                   |               |
| MO 1-1      | 45 kW ( 60 HP )  | Each | 192987          | 3478              | 196465        |
| MO 1-2      | 55 kW ( 75 HP )  | Each | 224369          | 3478              | 227847        |
| MO 1-3      | 75 kW ( 100 HP )   | Each | 266794          | 4641              | 271435        |
| MO 1-4      | 90 kW ( 120 HP )   | Each | 339964          | 4641              | 344605        |
| MO 1-5      | 110 kW ( 150 HP )  | Each | 434625          | 6956              | 441581        |
| MO 1-6      | 125 kW ( 170 HP )  | Each | 490556          | 6956              | 497512        |
| MO 1-7      | 135 kW ( 180 HP )  | Each | 519158          | 6956              | 526114        |
| MO 1-8      | 150 kW ( 200 HP )  | Each | 552417          | 6956              | 559373        |
| MO 1-9      | 160 kW ( 215 HP )  | Each | 598787          | 6956              | 605743        |
| MO 1-10     | 180 kW ( 240 HP )  | Each | 674868          | 9277              | 684145        |
| MO 1-11     | 187 kW ( 250 HP )  | Each | 685650          | 9277              | 694927        |
| MO 1-12     | 200 kW ( 270 HP )  | Each | 703743          | 9277              | 713020        |
| MO 1-13     | 225 kW ( 300 HP )  | Each | 803659          | 9277              | 812936        |
| <b>MO 2</b> | <b>Foot Mounted Motors SPDP 1500 RPM</b>   |      |                 |                   |               |
|             | Providing, erecting and giving test and trial of Foot Mounted SPDP motor 1500 RPM, squirrel cage induction motor, conforming to IS 325 having continuous rating suitable for operation at 415 Volts +/-10%, 3 Phase, 50 Hz +/-3% with "F" class insulation temperature rise limited to                       |      |                 |                   |               |
| MO 2-1      | 18.5 kW ( 25 HP )  | Each | 67414           | 2318              | 69732         |
| MO 2-2      | 22 kW ( 30 HP )  | Each | 72277           | 2318              | 74595         |
| MO 2-3      | 30 kW ( 40 HP )  | Each | 79973           | 2318              | 82291         |
| MO 2-4      | 37 kW ( 50 HP )  | Each | 107495          | 3478              | 110973        |
| MO 2-5      | 45 kW ( 60 HP )  | Each | 135503          | 3478              | 138981        |



| Code No     | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|--|------|-----------------|-------------------|---------------|
| MO 2-6      | 55 kW ( 75 HP )  | Each | 168961          | 3478              | 172439        |
| MO 2-7      | 75 kW ( 100 HP )   | Each | 211409          | 4641              | 216050        |
| MO 2-8      | 90 kW ( 120 HP )   | Each | 239746          | 4641              | 244387        |
| MO 2-9      | 110 kW ( 150 HP )  | Each | 286651          | 6956              | 293607        |
| MO 2-10     | 125 kW ( 170 HP )  | Each | 303458          | 6956              | 310414        |
| MO 2-11     | 135 kW ( 180 HP )  | Each | 331975          | 6956              | 338931        |
| MO 2-12     | 150 kW ( 200 HP )  | Each | 397125          | 6956              | 404081        |
| MO 2-13     | 160 kW ( 215 HP )  | Each | 481636          | 6956              | 488592        |
| MO 2-14     | 180 kW ( 240 HP )  | Each | 495094          | 9277              | 504371        |
| MO 2-15     | 187 kW ( 250 HP )  | Each | 501961          | 9277              | 511238        |
| MO 2-16     | 200 kW ( 270 HP )  | Each | 551659          | 9277              | 560936        |
| MO 2-17     | 225 kW ( 300 HP )  | Each | 655290          | 9277              | 664567        |
| <b>MO 3</b> | <b>Foot Mounted Motor SPDP 3000 RPM</b>  |      |                 |                   |               |
| MO 3-1      | 11 kW ( 15 HP )  | Each | 38973           | 2318              | 41291         |
| MO 3-2      | 15 kW ( 20 HP )  | Each | 51481           | 2318              | 53799         |
| MO 3-3      | 18.5 kW ( 25 HP )  | Each | 66229           | 2318              | 68547         |
| MO 3-4      | 22 kW ( 30 HP )  | Each | 70484           | 2318              | 72802         |
| MO 3-5      | 30 kW ( 40 HP )  | Each | 77374           | 2318              | 79692         |
| MO 3-6      | 37 kW ( 50 HP )  | Each | 109475          | 3483              | 112958        |
| MO 3-7      | 45 kW ( 60 HP )  | Each | 133585          | 3483              | 137068        |
| MO 3-8      | 55 kW ( 75 HP )  | Each | 176155          | 3483              | 179638        |
| MO 3-9      | 75 kW ( 100 HP )   | Each | 202675          | 4641              | 207316        |
| <b>MO 4</b> | <b>Foot Mounted Motor TEFC 1500 RPM</b>  |      |                 |                   |               |
|             | Providing, erecting and giving test and trial of Foot Mounted TEFC motor 1500 RPM, squirrel cage induction motor, conforming to IS 12615:2011 of efficiency class IE3 premium having continuous rating suitable for operation at 415 Volts +/-10%, 3 Phase, 50 Hz +/-3% with "F" class |      |                 |                   |               |
| MO 4-1      | 1.1 kW ( 1.5 HP )  | Each | 8856            | 233               | 9089          |
| MO 4-2      | 1.5 kW ( 2 HP )  | Each | 9591            | 233               | 9824          |
| MO 4-3      | 2.2 kW ( 3 HP )  | Each | 12763           | 233               | 12996         |
| MO 4-4      | 3.7 kW ( 5 HP )  | Each | 16403           | 350               | 16753         |
| MO 4-5      | 5.5 kW ( 7 HP )  | Each | 22576           | 579               | 23155         |
| MO 4-6      | 7.5 kW ( 10 HP )   | Each | 26420           | 579               | 26999         |
| MO 4-7      | 9.3 kW ( 12 HP )   | Each | 41061           | 1159              | 42220         |
| MO 4-8      | 11 kW ( 15 HP )  | Each | 43153           | 1159              | 44312         |
| MO 4-9      | 15 kW ( 20 HP )  | Each | 53587           | 1159              | 54746         |
| MO 4-10     | 18.5 kW ( 25 HP )  | Each | 66055           | 2318              | 68373         |
| MO 4-11     | 22 kW ( 30 HP )  | Each | 78523           | 2318              | 80841         |
| MO 4-12     | 30 kW ( 40 HP )  | Each | 106136          | 2318              | 108454        |
| MO 4-13     | 37 kW ( 50 HP )  | Each | 137478          | 3483              | 140961        |
| MO 4-14     | 45 kW ( 60 HP )  | Each | 166297          | 3483              | 169780        |
| MO 4-15     | 55 kW ( 75 HP )  | Each | 226717          | 3483              | 230200        |
| MO 4-16     | 75 kW ( 100 HP )   | Each | 290317          | 4641              | 294958        |
| <b>MO 5</b> | <b>Vertical Hollow Shaft Motor SPDP 1500 RPM</b>   |      |                 |                   |               |

| Code No       | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|--|------|-----------------|-------------------|---------------|
|               | Providing, erecting and giving test and trial of vertical hollow shaft SPDP motor 1500 RPM, squirrel cage induction motor, conforming to IS 325 having continuous rating suitable for operation at 415 Volts +/-10%, 3 Phase, 50 Hz +/-3% with "F" class insulation temperature rise   |      |                 |                   |               |
| MO 5-1        | 18.5 kW ( 25 HP )  | Each | 92947           | 2318              | 95265         |
| MO 5-2        | 22 kW ( 30 HP )  | Each | 102829          | 2318              | 105147        |
| MO 5-3        | 30 kW ( 40 HP )  | Each | 112237          | 2318              | 114555        |
| MO 5-4        | 37 kW ( 50 HP )  | Each | 129366          | 3483              | 132849        |
| MO 5-5        | 45 kW ( 60 HP )  | Each | 165349          | 3483              | 168832        |
| MO 5-6        | 55 kW ( 75 HP )  | Each | 210277          | 3483              | 213760        |
| MO 5-7        | 67 kW ( 90 HP )  | Each | 278530          | 4641              | 283171        |
| MO 5-8        | 75 kW ( 100 HP )   | Each | 281079          | 4641              | 285720        |
| MO 5-9        | 90 kW ( 120 HP )   | Each | 290849          | 4641              | 295490        |
| MO 5-10       | 110 kW ( 150 HP )  | Each | 346923          | 6956              | 353879        |
| MO 5-11       | 125 kW ( 170 HP )  | Each | 354903          | 6956              | 361859        |
| MO 5-12       | 135 kW ( 180 HP )  | Each | 409612          | 6956              | 416568        |
| MO 5-13       | 150 kW ( 200 HP )  | Each | 480541          | 6956              | 487497        |
| MO 5-14       | 160 kW ( 215 HP )  | Each | 517872          | 6956              | 524828        |
| MO 5-15       | 180 kW ( 240 HP )  | Each | 537954          | 9277              | 547231        |
| MO 5-16       | 187 kW ( 250 HP )  | Each | 544519          | 9277              | 553796        |
| MO 5-17       | 200 kW ( 270 HP )  | Each | 575414          | 9277              | 584691        |
| MO 5-18       | 225 kW ( 300 HP )  | Each | 600001          | 9277              | 609278        |
| <b>MO 5 A</b> | <b>Vertical Hollow Shaft Motor TEFC 1500 RPM</b>   |      |                 |                   |               |
|               | Providing, erecting and giving test and trial of vertical hollow shaft motor 1500 RPM, squirrel cage induction motor, conforming to IS 12615, class IE3 premium, having continuous rating suitable for operation at 415 Volts +/-10%, 3 Phase, 50 Hz +/-5% with "F" class insulation temperature rise limited to class "B" insulation. |      |                 |                   |               |
| MO 5-1        | 18.5 kW ( 25 HP )  | Each | 105922          | 2318              | 108240        |
| MO 5-2        | 22 kW ( 30 HP )  | Each | 117185          | 2318              | 119503        |
| MO 5-3        | 30 kW ( 40 HP )  | Each | 127905          | 2318              | 130223        |
| MO 5-4        | 37 kW ( 50 HP )  | Each | 147426          | 3483              | 150909        |
| MO 5-5        | 45 kW ( 60 HP )  | Each | 188432          | 3483              | 191915        |
| MO 5-6        | 55 kW ( 75 HP )  | Each | 239632          | 3483              | 243115        |
| MO 5-7        | 67 kW ( 90 HP )  | Each | 317414          | 4641              | 322055        |
| MO 5-8        | 75 kW ( 100 HP )   | Each | 320318          | 4641              | 324959        |
| MO 5-9        | 90 kW ( 120 HP )   | Each | 331452          | 4641              | 336093        |
| MO 5-10       | 110 kW ( 150 HP )  | Each | 395353          | 6956              | 402309        |
| MO 5-11       | 125 kW ( 170 HP )  | Each | 404448          | 6956              | 411404        |
| MO 5-12       | 135 kW ( 180 HP )  | Each | 466794          | 6956              | 473750        |
| MO 5-13       | 150 kW ( 200 HP )  | Each | 547625          | 6956              | 554581        |
| MO 5-14       | 160 kW ( 215 HP )  | Each | 590167          | 6956              | 597123        |
| MO 5-15       | 180 kW ( 240 HP )  | Each | 613053          | 9277              | 622330        |
| MO 5-16       | 187 kW ( 250 HP )  | Each | 620534          | 9277              | 629811        |

| Code No                                   | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---|---|------|-----------------|-------------------|---------------|
| MO 5-17                                   | 200 kW ( 270 HP )   | Each | 655742          | 9277              | 665019        |
| MO 5-18                                   | 225 kW ( 300 HP )   | Each | 683761          | 9277              | 693038        |
| <b>MO 6</b>                               | <b>Vertical Solid Shaft Motor SPDP / TEFC - 1500 RPM</b>  |      |                 |                   |               |
| <b>Note 1</b>                             | Add 5 % on the rate of Horizontal foot mounted ( SPDP / TEFC ) motor for vertical flange mounted solid shaft motor  |      |                 |                   |               |
| <b>SECTION 15 - MO<br/>[ H.T.MOTORS ]</b> |   |      |                 |                   |               |
| <b>MO 7</b>                               | <b>3.3 kV Foot Mounted Motor TEFC 1000 RPM</b>  |      |                 |                   |               |
|   | Providing, erecting and giving test and trial of Foot Mounted TEFC motor 1000 RPM, squirrel cage induction motor, conforming to IS 12615:2011 having continuous rating suitable for operation at 3300 Volts +/-10%, 3 Phase, 50 Hz +/-3% with "F" class insulation temperature rise limited to class "B" insulation. Motor shall be fitted with suitable space heater and six nos. RTD. |      |                 |                   |               |
| MO 7-1                                    | 225 kW ( 300 HP )   | Each | 629963          | 9277              | 639240        |
| MO 7-2                                    | 250 kW ( 335 HP )   | Each | 714920          | 11591             | 726511        |
| MO 7-3                                    | 280 kW ( 375 HP )   | Each | 847465          | 13910             | 861375        |
| MO 7-4                                    | 340 kW ( 456 HP )   | Each | 893060          | 13910             | 906970        |
| MO 7-5                                    | 390 kW ( 523 HP )   | Each | 941415          | 16231             | 957646        |
| MO 7-6                                    | 440 kW ( 590 HP )   | Each | 1001055         | 16231             | 1017286       |
| MO 7-7                                    | 510 kW ( 684 HP )   | Each | 1144512         | 16231             | 1160743       |
| MO 7-8                                    | 580 kW ( 777 HP )   | Each | 1236389         | 18550             | 1254949       |
| MO 7-9                                    | 660 kW ( 885 HP )   | Each | 1388217         | 18550             | 1406767       |
| <b>MO 8</b>                               | <b>3.3 kV Foot Mounted Motor TEFC 1500 RPM</b>  |      |                 |                   |               |
| MO 8-1                                    | 225 kW ( 300 HP )   | Each | 563685          | 9277              | 572962        |
| MO 8-2                                    | 250 kW ( 335 HP )   | Each | 639640          | 11591             | 651231        |
| MO 8-3                                    | 280 kW ( 375 HP )   | Each | 758017          | 13910             | 771927        |
| MO 8-4                                    | 330 kW ( 442 HP )   | Each | 792544          | 13910             | 806454        |
| MO 8-5                                    | 370 kW ( 495 HP )   | Each | 910921          | 16228             | 927149        |
| MO 8-6                                    | 425 kW ( 569 HP )   | Each | 945445          | 16228             | 961673        |
| MO 8-7                                    | 510 kW ( 683 HP )   | Each | 1030940         | 16228             | 1047168       |
| MO 8-8                                    | 660 kW ( 885 HP )   | Each | 1254541         | 18550             | 1273091       |
| <b>MO 9</b>                               | <b>3.3 kV Vertical Flange Mounted Motor TEFC 1000 RPM</b>   |      |                 |                   |               |

| Code No       | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------------|--|------|-----------------|-------------------|---------------|
| MO 9-1        | 225 kW ( 300 HP )  | Each | 663363          | 9277              | 672640        |
| MO 9-2        | 250 kW ( 335 HP )  | Each | 752915          | 11591             | 764506        |
| MO 9-3        | 280 kW ( 375 HP )  | Each | 892351          | 13910             | 906261        |
| MO 9-4        | 340 kW ( 456 HP )  | Each | 937225          | 13910             | 951135        |
| MO 9-5        | 390 kW ( 523 HP )  | Each | 986550          | 16228             | 1002778       |
| MO 9-6        | 440 kW ( 590 HP )  | Each | 1047381         | 16228             | 1063609       |
| MO 9-7        | 510 kW ( 684 HP )  | Each | 1185488         | 16228             | 1201716       |
| MO 9-8        | 580 kW ( 777 HP )  | Each | 1279202         | 18550             | 1297752       |
| MO 9-9        | 660 kW ( 885 HP )  | Each | 1433411         | 18550             | 1451961       |
| <b>MO 10</b>  | <b>3.3 kV Vertical Flange Mounted Motor TEFC 1500 RPM</b>  |      |                 |                   |               |
| MO 10-1       | 225 kW ( 300 HP )  | Each | 589365          | 9277              | 598642        |
| MO 10-2       | 250 kW ( 335 HP )  | Each | 668824          | 11591             | 680415        |
| MO 10-3       | 280 kW ( 375 HP )  | Each | 748283          | 13910             | 762193        |
| MO 10-4       | 330 kW ( 442 HP )  | Each | 828715          | 13910             | 842625        |
| MO 10-5       | 370 kW ( 495 HP )  | Each | 937225          | 16228             | 953453        |
| MO 10-6       | 425 kW ( 569 HP )  | Each | 971754          | 16228             | 987982        |
| MO 10-7       | 510 kW ( 683 HP )  | Each | 1057246         | 16228             | 1073474       |
| MO 10-8       | 660 kW ( 885 HP )  | Each | 1272625         | 18550             | 1291175       |
| <b>Note 2</b> | For all types of motors above 200 HP the cost is inclusive of 2 space heater and for all types of HT motor the cost is inclusive of 2 Nos. space heater and 6 Nos. RTD. Necessary provision for control wiring and suitable contactor shall be made in the estimate of LT panel board. |      |                 |                   |               |
| <b>Note 3</b> | For any special purpose if RTD and space heater are required in addition, add following extra charges<br>a) Space heater (240 Volts) Rs 5250/- for set of two<br>b) RTD Rs. 7500/- for six Nos.  |      |                 |                   |               |
| <b>Note 4</b> | <b>All motors shall be of BEE mark</b>   |      |                 |                   |               |

| Code No     | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|--|------|-----------------|-------------------|---------------|
|             |  |      |                 |                   |               |
|             | <b>SECTION 16 - LB<br/>[REMOVING , DISMANTLING , ASSEMBLING &amp; RE-ERECTION]</b>   |      |                 |                   |               |
| <b>Note</b> | The rates in this schedule are stated as percentage of rate for erection given in Section 1, 7, 14, 15 and Section of Civil CSR as applicable. |      |                 |                   |               |
| <b>LB 1</b> | Labour charges for removing, disassembling, assembling and re-erection of pumps  |      |                 |                   |               |
| LB 1-1      | Submersible pump set   | 80%  | 20%             |                   |               |
| LB 1-2      | Monoblock pump motor set   | 25%  | 20%             |                   |               |
| LB 1-3      | Rotating assembly of H.S. casing pump  | -    | 30%             |                   |               |
| LB 1-4      | Coupled pump (without motor )<br>Not applicable for HS casing Pump   | 10%  | 30%             |                   |               |
| LB 1-5      | Vacuum pump ( Monoblock )  | 25%  | 20%             |                   |               |
| LB 1-6      | Vacuum pump ( Coupled with out motor )   | 10%  | 30%             |                   |               |
| LB 1-7-a    | Vertical Turbine pump (upto 6 stage)( Without motor)   | 60%  | 30%             |                   |               |
| LB 1-7-b    | Vertical Turbine pump (above 6 stages & upto 12 stages)( Without motor)  | 70%  | 35%             |                   |               |
| LB 1-8      | Conventional sewage pump ( Without motor)  | 65%  | 50%             |                   |               |
| LB 1-9      | Submersible sewage pump  | 20%  | 40%             |                   |               |
| <b>LB 2</b> | <b>Motor</b>   | 20%  | 20%             |                   |               |

| Code No     | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|---|------|-----------------|-------------------|---------------|
| <b>LB 3</b> | <b>Transformer</b>  |      |                 |                   |               |
| LB 3-1      | Up to 315 kVA capacity  | 70%  | 35%             |                   |               |
| LB 3-2      | Above 315 to 750 kVA  | 80%  | 35%             |                   |               |
| <b>LB 4</b> | <b>Valves</b>   |      |                 |                   |               |
| LB 4        | Sluice Valve , Non return valve , butter fly valve and air valve  | 40%  | 50%             |                   |               |
| <b>Note</b> | <p>1) Above rates are exclusive of transportation charges of equipments</p> <p>2) Rates of re-erection are inclusive of jointing materials but excluding cost of fasteners</p> <p>3) For removing and re-erection of transformer by using crane, rates mentioned above are not applicable</p> |      |                 |                   |               |

| Code No                              | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|--------------------------------------|--|------|-----------------|-------------------|---------------|
| <b>SECTION 17 - TL<br/>[ TOOLS ]</b> |  |      |                 |                   |               |
| TL 1                                 | D.E. Open Jaw fix spanner 12 piece set<br>6 -32 mm           | Set  | 671             | 0                 | 671           |
| TL 2                                 | Bi-hexagon Ring spanner 12 piece set<br>6-32mm               | Set  | 1168            | 0                 | 1168          |
| TL 3                                 | Ball pen hammer with handle<br>800 gm                        | Each | 302             | 0                 | 302           |
| TL 4                                 | Combination side cutting plier<br>200 mm KDPE coated         | Each | 221             | 0                 | 221           |
| TL 5                                 | Adjustable wrench crome vanadium<br>250 mm - 30 mm           | Each | 287             | 0                 | 287           |
| TL 6                                 | Pipe wrench stillson pattern carbon steel<br>450 mm - 60 mm  | Each | 565             | 0                 | 565           |
| TL 7                                 | Pipe wrench stillson pattern carbon steel<br>600 mm - 76 mm  | Each | 1013            | 0                 | 1013          |
| TL 8                                 | Screw driver Engineering pattern 6 X 300 mm                  | Each | 96              | 0                 | 96            |
| TL 9                                 | Screw driver Engineering pattern 8 X 200 mm                  | Each | 84              | 0                 | 84            |
| TL 10                                | Screw driver Engineering pattern 5 X 200 mm                  | Each | 60              | 0                 | 60            |
| TL 11                                | Screw driver Engineering pattern 5 X 300 mm                  | Each | 62              | 0                 | 62            |
| TL 12                                | Screw driver with green neon bulb line tester<br>3.6 X 60 mm | Each | 60              | 0                 | 60            |
| TL 13                                | Hack saw frame 300 mm size with heavy duty blade             | Each | 68              | 0                 | 68            |

| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|--|------|-----------------|-------------------|---------------|
| TL 14   | Tool box fabricated from MS sheet of 18 SWG of size 50 X 30 X 30 cm with locking arrangement                 | Each | 1077            | 0                 | 1077          |
| TL 15   | Cold chisels chrome vanadium hexagonal 19/14 200 mm  | Each | 148             | 0                 | 148           |
| TL 16   | Chain pipe wrench IS 54123 -- 210 - 4"   | Each | 4005            | 0                 | 4005          |
| TL 17   | Chain pipe wrench IS 54123 -- 210 - 6"   | Each | 5880            | 0                 | 5880          |
| TL 18   | 25 mm dia heavy duty 1.2 m long crow bar   | Each | 203             | 0                 | 203           |
| TL 19   | 12 mm size 2 NT capacity wire rope 3 m long with dog bolt 2 Nos.   | Each | 270             | 0                 | 270           |
| TL 20   | 50 mm size G.I. "B" class pipe 1.5 m long with coupling on both side, for use as lever                       | Each | 242             | 0                 | 242           |
| TL 21   | Central punch Chrome Vanadium steel 175 mm   | Each | 62              | 0                 | 62            |
| TL 22   | Triangular file 300 mm size of "Standard" make   | Each | 337             | 0                 | 337           |
| TL 23   | Half round file of 300 mm size " Standard" make  | Each | 337             | 0                 | 337           |
| TL 24   | Bearing puller three legs -- 8"  | Each | 356             | 0                 | 356           |
| TL 25   | Bearing puller three legs -- 10"   | Each | 465             | 0                 | 465           |
| TL 26   | Bearing puller three legs -- 12"   | Each | 565             | 0                 | 565           |
| TL 27   | Hydraulic flip flop crimping tool suitable for 6 to 500 sq mm size cable lugs (Usha-Ismail or similar make)  | Each | 33376           | 0                 | 33376         |
| TL 28   | Hand operated crimping tool with set of dies ranging from 6 to 185 sq mm cable lug, in pairs of hand ratches | Each | 9423            | 0                 | 9423          |
| TL 29   | Insulator tester ( Megger ) cranking type having metal body of range 100 Volts 1000 Ohms.                    | Each | 4333            | 0                 | 4333          |
| T 30    | Earth Tester- 4 terminals of range 0-10-100-1000-10000 Ohms  | Each | 6665            | 0                 | 6665          |
| T 31    | Tong Tester ( Clip on meter ) of range 0-10-30-100-1000 Amps and 0-300-600 Volts                             | Each | 3271            | 0                 | 3271          |
| T 32    | Engineer's precision steel level of size 300 mm  | Each | 403             | 0                 | 403           |



| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|--|------|-----------------|-------------------|---------------|
| T 33    | Precision stainless steel rules 500 mm               | Each | 270             | 0                 | 270           |
| T 34    | Allen Head Wrench Chrome Vanadium 10 piece 6-10mm    | Set  | 326             | 0                 | 326           |
| T 35    | Tubler box spanner set with Tommy bar 8 piece 6-22mm | Set  | 809             | 0                 | 809           |
| T 36    | Diagonal cutting pliers 150 mm PVC coated            | Each | 194             | 0                 | 194           |
| T 37    | Long nose pliers carbon steel 200 mm PVC coated      | Each | 186             | 0                 | 186           |
| T 38    | Water pump pliers chrome vanadium 259 mm - 40 mm     | Each | 272             | 0                 | 272           |

| Code No | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|---|------|-----------------|-------------------|---------------|
|         |   |      |                 |                   |               |
| EC      | <p style="text-align: center;"><b>SECTION 18 - EC &amp; GC</b><br/> <b>[ ELECTRO CHLORINATION SYSTEM AND AUTOMATIC GAS CHLORINATION SYSTEM ]</b></p> <p style="text-align: center;"><b>A - EC- ELECTRO CHLORINATION SYSTEM</b></p> <p>Providing, erecting, commissioning &amp; giving test &amp; trial for a period of one month including one year free maintenance after commissioning of Electro chlorinator capable of generating chlorine from common salt by electrolysis using electrodes in form of sodium hypo chlorite solution containing 6-8 gms/lit of available chlorine in batch or continuous process and capable of providing 8 hrs storage of hypochlorite in case of power failure. The electro chlorinator shall comprise of following.</p> <ul style="list-style-type: none"> <li>* Electrolytic cell consisting dimensionally stable electrodes made from Gr I Titanium sheet with multi metal Oxide coating.</li> <li>* Electrolyzer tank made from PVC -FRP or Acrylic.</li> <li>* Power pack consisting of transformer rectifier for generating suitable DC current from AC supply along with the control switch for dosing pumps, etc through MCB's contacts, relays and wiring.</li> <li>* Control panel for the electro chlorinator consisting of DC voltage and current display in-come phase status unit on-off switches fuses etc.</li> <li>* Dosing tank of suitable capacity made from PVC/FRP.</li> </ul> |      |                 |                   |               |

| Code No  | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|----------|---|------|-----------------|-------------------|---------------|
|          | <p>* Dosing pumps of special quality (1W+1S) suitable to handle hypo chlorite solution.</p> <p>* Entire chlorine solution pipeline shall be of PVC</p> <p>Chlorine test kit suitable to measure residual chlorine up to 5ppm.</p>   |      |                 |                   |               |
| EC 18-1  | 25 gms / hr   | Each | 168136          | 16333             | 184469        |
| EC 18-2  | 50 gms / hr   | Each | 249090          | 24195             | 273285        |
| EC 18-3  | 100 gms / hr  | Each | 441096          | 42845             | 483941        |
| EC 18-4  | 150 gms / hr  | Each | 492991          | 47884             | 540875        |
| EC 18-5  | 250 gms / hr  | Each | 591589          | 57463             | 649051        |
| EC 18-6  | 350 gms / hr  | Each | 695376          | 67543             | 762920        |
| EC 18-7  | 500 gms / hr  | Each | 882194          | 85688             | 967882        |
| EC 18-8  | 750 gms / hr  | Each | 1119100         | 108698            | 1227798       |
| EC 18-9  | 1000 gms / hr   | Each | 1359616         | 132059            | 1491675       |
| EC 18-10 | 1500 gms / hr   | Each | 1712494         | 166332            | 1878826       |
| EC 18-11 | 2000 gms / hr   | Each | 1925259         | 186998            | 2112257       |
|          | <p><b>B - GC - [ AUTOMATIC GAS CHLORINATION SYSTEM ]</b></p> <p>Providing, Erecting commissioning &amp; giving test and trial including one year supervision of the system in day shift (General shift) and one year free maintenance of fully automatic gas chlorination system confirmation to all applicable NEC and Compressed Gas Associations recommendations and comprising of following</p> <p>* Automatic Vacuum operated Chlorinator unit of capacity as mentioned below with Actuator rotameter, injector, vacuum tubing special PVC Piping for Chlorine solution &amp; suitable booster pumps(1W+1S) with GI piping valves, fittings etc.</p> <p>* Automatic Switchover type vacuum regulators(2 nos.) installed on tonners with suitable mounting &amp; showing tonner status indication as standby, empty &amp; in use.</p> <p>* Auto Control Panel of suitable capacity ,wall mounted industrial type with voltmeter, ammeter, starter MCB indicating lamps having automatic operation.</p> <p>* Microprocessor based Multi functional controller with digital &amp; graphical display.</p> <p>* Online residual Chlorine Analyser without need of reagent utilizing unique, internally buffered sensor.</p> |      |                 |                   |               |
| GC       |   |      |                 |                   |               |

| Code No  | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|--|--|------|-----------------|-------------------|---------------|
|  | <p>* Gas leak &amp; temperature detection two channel measuring system designed for gas and temperature monitoring in up to two rooms with necessary wiring &amp; battery backup cum voltage stabilizer system of suitable capacity with batteries.</p> <p>* Preventing maintenance kit for injector, Rotameter &amp; Vacuum regulator.</p>  |      |                 |                   |               |
| GC 18-1  | 4 kg / hr ( 200PPD )   | Each | 1257906         | 192462            | 1450368       |
| GC 18-2  | 10 kg / hr (500 PPD)   | Each | 1316569         | 190462            | 1507031       |
| <b>C . GAS CHLORINATION SYSTEM ( Manual )</b>  |  |      |                 |                   |               |
|  | <p>Providing.Erecting,commissioning and giving test and trial of gas chlorination system confirmation to all applicable compressed Gas Association recommendations and comprising of following :</p> <p>Vacuum operated chlorinator unit of capacity as mentioned below :</p> <p>Two set of Rota meter assembly and control valve assembly,two sets of Remote injector assembly(1W + 1SB),10 RMT of vacuum tubing ,10 meters of uPVC piping for chlorine solution &amp; suitable booster pumps (1W + 1SB) with 10 meters water inlet piping ,valves,fittings etc.</p> <p>Automatic switchover type vacuum regulators(2 nos) or with vacuum operated switchover system.</p> <p>Control panel of suitable capacity wall mounted industrial type with voltmeter,ammeter,starter,MCB indicating lamps.</p> <p>Preventive maintenance kit for injector,Rotameter &amp; vacuum regulator including erection.</p> |      |                 |                   |               |
| GC 18-3  | 4 kg / hr ( 200PPD )   | Each | 254600          | 38537             | 293137        |
| GC 18-4  | 10 kg / hr (500 PPD)   | Each | 324900          | 38537             | 363437        |
| <p><b>Note: The autochlorination system shall be provided for water Treatment Plants of capacity 10 MLD and above.</b></p> |  |      |                 |                   |               |

| Code No     | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|--|------|-----------------|-------------------|---------------|
|             | <b>SECTION 19 - WM<br/>[ WATER METERS ]</b>  |      |                 |                   |               |
| <b>WM 1</b> | <b>Mechanical Type Meters.</b>   |      |                 |                   |               |
| <b>A)</b>   | <b>Domestic Meters</b>   |      |                 |                   |               |
| <b>a)</b>   | <b>ISI mark as per IS 779/1994</b>   |      |                 |                   |               |
|             | Providing, installing and giving satisfactory field testing of Domestic water meter, horizontal inferential multijet type with magnetic drive and dry dial suitable for ambient 50° C Temperature duly sealed against tampering complete with couplings at both ends and conforming to class B as per IS 779/1994 (VI Revision) with ISI mark along with manufacturer's test certificate and guarantee certificate, including cost of all materials and labour.  |      |                 |                   |               |
| 1           | 15 mm dia  | No   | 677             | 160               | 837           |
| 2           | 20 mm dia  | No   | 1540            | 160               | 1700          |
| 3           | 25 mm dia  | No   | 2183            | 160               | 2343          |
| 4           | 40 mm dia  | No   | 4780            | 160               | 4940          |
| <b>b)</b>   | <b>Multijet meters</b>   |      |                 |                   |               |
|             | Providing, installing and giving satisfactory field testing of Domestic water meter, horizontal inferential multijet type with magnetic drive and dry dial suitable for ambient 50° C Temperature duly sealed against tampering complete with couplings at both ends and conforming to class B as per ISO 4064 along with manufacturer's test certificate and guarantee certificate, including cost of all materials and labour etc with OIML , MID certification for Abroad and FCRI for India including 36 months guarantee etc complete |      |                 |                   |               |
| 1           | 15 mm dia  | No   | 1595            | 160               | 1755          |
| 2           | 20 mm dia  | No   | 1977            | 160               | 2137          |
| 3           | 25 mm dia  | No   | 3459            | 160               | 3619          |

| Code No   | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-----------|--|------|-----------------|-------------------|---------------|
| 4         | 40 mm dia  | No   | 6581            | 160               | 6741          |
| <b>c)</b> | <b>AMR Meters</b><br>Providing, installing and giving satisfactory field testing of domestic multijet mechanical AMR water meters horizontal inferencial with magnetic drive and dry dial suitable for ambient 50°C temperature duly sealed against tampering complete with coupling at both ends and conforming to ISO 4064 with GSM / radio frequency ( RF ) for communication to server via transreceiver alongwith Hand held Device and PC software etc complete with EEC / OIML.MID certification for Abroad meter and FCRI for India including 36 months guarantee etc complete. |      |                 |                   |               |
| 1         | 15 mm dia  | No   | 5250            | 608               | 5858          |
| 2         | 20 mm dia  | No   | 5775            | 695               | 6470          |
| 3         | 25 mm dia  | No   | 9018            | 859               | 9877          |
| 4         | 40 mm dia  | No   | 12296           | 1172              | 13468         |
| <b>B)</b> | <b>Bulk Meters.</b><br>Providing, installing and giving satisfactory field testing of flanged ends Bulk water meter of following type and as mentioned below with FGI-250 cast iron body, class "B" conforming to IS : 2373, to read in metric system, alongwith manufacturer's test and guarantee certificate including cost of all materials and labour with ISI mark etc complete.  |      |                 |                   |               |
| <b>a)</b> | <b>Removable mechanism type as per IS2373</b>  |      |                 |                   |               |
| 1         | 200 mm dia   | No   | 18772           | 1931              | 20703         |
| 2         | 250 mm dia   | No   | 36058           | 2544              | 38602         |
| 3         | 300 mm dia   | No   | 47651           | 3298              | 50950         |
| <b>b)</b> | <b>Removable mechanism type Bulk water meter as per ISO 4064</b>   |      |                 |                   |               |

| Code No     | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|--|------|-----------------|-------------------|---------------|
|             | Providing, installing and giving satisfactory field testing of bulk water meter, horizontal inferential multijet type with magnetic drive and dry dial suitable for ambient 50° C Temperature duly sealed against tampering complete with flanges at both ends and conforming to class B as per ISO 4064 along with manufacturer's test certificate and guarantee certificate, including cost of all materials and labour etc with OIML. MID certification for Abroad meter and FCRI for India including 36 months guarantee etc complete.   |      |                 |                   |               |
| 1           | 50 mm dia  | No   | 12475           | 335               | 12810         |
| 2           | 80 mm dia  | No   | 13860           | 817               | 14677         |
| 3           | 100 mm dia   | No   | 15246           | 1158              | 16404         |
| 4           | 150 mm dia   | No   | 19362           | 1807              | 21169         |
| 5           | 200 mm dia   | No   | 25515           | 1931              | 27446         |
| 6           | 250 mm dia   | No   | 57812           | 2544              | 60356         |
| 7           | 300 mm dia   | No   | 97369           | 3298              | 100667        |
| <b>NOTE</b> | <p>1) The domestic and bulk water meter shall be suitable for water, minimum, maximum and transitional flow conforming to IS 779-(1994-6th edition), I S 2373 or ISO-4064 as applicable and shall be installed so as to have laminar flow with pipe running full.</p> <p>2) Pressure rating (maximum working pressure 16 Kg. sqcm) suitable for forward and reverse flow.</p> <p>3) Strainers (also called as filters or dirt boxes) are recommended for installation upstream of the water meter at a length not less than 12D - D is diameter of pipe)</p> <p>4) For tapers, non-return valves, specials, pumps the meter shall be installed at a distance of not less than 15 D (D is diameter of pipe) downstream i.e. in the direction of flow.</p> <p>5) The cost of cutting existing pipe, welding flanges, excavation, construction of chamber is not included in above rates.</p> <p>6) Cost of Strainer (Filter/dirt box ) is not included in above rates.</p> <p>7) Guarantee period shall be 36 months.</p> <p>8) The rates are inclusive of all taxes , erection and commissioning.</p> |      |                 |                   |               |

| Code No     | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|--|------|-----------------|-------------------|---------------|
|             | 9) Octroi/ LBT charges are not included in above rates and shall be as per actuals which will be included wherever in estimates for meter but not in tenders.  |      |                 |                   |               |
| <b>c)</b>   | <b>C.I. Strainer "T" (Basket) Type with flanged ends</b><br><br>Providing, and fixing C.I.Strainer for water meters including cost of all material and labour.of "T" (Basket) Type with flanged ends and with stainless steel or brass mesh with openings of 2.5. mm to 3 mm and suitable for operating pressure of 16 Kg./cm2 and test pressure of 24 Kg./cm2                                       |      |                 |                   |               |
| 1           | 50 mm dia  | No   | 2760            | 335               | 3095          |
| 2           | 80 mm dia  | No   | 3989            | 817               | 4806          |
| 3           | 100 mm dia   | No   | 5698            | 1158              | 6856          |
| 4           | 150 mm dia   | No   | 10445           | 1807              | 12252         |
| 5           | 200 mm dia   | No   | 15750           | 1931              | 17681         |
| 6           | 250 mm dia   | No   | 21000           | 2544              | 23544         |
| 7           | 300 mm dia   | No   | 40320           | 3298              | 43618         |
| <b>NOTE</b> | 1) The cost of cutting existing pipe, welding flanges excavation, construction of chamber is not included in above rates.<br><br>2) Octroi/LBT charges are not included in above rates and shall be as per actuals which will be included wherever applicable in estimates for meter but not in tenders.   |      |                 |                   |               |
| <b>WM 2</b> | <b>Ultrasonic Water Meter</b>  |      |                 |                   |               |
| <b>A)</b>   | <b>AMR Domestic Meters</b><br><br>Providing, installing and giving satisfactory field testing of domestic battery operated AMR water meters with no measurement of air along with manufacturing test certificate and guarantee certificate with battery life of minimum 10 years with GSM / RF technology for communication to server with PC software including 36 months guarantee, etc. complete. |      |                 |                   |               |
|             | <b>General Specifications</b>  |      |                 |                   |               |



| Code No   | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-----------|---|------|-----------------|-------------------|---------------|
|           | <p>1. Meter should be battery operated with no moving parts, low pressure loss, dry type as per ISO 4064/OIML R49 and certification as per FCRI / MID.</p> <p>2. Display : 9 digits LCD</p> <p>3. Enclature : Protection class IP 68</p> <p>4. Temperature : Ambient 50 deg.C</p> <p>5. Pressure : PN-16</p> <p>6. Power Supply : 3.6 lithium battery with minimum life of 10 years</p> <p>7. Memory buili-in and should have storage for atleast 12 months with daily / monthly accumulated totalised data with time and date should be available. It should be able to access memory of the meter through serial communication</p> <p>8. End connections : Screwed upto 40 mm</p> <p>9. Installation : should be able to install in any orientation</p> |      |                 |                   |               |
| 1         | 15 mm dia   | No   | 7283            | 701               | 7984          |
| 2         | 20 mm dia   | No   | 7943            | 765               | 8708          |
| 3         | 25 mm dia   | No   | 9262            | 892               | 10154         |
| 4         | 40 mm dia   | No   | 13221           | 1272              | 14493         |
| <b>B)</b> | <b>AMR Bulk Meters</b>  |      |                 |                   |               |
|           | <p>Providing,installing testing and commissioning of in line battery operated ultrasonic bulk type water meters ISO 4064 with built in data logger and GSM/GPRS modem for transfer of data communication to remote central computer as per working on following conditions and specifications.The meter shall be suitable for 50°C and provided with IP 68 protection class with complete immersion of water.The meter shall have battery life of min.10 years should be able to detect the reverse flow volume and tampering.The accuracy of the meter shall be +/- 1 % of measured value including 36 months guarantee etc complete.( With Simcard and its charges,valid for 36 months)</p>   |      |                 |                   |               |
| 1         | 50 mm dia   | No   | 19129           | 1841              | 20970         |
| 2         | 80 mm dia   | No   | 22212           | 2137              | 24349         |
| 3         | 100 mm dia  | No   | 25941           | 2496              | 28437         |
| 4         | 150 mm dia  | No   | 36377           | 3499              | 39876         |
| 5         | 200 mm dia  | No   | 55153           | 5305              | 60458         |
| 6         | 250 mm dia  | No   | 105767          | 10172             | 115939        |
| 7         | 300 mm dia  | No   | 146491          | 10172             | 156663        |

| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|--|------|-----------------|-------------------|---------------|
|         |  |      |                 |                   |               |
| C)      | <p><b>Ultrasonic Flow meters</b><br/> Providing, installing and giving satisfactory test &amp; trial of Ultrasonic Flow meter of ISO working on 85 -260 V AC, 50 HZ electric power supply of following type working on time of flight principle suitable for satisfactory continuous operation in all seasons &amp; with following accessories, working conditions, specifications &amp; duly tested as specified below :</p>  |      |                 |                   |               |
| 1       | <p><b>Ultrasonic Clamp-on portable type Flow Meter (Single Channel)</b><br/><br/> Providing, installing and giving satisfactory test &amp; trial of ultrasonic clamp on portable type flow meter working on conditions &amp; specifications, calibration, inspection, testing, training, guarantees and manufacturers test certificate/ declaration copy along with accessories as mentioned above along with accessories like<br/><br/> a) Magnetic Clamps-1 Pair &amp;<br/><br/> b) Suitable carrying case-1 No.</p> | No   |                 |                   | 235655        |
| 2       | <p><b>Ultrasonic Clamp-on Fixed type Flow Meter (Single Channel)</b></p>   |      |                 |                   |               |

| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|--|------|-----------------|-------------------|---------------|
|         | Providing, installing and giving satisfactory test & trial of ultrasonic clamp on Fixed type flow meter working on conditions & specifications, calibration, inspection, testing, training, guarantee and manufacturers test certificate/ declaration copy along with accessories as mentioned in a (1) to (16) below.   | No   |                 |                   | 204750        |
| 3       | <p><b>Ultrasonic Insertion Fixed type Flow Meter (Single Channel)</b></p> <p>Providing, installing and giving satisfactory test &amp; trial of ultrasonic Insertion Fixed type flow meter working on conditions &amp; specifications, calibration, inspection, testing, training, guarantee and manufacturers test certificate/ declaration copy along with accessories as mentioned in a (1) to (16) below &amp; with inbuilt assembly to fix the insertion type transducer on the pipeline.</p> <p><b>Mandatory Accessories:</b></p> <p>1) Integrated signal converter transmitter enclosed in die cast aluminum case / any anticorrosive material confirming to IP-68 - 1 No.</p> <p>2) Pair of transducers (Sensors) confirming to IP-68 with junction boxes - 1 No.</p> <p>3)Stainless steel straps for mounting clamp on type sensors - 2 Nos.</p> <p>4) Grease count plant, 100 ml : Bottle - 5 Nos.</p> <p>5) Signal &amp; power cables for each transducer -50 Mtrs length/each (insertion type flow meter) &amp; 10 mtrs length /each (portable type flow meter)</p> <p>6) a) for fixed type flow meter-UPS working on 230 V AC, 50 Hz power supply suitable for 12 hrs continuous operation.-1 No. (only required for category C)</p> | No   |                 |                   | 210000        |
|         | b) Built in portable type battery back up for minimum 5 Hrs continuous operation with spare battery and separate battery charger working on 230 V AC, 50 Hz power supply for charging battery- 1 No. (only required for category A)  |      |                 |                   |               |

| Code No | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|---|------|-----------------|-------------------|---------------|
|         | <p>c) Aluminium / anticorrosive carrying case for flow meter and all accessories (only required for category C-1)</p> <p>7) Data storage capacity with built in or separate for date, time, actual flow rate, totaliser &amp; error messages if any with storage capacity of 120 days and at 5 minutes interval data logging along with local indication and necessary cables and software to download data to laptop -1 No</p> <p>8) Lazer printer of EPSON, WIPRO, WEP or Hewlett Packard make with built in or separate printer interface unit for printing of stored data with online / offline printing facility -1 No.</p> <p>9) Proper earthing shall be provided for protection against high voltage surge (only required for category B,C)</p> <p>10) Suitable over voltage protection unit for protection of instrument from higher voltage (upto 275 V-300 V AC)</p> <p>11) M.S. sensor protection boxes with suitable size for above ground lines where construction of chamber is not possible. (only required for category C-2)</p> <p>12) Magnetic clamp for metallic pipe lines and Nylon / SS strips, chain arrangement for clamp on sensors suitable for pipe diameters 50 mm to 3000 mm (only required for category C-1)</p> |      |                 |                   |               |
|         | <p>13) Battery powered ultrasonic thickness gauge along with charger, test sample, coupling agent and carrying case suitable measuring thickness of 1 mm to 100 mm (only required for category C)</p> <p>14) 5 meter steel measurement tape with level bottle.</p> <p>15) Communication facility through GSM(without simcard ( for category C )</p> <p>16) Guarantee period shall be 36 months.</p> <p><b>Optional Accessories:</b></p>   |      |                 |                   |               |

| Code No | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|---|------|-----------------|-------------------|---------------|
|         | 1) Pressure transducer, which should be connected to the pressure lead of dual channel data loggers, compatible with the dual channel loggers of appropriate type with a pressure range of 5m to 150 m with an accuracy of not less than +/- 1% to be supplied and installed at the upstream of the flow meters.  | No   |                 |                   | 13125         |
|         | 2) Fixing flow meter transmitter to internal walls of buildings in a suitably designed panel cabinet with proper locking arrangement with glass window on front door for seeing the readings of flow transmitter and data logger without opening of the panel cabinet. It should house complete ancillaries and including the provision for connection of electrical power supply from nearby apparatus. The panel cabinet shall be prewired and with suitable gland entries. | No   |                 |                   | 5250          |
|         | 3) Wireless communication device to communicate between central computer & flow transmitter installed at remote site with GSM based system  |      |                 |                   |               |
|         | 4) DA Scheduler software for CSV file storage and data acquisition  |      |                 |                   |               |
|         | 5) Cables for pressure, flow & totalized details from transmitter to field gate system (10 Mtrs with each GSM / GPRS system)  |      |                 |                   |               |
|         | 6) OPC Software to be installed in central PC for SCADA interface as may be necessary   |      |                 |                   |               |
|         | 7) Commissioning charges for each locations.  |      |                 |                   |               |
|         | 8) Customized page with Java Applets XML-Data import software for online MIMIC  |      |                 |                   |               |
|         | 9) Sensor/Transmitter cable of following specification:<br>3 x 0.38 mm <sup>2</sup> PVC cable with common branded copper shield 7mm dia and individually shielded cores-with empty pipe detection 9 EPD<br>4 x 0.38 mm <sup>2</sup> PVC cable with common branded copper shield 7 mm dia and individually shielded cores.<br><br>Conductor resistance : <math>\leq 50 \text{ Ohm/Km}</math>   | Mtr. |                 |                   | 156           |
|         | 10) Conduit pipe (PVC / HDPE plumbing) 32 mm diameter with suitable digging, laying and concealing the duct   | Mtr. |                 |                   |               |

| Code No | Description  | Unit                | Supply Rate Rs.  | Erection Rate Rs. | Total Amt Rs. |
|---------|--|---------------------|------------------|-------------------|---------------|
|         | <p>11) Other Civil Works:</p> <p>a) Flow meter chamber work with suitable man hole for entering the chamber &amp; removal of flow meter for maintenance in future,</p> <p>b) Construction of meter room with roof slab (100 mm) brick masonry with pile foundation of minimum 1.5 M x 1.5 M or as per instruction from Engineer-in -Charge with RCC beam/column minimum 0.15mx0.15m size with steel door &amp; cement jali ventilator and plinth height of minimum 0.5 M above GL and roof slab shall be 2.1 M from plinth inner and outer plaster with water proof cement painting</p> <p><b>C) Working Condition &amp; Specifications</b></p> <p>a) Water Temp : 10° to 50° C</p> <p>b) Water Quality: Raw water, turbid in nature. Potable chlorinated water</p> <p>c) Operating pressure:10-15 Kg./cm<sup>2</sup></p> <p>d) Pipeline MOC : CI, DI, MS with /without mortar lined, Non-metallic pipes.</p> <p>e) Pipe diameter :&gt; 1000 mm -4000 mm</p> <p>f) Flow -Up to 300 Mld</p> <p>g) Pipe condition: Pipe shall be running full.</p> | <p>No</p> <p>No</p> | As Per Civil CSR |                   |               |
|         | <p>h) Ultrasonic flow meters shall be designed, manufactured to international standards with accuracy of +/-2% of actual flow. The supplier should have full ISO -9000 series accreditation &amp; facility for fully traceable calibration flow rig as per international standard</p> <p>i) Functional details: Freely programmable.</p> <p>j) Measurement - Volumetric flow rate, totalized flow.</p> <p>k) Flow direction- Forward &amp; Reverse.</p>  |                     |                  |                   |               |

| Code No   | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-----------|---|------|-----------------|-------------------|---------------|
|           | l) Display- LCD display with suitable lines, digits, segments, markers, for identification of current output. The digit shall be clear, bold & can be read from 1 Mtr distance.   |      |                 |                   |               |
|           | m) Output - for current 4 mA - 20 mA HART (active/passive) for measuring flow in pipeline. Frequency output shall be 1 Khz, Open collector, passive.  |      |                 |                   |               |
|           | n) Status output-open collector.  |      |                 |                   |               |
|           | o) Meter shall be suitable for remote facility.   |      |                 |                   |               |
|           | p) Power supply-85-260 V AC(45-65 Hz)/20-55 V AC (45-65 Hz)/16-62 V DC.   |      |                 |                   |               |
|           | q) Galvanic isolation- input & output galvanically isolated from power supply from the sensor and from each other   |      |                 |                   |               |
|           | r) Instruments must carry "CE" mark.  |      |                 |                   |               |
|           | s) Functionality verification check should be possible inline using recommended software tools.   |      |                 |                   |               |
|           | t) Future upgradation to field bus foundation. Profibus should be possible with minimal changes.  |      |                 |                   |               |
| <b>D)</b> | <b>Calibration, Testing &amp; Inspection</b><br><br>The total supply quantity shall be inspected and tested as below. The flowmeter shall be calibrated at manufacturers place as per international standard given above. Manufacturer having NABL lab accreditation ,the calibration testing shall be witnessed by Third party approved by MJP .The manufacturer not having NABL lab accreditation shall be tested at FCRI/CWPRS/IDEMI etc. for which third party inspection is not required.<br>1. For Domestic water meter- 1%<br>2. For Bulk water meter- 10% |      |                 |                   |               |
| <b>E)</b> | <b>Manufacturer's Guarantee, Certificate &amp; training</b>   |      |                 |                   |               |

| Code No   | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---|---|------|-----------------|-------------------|---------------|
| <p data-bbox="236 539 261 566"><b>F)</b></p> <p data-bbox="323 539 839 566"><b>O &amp; M towards flow meter &amp; accessories</b></p> <p data-bbox="323 607 1035 797">The O &amp; M shall be decided based on "planned preventive maintenance" Program (PPM) to be finalized with suppliers with following service included (but not limited) for 36 months beyond standard warranty. However for project cases user must discuss with supplier for lumpsum O &amp; M cost for the overall project.</p> <p data-bbox="323 801 804 828">Planned Preventive Maintenance (PPM):</p> <p data-bbox="323 902 1035 965">a) Regular visit to the flow meters (once in 2 months to check the healthiness of instruments)</p> <p data-bbox="323 1001 1035 1064">b) Repairs/ replacement of components/spare parts as may be necessary during the flow meter inspection.</p> <p data-bbox="323 1099 1035 1162">c) Free replacement of the spare parts and consumables as necessary.</p> <p data-bbox="323 1198 1035 1261">d) Emergency visit to site within 48 hours for attending any major trouble shooting and break downs.</p> <p data-bbox="323 1296 1035 1359">e) Technical training/ trouble shooting training to the user by the supplier.</p> <p data-bbox="323 1395 1035 1458">f) Providing complete technical details on instrument with necessary manuals</p> <p data-bbox="236 1494 261 1520"><b>G)</b></p> <p data-bbox="323 1494 684 1520"><b>General Terms &amp; Conditions</b></p> <p data-bbox="323 1561 1035 1818">a) General Specifications with accessories (except required for each type of meter specified) working conditions, mandatory accessories, calibration, inspection testing manufacturers test certificates, installation and commissioning, guarantee and training shall be common for all flow meters as mentioned above. The optional accessories mentioned above to be considered as per project and site requirements.</p> <p data-bbox="323 1854 1035 1946">b) The above prices include local inland transportation from manufacturer's godown /custom's godown upto sites anywhere in Maharashtra.</p> | <p data-bbox="323 309 1035 501">The flow meter shall be supplied with manufacturer's test certificate as per international standards given above. calibration certificates. 36 months guarantee for the trouble free performance and given adequate training for handling flow meter and installation in field so that trainees can carryout the job independently.</p> |      |                 |                   |               |
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| Code No     | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|--|------|-----------------|-------------------|---------------|
|             | c) The above prices include necessary packing & forwarding charges as applicable for each project  |      |                 |                   |               |
|             | d) Octroi / LBT charges are not included in above rates and shall be as per actuals which will be included wherever applicable in estimates for meter up to site storage   |      |                 |                   |               |
|             | e) The above prices are inclusive of Marine & inland insurance of flow meters up to site storage   |      |                 |                   |               |
|             | f) Meter shall be procured with prior permission from concerned superintending Engineer/Chief Engineer.  |      |                 |                   |               |
|             | g) Planning for installation for meter shall be done during execution of pipe work. Straight pipe length of 5 D or more on up stream side and 2 D or more on down stream side of meter is necessary (D is diameter of flow meter) The meter shall be installed so as to have a laminar flow with pipe running full   |      |                 |                   |               |
| <b>WM 3</b> | <b>Full-Bore Electromagnetic Flow Meter:</b>   |      |                 |                   |               |
|             | Supply, install and commission Electromagnetic Flow Meter (EMF) As Per ISO 4064, for Raw/Pure water with accuracy +/-0.5% of measured value & protection as per given specifications for size 100 mm-1000mm including sensor, transmitter surge arrestor, cable suitable size for 25 mtrs built in GSM ( with Simcard and its charges,valid for 36 months) including the pipe cutting, leveling and installation of flow meter in the pipelines with necessary tool tackles, cranes including 36 months guarantee etc complete, as may be required at site & based on technical specifications (Annexure-A) attached |      |                 |                   |               |
| 1           | 100 mm Nominal Diameter Flowmeter  | No   | 94448           | 3593              | 98041         |
| 2           | 150 mm Nominal Diameter Flowmeter  | No   | 101325          | 4367              | 105692        |
| 3           | 200 mm Nominal Diameter Flowmeter  | No   | 120515          | 4623              | 125138        |
| 4           | 250 mm Nominal Diameter Flowmeter  | No   | 132929          | 5368              | 138297        |
| 5           | 300 mm Nominal Diameter Flowmeter  | No   | 152047          | 6571              | 158618        |
| 6           | 350 mm Nominal Diameter Flowmeter  | No   | 211132          | 8230              | 219362        |
| 7           | 400 mm Nominal Diameter Flowmeter  | No   | 239634          | 9488              | 249122        |
| 8           | 450 mm Nominal Diameter Flowmeter  | No   | 256034          | 10860             | 266894        |
| 9           | 500 mm Nominal Diameter Flowmeter  | No   | 299121          | 11365             | 310486        |
| 10          | 550 mm Nominal Diameter Flowmeter  | No   | 331230          | 12382             | 343612        |
| 11          | 600 mm Nominal Diameter Flowmeter  | No   | 344982          | 12820             | 357802        |

| Code No   | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-----------|--|------|-----------------|-------------------|---------------|
| 12        | 700 mm Nominal Diameter Flowmeter  | No   | 370657          | 13631             | 344288        |
| 13        | 750 mm Nominal Diameter Flowmeter  | No   | 397165          | 14455             | 411620        |
| 14        | 800 mm Nominal Diameter Flowmeter  | No   | 445410          | 16001             | 461411        |
| 15        | 900 mm Nominal Diameter Flowmeter  | No   | 507519          | 17965             | 525484        |
| 16        | 1000 mm Nominal Diameter Flowmeter   | No   | 543626          | 20955             | 564581        |
| <b>A)</b> | <p><b>Mandatory Accessories:</b></p> <p>1) The sensor should be as per IP-68 protection &amp; with flanges of PN 10 rating from CS-1 No.</p> <p>2) The sensor coil housing shall be IP-68.This protected against external magnetic field.</p> <p>3) The transmitter shall have one current 4 m A-20 mA output.</p> <p>4) The current output shall be galvanically / optically isolated. It shall be fitted with switched mode power supply capability 85-260 V &amp; 45-65 Hz to cope up with power transients without damage.</p> <p>5) Signal &amp; power cables shall be of 50 Mtrs length/each.</p> <p>6) Conduit pipe ( PVC Plumbing schedule 4 ) 25 mm diameter with suitable rating of cable with digging, laying &amp; concealed the duct - 25 mtrs/each.</p> <p>7) UPS working on 230 V AC, 50 Hz power supply suitable for 12 hrs continuous operation-1 No.</p> <p>8) Data storage capacity with built in or separate for date time, actual flow rate, totaliser &amp; error messages if any with storage capacity of 120 days -1 No.</p> <p>9) 21",80 column Dot matrix printer of EPSON, WIPRO, or Hewlett Packard make with printer interface unit for printing of stored data as per 8 /1 No for meter management system.The printer shall be installed as directed by engineer in- charge.</p> |      |                 |                   |               |
|           | <p>10) Proper earthing shall be provided for protection against high voltage surge.</p> <p>11) Suitable over voltage protection unit for protection of instrument from higher voltage (upto 275 V-300 V AC)</p>  |      |                 |                   |               |

| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |                  |     |
|---------|--|------|-----------------|-------------------|---------------|------------------|-----|
| B)      | 12) Fixing flow meter transmitter to internal walls of buildings in a suitably designed panel cabinet with proper locking arrangement with glass window on front door for seeing the readings of flow transmitter and data logger without opening of the panel cabinet. It should house complete ancillaries and including the provision for connection of electrical power supply from near by apparatus. The panel cabinet shall be prewired and with suitable gland entries.          | No   |                 |                   | 13125         |                  |     |
|         | <b>Optional Accessories:</b>   |      |                 |                   |               |                  |     |
|         | 1) Pressure transducer, which should be connected to the pressure lead of dual channel data loggers & should be compatible with the dual channel loggers. The pressure transducer should be of appropriate type with a pressure range of 5 m to 300 m with an accuracy of not less than 1% to be supplied and installed at the upstream of the flow meters.  |      |                 |                   |               |                  |     |
|         | 2) Providing and supplying DI/CI in-line adapters with mechanical joints & concentric tapers with flanges along with suitable gasket of SBR, complete with mild steel nut bolts coated or otherwise protected from rusting and suitable for DI pipes as may be necessary for the following line size x flow meter sizes. Applicable only for Sr.No. (2) Electromagnetic Flow meters.   |      |                 |                   |               | As per Civil CSR |     |
|         | 3) Wireless communication device to communicate between central computer & flow transmitter installed at remote site with GSM based system   |      |                 |                   |               |                  |     |
|         | 4) DA Scheduler software for CSV file storage and data acquisition   |      |                 |                   |               |                  |     |
|         | 5) OPC Software to be installed in central PC for SCADA interface as may be necessary  |      |                 |                   |               |                  |     |
|         | 6) Commissioning charges for each locations.   |      |                 |                   |               |                  |     |
|         | 7) Sensor/Transmitter cable of following specification:<br>3 X 0.38 mm <sup>2</sup> PVC cable with common, braided copper shield (-7mm dia) and individually shielded cores- with empty pipe detection 9 EPD): 4X0.38 mm <sup>2</sup> PVC cable with common, braided copper shield (-7 mm dia) and individually shielded cores-conductor resistance: <math>\leq 50</math> Ohm/Km-Capacitance: core/shield: <math>\leq 420</math> pF/m.-permanent operating temperature:-20.....+80 Deg C |      |                 |                   |               | Mtr              | 161 |
|         |  |      |                 |                   |               |                  |     |
|         |  |      |                 |                   |               |                  |     |
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| Code No | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|---|------|-----------------|-------------------|---------------|
|         | <p>f) Full-Bore Bi-directional Electromagnetic Flow meters shall be designed, manufactured &amp; calibrated to international standards with accuracy of +/-0.5% of reading.</p> <p>g) The supplier should have full ISO-9000 series accreditation &amp; full it aceable calibration methods to either of the two primary standard means of testing i.e. mass (ISO 4185) or volume (ISO 6817)</p> <p>h) Each meter shall be wet calibrated at the place of manufacturing with 3 point calibration at sufficient flow rates. The testing facility shall be duly accredited in accordance to ISO 17025</p> <p>i) The sensor shall be of standard length as per ISO 13359</p> <p>j) The sensor shall have built in stainless steel Grounding Electrode &amp; Empty pipe Detection. Any ground probes, rings, flanges or straps will be strictly not acceptable.</p> <p>k) The liner material shall be either Certified Hard Rubber (HR) with Drinking water Approval or Polyurathane (PU) &amp; teflon.</p> <p>l) The sensor &amp; transmitter shall be capable of working in tropical environment.</p> |      |                 |                   |               |
|         | <p>m) The Meter body shall be flanged or with custom connector as per the requirement. Wafer designs will not be acceptable.</p> <p>n) The housing of flow meter shall be Die cast Aluminum/painted steel with suitable anti-corrosive paint.</p> <p>o) The flow meter shall be suitable for both submergence as well as burial installation &amp; shall withstand all necessary natural shocks.</p> <p>p) The transmitter &amp; sensor shall not have any EMI interferences in the actual flow meter reading.</p>  |      |                 |                   |               |

| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
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|         | <p>q) The transmitter shall be wall-mounted type with a 2-line display for the indication of Actual Flow rate &amp; Totalized value. The material enclosure shall be sufficient to guarantee 5 year operation life.</p> <p>r) The transmitter shall be capable of fully programmed with push button/using HART communicator. It shall have a set-up menu so that all relevant parameters may be user-set from the self-prompting driven menu. The repeatability shall be 0.1% of reading or better, minimum +/-0.5mm/s</p> <p>s) The transmitter shall have one scalable pulse output. One current (HART) output. The current output shall be galvanically isolated. It shall be fitted with switched mode power supply capability 85-260 V &amp; 45-65 Hz to cope with power transients without damage.</p> <p>t) The totalizer value shall be protected by EEPROM during power outage, and utilizes an overflow counter.</p>   |      |                 |                   |               |
|         | <p>u) The flow meter shall be provided with remote display suitable without any signal booster/amplifier for distance upto 150 Mtrs. for online MIMIC</p> <p><b>D) Calibration, Testing &amp; Inspection</b></p> <p>The total supply quantity shall be inspected and tested as below. The flowmeter shall be calibrated at manufacturers place as per international standard given above. Manufacturer having NABL lab accreditation ,the calibration testing shall be witnessed by Third party approved by MJP .The manufacturer not having NABL lab accreditation shall be tested at FCRI/CWPRS/IDEMI etc. for which third party inspection is not required.</p> <p><b>E) Manufacturer's Guarantee, Certificate &amp; training</b></p> <p>The flow meters shall be supplied with manufacturer's test certificate as per international standards given above. calibration certificates. 36 months guarantee for the trouble free performance and given adequate training for handling flow meter and installation in field so that trainees can carryout the job independently.</p> <p><b>F) O &amp; M towards flow meter &amp; accessories</b></p> |      |                 |                   |               |

| Code No | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|---|------|-----------------|-------------------|---------------|
|         | The O & M shall be decided based on "planned preventive maintenance" Program (PPM) to be finalized with suppliers with following service included (but not limited) for 36 months beyond standard warranty. However for project cases user must discuss with supplier for lumpsum O & M cost for the overall project.   |      |                 |                   |               |
|         | Planned Preventive Maintenance (PPM):<br>a) Regular visit to the flow meters (once in 2 month to check the healthiness of instruments)<br>b) Repairs/ replacement of components/spare parts as may be necessary during the flow meter inspection.<br>c) Free replacement of the spare parts and consumables as necessary.<br>d) Emergency visit to site within 48 hours for attending any major trouble shooting and break downs.<br>e) Technical training/ trouble shooting training to the user by the supplier.<br>f) Providing complete technical details on instrument with necessary manuals<br><br><b>G) General Terms &amp; Conditions</b><br>a) General Specifications with accessories (except required for each type of meter specified) working conditions, mandatory accessories, calibration, inspection testing manufacturers test certificates, installation and commissioning, guarantee and training shall be common for all flow meters as mentioned above. The optional accessories mentioned above to be considered as per project and site requirements.<br>b) The above prices include local inland transportation from manufacturer's godown /custom's godown upto sites anywhere in Maharashtra.<br>c) The above prices includes necessary packing & forwarding charges as applicable for each project |      |                 |                   |               |
|         | d) Octroi / LBT charges are not included in above rates and shall be as per actuals which will be included wherever applicable in estimates for meter up to site storage<br><br>e) The above prices are inclusive of Marine & inland insurance of flow meters up to site storage  |      |                 |                   |               |

| Code No     | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|---|------|-----------------|-------------------|---------------|
|             | f) Planning for installation for meter shall be done during execution of pipe work. Straight pipe length of 5 D or more on up stream side and 2 D or more on down stream side of meter is necessary (D is diameter of flow meter) The meters shall be installed so as to have a laminar flow with pipe running full |      |                 |                   |               |
|             | <b>Note : While preparing the estimate of water meter / flowmeter, 7% of amount of supply rate of water meter / flowmeter shall be added for comprehensive maintenance of water meter for 36 months after the guarantee period .</b>  |      |                 |                   |               |
| <b>WM 4</b> | <b>Battery Operated electromagnetic flow meter</b>  |      |                 |                   |               |
|             | Providing, erecting, testing and commissioning of battery operated electromagnetic flow meter built in GSM ( with Simcard charges for 36 months validity ) of various diameters as per the following specifications including 36 months guarantee etc complete.   |      |                 |                   |               |
| <b>A)</b>   | <b>General Specifications</b>   |      |                 |                   |               |
|             | <b>Sensor</b>   |      |                 |                   |               |
|             | 1) Sensor size (dia.) : DN 25 mm to 1200 mm   |      |                 |                   |               |
|             | 2) Process temperature : Ambient -1... +50°C  |      |                 |                   |               |
|             | 3) Type : In line full bore Electromagnetic   |      |                 |                   |               |
|             | 6) Process Connection : Flanged AS per IS   |      |                 |                   |               |
|             | 7) Weather Protection class : IP 68   |      |                 |                   |               |
|             | 8) Liner : Neoprene or equivalent   |      |                 |                   |               |
|             | 9) Housing : corrosion resistant, non corrosive sensor can be buried.   |      |                 |                   |               |
|             | 10) Application : Water application and distribution network  |      |                 |                   |               |
|             | 11) Electrode : Stainless steel 316   |      |                 |                   |               |
|             | 12) Grounding electrode : Stainless steel 316   |      |                 |                   |               |
|             | 13) Flanges : Carbon steel  |      |                 |                   |               |







| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|--|------|-----------------|-------------------|---------------|
| 1.2     | <p>Enclosure- IP 67<br/>Mounting - On PLC panel</p> <p><b>Pressure Transmitter</b></p> <p>Designing, Supplying, Installing, commissioning &amp; testing of <b>pressure transmitter</b> CE markd with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement.</p> <p>Output 4-20 mA<br/>Power supply - 24V DC ext.<br/>Display - 4" LED<br/>Accuracy - +/- 0.1 % of full scale or better<br/>Enclosure- IP 67</p> | Each | 26803           | 1848              | 28651         |
| 1.3     | <p><b>Power Analyser</b></p> <p>Designing, Supplying, Installing, commissioning &amp; testing of Power Analyser <b>interfacing to PLC Panel with modbus communicatuion port , as per IEC 62053</b> and in the prescribed format including mounting arrangement.</p>  | Each | 25271           | 1743              | 27014         |
| 1.4     | <p><b>PLC Panel</b></p> <p>Designing, Supplying, Installing, commissioning &amp; testing of <b>PLC Panel</b>. Including PLC with CPU &amp; Power supply unit, power supplyb cables interfacing cards, interfacing cables, wireless modules with 25% extra quantity of all accessories.</p>   | Each | 18600           | 1320              | 19920         |
| 1.5     | <p><b>PLC based control monitoring and communication software</b></p>  |      |                 |                   |               |

| Code No | Description   | Unit | Supply Rate Rs.     | Erection Rate Rs. | Total Amt Rs. |
|---------|---|------|---------------------|-------------------|---------------|
| 1.6     | <p>Designing, Supplying, Installing, commissioning &amp; testing of PLC based <b>control monitoring and communication software</b> as per IEC 61131 at Raw water Jackwell / Sump suitable for monitoring and control of Raw water Pumps, Pressure Transmitters, Level Transmitter, Flow Transmitter complete.</p> <p><b>Power Cable</b></p> | Each | 35242               | 5279              | 40521         |
| 1.7     | <p>Designing, Supplying, Installing, commissioning &amp; testing with Terminating &amp; Interfacing of <b>2 C x 1.5 sq.mm</b> as per IS 694 twisted shielded copper armoured conductor on wall in GI tray or in ground suitable for supplied D. C. Voltage.</p> <p><b>Communication Cable</b></p>   | RM   | As Per MJP Mech CSR |                   |               |
| 1.8     | <p>Designing, Supplying, Installing, commissioning &amp; testing with Terminating &amp; Interfacing of CAT 6 as per ISO/IEC-11801 std.cable for networking on wall in GI tray or on ground etc.</p> <p><b>Signal Cable</b></p>  | RM   | As Per PWD CSR      |                   |               |
| 1.8.1   | Designing, Supplying, Installing, commissioning & testing with Terminating & Interfacing of <b>2 Pair x 1 sq.mm</b> as per IS 694 copper Shielded twisted, multistranded armoured cable on wall in GI tray or on ground.  | RM   | 136                 | 9                 | 145           |
| 1.8.2   | Designing, Supplying, Installing, commissioning & testing with Terminating & Interfacing of <b>3 Pairs x 1 sq.mm.</b> as per IS 694 copper Shielded, twisted, multi stranded armoured cable on wall in GI tray or on ground.  | RM   | 173                 | 11                | 184           |
| 1.8.3   | Designing, Supplying, Installing, commissioning & testing with Terminating & Interfacing of <b>4.5 Pairs x 1.0 sq.mm</b> as per IS 694 copper shielded, twisted, multi stranded armoured cable on wall in GI tray or on ground.   | RM   | 255                 | 16                | 271           |
| 1.8.4   | Designing, Supplying, Installing, commissioning & testing with Terminating & Interfacing of <b>8 Pairs x 1.0 sq.mm</b> as per IS 694 copper shielded, twisted, multi stranded armoured cable on wall in GI tray or on ground.   | RM   | 448                 | 40                | 488           |
| 1.9     | <b>Cable Trays</b>  |      |                     |                   |               |

| Code No     | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|---|------|-----------------|-------------------|---------------|
| 1.9.1       | Designing, Supplying, Installing Bending, Cutting Perforated GI tray 80 x 20 mm x3 mm thk for laying of cable etc   | RM   |                 |                   |               |
| 1.9.2       | Designing, Supplying, Installing, Bending, Cutting Perforated GI tray 200 x 20 x 3mm thk for for laying of cable etc  | RM   |                 |                   |               |
| 1.9.3       | EARTHING - Providing making separate Earthing arrangement for SCADA & Automation system with copper Earth Pit & Copper Earth Plate etc  | No   |                 |                   |               |
| <b>1.10</b> | <b>Surveillance System</b>  |      |                 |                   |               |
|             | Designing, supplying, installing, commissioning & testing of CCTV IR water proof camera suitable for upto 100ft. with IR Dome camera, control key board, DVR, Hard Disk, cables, UPT transreceivers etc. complete.  | Each | 22320           | 1584              | 23904         |
| <b>SA 2</b> | <b>Water Treatment Plant Aeration Fountain</b>  |      |                 |                   |               |
| 2.1         | <b>Open channel type ultrasonic flowmeter with FIT</b>  | Each | 38290           | 2639              | 40929         |
|             | Design, Supply, Installation, Testing & calibration of open channel type ultrasonic flow Transmitter CE marked with following technical parameters at Raw Water channel and Interfacing with PLC panel including mounting arrangement.<br><br>Range- 0 - 5 mtrs<br>Output-4-20 mA<br>Power supply - 24V DC ext.<br>Display - 4" LED<br>Accuracy - +/- 0.25% of Full Scale or better<br>Enclosure- IP 68 |      |                 |                   |               |
| <b>2.2</b>  | <b>PH analyser</b>  |      |                 |                   |               |

| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|--|------|-----------------|-------------------|---------------|
| 2.3     | <p>Design, Supply, Installation, Testing of <b>pH analyser</b> as per IUPAC( International Union for Pure &amp; Applied Chemistry)at A.F. and Interfacing with PLC panel including mounting arrangement.<br/>           Range : 0 14 ,<br/>           pH Accuracy : Better than 0.1% of full scale ,<br/>           Supply Voltage : 24V dc,<br/>           Output : 4 20 mA<br/>           As per IEC 61000-6-2 &amp; IEC 61000-6-3</p> <p><b>Turbidity Analyser</b></p>  | Each | 76580           | 5279              | 81859         |
| 2.3.1   | <p>Design, Supply, Installation, commissioning, testing of <b>Turbidity Analyser</b> as per ISO 7027 scattering light method at A.F. and Interfacing with PLC panel. Turbidity analyser shall comprises of 3 components i.e. sensors,signal distributor and transmitter with indicator. with 2 Outputs, 1 to PLC &amp; another to Local Display with mounting arrangement.</p> <p>Overall Range : 0 2000 NTU<br/>           Accuracy : +/- 0.02 NTU<br/>           Supply Voltage : 230 V ac<br/>           Output : 4 20 mA</p> <p><b>Alum / PAC Dosing</b></p> | Each | 226800          | 19531             | 246331        |
| 2.3.2   | <p>Design, Supply, Installing commissioning and testing <b>PLC compatible</b> Alum/PAC Mixing, Dosing and monitoring system for Dosing at raw water channel by applying suitable mechanism to control the available turbidity in desired limit. This system includes level switches for tank.</p>  | Each | 167401          | 11878             | 179279        |
| 2.4     | <p><b>Level transmitter</b></p> <p>Designing,Supplying, installing, commissioning &amp; testing of <b>Ultrasonic level transmitter CE marked at each filter bed</b> with following technical parameters Interfacing with PLC panel including mounting arrangement.<br/>           Range- 0 - 5 mtrs<br/>           Output-4-20 mA<br/>           Power supply - 24V DC ext.<br/>           Display - 4" LED<br/>           Accuracy - +/- 0.25% of Full Scale or better<br/>           Enclosure- IP 65</p>  | Each | 38290           | 2639              | 40929         |

| Code No | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|---|------|-----------------|-------------------|---------------|
| 2.5     | <b>Power Analyser</b><br>Designing, Supplying, Installing, commissioning & testing of <b>Power Analyser interfacing to PLC Panel with modbus communicatuion port, as per IEC 62053</b> and in the prescribed format including mounting arrangement.   | Each | 24552           | 1743              | 26295         |
| 2.6     | <b>PLC Panel with HMI for Filter Bed</b><br>Designing, Supplying, Installing, commissioning & testing of <b>PLC Panel with HMI</b> including PLC with CPU & Power supply unit, power supply cable, Interfacing cards, interfacing cables, wireless modules with 25 % extra quantity of all accessories.   | Each | 18600           | 1320              | 19920         |
| 2.7     | <b>Master PLC Panel</b><br>Design, Supply, Installing, Commissioning & Testing of <b>Master PLC control monitoring and communication panel</b> as per IEC 61131 at Pure Water Sump suitable for monitoring and control of pure water Pumps. Pressure Transmitters, Level Transmitter, PH Transmitter, Turbidity Transmitter ,for all pumps installed. | Each | 35242           | 5279              | 40521         |
| 2.8     | <b>Control Cable</b>  |      |                 |                   |               |
| 2.8.1   | Designing, Supplying, Installing, commissioning & testing with Terminating & Interfacing of <b>2 C x 1.5 sq.mm</b> as per IS 694 twisted shielded copper armoured conductor on wall in GI tray or in ground suitable for supplied DC Voltage  | RM   | As Per MJP CSR  |                   |               |
| 2.8.2   | <b>Communication Cable</b>  |      |                 |                   |               |
|         | Designing, Supplying, Installing, commissioning & testing with Terminating & Interfacing of CAT 6 as per ISO/IEC-11801 std.cable for networking on wall in GI tray or on ground etc.  | RM   | As Per PWD CSR  |                   |               |
| 2.9     | <b>Signal Cable</b>   |      |                 |                   |               |

| Code No  | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|----------|--|------|-----------------|-------------------|---------------|
| 2.9.1    | Designing, Supplying, Installing, commissioning & testing with Terminating & Interfacing of <b>2 pair x 1.0 sq.mm.</b> as per IS 694 <b>copper shieled, twisted, multistraned</b> armoured cable on wall in GI tray or on ground.  | RM   | As Per MJP CSR  |                   |               |
| 2.9.2    | Designing, Supplying, Installing, commissioning & testing with Terminating & Interfacing of <b>3 pair x 1.0 sq.mm.</b> as per IS 694 <b>copper shieled, twisted, multistraned</b> armoured cable on wall in GI tray or on ground.  | RM   |                 |                   |               |
| 2.9.3    | Designing, Supplying, Installing, commissioning & testing with Terminating & Interfacing of <b>4.5 pair x 1.0 sq.mm.</b> as per IS 694 <b>copper shieled, twisted, multistraned</b> armoured cable on wall in GI tray or on ground.  | RM   |                 |                   |               |
| 2.9.4    | Designing, Supplying, Installing, commissioning & testing with Terminating & Interfacing of <b>8 pair x 1.0 sq.mm.</b> as per IS 694 <b>copper shieled, twisted, multistraned</b> armoured cable on wall in GI tray or on ground.  | RM   | As Per PWD CSR  |                   |               |
| <b>3</b> | <b>Cable Trays</b>   |      |                 |                   |               |
| 3.1      | Designing, Supplying, Installing Bending, Cutting Perforated <b>GI tray 80 x 20 mm</b> x3 mm thk for laying of cable etc.  | RM   |                 |                   |               |
| 3.2      | Designing, Supplying, Installing, Bending, Cutting Perforated <b>GI tray 200 x 20</b> x 3mm thk for for laying of cable etc.   | RM   | As Per MJP CSR  |                   |               |
| <b>4</b> | <b>Blower</b>  |      |                 |                   |               |
| 4.1      | <b>Pressure Transmitter for Blower</b><br>Designing, Supplying, Installing, commissioning & testing of pressure transmitter CE markd with following technical parameters at Blower delivery and Interfacing with PLC panel.<br>Medium- Water<br>Pressure - 0-10 kg/cm2<br>Output 4-20 mA<br>Power supply - 24V DC ext.<br>Display - Large LED<br>Accuracy - +/- 0.5 % of full scale or better<br>Temp.- suitable for Amb.temp<br>Enclosure- IP 65 weatherproof<br>Mounting - In Line | Each |                 |                   |               |



| Code No | Description  | Unit | Supply Rate Rs.               | Erection Rate Rs. | Total Amt Rs. |
|---------|--|------|-------------------------------|-------------------|---------------|
| 4.2     | <p><b>Ultrasonic Level Transmitter for Wash Water Tank</b></p> <p>Designing, Supplying, Installing, commissioning &amp; testing of Ultrasonic level transmitter CE marked with following technical parameters and Interfacing with PLC panel including Mounting accessories.</p> <p>Range- 0 - 5 mtrs<br/>Output-4-20 mA<br/>Power supply - 24V DC ext.<br/>Display - 4" LED<br/>Accuracy - +/- 0.25% of Full Scale or better<br/>Enclosure- IP 65</p> | Each | 38290                         | 2639              | 40929         |
| 4.3     | <p><b>Priming arrangement</b></p> <p>Desidning,supplying,installing,commissioning &amp; testing with complete priming arrangements for centrifugal pumps as applicable &amp; as required shall be done with interface with PLC panels &amp; further to SCADA system.</p>   | Each | 69075                         | 10346             | 79421         |
| 4.4     | <p><b>Surveillance system</b></p> <p>Desiging,supplying,installing,commissioning &amp; testing of CCTV IR water proof camera suitable for upto 100ft.with IR Dome camera,control key board,DVR,Hard Disk,cables,UPT transreceivers etc.complete.</p>   | Each | 22320                         | 1584              | 23904         |
| SA 3    | <p><b>Flash Mixer &amp; Clariflocculator</b></p> <p>Designing,Supplying,Installing,commissioning &amp; testing with operation, controlling &amp; Monitoring of Flash Mixer and Clarifloccutor mechanism interfaced with Master PLC of WTP</p>  | Each | 18600                         | 1320              | 19920         |
| SA 4    | <p><b>Valves with actuator</b></p> <p>Design, Supply, Installation, Testing of <b>Motor Actuated Valve</b> / Gate at all required sizes and places of filter beds,Clarifier Drains,blowers and Interfacing with PLC panel,<br/>Supply Voltage : 415 V ac,<br/>Manual Operation : Hand wheel<br/>Position Indication : 01 Nos.<br/>Limit Switch for open, close<br/>Overload Protection : Torque Overload Limit Switch</p>                              | No.  | As per MJP CSR (Civil / Mech) |                   |               |
| SA 5    | <b>Pure Water Pump house</b>   |      |                               |                   |               |

| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|--|------|-----------------|-------------------|---------------|
| 5.1     | <p><b>Ultrasonic level transmitter</b></p> <p>Designing, Supplying, Installing, commissioning &amp; testing of <b>Ultrasonic level transmitter</b> CE marked with following technical parameters at pure Water Pump House and Interfacing with PLC panel including Mounting accessories.</p> <p>Range- 0 - 5 mtrs<br/>Output-4-20 mA<br/>Power supply - 24V DC ext.<br/>Display - 4" LED<br/>Accuracy - +/- 0.25% of Full Scale or better<br/>Temp.- With Inbuilt temp compensation<br/>Enclosure- IP 65 weatherproof<br/>Mounting - Top/above FSL of Tank</p> | Each | 38290           | 2639              | 40929         |
| 5.2     | <p><b>Pressure Transmitter</b></p> <p>Designing, Supplying, Installing, commissioning &amp; testing of <b>pressure transmitter</b> CE markd with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including Mounting arrangement.</p> <p>Output 4-20 mA<br/>Power supply - 24V DC ext.<br/>Display - 4" LED<br/>Accuracy - +/- 0.1 % of full scale or better<br/>Enclosure- IP 67</p>   | Each | 26803           | 1848              | 28651         |
| 5.3     | <p><b>pH analyser</b></p> <p>Design, Supply, Installation, Testing of <b>pH Analyser</b> as per IUPAC ( International Union for Pure &amp; Applied Chemistry)at A.F. and Interfacing with PLC panel including Mounting arrangement.</p> <p>Range : 0 14 ,<br/>pH Accuracy : Better than 0.5% of full scale ,<br/>Supply Voltage : 24V dc,<br/>Output : 4 20 mA<br/>As per IEC 61000-6-2 &amp; IEC 61000-6-3</p>  | No.  | 74400           | 5279              | 79679         |
| 5.4     | <p><b>Turbidity meter / analyser</b></p>   |      |                 |                   |               |

| Code No | Description  | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|--|------|-----------------|-------------------|---------------|
|         | Design, Supply, Installation, Commissioning & Testing of Turbidity Analyser as per ISO 7027 scattering light method at A.F. and Interfacing with PLC panel. Turbidity Analyser shall comprises of 3 components i.e. sensors,signal distributor and transmitter with indicator with 2 outputs, 1 to PLC & another_ to local display including Mounting arrangement.<br>Overall Range : 0 100 NTU<br>Accuracy : +/- 0.02 NTU<br>Supply Voltage : 230 V ac<br>Output : 4 20 mA  | No.  | 148801          | 10558             | 159359        |
| 5.5     | <b>Residual chlorine analyser</b><br><br>Design, Supply, Installation,Testing of <b>Residual chlorine analyser / meter</b> must have automatic sensor cleaning facility at pure water sump and Interfacing with PLC panel. Residual Chlorine meter shall comprises of 3 components i.e. sensors,flow through assembly and transmitter with indicator and gives 2 outputs one to Local display & other to PLC including Mounting arrangement.<br>Overall Range : 0 8 mg/l (ppm)<br>Accuracy : 2% of full scale<br>Supply Voltage : 230 V ac<br>Output : 4 20 mA<br>Membrane free sensor of 2 gold plated electrodes for long term stability and reference electrode (ag/Agcl) <b>must be</b> provided to avoid maintenance.<br>IP 65 Nema 4 housing protection class requird. | No.  | 191451          | 13197             | 204648        |
| 5.6     | <b>Power Analyzer</b><br><br>Designing, Supplying, Installing, commissioning & testing of <b>Power Analyzer interfacing to PLC Panel with Modbus Communication Port, as per IEC 62053</b> and in the prescribed format including Mounting arrangement.   | Each | 24552           | 1743              | 26295         |
| 5.7     | <b>PLC Panel</b><br>Designing, Supplying, Installing, commissioning & testing of <b>PLC Panel</b> including PLC with CPU & Power supply unit, power supply cable, Interfacing cards, interfacing cables, wireless modules with 25 % extra quantity of all accessories.   | Each | 18600           | 1320              | 19920         |

| Code No     | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|-------------|---|------|-----------------|-------------------|---------------|
| 5.8         | <b>PLC based control monitoring and communication software</b><br><br>Design, Supply, Installing,Testing, PLC based <b>control monitoring and communication panel</b> as per IEC 61131 at Pure Water Sump suitable for monitoring and control of pure water Pumps. Pressure Transmitters, Level Transmitter, PH Transmitter, Turbidity Transmitter,residual chlorine analyser ,for all pumps installed. | Each | 35242           | 5279              | 40521         |
| 5.9         | <b>Surveillance system</b><br><br>Desiging,supplying,installing,commissioning & testing of CCTV IR water proof camera suitable for upto 100ft.with IR Dome camera,control key board,DVR,Hard Disk,cables,UPT transreceivers etc.complete.   | Each | 22320           | 1584              | 23904         |
| <b>SA 6</b> | <b>SCADA Software</b><br><br>Supply, Installation, Commissioning, Testing, Terminating & Interfacing Software Design to PLC and commissioning of <b>SCADA software with required hard tags plus 25% extra and with unlimited soft Tags &amp; life time licence</b> Development version  | No.  | 180127          | 21115             | 201242        |
| 6.1         | Developing/programming charges to install the software as per logic defined by the dept.  | No.  | 105727          | 15836             | 121563        |
| 6.2         | Supply, Installation, Testing, Terminating & <b>Interfacing Centralised Historian Server grade Historian PC with Window 7 or latest window operating system &amp; Historian software development cost etc. complete</b>   | No.  | 55800           | 3960              | 59760         |
| 6.3         | Supply, Installation, Testing, Terminating & Interfacing <b>Secondary Computer Station</b> Secondary computer station etc.  | No.  | 48360           | 3432              | 51792         |
| 6.4         | Supply, Installation, Testing, Intgeration & Commissioning of <b>46" LCD monitor</b> at Conf. Room for display of total water system (Online)   | No.  | 66966           | 4751              | 71717         |
| 6.5         | Supply, installation and commissioning of <b>Split Air Conditioner of Capacity 2T</b> for Central control room at WTP etc. as per detailed specification attached   | No.  | As Per PWD CSR  |                   |               |
| 6.6         |   |      |                 |                   |               |
| <b>SA7</b>  | <b>MBR / GSR / ESR</b>  |      |                 |                   |               |

| Code No | Description   | Unit | Supply Rate Rs. | Erection Rate Rs. | Total Amt Rs. |
|---------|---|------|-----------------|-------------------|---------------|
| 7.1     | <p>Providing, installing, testing and commissioning of following equipments with satisfactory test and trial etc.as per detailed specification attached</p> <p><b>Ultrasonic level transmitter</b><br/> Medium- Water<br/> Range- 0 - 5 mtrs<br/> Output-4-20 mA<br/> Power supply - 24V DC ext.<br/> Display - Large LED<br/> Accuracy - +/- 0.25% of Full Scale or better<br/> Enclosure- IP 65</p> | No.  | 38290           | 2639              | 40929         |
| 7.2     | <p><b>PLC Panel suitable for Wireless communication</b></p> <p>Designing, supplying, Installing commissioning &amp; testing of following equipments with satisfactory test and trial of PLC Panel control, monitoring and communication system along with PLC Panel at Central monitoring system.</p>   | No.  | 130201          | 9238              | 139439        |
| 7.3     | <p><b>Solar Panel with Battery</b></p> <p>Designing, Supplying, installing commissioning &amp; testing of photovoltaic solar panel with its charger, MS Stand for mounting solar panel so as to have maximum exposure of sunlight for desired location and maintenance free battery wit 3 days battery backup.</p>  | Set  | 13392           | 950               | 14342         |
| SA8     | <p><b>ESR Management Systems (RMS)</b></p> <p>Designing, Supplying, Installing, Commissioning &amp; testing of <b>Flow Control Valve / Pressure reducing valve / Altitude Valve</b> for inlet / outlet with flow controlling, pressure controlling &amp; monitoring on web and to the pipeline feeding to ESR / MBR / GSR with cable, PLC etc. complete .</p>   |      |                 |                   |               |
| SA8-1   | 80 mm Dia   | No   | 107608          | 10558             | 118166        |
| SA8-2   | 100 mm Dia  | No   | 116159          | 10558             | 126717        |
| SA8-3   | 150 mm Dia  | No   | 153018          | 10558             | 163576        |
| SA8-4   | 200 mm Dia  | No   | 195494          | 10558             | 206052        |
| SA8-5   | 250 mm Dia  | No   | 264133          | 10558             | 274691        |
| SA8-6   | 300 mm Dia  | No   | 313075          | 10558             | 323633        |
| SA8-7   | 350 mm Dia  | No   | 401051          | 10558             | 411609        |
| SA8-8   | 400 mm Dia  | No   | 525712          | 10558             | 536270        |
| SA8-9   | 450 mm Dia  | No   | 563110          | 10558             | 573668        |
| SA8-10  | 500 mm Dia  | No   | 739098          | 10558             | 749656        |
| SA8-11  | 550 mm Dia  | No   | 1063216         | 10558             | 1073774       |

| Code No       | Description  | Unit | Supply Rate Rs.       | Erection Rate Rs. | Total Amt Rs.    |
|---------------|--|------|-----------------------|-------------------|------------------|
| SA8-12        | 600 mm Dia   | No   | 1063216               | 10558             | 1073774          |
| <b>SA 9</b>   | <b>Ultrasonic Flow Meter with battery backup.</b><br>In line battery operated ultrasonic bulk type water meters ISO 4064 with built in data logger and GSM/GPRS modem for transfer of data communication to remote central computer. The meter shall be suitable for 50°C and provided with IP 68 protection class with complete immersion of water. The accuracy of the meter shall be +/- 1 % of measured value.as per detailed specification attached | No.  | As per MJP CSR        |                   |                  |
| <b>SA 10</b>  | <b>Butterfly Valve with Actuator</b>   | No.  | As per MJP CSR (Mech) |                   |                  |
| <b>SA11</b>   | <b>Comprehensive O &amp; M</b><br>Operation and Maintenance Charges of the whole water supply scheme on SCADA and generation of daily report of water quality parameters and electrical parameters with specific consumption in kWh/ml . The report shall be mailed daily to the head quarters for monitoring purpose.   |      |                       |                   |                  |
| 1             | During First year  |      |                       |                   | Free             |
| 2             | During Second year   |      |                       |                   | 3% of total cost |
| 3             | During Third year  |      |                       |                   | 5% of total cost |
| 4             | During Fourth year   |      |                       |                   | 7% of total cost |
| 5             | During Fifth year  |      |                       |                   | 7% of total cost |
| 6             | During Sixth year  |      |                       |                   | 7% of total cost |
| <b>NOTE -</b> | <b>All makes shall got approved from<br/>The Superintending Engineer (Mech.)</b>   |      |                       |                   |                  |

## CABLE SECTION CHART

| Sr. No. | Conductor Size<br>in Sq.mm. | Aluminium Conductor PVC insulated cable |        |                   |        | Plain Copper Conductor PVC insulated flexible cable |             |
|---------|-----------------------------|---|--------|-------------------|--------|---|-------------|
|         |                             | (Maximum) in Ground                     |        | (Minimum) in Duct |        | Current Carrying Capacity in Amp                    |             |
|         |                             | no.                                     | 2 Core | Multi Core        | 2 Core | Multi Core  | Single Core |
| 1       | 1.5                         | 18                                      | 16     | 16                | 14     | 15  | 14          |
| 2       | 2.5                         | 25                                      | 21     | 21                | 18     | 20  | 19          |
| 3       | 4                           | 32                                      | 28     | 27                | 23     | 27  | 26          |
| 4       | 6                           | 40                                      | 35     | 34                | 30     | 46  | 42          |
| 5       | 10                          | 55                                      | 46     | 45                | 39     | 46  | 42          |
| 6       | 16                          | 70                                      | 60     | 58                | 50     | 62  | 57          |
| 7       | 25                          | 90                                      | 76     | 76                | 63     | 80  | 71          |
| 8       | 35                          | 110                                     | 82     | 92                | 77     | 102   | 91          |
| 9       | 50                          | 135                                     | 110    | 115               | 95     | 138   | 120         |
| 10      | 70                          | 160                                     | 135    | 140               | 115    | 214   | 165         |
| 11      | 95                          | 190                                     | 165    | 170               | 140    | 254   | 200         |
| 12      | 120                         | 210                                     | 185    | 190               | 155    | 300   | 225         |
| 13      | 150                         | 240                                     | 210    | 210               | 175    | 340   | -           |
| 14      | 185                         | 275                                     | 235    | 240               | 200    | 390   | -           |
| 15      | 240                         | 320                                     | 275    | 275               | 235    | 460   | -           |
| 16      | 300                         | 355                                     | 305    | 305               | 260    | -   | -           |
| 17      | 400                         | 385                                     | 335    | 345               | 290    | -   | -           |

### HP Vs Current

Approximate full load current for submersible pump motor, 3 phase, 50 cycles, 415-425 V.

## Recommended Height of the Pump House

### A) For V.T. Pumps

#### i) Single floor pump house

| Sr. No. | HP of Pump            | Pump Floor to corbel top | Corbel top to roof slab bottom | Pump floor to bottom of roof slab Total | Lifting Equipments |
|---------|-----------------------|--------------------------|--------------------------------|---|--------------------|
| 1       | Upto 50 HP            | -                        | -                              | 5.5 m                                   | Monorail           |
| 2       | From 51 HP to 150 HP  | 5 m                      | 1.5 m                          | 6.5 m                                   | HOT                |
| 3       | From 151 HP to 300 HP | 5.5 m                    | 1.5 m                          | 7 m                                     | HOT                |
| 4       | From 301 HP to 500 HP | 5.5 m                    | 2 m                            | 7.5 m                                   | EOT                |
| 5       | 501 HP and above      | 5.5 m                    | 2.5 m                          | 8 m                                     | EOT                |

#### ii) Double floor pump house

Generally double floor arrangement shall be provided for the delivery pipes of diameter 350 mm or above. The height of pump house shall be as below:

|                           |                               |                       |  |
|---------------------------|-------------------------------|-----------------------|--|
| Pump floor to Panel floor | 2.5 m                         | Panel floor to Corbel |  |
| 5 m                       | Corbel to bottom of roof slab | 2.5 m                 |  |

### B) For Centrifugal and Submersible Pumps

| Sr. No. | HP of Pump            | Pump Floor to corbel top | Corbel top to roof slab bottom | Pump floor to bottom of roof slab Total | Lifting Equipments |
|---------|-----------------------|--------------------------|--------------------------------|---|--------------------|
| 1       | Upto 150 HP           | -                        | -                              | 4 m                                     | Monorail           |
| 2       | From 151 HP to 300 HP | 3.5 m                    | 1.5 m                          | 5 m                                     | HOT                |
| 3       | 301 HP and above      | 4 m                      | 2.5 m                          | 6.5 m                                   | EOT                |



## MULTIPLYING FACTOR FOR CALCULATING THE SIZES OF CAPACITOR FOR POWER FACTOR IMPROVEMENT

| Original Power Factor of Load before applying Capacitor | SIZE OF CAPACITORS IN KVAR PER KW OF LOAD FOR RAISING THE POWER FACTOR |       |       |       |       |       |       |       |       |       |       |       |       |
|---|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|   | 0.8  | 0.85  | 0.9   | 0.91  | 0.92  | 0.93  | 0.94  | 0.95  | 0.96  | 0.97  | 0.98  | 0.99  | UNITY |
| 0.45  | 1.23   | 1.36  | 1.501 | 1.532 | 1.561 | 1.592 | 1.626 | 1.659 | 1.695 | 1.737 | 1.784 | 1.846 | 1.988 |
| 0.46  | 1.179  | 1.309 | 1.446 | 1.473 | 1.502 | 1.533 | 1.567 | 1.6   | 1.636 | 1.677 | 1.725 | 1.786 | 1.929 |
| 0.47  | 1.13   | 1.26  | 1.397 | 1.425 | 1.454 | 1.485 | 1.519 | 1.552 | 1.588 | 1.629 | 1.677 | 1.758 | 1.881 |
| 0.48  | 1.076  | 1.206 | 1.343 | 1.37  | 1.4   | 1.43  | 1.464 | 1.497 | 1.534 | 1.575 | 1.623 | 1.684 | 1.826 |
| 0.49  | 1.03   | 1.16  | 1.297 | 1.326 | 1.355 | 1.386 | 1.42  | 1.435 | 1.489 | 1.53  | 1.578 | 1.639 | 1.782 |
| 0.5   | 0.982  | 1.112 | 1.248 | 1.276 | 1.303 | 1.337 | 1.363 | 1.403 | 1.441 | 1.481 | 1.529 | 1.49  | 1.732 |
| 0.51  | 0.936  | 1.066 | 1.202 | 1.23  | 1.357 | 1.291 | 1.323 | 1.357 | 1.395 | 1.435 | 1.483 | 1.544 | 1.686 |
| 0.52  | 0.894  | 1.024 | 1.16  | 1.188 | 1.215 | 1.249 | 1.281 | 1.315 | 1.353 | 1.393 | 1.441 | 1.502 | 1.644 |
| 0.53  | 0.85   | 0.98  | 1.116 | 1.144 | 1.171 | 1.205 | 1.237 | 1.271 | 1.309 | 1.349 | 1.397 | 1.487 | 1.6   |
| 0.54  | 0.809  | 0.939 | 1.075 | 1.103 | 1.13  | 1.164 | 1.196 | 1.23  | 1.268 | 1.308 | 1.356 | 1.458 | 1.559 |
| 0.55  | 0.769  | 0.899 | 1.035 | 1.063 | 1.09  | 1.124 | 1.156 | 1.19  | 1.268 | 1.268 | 1.316 | 1.377 | 1.519 |
| 0.56  | 0.73   | 0.86  | 0.996 | 1.024 | 1.051 | 1.085 | 1.117 | 1.151 | 1.189 | 1.229 | 1.277 | 1.338 | 1.48  |
| 0.57  | 0.692  | 0.822 | 0.958 | 0.986 | 1.013 | 1.047 | 1.079 | 1.113 | 1.151 | 1.191 | 1.239 | 1.3   | 1.442 |
| 0.58  | 0.655  | 0.785 | 0.921 | 0.949 | 0.976 | 1.01  | 1.042 | 1.076 | 1.114 | 1.154 | 1.202 | 1.263 | 1.405 |
| 0.59  | 0.618  | 0.748 | 0.884 | 0.912 | 0.939 | 0.973 | 1.005 | 1.039 | 1.077 | 1.117 | 1.165 | 1.226 | 1.368 |
| 0.6   | 0.584  | 0.714 | 0.849 | 0.878 | 0.905 | 0.939 | 0.971 | 1.005 | 1.044 | 1.083 | 1.131 | 1.192 | 1.334 |
| 0.61  | 0.549  | 0.679 | 0.815 | 0.843 | 0.87  | 0.904 | 0.936 | 0.97  | 1.008 | 1.048 | 1.096 | 1.157 | 1.299 |
| 0.62  | 0.515  | 0.645 | 0.781 | 0.809 | 0.836 | 0.87  | 0.902 | 0.936 | 0.974 | 1.014 | 1.08  | 1.123 | 1.265 |
| 0.63  | 0.483  | 0.613 | 0.749 | 0.777 | 0.804 | 0.838 | 0.87  | 0.904 | 0.942 | 0.982 | 1.062 | 1.091 | 1.233 |
| 0.64  | 0.45   | 0.58  | 0.716 | 0.744 | 0.771 | 0.805 | 0.837 | 0.871 | 0.909 | 0.949 | 1.03  | 1.058 | 1.2   |
| 0.65  | 0.419  | 0.549 | 0.685 | 0.713 | 0.74  | 0.774 | 0.806 | 0.84  | 0.878 | 0.918 | 0.997 | 1.027 | 1.169 |
| 0.66  | 0.388  | 0.518 | 0.654 | 0.682 | 0.709 | 0.743 | 0.775 | 0.809 | 0.847 | 0.887 | 0.966 | 0.996 | 1.138 |
| 0.67  | 0.358  | 0.488 | 0.624 | 0.652 | 0.679 | 0.713 | 0.745 | 0.779 | 0.817 | 0.857 | 0.935 | 0.966 | 1.108 |
| 0.68  | 0.329  | 0.459 | 0.595 | 0.623 | 0.65  | 0.684 | 0.716 | 0.758 | 0.788 | 0.828 | 0.905 | 0.937 | 1.079 |
| 0.69  | 0.299  | 0.429 | 0.565 | 0.593 | 0.62  | 0.654 | 0.686 | 0.72  | 0.758 | 0.798 | 0.876 | 0.907 | 1.049 |
| 0.7   | 0.27   | 0.4   | 0.536 | 0.564 | 0.591 | 0.625 | 0.657 | 0.691 | 0.729 | 0.769 | 0.84  | 0.878 | 1.02  |
| 0.71  | 0.242  | 0.372 | 0.508 | 0.536 | 0.563 | 0.597 | 0.629 | 0.663 | 0.701 | 0.741 | 0.811 | 0.85  | 0.992 |
| 0.72  | 0.213  | 0.343 | 0.479 | 0.507 | 0.534 | 0.568 | 0.6   | 0.634 | 0.672 | 0.712 | 0.783 | 0.821 | 0.963 |
| 0.73  | 0.186  | 0.316 | 0.452 | 0.48  | 0.507 | 0.541 | 0.573 | 0.607 | 0.645 | 0.685 | 0.754 | 0.794 | 0.936 |
| 0.74  | 0.159  | 0.289 | 0.425 | 0.453 | 0.48  | 0.514 | 0.546 | 0.58  | 0.618 | 0.658 | 0.727 | 0.767 | 0.909 |
| 0.75  | 0.132  | 0.262 | 0.398 | 0.426 | 0.453 | 0.487 | 0.519 | 0.553 | 0.591 | 0.631 | 0.7   | 0.74  | 0.882 |
| 0.76  | 0.105  | 0.235 | 0.371 | 0.399 | 0.426 | 0.46  | 0.492 | 0.526 | 0.564 | 0.604 | 0.673 | 0.713 | 0.855 |
| 0.77  | 0.079  | 0.209 | 0.345 | 0.373 | 0.4   | 0.434 | 0.466 | 0.5   | 0.538 | 0.578 | 0.652 | 0.687 | 0.829 |
| 0.78  | 0.053  | 0.183 | 0.319 | 0.347 | 0.374 | 0.408 | 0.44  | 0.474 | 0.512 | 0.552 | 0.62  | 0.661 | 0.803 |
| 0.79  | 0.026  | 0.156 | 0.292 | 0.32  | 0.347 | 0.381 | 0.413 | 0.447 | 0.485 | 0.525 | 0.594 | 0.634 | 0.776 |
| 0.8   | -  | 0.13  | 0.266 | 0.294 | 0.321 | 0.355 | 0.387 | 0.421 | 0.459 | 0.499 | 0.567 | 0.608 | 0.75  |
| 0.81  | -  | 0.104 | 0.24  | 0.268 | 0.295 | 0.329 | 0.361 | 0.395 | 0.433 | 0.473 | 0.541 | 0.582 | 0.724 |
| 0.82  | -  | 0.078 | 0.214 | 0.242 | 0.269 | 0.303 | 0.335 | 0.369 | 0.407 | 0.447 | 0.515 | 0.556 | 0.698 |
| 0.83  | -  | 0.052 | 0.188 | 0.216 | 0.243 | 0.277 | 0.309 | 0.343 | 0.381 | 0.421 | 0.489 | 0.53  | 0.672 |
| 0.84  | -  | 0.026 | 0.162 | 0.19  | 0.217 | 0.251 | 0.283 | 0.317 | 0.355 | 0.396 | 0.463 | 0.504 | 0.645 |
| 0.85  | -  | -     | 0.136 | 0.164 | 0.191 | 0.225 | 0.257 | 0.291 | 0.329 | 0.369 | 0.437 | 0.478 | 0.62  |
| 0.86  | -  | -     | 0.109 | 0.14  | 0.167 | 0.198 | 0.23  | 0.264 | 0.301 | 0.343 | 0.39  | 0.45  | 0.593 |
| 0.87  | -  | -     | 0.083 | 0.114 | 0.141 | 0.172 | 0.204 | 0.238 | 0.275 | 0.317 | 0.364 | 0.424 | 0.567 |
| 0.88  | -  | -     | 0.054 | 0.085 | 0.112 | 0.143 | 0.175 | 0.209 | 0.246 | 0.288 | 0.335 | 0.395 | 0.538 |
| 0.89  | -  | -     | 0.028 | 0.059 | 0.086 | 0.117 | 0.149 | 0.183 | 0.23  | 0.262 | 0.309 | 0.369 | 0.512 |
| 0.9   | -  | -     | -     | 0.031 | 0.058 | 0.089 | 0.121 | 0.155 | 0.192 | 0.234 | 0.281 | 0.341 | 0.484 |
| 0.91  | -  | -     | -     | -     | 0.027 | 0.058 | 0.09  | 0.124 | 0.161 | 0.203 | 0.25  | 0.31  | 0.453 |
| 0.92  | -  | -     | -     | -     | -     | 0.031 | 0.063 | 0.097 | 0.134 | 0.176 | 0.223 | 0.283 | 0.426 |
| 0.93  | -  | -     | -     | -     | -     | -     | 0.032 | 0.066 | 0.108 | 0.145 | 0.192 | 0.252 | 0.395 |
| 0.94  | -  | -     | -     | -     | -     | -     | -     | 0.034 | 0.071 | 0.113 | 0.16  | 0.22  | 0.363 |
| 0.95  | -  | -     | -     | -     | -     | -     | -     | -     | 0.037 | 0.079 | 0.126 | 0.186 | 0.329 |
| 0.96  | -  | -     | -     | -     | -     | -     | -     | -     | -     | 0.042 | 0.089 | 0.149 | 0.292 |
| 0.97  | -  | -     | -     | -     | -     | -     | -     | -     | -     | -     | 0.047 | 0.107 | 0.25  |
| 0.98  | -  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 0.06  | 0.203 |
| 0.99  | -  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 0.143 |

eg. : 100 KW load to be improved from 0.77 to 0.95 power factor from table is 0.500 i.e. capacitor (KVAR) = 100x0.5 = 50 KVAR