TENDER DOCUMENT

NIT No.- DLI / C&E / WI-665 / 513

FOR

Tender for “Design, Engineering, Manufacturing at works, Supply and Supervision of Testing and Commissioning of “2 (Two) Nos. 3Ph.-N 415V Non-Intelligent Draw out Type MCC & of 6 (Six) Nos. 3Ph.-N 415V Non-Intelligent Type MCP (Motor Control Panel)” for “Augmentation of Raw Material Handling Receipt and Handling facilities with new OHP Part– B (Package- 061) of Bhilai Steel Plant, (SAIL)”.

VOLUME- 2 C

(TENDER DRAWINGS)
### Contents - (Volume-2)

**NIT No. DLI/C&E/WI-665/513**

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BHILAI STEEL PLANT
AUGMENTATION OF RAW MATERIAL RECEIPT & HANDLING FACILITIES WITH NEW OHP, PART - B, (PKG-61) AT BHILAI, CHHATISGARH

SLD OF MCP'S

1. INTELLIGENT TYPE MCP
   a. 110 KW - 1 NO. Z3C3
   b. 160 KW - 7 NO. Z1C1/Z1C2, Z5C1/Z5C2/Z5C3, 13C1/C2
   c. 200 KW - 7 NO. Z4C1/Z4C2/Z4C3, Z9C1/Z9C2, L4C1, L9C1
   TOTAL = 15 NUMBER

2. NON-INTELLIGENT TYPE MCP
   a. 160 KW - 3 NO. J15C2, J17C3, J17AC1
   b. 200 KW - 3 NO. J16AC1, J9C1, J10AC1
   TOTAL - 6 NO.

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*REVISED AS PER DISCUSSED ON 14.09.2012*
415V TPN POWER SUPPLY FROM PCC

**415V, 3φ-N, 50Hz, 350A AL**

BUSBAR FAULT LEVEL 50KA FOR 1SEC.

NON INTELLEGENT TYPE MCP 160KW.

**FEEDING FROM** | **DESCRIPTION** | **LOCATION**
---|---|---
PCC-5, SEC.-I | CONV J15C2 | LTSS-5
PCC-5, SEC.-I | CONV J17G3 | LTSS-5
PCC-5, SEC.-II | CONV J17AC1 | LTSS-5

**TOTAL NO. OF MCP- 03 NOS.**

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**NOTE:-**

1. POWER TERMINAL SHALL BE STUD TYPE.
2. VSS SHALL BE 7 POSITION SELECTOR SWITCH.
3. ASS SHALL BE 4 POSITION SELECTOR SWITCH.
4. PT/CT WIRING SHALL BE CABLE BLACK COLOUR OF MIN. SIZE 2.5MM.
5. CONTROL & POTENTIAL CURRENT CABLE BLACK COLOUR OF MIN 1.5MM.
6. CONTROL TERMINAL SHALL BE SUITABLE FOR 2NOS 2.5MM CABLE AND SHALL HAVE MIN. 20" SPARE TERMINAL.
7. ALL OTHER PANEL SPEC. SHALL BE AS PER GTS/TIS.
8. MCB SHALL BE MICROPROCESSOR BASED & PROTECTION TYPE CONFORMING TO TYPE 2 CO-ORDINATION.

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**REFERENCES**

- BHILAI STEEL PLANT, BHILAI, CHHATTISGARH
- EPC.061.03.01.05.0039

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**DRAWING SCALE**

- SHEET 1 OF 4

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**DRAWING COMMISSIONED & APPROVED**

- SHEET 1 OF 4

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**DRAWING ISSUED TO**

- SHEET 1 OF 4
415V TPN POWER SUPPLY FROM PCC

415V 38-N, 50Hz 450A AL
BUSBAR FAULT LEVEL 50KA FOR 1SEC.
NON INTELLEGENT TYPE MCP 200KW.

FEEDING FROM
LOCATION
PCC-5, SEC.-II CONV J16AC1 LTSS-5
EXISTING LTSS-4 CONV J9C1 MCC-6
EXISTING LTSS-4 CONV J10AC1 MCC-6

MCC-6 LOCATION NEAR JH-9H
TOTAL NO. OF MCP- 03 NOS.

NOTE:-
1. POWER TERMINAL SHALL BE STUD TYPE.
2. VSS SHALL BE 7 POSITION SELECTOR SWITCH.
3. ASS SHALL BE 4 POSITION SELECTOR SWITCH.
4. PTICT WIRING SHALL BE CU. BLACK COLOUR OF MIN.2.5 SQ-MM.
5. CONTROL SUPPLY MCBE, 50 KA MICROPROCESSOR BASED
6. CONTROL TERMINAL SHALL BE SUITABLE FOR 2NOS 2.5 SQ-MM CU.WIRE AND SHALL HAVE MIN.20" SPARE TERMINAL.
7. ALL OTHER PANEL SPEC. SHALL BE AS PER GTS/1TS.
8. MCCB SHALL BE MICROPROCESSOR BASED & PROTECTION TYPE CONFORMING TO TYPE 2 CO-ORDINATION.

THIS DRAWING IS CONFIDENTIAL & SHOULDN'T BE DISCLOSED TO A THIRD PARTY UNLESS WRITTEN CONSENT OF ENGINEERS (O). EXCEPT FOR THE PURPOSE OF CONSTRUCTION, OPERATION AND MAINTENANCE OF THE SYSTEM FOR WHICH THE DRAWING IS INTENDED.
NOTE - DETAIL OF LCS SHALL BE SUBMITTED SAPERETLY.
- ALL POWER SUPPLY FEEDER SHALL HAVE MICROFROSSER BASED O/L, S/C & E/T
- FOR SMALLER RATING OF MOTORS, MPCB SHALL BE USED AND AS PER TYPE-II
- CO-ORDINATION CHART OF MANUFACTURERS
- THE MCC WILL BE NON- INTELLIGENT TYPE

415V NON-INTELLIGENT TYPE MCC
DRIVE UPTO JH-15

415V, 3φ-N, 50Hz, 1000A, 50kA FOR 1 SEC.

SECTION-I

SECTION-II

415V NON-INTELLIGENT TYPE MCC
MAXIMUM DEMAND-428KW

415V, 3φ-N, 50Hz, 1000A, 50kA FOR 1 SEC.
415V NON-INTELLIGENT TYPE MCC- 8(1)
MAXIMUM DEMAND-245KW
DRAW OUT TYPE

415V, 3φ-N, 50Hz, 630A, 50ka FOR 1

NOTE - DETAIL OF LCS SHALL BE SUBMITTED SEPARATELY.
- ALL POWER SUPPLY FEEDER SHALL HAVE MICROPROCESSOR BASED 0/L S/C & L/P
- FOR SMALLER RATING OF MOTORS, NCPS SHALL BE USED AND AS PER TYPE-II
  CO-ORDINATION CHART OF MANUFACTURERS
  - THE MCC WILL BE NON-INTELLIGENT TYPE
  - CONSIDERED ADDITIONAL FEEDER FOR SHUTTLE (AS REQUIRED BY BSF / MECOM)
  & SHALL BE FINALISED AFTER DETAIL ENGINEERING.
1. ALL FEEDERS SHALL HAVE PROTECTIONS AS PER GENERAL TECHNICAL SPECIFICATIONS (GTS).
2. THE ACB FEEDERS SHALL HAVE MICROPROCESSOR BASED STATE OF ART PROTECTION AND METERING SYSTEM WITH PROPER COMMUNICATION TO INTERACT WITH PLANT AUTOMATION AND SCADA SYSTEM AS PER (GTS).
3. ALL THE SPARES FEEDERS SHALL BE PROVIDED WITH THE NECESSARY BREAKERS, METERS/RELAYS/RELEASES/CTs ETC. SIMILAR TO THE RESPECTIVE FEEDER AS PER SPECIFICATION.
4. FOR THE CONTROL OF DRIVES RATING FROM 110KW TO 200KW, SEPARATE INTELLIGENT TYPE MOTOR CONTROL MOTOR CENTRE (MCPs) HAVING COMMUNICATION CAPABILITY SHALL BE PROVIDED.
5. MCCs FOR DRIVE MOTORS OF NEW SERIES CONVEYORS PARALLEL TO EXISTING CONVEYOR FROM OHP-1 TO JH-27/JH-42 WILL BE NON-INTELLIGENT DRAWOUT TYPE AND MOTOR CONTROL PANEL (MCPs) WILL BE NON-INTELLIGENT.
6. ELECTRONIC OVERLOAD RELAY UPTO 90KW AND MOTOR PROTECTION RELAYS FOR MOTOR ABOVE 90KW IN CONVENTIONAL TYPE MCCs / MCPs.
7. SOFT STARTER WILL BE PROVIDED FOR LT MOTORS OF RATING MORE THAN 75KW.
8. SURGE PROTECTION DEVICE WILL 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 IMCC/MCC.
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.
   
<table>
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<td>VOLTAGE</td>
<td>415V +10% &amp; -15%</td>
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<tr>
<td>FAULT LEVEL</td>
<td>60 KA FOR 1 SEC</td>
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<tr>
<td>FREQUENCY</td>
<td>50 Hz +4% &amp; -6%</td>
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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 INTELLIGENT 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 12 DIGITAL & 4 ANALOG INPUT AND FOR INCREASING NO OF I/O'S EXTENDED MODULE CAN BE ADDED.
17. THE INTELLIGENT CONTROLLER SHALL HAVE MINIMUM 4 RELAY OUT PUT (240V AC 10A)
18. PROTECTION, DISPLAY DATA & FAULT / ALARM HISTORY DESCRIPTION ETC. OF INTELLIGENT CONTROLLER SHALL BE IN LINE WITH TS/GTS.
19. 7 POSITION SELECTOR SWITCH FOR VOLTMETER & 4 POSITION AMMETER SELECTOR SWITCH SHALL BE PROVIDED FOR INCOMERS OF IMCC/ MCC.
20. ON OFF & TRIP INDICATION LAMP SHALL BE PROVIDED FOR INCOMER, BUS COUPLER AND ALL OUTGOING FEEDERS.
21. UPS SUPPLY SHALL BE PROVIDED FOR CONTROLLER OF INTELLIGENT CONTROLLER.
22. MECH. INTERLOCKING SHALL BE PROVIDED FOR RDOL CONTACTOR.
23. CONTROLLER SHALL HAVE FUNCTION OF PROTECTION, CONTROL, METERING & ANNUNCIATION.
24. 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.
25. CONTROL TERMINAL WILL BE ELMEX SUITABLE FOR CONNECTING TWO CORE OF 2.5 SQMM & SHALL HAVE MIN. 20% SPARE TERMINAL.
26. FOR L/I/RELAY SHALL BE PROVIDED FOR IN MCC/ IMCC FOR EACH MOTOR FEEDER.
27. ANNAMETER & SIB SHALL BE PROVIDED FOR ALL MOTOR ABOVE 30KW IN CONV M/C.
### LEGEND

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<td>— —</td>
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<td>BUS DUCT.</td>
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<td>MOTOR</td>
<td>IMCC-S</td>
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<td>VCB WITHOUT PROTECTION</td>
<td>MCB</td>
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NOTE: THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH BLOCK DIAGRAM FOR POWER DISTRIBUTION.