TENDER DOCUMENT

TENDER NO.: DLI/C&E/WI-675/501

FOR

Tender for Design, Engineering, Manufacturing at works, Supply, Supervision, Testing & Commissioning of “5 Nos. 3Ph.-N 415V Draw Out Intelligent Type MCC (Motor Control Centre) & 2 Nos. 3Ph.-N 415V Intelligent Fixed Type MCP (Motor Control Panel) & Associated Works” for the project of “Augmentation of Fuel and Flux Crushing Facilities (Package No. 064) of Bhilai Steel Plant (SAIL)”

VOLUME – 2C

DRAWING LIST
## LIST OF DRAWINGS

<table>
<thead>
<tr>
<th>S.No</th>
<th>Drawing Number</th>
<th>Rev</th>
<th>Drawing Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BSP-EPI-02-064-02-010-29-BE-03014 (Sheet 01 to 03 of 03)</td>
<td>03</td>
<td>General Notes &amp; Legend for IMCC</td>
</tr>
<tr>
<td>2</td>
<td>BSP-EPI-02-064-02-010-29-BE-03009 (Sheet 01 to 03 of 03)</td>
<td>03</td>
<td>SLD for Intelligent MCC-1A &amp; 1B (Coal Handling Plant)</td>
</tr>
<tr>
<td>3</td>
<td>BSP-EPI-02-064-02-010-29-BE-03010 (Sheet 01 to 02 of 02)</td>
<td>00</td>
<td>SLD for Intelligent MCC-2 (Coke Sorting Plant)</td>
</tr>
<tr>
<td>4</td>
<td>BSP-EPI-02-064-02-010-29-BE-03011 (Sheet 01 to 03 of 03)</td>
<td>00</td>
<td>SLD for Intelligent MCC-3A &amp; 3B (Coke Sorting Plant)</td>
</tr>
<tr>
<td>5</td>
<td>BSP-EPI-02-064-02-010-29-BE-03044 (Sheet 01 to 03 of 03)</td>
<td>00</td>
<td>SLD for Intelligent MCP (132 kW &amp; 160 kW)</td>
</tr>
</tbody>
</table>
GENERAL NOTES & LEGEND FOR IMCC

AUGMENTATION OF FUEL & FLUX CRUSHING FACILITIES (PKG.- 064)
1. All Feeders shall have protections as per general technical specifications (GTS).
2. The ACB feeders will be provided as per GTS/TS.
3. All the spares feeders shall be provided with the necessary breakers, meters, relays, releases, CTs, etc.
4. Similar to the respective feeder as per specification.
5. S/S for L/L/R shall be provided in IMCC for each motor feeder.
6. Soft starter will be provided for LT motors of rating more than 75KW.
7. Surge protection device will be provided at the incoming side of MCC, VFDs to protect the system/equipment.
8. Control supply voltage shall be 240V, AC.
9. Protection, display data & fault/alarm history description etc. of intelligent controller shall be in line with TS/GTS.
10. Position selector switch for voltmeter & 4 position ammeter selector switch shall be provided for incomers of IMCC/MCC.
11. UPS supply shall be provided for controller of Intelligent controller.
12. Controller shall have function of protection, control, metering & annunciation.
13. Protection, display data & fault/alarm history description etc. of intelligent controller shall be in line with TS/GTS.

**General Notes for IMCC**

1. ALL FEEDERS SHALL HAVE PROTECTIONS AS PER GENERAL TECHNICAL SPECIFICATIONS (GTS).
2. THE ACB FEEDERS WILL PROVIDED AS PER GTS/TS.
3. ALL THE SPARES FEEDERS SHALL BE PROVIDED WITH THE NECESSARY BREAKERS, METERS/RELAYS/RELEASES/CTs ETC.
4. SIMILAR TO THE RESPECTIVE FEEDER AS PER SPECIFICATION.
5. S/S FOR L/L/R SHALL BE PROVIDED IN IMCC FOR EACH MOTOR FEEDER.
6. CONTROL TERMINAL WILL BE ELMEX SUITABLE FOR CONNECTING TWO CORE OF 2.5 SQMM & SHALL HAVE MIN. 20% SPARE TERMINAL.
7. SOFT STARTER WILL BE PROVIDED FOR LT MOTORS OF RATING MORE THAN 75KW.
8. SURGE PROTECTION DEVICE WILLL BE PROVIDED AT THE INCOMING SIDE OF MCCs, VFDs TO PROTECT THE SYSTEM /EQUIPMENT.
9. CONTROL SUPPLY VOLTAGE SHALL BE 240V, AC.
10. LCP OF HT MOTOR AS WELL AS MOTOR OF RATING ABOVE 45KW SHALL BE PROVIDED AMMETER & LCP SHALL BE PROVIDED FOR ALL DRIVES AS PER GTS.
11. EQUIPMENT SELECTION AND DE-RATING SHALL BE GENERALLY BE BASED ON AMBIENT TEMPERATURE OF 50 DEG.
12. EQUIPMENT SHALL BE SUITABLE FOR FOLLOWING PARAMETERS.
   - VOLTAGE: 415V ±10% & ±15%
   - FAULT LEVEL: 50 KA FOR 1 SEC
   - FREQUENCY: 50 Hz ±4% & ±6%
13. MECH/ELECT. INTER LOCKING BETWEEN I/C & B/C SHALL BE PROVIDED AS PER TS / GTS.
14. INCASE OF MISSING OF ANY FEEDER AND/OR CHANGE IN KW RATING, THE SAME SHALL BE PROVIDED/INCLUDED BEFORE THE PANEL MANUFACTURING.
15. THE SELECTION, DESIGN BASIS, SPECIFICATION OF THE LT MCC, ACB, MCCB INTELLEGENT CONTROLLER, SOFT STARTER AND OTHER COMPONENT SHALL BE AS PER CONTRACT / GTS & SHALL BE AS PER LIST OF PREFERRED MAKE.
16. THE INTELLIGENT CONTROLLER SHALL HAVE MINIMUM 4 RELAY OUT PUT (240V AC 10A).
17. PROTECTION, DISPLAY DATA & FAULTALARM HISTORY DESCRIPTION ETC. OF INTELLIGENT CONTROLLER SHALL BE IN LINE WITH TS/GTS.
18. 7 POSITION SELECTOR SWITCH FOR VOLT per METER & 4 POSITION AMMETER SELECTOR SWITCH SHALL BE PROVIDED FOR INCOMERS OF IMCC/MCC.
19. ON OFF & TRIP INDICATION LAMP SHALL BE PROVIDED FOR INCOMER, BUS COUPLER AND ALL OUTGOING MOTOR & POWER SUPPLY FEEDERS.
20. UPS SUPPLY SHALL BE PROVIDED FOR CONTROLLER OF INTELLIGENT CONTROLLER.
21. MECH. INTERLOCKING SHALL BE PROVIDED FOR RDOL CONTACTOR.
22. CONTROLLER SHALL HAVE FUNCTION OF PROTECTION, CONTROL, METERING & ANNUNCATION.
23. FOR PT/CT CIRCUIT SINGLE CORE 1.1 KV GRADE BLACK COLOUR COPPER PVC OF MIN. SIZE 2.5 SQMM & 1.5 SQMM FOR CONTROL CIRCUIT SHALL BE USED.
24. 04 OUTGOING FEEDERS
   - EACH OUTGOING MOTOR FEEDER WILL HAVE FOLLOWING:
     - MCCB (ABOVE 45 KW MOTOR) / MOTOR PROTECTION CIRCUIT BREAKER (UP TO 45 KW MOTOR)
     - THREE POLE CONTACTOR
     - AMMETER WITH CT & SELECTOR SWITCH
     - STOP & TEST PUSH BUTTONS
     - ON/OFF TRIP INDICATION LEDS
     - DIGITAL MICROPROCESSOR BASED OVERLOAD Relay WITH SP & MANUAL RESET FACILITY
     - MOTOR PROTECTION RELAYS FOR MOTORS ABOVE 90 KW RATING.
   - EACH OUTGOING NON MOTOR FEEDER WILL HAVE FOLLOWING:
     - MCCB.
     - ON/OFF INDICATION LEDS.
### LEGEND

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(•)</td>
<td>TRANSFORMER</td>
<td>≈</td>
<td>BUSDUCT</td>
<td>💐</td>
<td>INDICATOR FORWARD</td>
</tr>
<tr>
<td>M</td>
<td>MOTOR</td>
<td>IMCC</td>
<td>INTELLIGENT TYPE MCC</td>
<td>☞</td>
<td>CT WITH AMMETER</td>
</tr>
<tr>
<td>☰</td>
<td>INTELLIGENT MOTOR CONTROLLER</td>
<td>IMCC-R</td>
<td>INTELLIGENT TYPE MCC RECLAIMER</td>
<td>☰</td>
<td>INDICATOR REVERSE</td>
</tr>
<tr>
<td>▲</td>
<td>VCB WITHOUT PROTECTION</td>
<td>MCB</td>
<td>HT BCS (STAY PUT TYPE)</td>
<td>LCP</td>
<td>LOCAL CONTROL PANEL</td>
</tr>
<tr>
<td>TDS</td>
<td>TWIN BOOM STACKER</td>
<td>SS</td>
<td>SOFT STRATER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BWR</td>
<td>BUCKET WHEEL RECLAIMER</td>
<td>MCCB</td>
<td>FOR NEUTRAL CT PROTECTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCC</td>
<td>POWER CONTROL CENTRE</td>
<td>R Dol</td>
<td>POWER DISTRIBUTION BOARD</td>
<td>PD³</td>
<td>POWER DISTRIBUTION BOARD</td>
</tr>
<tr>
<td>MLD3</td>
<td>MAIN LIGHTING DISTRIBUTION</td>
<td>Dol</td>
<td>OVER CURRENT EARTH FAULT RELAY</td>
<td></td>
<td>OVER CURRENT EARTH FAULT RELAY</td>
</tr>
<tr>
<td>IMCC</td>
<td>INTELLIGENT MOTOR CONTROL</td>
<td>MFDM</td>
<td>TRANSFORMER NEUTRAL (EF)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCP</td>
<td>MOTOR CONTROL PANEL</td>
<td>DC</td>
<td>TRIP CIRCUIT HEALTHY (WHITE)</td>
<td>MPCB</td>
<td>ELECTRONIC O/L RELAY</td>
</tr>
<tr>
<td>LP</td>
<td>LIGHTING PANEL</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TR FRL</td>
<td>TRANSFORMER FAULT RELAY</td>
<td>VSS</td>
<td>VOLTMETER SELECTOR SWITCH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLM</td>
<td>SYNCHRONIZING RELAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC</td>
<td>LOCAL CONTROL STATION</td>
<td>RELAY</td>
<td>UNDER VOLTAGE RELAY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>TEST PUSH BUTTON</td>
<td>RELAY</td>
<td>MICROPROCESSOR BASED O/L, S/C, E/F PROTECTION RELAY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t</td>
<td>TRIP INDICATION (AMBER)</td>
<td>ACB</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH BLOCK DIAGRAM FOR POWER DISTRIBUTION.
NOTE - DETAIL OF LCS SHALL BE SUBMITTED SEPARATELY.
- LOCAL REMOTE SELECTOR SWITCH WILL BE MOUNTED ON MCC & CONTROL PANEL.
- MOTOR FEEDER UP TO 45 KW RATING WILL HAVE MPCB AND MCCB BEYOND 45 KW RATING.
- FOR CURRENT TRANSFORMER REFER DTS-03 PAGE 79 OF 206.
- COMMON UPS FOR RHB PANEL, MCC & OTHER REQUIREMENT WILL BE PROVIDED.
- FOR MOTOR FEEDER, MCCB/MICROMAG SHALL BE MOTOR DUTY CLAS WITH MAGNETIC TRIP ONLY.
- FOR POWER SUPPLY FEEDER MCCB SHALL BE MICROPROCESSOR BASED WITH OILS & DP PROTECTION IN LINE WITH CONTRACT.

I/C-2 FROM PCC-1

SECTION-I

415V + I, NEUTRAL, 3 PH, 0.8 X 1000A, 60A FOR 1 SEC.

SECTION-II

UPS SUPPLY

NOTE: PLACED AS FEEDER (10 KV)

SHARED FEEDER
NOTE - DETAIL OF LCS SHALL BE SUBMITTED SEPARATELY.

- LOCAL, REMOTE SELECTOR SWITCH SHALL BE MOUNTED ON MCC & CONTROL PANEL.
- MOTOR FEEDER UP TO 45 KW RATING WILL HAVE MCB & MCCS BEYOND 45 KW RATING.
- FOR CURRENT TRANSFORMER REFER DET. NO.: 02 OF 205.
- FOR ACB & BIC FEDDER REFER DET. NO.: 02 OF 205.

FOR BRAKE FEEDER MCCB & POWER CONTACTOR (25A) SHALL BE CONSIDERED AS SHOWN FOR ONE FEEDER.

In case of missing of any drive feed and/or change in its rating the said shall be suitably revised.
TOTAL NO OF MCP = 02

B. 160 KW - 01 NO. - CONV Y7 - 35
A. 132 KW - 01 NO. - CONV Y11 - 207

SLD OF MCP's

CRUSHING FACILITIES (PKG - 064)
AUGMENTATION OF FUEL & FLUX
BHAILA STEEL PLANT